



Everett Link Extension

ATTACHMENT B

No Build and Build Conditions Traffic Data – Synchro Files Part 1

Intersection						
Int Delay, s/veh	3.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	20	15	25	25	15
Future Vol, veh/h	30	20	15	25	25	15
Conflicting Peds, #/hr	0	0	0	0	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	32	21	16	26	26	16
Major/Minor						
	Major1	Major2	Minor1			
Conflicting Flow All	0	0	53	0	102	48
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.1	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.2	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1566	-	894	1018
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1566	-	884	1014
Mov Cap-2 Maneuver	-	-	-	-	842	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	950	-
Approach						
	EB	WB	NB			
HCM Control Delay, s/v	0	2.7	9.2			
HCM LOS	A					
Minor Lane/Major Mvmt						
	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	899	-	-	1566	-	
HCM Lane V/C Ratio	0.047	-	-	0.01	-	
HCM Control Delay (s/veh)	9.2	-	-	7.3	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q (veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	55	50	20	10	0
Future Vol, veh/h	0	55	50	20	10	0
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	0	55	50	20	10	0
Major/Minor						
	Major1	Major2	Minor2			
Conflicting Flow All	72	0	-	0	117	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1541	-	-	-	901	1014
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	982	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1538	-	-	-	897	1012
Mov Cap-2 Maneuver	-	-	-	-	855	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	980	-
Approach						
	EB	WB	SB			
HCM Control Delay, s/v	0	0	9.3			
HCM LOS			A			
Minor Lane/Major Mvmt						
	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1538	-	-	-	855	
HCM Lane V/C Ratio	-	-	-	-	0.012	
HCM Control Delay (s/veh)	0	-	-	-	9.3	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q (veh)	0	-	-	-	0	

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖			↕	↗
Traffic Vol, veh/h	20	5	30	0	5	0	20	10	10	10	30	40
Future Vol, veh/h	20	5	30	0	5	0	20	10	10	10	30	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	5	30	0	5	0	20	10	10	10	30	40
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	7.4	7.9	7.7	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	80%	0%	0%	25%	0%
Vol Thru, %	0%	50%	20%	0%	100%	75%	0%
Vol Right, %	0%	50%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	20	25	30	5	40	40
LT Vol	20	0	20	0	0	10	0
Through Vol	0	10	5	0	5	30	0
RT Vol	0	10	0	30	0	0	40
Lane Flow Rate	20	20	25	30	5	40	40
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.029	0.024	0.035	0.033	0.007	0.053	0.044
Departure Headway (Hd)	5.145	4.294	5.106	4.005	4.746	4.748	3.923
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	692	828	695	882	744	750	906
Service Time	2.903	2.052	2.885	1.784	2.84	2.501	1.675
HCM Lane V/C Ratio	0.029	0.024	0.036	0.034	0.007	0.053	0.044
HCM Control Delay, s/veh	8.1	7.2	8.1	6.9	7.9	7.8	6.9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1	0.1	0	0.2	0.1

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	10	160	660	20	10	20
Future Vol, veh/h	10	160	660	20	10	20
Conflicting Peds, #/hr	3	0	0	3	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	11	168	695	21	11	21
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	719	0	-	0	818	361
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	4.28	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.29	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	833	-	-	-	318	641
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	831	-	-	-	311	639
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	906	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.6	0		12.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	831	-	-	-	311	639
HCM Lane V/C Ratio	0.013	-	-	-	0.034	0.033
HCM Control Delay (s/veh)	9.4	0.1	-	-	17	10.8
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0	-	-	-	0.1	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	50	150	5	25	15	50	215	30	15	340	45
Future Volume (veh/h)	45	50	150	5	25	15	50	215	30	15	340	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	47	53	158	5	26	16	53	226	32	16	358	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	531	451	401	332	599	266	110	488	72	26	603	83
Arrive On Green	0.07	0.24	0.24	0.01	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1847	1843	1640	1589	3169	1406	560	2494	367	132	3051	420
Grp Volume(v), veh/h	47	53	158	5	26	16	164	0	147	223	0	198
Grp Sat Flow(s),veh/h/ln	1847	1843	1640	1589	1585	1406	1734	0	1688	1838	0	1764
Q Serve(g_s), s	1.1	1.2	4.4	0.1	0.4	0.5	4.6	0.0	4.2	6.1	0.0	5.5
Cycle Q Clear(g_c), s	1.1	1.2	4.4	0.1	0.4	0.5	4.6	0.0	4.2	6.1	0.0	5.5
Prop In Lane	1.00		1.00	1.00		1.00	0.32		0.22	0.07		0.24
Lane Grp Cap(c), veh/h	531	451	401	332	599	266	339	0	330	363	0	348
V/C Ratio(X)	0.09	0.12	0.39	0.02	0.04	0.06	0.48	0.00	0.45	0.62	0.00	0.57
Avail Cap(c_a), veh/h	792	1003	893	617	1668	740	1309	0	1274	1488	0	1428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	16.1	17.3	15.4	18.2	18.2	19.6	0.0	19.4	20.1	0.0	19.8
Incr Delay (d2), s/veh	0.0	0.1	0.5	0.0	0.0	0.1	0.8	0.0	0.7	1.3	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.5	1.6	0.0	0.1	0.2	1.8	0.0	1.6	2.5	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.6	16.2	17.7	15.5	18.2	18.3	20.3	0.0	20.1	21.3	0.0	20.9
LnGrp LOS	B	B	B	B	B	B	C		C	C		C
Approach Vol, veh/h	258			47			311			421		
Approach Delay, s/veh	17.0			17.9			20.2			21.1		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	15.4		5.2	18.6		15.5		8.3	15.5			
Change Period (Y+Rc), s	4.7		4.7	5.2		4.7		4.7	5.2			
Max Green Setting (Gmax), s	41.3		10.3	29.8		44.3		11.3	28.8			
Max Q Clear Time (g_c+I1), s	6.6		2.1	6.4		8.1		3.1	2.5			
Green Ext Time (p_c), s	1.6		0.0	1.0		2.2		0.0	0.1			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	19.7											
HCM 6th LOS	B											

Intersection													
Int Delay, s/veh	0.8												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕	↕		↕			↕		
Traffic Vol, veh/h	5	0	0	5	0	5	5	100	10	15	260	10	
Future Vol, veh/h	5	0	0	5	0	5	5	100	10	15	260	10	
Conflicting Peds, #/hr	0	0	0	0	0	0	6	0	2	2	0	6	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95	
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1	
Mvmt Flow	5	0	0	5	0	5	5	105	11	16	274	11	

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	381	446	149	292	446	60	291	0	0	118	0	0
Stage 1	318	318	-	123	123	-	-	-	-	-	-	-
Stage 2	63	128	-	169	323	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	392	363	640	643	510	999	1232	-	-	1475	-	-
Stage 1	482	484	-	874	798	-	-	-	-	-	-	-
Stage 2	724	615	-	822	654	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	383	354	636	634	497	997	1225	-	-	1473	-	-
Mov Cap-2 Maneuver	383	354	-	634	497	-	-	-	-	-	-	-
Stage 1	477	475	-	869	793	-	-	-	-	-	-	-
Stage 2	717	611	-	811	642	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v14.5		9.7	0.3	0.4
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1225	-	-	383	634	997	1473	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.008	0.005	0.011	-
HCM Control Delay (s/veh)	8	0	-	14.5	10.7	8.6	7.5	0
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q (veh)	0	-	-	0	0	0	0	-

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	60	50	5	10	15
Future Volume (Veh/h)	40	60	50	5	10	15
Sign Control	Free		Stop		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	60	50	5	10	15
Pedestrians			3		1	
Lane Width (ft)			11.0		10.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		103	84	144	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		103	84	144	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	98		94	99	99	99
cM capacity (veh/h)	1607		826	776	714	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	40	60	55	25		
Volume Left	40	0	50	0		
Volume Right	0	60	0	15		
cSH	1607	1700	821	889		
Volume to Capacity	0.02	0.04	0.07	0.03		
Queue Length 95th (ft)	2	0	5	2		
Control Delay (s/veh)	7.3	0.0	9.7	9.2		
Lane LOS	A		A	A		
Approach Delay (s/veh)	2.9		9.7	9.2		
Approach LOS			A	A		
Intersection Summary						
Average Delay	5.9					
Intersection Capacity Utilization	20.9%		ICU Level of Service		A	
Analysis Period (min)	15					

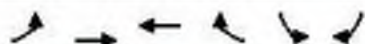
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall No-Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	70	20	35	90	35	5	5	10	55	10	65
Future Volume (vph)	40	70	20	35	90	35	5	5	10	55	10	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.99	
Satd. Flow (prot)	1544	2996		3027	3121	1375		1423	2153	1431	1321	
Flt Permitted	0.69	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.99	
Satd. Flow (perm)	1125	2996		3027	3121	1375		1423	2153	1431	1321	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	74	21	37	95	37	5	5	11	58	11	68
RTOR Reduction (vph)	0	15	0	0	0	15	0	0	10	0	48	0
Lane Group Flow (vph)	42	80	0	37	95	22	0	10	1	52	37	0
Confl. Peds. (#/hr)	8		1	1		8			3	3		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D,P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	19.2	17.0		2.2	16.9	33.4		2.8	5.0	16.5	16.5	
Effective Green, g (s)	19.2	17.0		2.2	16.9	33.4		2.8	5.0	16.5	16.5	
Actuated g/C Ratio	0.34	0.30		0.04	0.30	0.59		0.05	0.09	0.29	0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	399	901		117	933	812		70	190	417	385	
v/s Ratio Prot	0.00	0.03		c0.01	0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	c0.03					0.01			0.00			
v/c Ratio	0.10	0.08		0.31	0.10	0.02		0.14	0.00	0.12	0.09	
Uniform Delay, d1	12.6	14.1		26.4	14.3	4.7		25.7	23.4	14.6	14.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.5	0.0	0.0		0.3	0.0	0.0	0.0	
Delay (s)	12.6	14.2		26.9	14.3	4.8		26.0	23.4	14.7	14.6	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		13.7			15.0			24.7			14.6	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		15.0										
HCM 2000 Volume to Capacity ratio		0.13										
Actuated Cycle Length (s)		56.5										
Intersection Capacity Utilization		41.2%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall No-Build AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	95	100	140	10	25	420
Future Volume (veh/h)	95	100	140	10	25	420
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97			0.96	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1668	1668	1682	1682	1750	1750
Adj Flow Rate, veh/h	100	105	147	11	26	442
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	5	0	0
Cap, veh/h	491	1280	574	42	557	496
Arrive On Green	0.08	0.40	0.19	0.19	0.33	0.33
Sat Flow, veh/h	1589	3253	3090	222	1667	1483
Grp Volume(v), veh/h	100	105	77	81	26	442
Grp Sat Flow(s), veh/h/ln	1589	1585	1598	1631	1667	1483
Q Serve(g_s), s	1.9	0.8	1.6	1.6	0.4	11.0
Cycle Q Clear(g_c), s	1.9	0.8	1.6	1.6	0.4	11.0
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	491	1280	305	311	557	496
V/C Ratio(X)	0.20	0.08	0.25	0.26	0.05	0.89
Avail Cap(c_a), veh/h	1579	4048	2041	2083	1282	1141
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	7.2	13.4	13.4	8.8	12.3
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.5	0.2	0.5	0.5	0.1	8.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	11.0	7.2	13.6	13.6	8.8	14.6
LnGrp LOS	B	A	B	B	A	B
Approach Vol, veh/h		205	158		468	
Approach Delay, s/veh		9.1	13.6		14.3	
Approach LOS		A	B		B	
Timer - Assigned Phs			4		6	7
Phs Duration (G+Y+Rc), s			21.0		18.0	8.3
Change Period (Y+Rc), s			5.2		5.0	5.0
Max Green Setting (Gmax), s			49.8		30.0	30.0
Max Q Clear Time (g_c+I1), s			2.8		13.0	3.9
Green Ext Time (p_c), s			0.1		0.1	0.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			12.8			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall No-Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	70	120	110	25	65	20	60	90	105	80	440	210
Future Volume (veh/h)	70	120	110	25	65	20	60	90	105	80	440	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	71	122	112	26	66	20	61	92	107	82	449	214
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	226	395	331	43	262	76	368	472	421	602	719	340
Arrive On Green	0.12	0.21	0.21	0.03	0.12	0.12	0.08	0.30	0.30	0.09	0.31	0.31
Sat Flow, veh/h	1847	1894	1588	1416	2154	624	1581	1577	1404	1744	2291	1083
Grp Volume(v), veh/h	71	118	116	26	42	44	61	92	107	82	340	323
Grp Sat Flow(s), veh/h/ln	1847	1843	1640	1416	1412	1365	1581	1577	1404	1744	1739	1634
Q Serve(g_s), s	1.9	2.9	3.2	1.0	1.4	1.5	1.3	2.3	3.1	1.6	8.8	8.9
Cycle Q Clear(g_c), s	1.9	2.9	3.2	1.0	1.4	1.5	1.3	2.3	3.1	1.6	8.8	8.9
Prop In Lane	1.00		0.97	1.00		0.46	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	226	384	342	43	172	166	368	472	421	602	546	513
V/C Ratio(X)	0.31	0.31	0.34	0.61	0.25	0.26	0.17	0.19	0.25	0.14	0.62	0.63
Avail Cap(c_a), veh/h	892	1414	1258	676	1075	1039	987	1204	1072	1259	1328	1247
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	17.7	17.8	25.3	21.0	21.0	11.0	13.8	14.0	10.3	15.4	15.5
Incr Delay (d2), s/veh	0.3	0.5	0.7	5.2	1.1	1.2	0.1	0.2	0.4	0.0	1.4	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.8	1.2	1.1	0.4	0.5	0.5	0.4	0.7	0.9	0.5	3.2	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.4	18.2	18.5	30.5	22.1	22.2	11.0	14.0	14.4	10.4	16.9	17.0
LnGrp LOS	C	B	B	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		305			112			260			745	
Approach Delay, s/veh		19.1			24.1			13.5			16.2	
Approach LOS		B			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.1	20.5	6.4	15.8	9.3	21.3	11.0	11.2				
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gm), s	40.3	25.2	* 41	24.8	40.3	25.5	40.2					
Max Q Clear Time (g_c+I), s	5.1	3.0	5.2	3.3	10.9	3.9	3.5					
Green Ext Time (p_c), s	0.1	1.5	0.0	1.8	0.1	5.4	0.1	0.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			16.9									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	210	130	30	30	585	80	30	120	30	40	120	100
Future Volume (vph)	210	130	30	30	585	80	30	120	30	40	120	100
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2860		1575	2881		3162	3161		1499	1565	
Flt Permitted	0.19	1.00		0.64	1.00		0.61	1.00		0.47	1.00	
Satd. Flow (perm)	307	2860		1069	2881		2046	3161		754	1565	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	137	32	32	616	84	32	126	32	42	126	105
RTOR Reduction (vph)	0	14	0	0	9	0	0	21	0	0	25	0
Lane Group Flow (vph)	221	155	0	32	691	0	32	137	0	42	206	0
Confl. Peds. (#/hr)	1					1				1		3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	46.3	38.3		29.5	26.0		17.3	13.9		28.3	20.4	
Effective Green, g (s)	46.3	38.3		29.5	26.0		17.3	13.9		28.3	20.4	
Actuated g/C Ratio	0.55	0.46		0.35	0.31		0.21	0.17		0.34	0.24	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	385	1304		396	891		466	523		348	380	
v/s Ratio Prot	c0.11	0.05		0.00	c0.24		0.00	0.04		c0.02	c0.13	
v/s Ratio Perm	0.21			0.02			0.01			0.03		
v/c Ratio	0.57	0.11		0.08	0.77		0.06	0.26		0.12	0.54	
Uniform Delay, d1	12.0	13.1		18.0	26.3		26.7	30.5		19.1	27.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.0		0.0	3.8		0.0	0.0		0.0	0.8	
Delay (s)	13.3	13.1		18.1	30.2		26.8	30.6		19.1	28.5	
Level of Service	B	B		B	C		C	C		B	C	
Approach Delay (s/veh)		13.2			29.7			30.0			27.1	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		25.3										
HCM 2000 Volume to Capacity ratio		0.63										
Actuated Cycle Length (s)		84.0								18.6		
Intersection Capacity Utilization		66.3%								C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall No-Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱		↱	↱	↰	↱		↰	↱	↱
Traffic Volume (veh/h)	30	590	985	0	720	30	150	120	20	30	120	30
Future Volume (veh/h)	30	590	985	0	720	30	150	120	20	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	32	621	0	0	758	32	158	126	21	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	265	1319		0	1212	541	869	677	111	856	538	133
Arrive On Green	0.42	0.42	0.00	0.00	0.42	0.42	0.09	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	656	3129	1395	0	2952	1283	2967	2625	429	3183	2602	641
Grp Volume(v), veh/h	32	621	0	0	758	32	158	72	75	32	78	80
Grp Sat Flow(s), veh/h/ln	656	1564	1395	0	1438	1283	1483	1525	1528	1591	1637	1607
Q Serve(g_s), s	2.3	8.3	0.0	0.0	12.0	0.9	2.3	2.1	2.2	0.4	2.3	2.4
Cycle Q Clear(g_c), s	14.4	8.3	0.0	0.0	12.0	0.9	2.3	2.1	2.2	0.4	2.3	2.4
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.28	1.00		0.40
Lane Grp Cap(c), veh/h	265	1319		0	1212	541	869	393	394	856	338	332
V/C Ratio(X)	0.12	0.47		0.00	0.63	0.06	0.18	0.18	0.19	0.04	0.23	0.24
Avail Cap(c_a), veh/h	546	2663		0	2448	1092	1867	775	777	1267	832	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	12.1	0.0	0.0	13.2	10.0	15.4	16.8	16.8	16.9	19.2	19.2
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh	0.3	2.5	0.0	0.0	3.3	0.0	0.7	0.7	0.7	0.2	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.2	12.6	0.0	0.0	13.6	10.0	15.5	16.9	17.0	16.9	19.5	19.6
LnGrp LOS	B	B			B	A	B	B	B	B	B	B
Approach Vol, veh/h		653			790			305			190	
Approach Delay, s/veh		12.9			13.4			16.2			19.1	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.5			30.1	10.5	17.5		30.1				
Change Period (Y+Rc), s	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	29.5			49.4	24.5	29.5		49.4				
Max Q Clear Time (g_c+I2), s	4.2			16.4	4.3	4.4		14.0				
Green Ext Time (p_c), s	0.0	0.6		8.1	0.4	0.8		4.8				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	14.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall No-Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	115	25	250	260	15	15	10	75	15	5	5
Future Volume (vph)	5	115	25	250	260	15	15	10	75	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%				0%
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	0.99	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2961		1513	3103		1357	1420	1269	1515	1463	
Flt Permitted	0.57	1.00		0.65	1.00		0.75	0.96	1.00	0.74	1.00	
Satd. Flow (perm)	917	2961		1049	3103		1073	1379	1269	1193	1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	121	26	263	274	16	16	11	79	16	5	5
RTOR Reduction (vph)	0	18	0	0	3	0	0	0	61	0	4	0
Lane Group Flow (vph)	5	129	0	263	287	0	13	14	18	16	6	0
Confl. Peds. (#/hr)	7		1	1		7	8		1	1		8
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D,P+P	NA		D,P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	26.4	16.9		26.4	25.5		11.9	11.9	11.9	11.9	11.9	
Effective Green, g (s)	26.4	16.9		26.4	25.5		11.9	11.9	11.9	11.9	11.9	
Actuated g/C Ratio	0.49	0.32		0.49	0.48		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	463	937		601	1481		239	307	282	265	326	
v/s Ratio Prot	0.00	0.04		c0.08	0.09						0.00	
v/s Ratio Perm	0.01			c0.14			0.01	0.01	c0.01	0.01		
v/c Ratio	0.01	0.13		0.43	0.19		0.05	0.04	0.06	0.06	0.01	
Uniform Delay, d1	6.8	13.0		8.2	8.0		16.3	16.2	16.3	16.3	16.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.1	0.0		0.0	0.0	0.0	0.0	0.0	
Delay (s)	6.8	13.1		8.4	8.1		16.3	16.3	16.3	16.3	16.2	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		12.9			8.2			16.3			16.3	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			53.4			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			46.8%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	70	20	15	25	0	25	0	15	35	0	40
Future Vol, veh/h	0	70	20	15	25	0	25	0	15	35	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	5	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	3	3	3	2	2	2
Mvmt Flow	0	74	21	16	26	0	26	0	16	37	0	42
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	95	0	0	165	-	90	156	153	27
Stage 1	-	-	-	-	-	-	85	-	-	58	58	-
Stage 2	-	-	-	-	-	-	80	-	-	98	95	-
Critical Hdwy	-	-	-	4.1	-	-	7.13	-	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	-	-	6.12	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.527	-	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1512	-	0	797	0	965	810	739	1048
Stage 1	0	-	-	-	-	0	920	0	-	954	847	-
Stage 2	0	-	-	-	-	0	926	0	-	908	816	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1512	-	-	758	-	961	787	731	1047
Mov Cap-2 Maneuver	-	-	-	-	-	-	755	-	-	770	706	-
Stage 1	-	-	-	-	-	-	920	-	-	954	838	-
Stage 2	-	-	-	-	-	-	878	-	-	889	816	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			2.8			9.5			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBT	EBR	WBL	WBT	SBLn1					
Capacity (veh/h)	755 961		-	-	1512	-	896					
HCM Lane V/C Ratio	0.035 0.016		-	-	0.01	-	0.088					
HCM Control Delay (s/veh)	9.9 8.8		-	-	7.4	0	9.4					
HCM Lane LOS	A A		-	-	A A	A A						
HCM 95th %tile Q (veh)	0.1 0.1		-	-	0	-	0.3					

Intersection

Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←		←			←			←	←
Traffic Vol, veh/h	75	15	50	0	5	0	20	35	10	10	30	55
Future Vol, veh/h	75	15	50	0	5	0	20	35	10	10	30	55
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	75	15	50	0	5	0	20	35	10	10	30	55
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay, s/veh	8.2	8.1	8.4	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	31%	83%	0%	0%	25%	0%
Vol Thru, %	54%	17%	0%	100%	75%	0%
Vol Right, %	15%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	90	50	5	40	55
LT Vol	20	75	0	0	10	0
Through Vol	35	15	0	5	30	0
RT Vol	10	0	50	0	0	55
Lane Flow Rate	65	90	50	5	40	55
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.089	0.133	0.058	0.007	0.056	0.065
Departure Headway (Hd)	4.937	5.306	4.187	5.051	5.051	4.223
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	729	679	858	711	712	851
Service Time	2.948	3.019	1.899	3.067	2.76	1.933
HCM Lane V/C Ratio	0.089	0.133	0.058	0.007	0.056	0.065
HCM Control Delay, s/veh	8.4	8.8	7.2	8.1	8.1	7.2
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-ile Q	0.3	0.5	0.2	0	0.2	0.2

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	20	155	650	35	25	25
Future Vol, veh/h	20	155	650	35	25	25
Conflicting Peds, #/hr	3	0	0	3	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	21	163	684	37	26	26

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	724	0	833
Stage 1	-	-	706
Stage 2	-	-	127
Critical Hdwy	4.28	-	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.29	-	3.5
Pot Cap-1 Maneuver	830	-	311
Stage 1	-	-	456
Stage 2	-	-	891
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	828	-	300
Mov Cap-2 Maneuver	-	-	300
Stage 1	-	-	442
Stage 2	-	-	888

Approach	EB	WB	SB
HCM Control Delay, s/v	1.2	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	828	-	-	-	300	637
HCM Lane V/C Ratio	0.025	-	-	-	0.088	0.041
HCM Control Delay (s/veh)	9.5	0.1	-	-	18.2	10.9
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.3	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build B AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	65	145	15	40	35	50	185	40	35	305	45
Future Volume (veh/h)	45	65	145	15	40	35	50	185	40	35	305	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	47	68	153	16	42	37	53	195	42	37	321	47
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	518	420	373	342	602	268	117	448	100	61	551	84
Arrive On Green	0.07	0.23	0.23	0.03	0.19	0.19	0.20	0.20	0.20	0.19	0.19	0.19
Sat Flow, veh/h	1847	1843	1639	1589	3169	1409	599	2285	511	315	2840	435
Grp Volume(v), veh/h	47	68	153	16	42	37	153	0	137	215	0	190
Grp Sat Flow(s),veh/h/ln	1847	1843	1639	1589	1585	1409	1732	0	1663	1829	0	1761
Q Serve(g_s), s	1.1	1.6	4.3	0.4	0.6	1.2	4.2	0.0	3.9	5.8	0.0	5.3
Cycle Q Clear(g_c), s	1.1	1.6	4.3	0.4	0.6	1.2	4.2	0.0	3.9	5.8	0.0	5.3
Prop In Lane	1.00		1.00	1.00		1.00	0.35		0.31	0.17		0.25
Lane Grp Cap(c), veh/h	518	420	373	342	602	268	340	0	326	355	0	342
V/C Ratio(X)	0.09	0.16	0.41	0.05	0.07	0.14	0.45	0.00	0.42	0.60	0.00	0.56
Avail Cap(c_a), veh/h	781	1009	898	599	1677	746	1314	0	1262	1489	0	1433
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	16.9	17.9	15.4	18.1	18.3	19.3	0.0	19.2	20.0	0.0	19.8
Incr Delay (d2), s/veh	0.0	0.1	0.5	0.0	0.0	0.2	0.7	0.0	0.6	1.2	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	1.5	0.1	0.2	0.4	1.6	0.0	1.4	2.4	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	17.0	18.4	15.4	18.1	18.5	20.0	0.0	19.8	21.3	0.0	20.9
LnGrp LOS	B	B	B	B	B	B	B		B	C		C
Approach Vol, veh/h	268			95			290			405		
Approach Delay, s/veh	17.6			17.8			19.9			21.1		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	15.4		6.2	17.6		15.3		8.3	15.5			
Change Period (Y+Rc), s	4.7		4.7	5.2		4.7		4.7	5.2			
Max Green Setting (Gmax), s	41.3		10.3	29.8		44.3		11.3	28.8			
Max Q Clear Time (g_c+I1), s	6.2		2.4	6.3		7.8		3.1	3.2			
Green Ext Time (p_c), s	1.5		0.0	1.1		2.1		0.0	0.2			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				19.6								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+			+	
Traffic Vol, veh/h	5	0	0	5	0	5	5	120	10	15	275	10
Future Vol, veh/h	5	0	0	5	0	5	5	120	10	15	275	10
Conflicting Peds, #/hr	0	0	0	0	0	0	6	0	2	2	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	5	0	5	5	126	11	16	289	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	406	482	156	321	482	71	306	0	0	139	0	0
Stage 1	333	333	-	144	144	-	-	-	-	-	-	-
Stage 2	73	149	-	177	338	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	374	343	632	613	487	983	1216	-	-	1450	-	-
Stage 1	471	475	-	850	782	-	-	-	-	-	-	-
Stage 2	713	599	-	813	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	365	334	628	604	475	981	1209	-	-	1448	-	-
Mov Cap-2 Maneuver	365	334	-	604	475	-	-	-	-	-	-	-
Stage 1	466	466	-	845	777	-	-	-	-	-	-	-
Stage 2	706	595	-	802	632	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	15		9.9		0.3		0.4					
HCM LOS	C		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1209	-	-	365 604 981	1448	-	-					
HCM Lane V/C Ratio	0.004	-	-	0.014 0.009 0.005	0.011	-	-					
HCM Control Delay (s/veh)	8	0	-	15 11 8.7	7.5	0	-					
HCM Lane LOS	A	A	-	C B A	A	A	-					
HCM 95th %tile Q (veh)	0	-	-	0 0 0	0	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build B AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	100	90	5	10	15
Future Volume (Veh/h)	40	100	90	5	10	15
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	100	90	5	10	15
Pedestrians				3	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		103	84	184	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		103	84	184	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	98		89	99	99	99
cM capacity (veh/h)	1607		826	776	678	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	40	100	95	25		
Volume Left	40	0	90	0		
Volume Right	0	100	0	15		
cSH	1607	1700	823	866		
Volume to Capacity	0.02	0.06	0.12	0.03		
Queue Length 95th (ft)	2	0	10	2		
Control Delay (s/veh)	7.3	0.0	9.9	9.3		
Lane LOS	A		A	A		
Approach Delay (s/veh)	2.1		9.9	9.3		
Approach LOS			A	A		
Intersection Summary						
Average Delay				5.6		
Intersection Capacity Utilization				23.3%	ICU Level of Service	A
Analysis Period (min)				15		

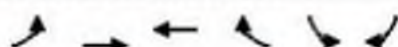
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build B AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↶↷		↰	↶↷	↰		↰	↶↷	↰	↰	
Traffic Volume (vph)	40	70	20	30	90	35	5	5	10	55	10	65
Future Volume (vph)	40	70	20	30	90	35	5	5	10	55	10	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1544	2996		3027	3121	1375		1423	2153	1431	1321	
Flt Permitted	0.69	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1125	2996		3027	3121	1375		1423	2153	1431	1321	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	74	21	32	95	37	5	5	11	58	11	68
RTOR Reduction (vph)	0	15	0	0	0	15	0	0	10	0	48	0
Lane Group Flow (vph)	42	80	0	32	95	22	0	10	1	52	37	0
Confl. Peds. (#/hr)	8		1	1		8			3	3		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	19.2	17.0		2.2	17.0	33.4		2.8	5.0	16.4	16.4	
Effective Green, g (s)	19.2	17.0		2.2	17.0	33.4		2.8	5.0	16.4	16.4	
Actuated g/C Ratio	0.34	0.30		0.04	0.30	0.59		0.05	0.09	0.29	0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	399	903		118	940	814		70	190	416	384	
v/s Ratio Prot	0.00	0.03		c0.01	0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	c0.03					0.01			0.00			
v/c Ratio	0.11	0.09		0.27	0.10	0.03		0.14	0.01	0.13	0.10	
Uniform Delay, d1	12.6	14.1		26.3	14.2	4.8		25.7	23.4	14.7	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.5	0.0	0.0		0.3	0.0	0.0	0.0	
Delay (s)	12.7	14.2		26.8	14.2	4.8		26.0	23.4	14.8	14.6	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		13.7			14.5			24.7			14.7	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		14.8										
HCM 2000 Volume to Capacity ratio		0.13										
Actuated Cycle Length (s)		56.4										
Intersection Capacity Utilization		41.2%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build B AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↶↶	↶↶		↰	↶↶
Traffic Volume (veh/h)	105	100	140	10	25	425
Future Volume (veh/h)	105	100	140	10	25	425
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97			0.96	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1668	1668	1682	1682	1750	1750
Adj Flow Rate, veh/h	111	105	147	11	26	447
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	5	0	0
Cap, veh/h	493	1283	568	42	562	500
Arrive On Green	0.09	0.40	0.19	0.19	0.34	0.34
Sat Flow, veh/h	1589	3253	3090	222	1667	1483
Grp Volume(v), veh/h	111	105	77	81	26	447
Grp Sat Flow(s), veh/h/ln	1589	1585	1598	1631	1667	1483
Q Serve(g_s), s	2.1	0.8	1.6	1.7	0.4	11.3
Cycle Q Clear(g_c), s	2.1	0.8	1.6	1.7	0.4	11.3
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	493	1283	302	308	562	500
V/C Ratio(X)	0.22	0.08	0.26	0.26	0.05	0.89
Avail Cap(c_a), veh/h	1035	3832	1043	1064	2825	2514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	7.2	13.7	13.7	8.8	12.4
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.2	0.5	0.5	0.1	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	11.2	7.3	13.8	13.8	8.8	14.7
LnGrp LOS	B	A	B	B	A	B
Approach Vol, veh/h		216	158		473	
Approach Delay, s/veh		9.3	13.8		14.4	
Approach LOS		A	B		B	
Timer - Assigned Phs			4		6	7 8
Phs Duration (G+Y+Rc), s			21.2		18.3	8.5 12.7
Change Period (Y+Rc), s			5.2		5.0	5.0 5.2
Max Green Setting (Gmax), s			47.8		67.0	17.0 25.8
Max Q Clear Time (g_c+I1), s			2.8		13.3	4.1 3.7
Green Ext Time (p_c), s			0.1		0.1	0.0 0.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			13.0			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build B AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	130	110	35	75	25	60	90	115	85	435	210
Future Volume (veh/h)	70	130	110	35	75	25	60	90	115	85	435	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	71	133	112	36	77	26	61	92	117	87	444	214
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	226	391	303	55	253	81	372	474	422	597	725	346
Arrive On Green	0.12	0.20	0.20	0.04	0.12	0.12	0.08	0.30	0.30	0.10	0.32	0.32
Sat Flow, veh/h	1847	1967	1527	1416	2094	673	1581	1577	1404	1744	2282	1090
Grp Volume(v), veh/h	71	124	121	36	51	52	61	92	117	87	338	320
Grp Sat Flow(s),veh/h/ln	1847	1843	1651	1416	1412	1355	1581	1577	1404	1744	1739	1632
Q Serve(g_s), s	1.9	3.1	3.4	1.3	1.7	1.9	1.3	2.3	3.4	1.7	8.7	8.9
Cycle Q Clear(g_c), s	1.9	3.1	3.4	1.3	1.7	1.9	1.3	2.3	3.4	1.7	8.7	8.9
Prop In Lane	1.00		0.92	1.00		0.50	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	226	366	328	55	171	164	372	474	422	597	553	519
V/C Ratio(X)	0.31	0.34	0.37	0.66	0.30	0.32	0.16	0.19	0.28	0.15	0.61	0.62
Avail Cap(c_a), veh/h	747	1161	1040	458	775	744	599	1996	1777	850	2234	2096
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	18.3	18.4	25.2	21.3	21.4	10.9	13.8	14.2	10.3	15.4	15.4
Incr Delay (d2), s/veh	0.3	0.7	0.8	4.9	1.4	1.6	0.1	0.2	0.4	0.0	1.3	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.3	1.2	0.5	0.6	0.6	0.4	0.7	1.0	0.5	3.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.6	19.0	19.3	30.1	22.7	22.9	11.0	14.1	14.6	10.4	16.7	16.9
LnGrp LOS	C	B	B	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	316			139			270			745		
Approach Delay, s/veh	19.7			24.7			13.6			16.0		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.7	6.9	15.4	9.4	21.6	11.0	11.2					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	67.3	17.2	* 34	11.8	68.3	21.5	29.2					
Max Q Clear Time (g_c+I), s	5.4	3.3	5.4	3.3	10.9	3.9	3.9					
Green Ext Time (p_c), s	0.1	1.6	0.0	1.8	0.0	5.8	0.1	0.7				

Intersection Summary

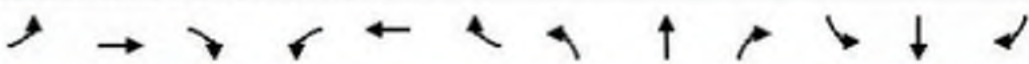
HCM 6th Ctrl Delay, s/veh	17.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall Build B AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	215	135	30	30	580	75	30	120	30	40	120	110
Future Volume (vph)	215	135	30	30	580	75	30	120	30	40	120	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2863		1575	2884		3153	3152		1499	1558	
Flt Permitted	0.22	1.00		0.64	1.00		0.61	1.00		0.47	1.00	
Satd. Flow (perm)	339	2863		1064	2884		2019	3152		738	1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	142	32	32	611	79	32	126	32	42	126	116
RTOR Reduction (vph)	0	15	0	0	9	0	0	22	0	0	28	0
Lane Group Flow (vph)	226	159	0	32	681	0	32	136	0	42	214	0
Confl. Peds. (#/hr)	1						1	3		1	1	3
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.6	33.8		27.5	25.2		15.1	12.9		27.0	20.3	
Effective Green, g (s)	40.6	33.8		27.5	25.2		15.1	12.9		27.0	20.3	
Actuated g/C Ratio	0.53	0.44		0.36	0.33		0.20	0.17		0.35	0.26	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	336	1256		395	943		428	528		361	410	
v/s Ratio Prot	c0.09	0.06		0.00	0.24		0.00	0.04		c0.02	c0.14	
v/s Ratio Perm	c0.26			0.03			0.01			0.03		
v/c Ratio	0.67	0.13		0.08	0.72		0.07	0.26		0.12	0.52	
Uniform Delay, d1	11.9	12.8		16.2	22.8		25.1	27.9		16.9	24.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	0.0		0.1	2.3		0.1	0.1		0.1	0.6	
Delay (s)	16.1	12.9		16.3	25.1		25.2	28.0		16.9	24.8	
Level of Service	B	B		B	C		C	C		B	C	
Approach Delay (s/veh)		14.7			24.8			27.5			23.6	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			22.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			77.0			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			66.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build B AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	580	970	0	710	30	145	120	15	30	120	30
Future Volume (veh/h)	30	580	970	0	710	30	145	120	15	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	32	611	0	0	747	32	153	126	16	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	270	1323		0	1216	542	867	702	88	857	537	132
Arrive On Green	0.42	0.42	0.00	0.00	0.42	0.42	0.09	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	663	3129	1395	0	2952	1283	2967	2729	341	3183	2602	641
Grp Volume(v), veh/h	32	611	0	0	747	32	153	70	72	32	78	80
Grp Sat Flow(s),veh/h/ln	663	1564	1395	0	1438	1283	1483	1525	1544	1591	1637	1607
Q Serve(g_s), s	2.3	8.1	0.0	0.0	11.8	0.9	2.2	2.1	2.1	0.4	2.3	2.4
Cycle Q Clear(g_c), s	14.1	8.1	0.0	0.0	11.8	0.9	2.2	2.1	2.1	0.4	2.3	2.4
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.22	1.00		0.40
Lane Grp Cap(c), veh/h	270	1323		0	1216	542	867	392	397	857	338	332
V/C Ratio(X)	0.12	0.46		0.00	0.61	0.06	0.18	0.18	0.18	0.04	0.23	0.24
Avail Cap(c_a), veh/h	678	3248		0	2986	1332	1863	878	889	1266	520	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	12.0	0.0	0.0	13.1	9.9	15.4	16.8	16.8	16.9	19.2	19.3
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.4	0.0	0.0	3.2	0.8	0.7	0.7	0.7	0.2	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.9	12.5	0.0	0.0	13.5	10.0	15.5	17.0	17.0	16.9	19.6	19.7
LnGrp LOS	B	B			B	A	B	B	B	B	B	B
Approach Vol, veh/h	643			779			295			190		
Approach Delay, s/veh	12.8			13.3			16.2			19.2		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	20.5		30.2	10.5	17.5		30.2				
Change Period (Y+Rc), s	5.5	5.5		5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	33.5	33.5		60.4	24.5	18.5		60.4				
Max Q Clear Time (g_c+I), s	4.1	4.1		16.1	4.2	4.4		13.8				
Green Ext Time (p_c), s	0.0	0.6		8.5	0.3	0.6		4.8				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.2											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build B AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	115	40	255	255	15	30	10	85	15	5	5
Future Volume (vph)	5	115	40	255	255	15	30	10	85	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2922		1513	3102		1357	1397	1269	1515	1463	
Flt Permitted	0.58	1.00		0.65	1.00		0.75	0.90	1.00	0.74	1.00	
Satd. Flow (perm)	923	2922		1033	3102		1073	1284	1269	1184	1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	121	42	268	268	16	32	11	89	16	5	5
RTOR Reduction (vph)	0	29	0	0	4	0	0	0	69	0	4	0
Lane Group Flow (vph)	5	134	0	268	280	0	21	22	20	16	6	0
Confl. Peds. (#/hr)	7		1	1		7	8		1	1		8
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	26.5	16.9		26.5	25.6		11.9	11.9	11.9	11.9	11.9	
Effective Green, g (s)	26.5	16.9		26.5	25.6		11.9	11.9	11.9	11.9	11.9	
Actuated g/C Ratio	0.50	0.32		0.50	0.48		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	467	923		597	1484		238	285	282	263	325	
v/s Ratio Prot	0.00	0.05		c0.08	0.09						0.00	
v/s Ratio Perm	0.01			c0.14			c0.02	0.02	0.02	0.01		
v/c Ratio	0.01	0.15		0.45	0.19		0.09	0.08	0.07	0.06	0.02	
Uniform Delay, d1	6.8	13.1		8.3	8.0		16.5	16.5	16.4	16.4	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.1		0.1	0.0	0.0	0.0	0.0	
Delay (s)	6.8	13.2		8.5	8.1		16.6	16.5	16.5	16.4	16.2	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.0			8.3			16.5			16.4	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.7			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			53.5			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			47.1%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	20	15	35	25	15
Future Vol, veh/h	40	20	15	35	25	15
Conflicting Peds, #/hr	0	0	0	0	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	42	21	16	37	26	16

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	63
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1553
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1553
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.2	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	884	-	-	1553	-
HCM Lane V/C Ratio	0.048	-	-	0.01	-
HCM Control Delay (s/veh)	9.3	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	4		4	
Traffic Vol, veh/h	0	65	60	20	10	0
Future Vol, veh/h	0	65	60	20	10	0
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	0	65	60	20	10	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	82	0	137
Stage 1	-	-	72
Stage 2	-	-	65
Critical Hdwy	4.1	-	5.8
Critical Hdwy Stg 1	-	-	4.8
Critical Hdwy Stg 2	-	-	4.8
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1528	-	881
Stage 1	-	-	968
Stage 2	-	-	973
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1525	-	877
Mov Cap-2 Maneuver	-	-	842
Stage 1	-	-	966
Stage 2	-	-	971

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1525	-	-	-	842
HCM Lane V/C Ratio	-	-	-	-	0.012
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←		←		←	←			←	←
Traffic Vol, veh/h	20	15	40	0	5	0	30	10	10	10	30	40
Future Vol, veh/h	20	15	40	0	5	0	30	10	10	10	30	40
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	15	40	0	5	0	30	10	10	10	30	40
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	7.5	7.9	7.8	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	57%	0%	0%	25%	0%
Vol Thru, %	0%	50%	43%	0%	100%	75%	0%
Vol Right, %	0%	50%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	20	35	40	5	40	40
LT Vol	30	0	20	0	0	10	0
Through Vol	0	10	15	0	5	30	0
RT Vol	0	10	0	40	0	0	40
Lane Flow Rate	30	20	35	40	5	40	40
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.043	0.024	0.049	0.045	0.007	0.053	0.044
Departure Headway (Hd)	5.18	4.329	5.008	4.021	4.889	4.789	3.963
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	685	818	707	877	736	741	893
Service Time	2.955	2.103	2.797	1.809	2.889	2.56	1.734
HCM Lane V/C Ratio	0.044	0.024	0.05	0.046	0.007	0.054	0.045
HCM Control Delay, s/veh	8.2	7.2	8.1	7	7.9	7.8	6.9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.1	0.1	0.2	0.1	0	0.2	0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	15	160	655	25	20	20
Future Vol, veh/h	15	160	655	25	20	20
Conflicting Peds, #/hr	3	0	0	3	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	16	168	689	26	21	21
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	718	0	-	0	824	361
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	4.28	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.29	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	834	-	-	-	315	641
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	899	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	832	-	-	-	306	639
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	896	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.9	0		14.2		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	832	-	-	-	306	639
HCM Lane V/C Ratio	0.019	-	-	-	0.069	0.033
HCM Control Delay (s/veh)	9.4	0.1	-	-	17.6	10.8
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.2	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	65	145	15	40	45	50	185	40	45	310	50
Future Volume (veh/h)	50	65	145	15	40	45	50	185	40	45	310	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	53	68	153	16	42	47	53	195	42	47	326	53
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	519	424	377	343	593	264	116	442	99	76	546	93
Arrive On Green	0.07	0.23	0.23	0.03	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20
Sat Flow, veh/h	1847	1843	1640	1589	3169	1409	599	2285	511	380	2736	465
Grp Volume(v), veh/h	53	68	153	16	42	47	153	0	137	226	0	200
Grp Sat Flow(s),veh/h/ln	1847	1843	1640	1589	1585	1409	1732	0	1663	1826	0	1755
Q Serve(g_s), s	1.2	1.6	4.4	0.4	0.6	1.5	4.3	0.0	4.0	6.2	0.0	5.7
Cycle Q Clear(g_c), s	1.2	1.6	4.4	0.4	0.6	1.5	4.3	0.0	4.0	6.2	0.0	5.7
Prop In Lane	1.00		1.00	1.00		1.00	0.35		0.31	0.21		0.26
Lane Grp Cap(c), veh/h	519	424	377	343	593	264	335	0	322	364	0	350
V/C Ratio(X)	0.10	0.16	0.41	0.05	0.07	0.18	0.46	0.00	0.42	0.62	0.00	0.57
Avail Cap(c_a), veh/h	767	994	884	596	1652	735	1295	0	1244	1464	0	1408
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	17.0	18.1	15.5	18.5	18.9	19.7	0.0	19.6	20.2	0.0	20.0
Incr Delay (d2), s/veh	0.0	0.1	0.5	0.0	0.0	0.2	0.7	0.0	0.7	1.3	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.6	1.6	0.1	0.2	0.5	1.7	0.0	1.5	2.6	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.7	17.1	18.6	15.6	18.5	19.1	20.4	0.0	20.2	21.5	0.0	21.1
LnGrp LOS	B	B	B	B	B	B	C		C	C		C
Approach Vol, veh/h	274			105			290			426		
Approach Delay, s/veh	17.7			18.3			20.3			21.3		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	15.4			6.2			17.9			15.7		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	41.3			10.3			29.8			44.3		
Max Q Clear Time (g_c+I1), s	6.3			2.4			6.4			8.2		
Green Ext Time (p_c), s	1.5			0.0			1.1			2.2		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				19.8								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	0	20	0	15	5	130	20	20	285	10
Future Vol, veh/h	5	0	0	20	0	15	5	130	20	20	285	10
Conflicting Peds, #/hr	0	0	0	0	0	0	6	0	2	2	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	21	0	16	5	137	21	21	300	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	433	524	162	352	519	81	317	0	0	160	0	0
Stage 1	354	354	-	160	160	-	-	-	-	-	-	-
Stage 2	79	170	-	192	359	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	355	321	625	583	464	969	1205	-	-	1424	-	-
Stage 1	455	462	-	832	769	-	-	-	-	-	-	-
Stage 2	706	584	-	797	631	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	341	311	621	572	450	967	1198	-	-	1422	-	-
Mov Cap-2 Maneuver	341	311	-	572	450	-	-	-	-	-	-	-
Stage 1	450	451	-	826	764	-	-	-	-	-	-	-
Stage 2	691	580	-	783	616	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	15.7		10.3		0.3		0.6					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1198	-	-	341 572 967	1422	-	-					
HCM Lane V/C Ratio	0.004	-	-	0.015 0.037 0.016	0.015	-	-					
HCM Control Delay (s/veh)	8	0	-	15.7 11.5 8.8	7.6	0.1	-					
HCM Lane LOS	A	A	-	C B A	A	A	-					
HCM 95th %tile Q (veh)	0	-	-	0 0.1 0.1	0	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	60	50	15	20	70
Future Volume (Veh/h)	95	60	50	15	20	70
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	95	60	50	15	20	70
Pedestrians				3	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		273	194	254	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		273	194	254	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	94		91	98	97	93
cM capacity (veh/h)	1607		581	651	598	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	95	60	65	90		
Volume Left	95	0	50	0		
Volume Right	0	60	0	70		
cSH	1607	1700	596	906		
Volume to Capacity	0.06	0.04	0.11	0.10		
Queue Length 95th (ft)	5	0	9	8		
Control Delay (s/veh)	7.4	0.0	11.8	9.4		
Lane LOS	A		B	A		
Approach Delay (s/veh)	4.5		11.8	9.4		
Approach LOS			B	A		
Intersection Summary						
Average Delay	7.5					
Intersection Capacity Utilization	23.6%			ICU Level of Service	A	
Analysis Period (min)	15					

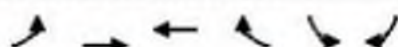
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰↱	↰↱	↰		↱	↰↱	↰	↰	
Traffic Volume (vph)	40	80	20	30	100	35	5	5	10	55	10	65
Future Volume (vph)	40	80	20	30	100	35	5	5	10	55	10	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1544	3006		3027	3121	1375		1423	2153	1431	1321	
Flt Permitted	0.69	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1115	3006		3027	3121	1375		1423	2153	1431	1321	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	84	21	32	105	37	5	5	11	58	11	68
RTOR Reduction (vph)	0	15	0	0	0	15	0	0	10	0	48	0
Lane Group Flow (vph)	42	90	0	32	105	22	0	10	1	52	37	0
Confl. Peds. (#/hr)	8		1	1		8			3	3		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	19.2	17.0		2.2	17.0	33.4		2.8	5.0	16.4	16.4	
Effective Green, g (s)	19.2	17.0		2.2	17.0	33.4		2.8	5.0	16.4	16.4	
Actuated g/C Ratio	0.34	0.30		0.04	0.30	0.59		0.05	0.09	0.29	0.29	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	396	906		118	940	814		70	190	416	384	
v/s Ratio Prot	0.00	0.03		c0.01	c0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	0.03					0.01			0.00			
v/c Ratio	0.11	0.10		0.27	0.11	0.03		0.14	0.01	0.13	0.10	
Uniform Delay, d1	12.6	14.2		26.3	14.2	4.8		25.7	23.4	14.7	14.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.5	0.0	0.0		0.3	0.0	0.0	0.0	
Delay (s)	12.7	14.2		26.8	14.3	4.8		26.0	23.4	14.8	14.6	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		13.8			14.5			24.7			14.7	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		14.8										
HCM 2000 Volume to Capacity ratio		0.13										
Actuated Cycle Length (s)		56.4										
Intersection Capacity Utilization		41.2%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	110	110	150	10	25	430	
Future Volume (veh/h)	110	110	150	10	25	430	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	0.97			0.96	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1668	1668	1682	1682	1750	1750	
Adj Flow Rate, veh/h	116	116	158	11	26	453	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	6	6	5	5	0	0	
Cap, veh/h	487	1279	568	39	568	506	
Arrive On Green	0.09	0.40	0.19	0.19	0.34	0.34	
Sat Flow, veh/h	1589	3253	3107	208	1667	1483	
Grp Volume(v), veh/h	116	116	83	86	26	453	
Grp Sat Flow(s),veh/h/ln	1589	1585	1598	1634	1667	1483	
Q Serve(g_s), s	2.3	0.9	1.8	1.8	0.4	11.6	
Cycle Q Clear(g_c), s	2.3	0.9	1.8	1.8	0.4	11.6	
Prop In Lane	1.00			0.13	1.00	1.00	
Lane Grp Cap(c), veh/h	487	1279	300	307	568	506	
V/C Ratio(X)	0.24	0.09	0.28	0.28	0.05	0.90	
Avail Cap(c_a), veh/h	1537	3953	1993	2038	1252	1114	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	11.3	7.4	13.9	13.9	8.8	12.5	
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	2.3	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.6	0.2	0.5	0.6	0.1	0.3	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	11.4	7.4	14.1	14.1	8.8	14.8	
LnGrp LOS	B	A	B	B	A	B	
Approach Vol, veh/h		232	169		479		
Approach Delay, s/veh		9.4	14.1		14.5		
Approach LOS		A	B		B		
Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			21.3		18.6	8.6	12.7
Change Period (Y+Rc), s			5.2		5.0	5.0	5.2
Max Green Setting (Gmax), s			49.8		30.0	30.0	49.8
Max Q Clear Time (g_c+I1), s			2.9		13.6	4.3	3.8
Green Ext Time (p_c), s			0.1		0.1	0.0	0.1
Intersection Summary							
HCM 6th Ctrl Delay, s/veh			13.1				
HCM 6th LOS			B				

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	135	110	35	80	25	60	90	115	85	435	210
Future Volume (veh/h)	70	135	110	35	80	25	60	90	115	85	435	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	71	138	112	36	82	26	61	92	117	87	444	214
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	227	400	300	55	260	79	369	466	414	591	713	341
Arrive On Green	0.12	0.20	0.20	0.04	0.12	0.12	0.08	0.30	0.30	0.10	0.31	0.31
Sat Flow, veh/h	1847	1998	1501	1416	2128	645	1581	1577	1404	1744	2282	1090
Grp Volume(v), veh/h	71	126	124	36	53	55	61	92	117	87	338	320
Grp Sat Flow(s),veh/h/ln	1847	1843	1656	1416	1412	1361	1581	1577	1404	1744	1739	1632
Q Serve(g_s), s	1.8	3.1	3.4	1.3	1.8	1.9	1.3	2.3	3.4	1.7	8.7	8.8
Cycle Q Clear(g_c), s	1.8	3.1	3.4	1.3	1.8	1.9	1.3	2.3	3.4	1.7	8.7	8.8
Prop In Lane	1.00		0.91	1.00		0.47	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	227	369	331	55	172	166	369	466	414	591	543	510
V/C Ratio(X)	0.31	0.34	0.37	0.65	0.31	0.33	0.17	0.20	0.28	0.15	0.62	0.63
Avail Cap(c_a), veh/h	894	1417	1273	677	1078	1039	989	1207	1074	1245	1331	1249
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	18.1	18.2	25.0	21.1	21.2	11.0	13.9	14.3	10.4	15.5	15.5
Incr Delay (d2), s/veh	0.3	0.7	0.8	4.8	1.4	1.6	0.1	0.2	0.4	0.0	1.4	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.3	1.3	0.5	0.6	0.6	0.4	0.7	1.0	0.5	3.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.4	18.8	19.1	29.8	22.5	22.8	11.1	14.1	14.7	10.4	16.9	17.0
LnGrp LOS	C	B	B	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	321			144			270			745		
Approach Delay, s/veh	19.4			24.4			13.7			16.2		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.2	20.2	6.8	15.3	9.3	21.2	11.0	11.2				
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I), s	5.4	5.4	3.3	5.4	3.3	10.8	3.8	3.9				
Green Ext Time (p_c), s	0.1	1.5	0.0	1.9	0.1	5.3	0.1	0.9				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	17.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	220	130	30	30	575	80	30	120	30	45	120	115
Future Volume (vph)	220	130	30	30	575	80	30	120	30	45	120	115
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2860		1575	2880		3152	3152		1499	1555	
Flt Permitted	0.20	1.00		0.65	1.00		0.61	1.00		0.48	1.00	
Satd. Flow (perm)	309	2860		1069	2880		2010	3152		763	1555	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	137	32	32	605	84	32	126	32	47	126	121
RTOR Reduction (vph)	0	14	0	0	10	0	0	21	0	0	29	0
Lane Group Flow (vph)	232	155	0	32	679	0	32	137	0	47	218	0
Confl. Peds. (#/hr)	1						1	3		1	1	3
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	46.5	38.5		29.3	25.8		17.9	14.5		28.9	21.0	
Effective Green, g (s)	46.5	38.5		29.3	25.8		17.9	14.5		28.9	21.0	
Actuated g/C Ratio	0.55	0.45		0.35	0.30		0.21	0.17		0.34	0.25	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	388	1298		390	876		470	538		352	385	
v/s Ratio Prot	c0.11	0.05		0.00	c0.24		0.00	0.04		c0.02	c0.14	
v/s Ratio Perm	0.21			0.02			0.01			0.03		
v/c Ratio	0.60	0.12		0.08	0.78		0.07	0.26		0.13	0.57	
Uniform Delay, d1	12.4	13.4		18.5	26.9		26.7	30.5		19.2	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.0		0.1	4.0		0.1	0.1		0.1	1.1	
Delay (s)	14.0	13.4		18.6	30.8		26.7	30.6		19.2	29.0	
Level of Service	B	B		B	C		C	C		B	C	
Approach Delay (s/veh)		13.8			30.3			29.9			27.5	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			25.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			84.8			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			67.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	580	970	0	710	30	145	120	15	30	120	30
Future Volume (veh/h)	30	580	970	0	710	30	145	120	15	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	32	611	0	0	747	32	153	126	16	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	266	1306		0	1201	535	876	709	89	864	542	134
Arrive On Green	0.42	0.42	0.00	0.00	0.42	0.42	0.09	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	663	3129	1395	0	2952	1283	2967	2729	341	3183	2602	641
Grp Volume(v), veh/h	32	611	0	0	747	32	153	70	72	32	78	80
Grp Sat Flow(s),veh/h/ln	663	1564	1395	0	1438	1283	1483	1525	1544	1591	1637	1607
Q Serve(g_s), s	2.3	8.1	0.0	0.0	11.8	0.9	2.2	2.0	2.1	0.4	2.3	2.4
Cycle Q Clear(g_c), s	14.1	8.1	0.0	0.0	11.8	0.9	2.2	2.0	2.1	0.4	2.3	2.4
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.22	1.00		0.40
Lane Grp Cap(c), veh/h	266	1306		0	1201	535	876	396	401	864	341	335
V/C Ratio(X)	0.12	0.47		0.00	0.62	0.06	0.17	0.18	0.18	0.04	0.23	0.24
Avail Cap(c_a), veh/h	557	2682		0	2465	1100	1881	781	790	1278	838	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	12.2	0.0	0.0	13.2	10.0	15.2	16.5	16.6	16.7	19.0	19.0
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.4	0.0	0.0	3.2	0.0	0.7	0.7	0.7	0.2	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.1	12.6	0.0	0.0	13.6	10.1	15.2	16.7	16.7	16.7	19.3	19.4
LnGrp LOS	B	B			B	B	B	B	B	B	B	B
Approach Vol, veh/h	643			779			295			190		
Approach Delay, s/veh	12.9			13.5			16.0			18.9		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s/7.5	20.5			29.7	10.5	17.5		29.7				
Change Period (Y+Rc), s/5.5		5.5		5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s/9.5	29.5			49.4	24.5	29.5		49.4				
Max Q Clear Time (g_c+I), s/4.1		4.1		16.1	4.2	4.4		13.8				
Green Ext Time (p_c), s/0.0		0.6		8.0	0.3	0.8		4.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.2											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	115	45	265	255	15	35	10	95	15	5	5
Future Volume (vph)	5	115	45	265	255	15	35	10	95	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2911		1513	3102		1357	1394	1269	1515	1463	
Flt Permitted	0.58	1.00		0.65	1.00		0.75	0.89	1.00	0.74	1.00	
Satd. Flow (perm)	923	2911		1028	3102		1073	1267	1269	1181	1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	121	47	279	268	16	37	11	100	16	5	5
RTOR Reduction (vph)	0	32	0	0	4	0	0	0	78	0	4	0
Lane Group Flow (vph)	5	136	0	279	280	0	24	24	22	16	6	0
Confl. Peds. (#/hr)	7		1	1		7	8		1	1		8
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	26.8	17.0		26.8	25.9		11.9	11.9	11.9	11.9	11.9	
Effective Green, g (s)	26.8	17.0		26.8	25.9		11.9	11.9	11.9	11.9	11.9	
Actuated g/C Ratio	0.50	0.32		0.50	0.48		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	469	919		600	1493		237	280	280	261	323	
v/s Ratio Prot	0.00	0.05		c0.08	0.09						0.00	
v/s Ratio Perm	0.01			c0.15			c0.02	0.02	0.02	0.01		
v/c Ratio	0.01	0.15		0.47	0.19		0.10	0.09	0.08	0.06	0.02	
Uniform Delay, d1	6.8	13.2		8.3	8.0		16.7	16.6	16.6	16.5	16.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.1		0.1	0.0	0.0	0.0	0.0	
Delay (s)	6.8	13.3		8.5	8.0		16.8	16.7	16.7	16.6	16.4	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.1			8.3			16.7			16.5	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.8			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			53.8			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			47.7%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Intersection

Int Delay, s/veh 3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	20	15	25	25	15
Future Vol, veh/h	30	20	15	25	25	15
Conflicting Peds, #/hr	0	0	0	0	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	32	21	16	26	26	16

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	53
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1566
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1566
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.7	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	899	-	-	1566	-
HCM Lane V/C Ratio	0.047	-	-	0.01	-
HCM Control Delay (s/veh)	9.2	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	40	35	15	10	0
Future Vol, veh/h	0	40	35	15	10	0
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	0	40	35	15	10	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	52	0	85
Stage 1	-	-	45
Stage 2	-	-	40
Critical Hdwy	4.1	-	5.8
Critical Hdwy Stg 1	-	-	4.8
Critical Hdwy Stg 2	-	-	4.8
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1567	-	935
Stage 1	-	-	990
Stage 2	-	-	994
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1564	-	931
Mov Cap-2 Maneuver	-	-	877
Stage 1	-	-	988
Stage 2	-	-	992

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1564	-	-	-	877
HCM Lane V/C Ratio	-	-	-	-	0.011
HCM Control Delay (s/veh)	0	-	-	-	9.2
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰		↰	↱			↰	↱
Traffic Vol, veh/h	20	5	15	0	5	0	15	10	5	5	20	25
Future Vol, veh/h	20	5	15	0	5	0	15	10	5	5	20	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	5	15	0	5	0	15	10	5	5	20	25
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	7.6	7.8	7.6	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	80%	0%	0%	20%	0%
Vol Thru, %	0%	67%	20%	0%	100%	80%	0%
Vol Right, %	0%	33%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	15	25	15	5	25	25
LT Vol	15	0	20	0	0	5	0
Through Vol	0	10	5	0	5	20	0
RT Vol	0	5	0	15	0	0	25
Lane Flow Rate	15	15	25	15	5	25	25
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.021	0.018	0.035	0.016	0.006	0.033	0.027
Departure Headway (Hd)	5.101	4.367	5.035	3.934	4.663	4.69	3.89
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	700	816	708	903	761	761	916
Service Time	2.846	2.111	2.79	1.689	2.731	2.433	1.632
HCM Lane V/C Ratio	0.021	0.018	0.035	0.017	0.007	0.033	0.027
HCM Control Delay, s/veh	8	7.2	8	6.8	7.8	7.6	6.7
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1	0	0	0.1	0.1

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	15	155	650	15	10	20
Future Vol, veh/h	15	155	650	15	10	20
Conflicting Peds, #/hr	3	0	0	3	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	16	163	684	16	11	21
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	703	0	-	0	812	353
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	117	-
Critical Hdwy	4.28	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.29	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	845	-	-	-	321	649
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	901	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	843	-	-	-	312	647
Mov Cap-2 Maneuver	-	-	-	-	312	-
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	898	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.9	0		12.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	843	-	-	-	312	647
HCM Lane V/C Ratio	0.019	-	-	-	0.034	0.033
HCM Control Delay (s/veh)	9.4	0.1	-	-	16.9	10.8
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	50	145	5	25	15	50	195	30	15	315	60
Future Volume (veh/h)	60	50	145	5	25	15	50	195	30	15	315	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	63	53	153	5	26	16	53	205	32	16	332	63
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	550	471	419	348	591	263	116	468	76	26	556	111
Arrive On Green	0.08	0.26	0.26	0.01	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1847	1843	1640	1589	3169	1409	601	2424	393	134	2869	570
Grp Volume(v), veh/h	63	53	153	5	26	16	153	0	137	219	0	192
Grp Sat Flow(s),veh/h/ln	1847	1843	1640	1589	1585	1409	1732	0	1686	1838	0	1735
Q Serve(g_s), s	1.4	1.2	4.2	0.1	0.4	0.5	4.3	0.0	4.0	6.0	0.0	5.6
Cycle Q Clear(g_c), s	1.4	1.2	4.2	0.1	0.4	0.5	4.3	0.0	4.0	6.0	0.0	5.6
Prop In Lane	1.00		1.00	1.00		1.00	0.35		0.23	0.07		0.33
Lane Grp Cap(c), veh/h	550	471	419	348	591	263	334	0	325	356	0	336
V/C Ratio(X)	0.11	0.11	0.37	0.01	0.04	0.06	0.46	0.00	0.42	0.61	0.00	0.57
Avail Cap(c_a), veh/h	782	991	882	629	1647	732	1290	0	1256	1469	0	1387
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	15.8	16.9	15.2	18.5	18.5	19.8	0.0	19.7	20.4	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.1	0.4	0.0	0.0	0.1	0.7	0.0	0.6	1.3	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.5	1.5	0.0	0.1	0.2	1.7	0.0	1.5	2.5	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	15.9	17.3	15.2	18.5	18.6	20.5	0.0	20.3	21.7	0.0	21.4
LnGrp LOS	B	B	B	B	B	B	C		C	C		C
Approach Vol, veh/h	269			47			290			411		
Approach Delay, s/veh	16.6			18.2			20.4			21.6		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	15.4			5.2			19.4			15.4		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	41.3			10.3			29.8			44.3		
Max Q Clear Time (g_c+I1), s	6.3			2.1			6.2			8.0		
Green Ext Time (p_c), s	1.5			0.0			1.0			2.1		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				19.8								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+			+	
Traffic Vol, veh/h	5	0	0	5	0	5	5	125	10	15	280	10
Future Vol, veh/h	5	0	0	5	0	5	5	125	10	15	280	10
Conflicting Peds, #/hr	0	0	0	0	0	0	6	0	2	2	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	5	0	5	5	132	11	16	295	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	415	494	159	330	494	74	312	0	0	145	0	0
Stage 1	339	339	-	150	150	-	-	-	-	-	-	-
Stage 2	76	155	-	180	344	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	368	337	629	605	479	979	1210	-	-	1442	-	-
Stage 1	466	471	-	843	777	-	-	-	-	-	-	-
Stage 2	710	595	-	810	640	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	359	328	625	596	467	977	1203	-	-	1440	-	-
Mov Cap-2 Maneuver	359	328	-	596	467	-	-	-	-	-	-	-
Stage 1	461	462	-	837	772	-	-	-	-	-	-	-
Stage 2	703	591	-	799	628	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	15.2		9.9		0.3		0.4					
HCM LOS	C		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1203	-	-	359 596 977	1440	-	-					
HCM Lane V/C Ratio	0.004	-	-	0.015 0.009 0.005	0.011	-	-					
HCM Control Delay (s/veh)	8	0	-	15.2 11.1 8.7	7.5	0	-					
HCM Lane LOS	A	A	-	C B A	A	A	-					
HCM 95th %tile Q (veh)	0	-	-	0 0 0	0	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	45	35	5	10	10
Future Volume (Veh/h)	35	45	35	5	10	10
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	35	45	35	5	10	10
Pedestrians				3	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		88	74	119	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		88	74	119	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	98		96	99	99	99
cM capacity (veh/h)	1607		851	788	739	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	35	45	40	20		
Volume Left	35	0	35	0		
Volume Right	0	45	0	10		
cSH	1607	1700	843	872		
Volume to Capacity	0.02	0.03	0.05	0.02		
Queue Length 95th (ft)	2	0	4	2		
Control Delay (s/veh)	7.3	0.0	9.5	9.2		
Lane LOS	A		A	A		
Approach Delay (s/veh)	3.2		9.5	9.2		
Approach LOS			A	A		
Intersection Summary						
Average Delay				5.8		
Intersection Capacity Utilization				20.0%	ICU Level of Service	A
Analysis Period (min)				15		

HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	70	25	50	90	35	5	5	30	55	10	65
Future Volume (vph)	40	70	25	50	90	35	5	5	30	55	10	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1544	2976		3027	3121	1373		1423	2160	1431	1321	
Flt Permitted	0.69	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1125	2976		3027	3121	1373		1423	2160	1431	1321	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	74	26	53	95	37	5	5	32	58	11	68
RTOR Reduction (vph)	0	18	0	0	0	15	0	0	28	0	50	0
Lane Group Flow (vph)	42	82	0	53	95	22	0	10	4	52	35	0
Confl. Peds. (#/hr)	8		1	1		8			3	3		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	21.4	17.5		3.9	19.1	34.7		2.9	6.8	15.6	15.6	
Effective Green, g (s)	21.4	17.5		3.9	19.1	34.7		2.9	6.8	15.6	15.6	
Actuated g/C Ratio	0.37	0.30		0.07	0.33	0.60		0.05	0.12	0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	432	899		203	1029	822		71	253	385	355	
v/s Ratio Prot	0.00	0.03		c0.02	0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	c0.03					0.01			0.00			
v/c Ratio	0.10	0.09		0.26	0.09	0.03		0.14	0.01	0.14	0.10	
Uniform Delay, d1	11.8	14.5		25.6	13.4	4.7		26.3	22.6	16.0	15.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.3	0.0	0.0		0.3	0.0	0.1	0.0	
Delay (s)	11.9	14.5		25.9	13.4	4.7		26.6	22.6	16.1	15.9	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		13.7			15.3			23.6			16.0	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		15.7										
HCM 2000 Volume to Capacity ratio		0.13										
Actuated Cycle Length (s)		57.9										
Intersection Capacity Utilization		41.2%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↰	↰↰		↰	↰↰		↰	↰		↰	↰	
Traffic Volume (veh/h)	95	105	30	0	140	10	35	15	0	25	15	415
Future Volume (veh/h)	95	105	30	0	140	10	35	15	0	25	15	415
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.98	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1668	1668	1723	1723	1682	1682	1723	1723	1723	1750	1723	1750
Adj Flow Rate, veh/h	100	111	33	0	147	11	38	16	0	26	16	437
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.95	0.92	0.95
Percent Heavy Veh, %	6	6	2	2	5	5	2	2	2	0	2	0
Cap, veh/h	465	932	266	173	548	41	256	638	0	690	19	524
Arrive On Green	0.08	0.38	0.38	0.00	0.18	0.18	0.37	0.37	0.00	0.37	0.37	0.37
Sat Flow, veh/h	1589	2421	691	1244	3006	222	938	1723	0	1419	52	1416
Grp Volume(v), veh/h	100	71	73	0	77	81	38	16	0	26	0	453
Grp Sat Flow(s), veh/h/ln	1589	1585	1528	1244	1598	1630	938	1723	0	1419	0	1468
Q Serve(g_s), s	2.1	1.2	1.3	0.0	1.7	1.8	1.6	0.2	0.0	0.5	0.0	11.7
Cycle Q Clear(g_c), s	2.1	1.2	1.3	0.0	1.7	1.8	13.3	0.2	0.0	0.7	0.0	11.7
Prop In Lane	1.00		0.45	1.00		0.14	1.00		0.00	1.00		0.96
Lane Grp Cap(c), veh/h	465	610	588	173	291	297	256	638	0	690	0	543
V/C Ratio(X)	0.21	0.12	0.12	0.00	0.27	0.27	0.15	0.03	0.00	0.04	0.00	0.83
Avail Cap(c_a), veh/h	2548	3418	3295	747	1028	1050	484	1055	0	1017	0	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	8.2	8.3	0.0	14.6	14.6	18.0	8.3	0.0	8.6	0.0	11.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.2	0.2	0.3	0.0	0.0	0.0	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.3	0.0	0.5	0.6	0.3	0.1	0.0	0.1	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.1	8.3	8.3	0.0	14.8	14.8	18.3	8.4	0.0	8.6	0.0	13.7
LnGrp LOS	B	A	A		B	B	B	A		A		B
Approach Vol, veh/h		244			158			54			479	
Approach Delay, s/veh		9.9			14.8			15.3			13.4	
Approach LOS		A			B			B			B	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		20.4		21.2		20.4	8.4	12.8				
Change Period (Y+Rc), s		* 5		5.2		5.0	5.0	5.2				
Max Green Setting (Gmax), s		* 26		89.8		25.0	58.0	26.8				
Max Q Clear Time (g_c+I1), s		15.3		3.3		13.7	4.1	3.8				
Green Ext Time (p_c), s		0.1		0.1		0.6	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				12.8								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	75	130	110	35	75	25	60	90	115	85	435	215
Future Volume (veh/h)	75	130	110	35	75	25	60	90	115	85	435	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/in	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	77	133	112	36	77	26	61	92	117	87	444	219
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	236	401	312	55	253	81	365	467	416	590	708	346
Arrive On Green	0.13	0.20	0.20	0.04	0.12	0.12	0.08	0.30	0.30	0.10	0.31	0.31
Sat Flow, veh/h	1847	1967	1527	1416	2094	673	1581	1577	1404	1744	2262	1106
Grp Volume(v), veh/h	77	124	121	36	51	52	61	92	117	87	340	323
Grp Sat Flow(s), veh/h/in	1847	1843	1651	1416	1412	1355	1581	1577	1404	1744	1739	1629
Q Serve(g_s), s	2.0	3.1	3.4	1.3	1.7	1.9	1.3	2.3	3.4	1.7	8.9	9.0
Cycle Q Clear(g_c), s	2.0	3.1	3.4	1.3	1.7	1.9	1.3	2.3	3.4	1.7	8.9	9.0
Prop In Lane	1.00		0.92	1.00		0.50	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	236	376	337	55	171	164	365	467	416	590	545	510
V/C Ratio(X)	0.33	0.33	0.36	0.66	0.30	0.32	0.17	0.20	0.28	0.15	0.63	0.63
Avail Cap(c_a), veh/h	884	1401	1255	670	1065	1022	978	1193	1062	1236	1316	1232
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	18.1	18.2	25.3	21.4	21.4	11.1	14.0	14.4	10.5	15.6	15.7
Incr Delay (d2), s/veh	0.3	0.6	0.8	4.9	1.4	1.6	0.1	0.2	0.4	0.0	1.4	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.2	1.2	0.5	0.6	0.6	0.4	0.7	1.0	0.5	3.2	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.5	18.7	19.0	30.1	22.7	23.0	11.2	14.3	14.8	10.6	17.1	17.2
LnGrp LOS	C	B	B	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	322			139			270			750		
Approach Delay, s/veh	19.5			24.7			13.8			16.4		
Approach LOS	B			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	6.9	15.7	9.4	21.4	11.3	11.2					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	25.2	* 41	24.8	40.3	25.5	40.2					
Max Q Clear Time (g_c+I), s	5.4	3.3	5.4	3.3	11.0	4.0	3.9					
Green Ext Time (p_c), s	0.1	1.5	0.0	1.9	0.1	5.4	0.1	0.8				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	17.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	215	130	30	30	575	75	30	120	30	40	120	110
Future Volume (vph)	215	130	30	30	575	75	30	120	30	40	120	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2860		1575	2883		3152	3152		1499	1558	
Flt Permitted	0.20	1.00		0.65	1.00		0.61	1.00		0.48	1.00	
Satd. Flow (perm)	312	2860		1069	2883		2019	3152		759	1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	137	32	32	605	79	32	126	32	42	126	116
RTOR Reduction (vph)	0	14	0	0	9	0	0	21	0	0	28	0
Lane Group Flow (vph)	226	155	0	32	675	0	32	137	0	42	214	0
Confl. Peds. (#/hr)	1						1	3		1	1	3
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.9	37.9		28.9	25.4		17.6	14.2		28.6	20.7	
Effective Green, g (s)	45.9	37.9		28.9	25.4		17.6	14.2		28.6	20.7	
Actuated g/C Ratio	0.55	0.45		0.34	0.30		0.21	0.17		0.34	0.25	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	389	1291		389	872		469	533		353	384	
v/s Ratio Prot	c0.11	0.05		0.00	c0.23		0.00	0.04		c0.02	c0.14	
v/s Ratio Perm	0.21			0.02			0.01			0.03		
v/c Ratio	0.58	0.12		0.08	0.77		0.07	0.26		0.12	0.56	
Uniform Delay, d1	12.2	13.3		18.4	26.6		26.5	30.3		18.9	27.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.0		0.1	3.9		0.1	0.1		0.1	1.0	
Delay (s)	13.6	13.4		18.5	30.6		26.5	30.4		18.9	28.6	
Level of Service	B	B		B	C		C	C		B	C	
Approach Delay (s/veh)		13.5			30.0			29.7			27.2	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			25.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			83.9			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			66.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	580	970	0	710	30	145	120	15	30	120	30
Future Volume (veh/h)	30	580	970	0	710	30	145	120	15	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	32	611	0	0	747	32	153	126	16	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	266	1306		0	1201	535	876	709	89	864	542	134
Arrive On Green	0.42	0.42	0.00	0.00	0.42	0.42	0.09	0.26	0.26	0.03	0.21	0.21
Sat Flow, veh/h	663	3129	1395	0	2952	1283	2967	2729	341	3183	2602	641
Grp Volume(v), veh/h	32	611	0	0	747	32	153	70	72	32	78	80
Grp Sat Flow(s),veh/h/ln	663	1564	1395	0	1438	1283	1483	1525	1544	1591	1637	1607
Q Serve(g_s), s	2.3	8.1	0.0	0.0	11.8	0.9	2.2	2.0	2.1	0.4	2.3	2.4
Cycle Q Clear(g_c), s	14.1	8.1	0.0	0.0	11.8	0.9	2.2	2.0	2.1	0.4	2.3	2.4
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.22	1.00		0.40
Lane Grp Cap(c), veh/h	266	1306		0	1201	535	876	396	401	864	341	335
V/C Ratio(X)	0.12	0.47		0.00	0.62	0.06	0.17	0.18	0.18	0.04	0.23	0.24
Avail Cap(c_a), veh/h	557	2682		0	2465	1100	1881	781	790	1278	838	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	12.2	0.0	0.0	13.2	10.0	15.2	16.5	16.6	16.7	19.0	19.0
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.4	0.0	0.0	3.2	0.0	0.7	0.7	0.7	0.2	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.1	12.6	0.0	0.0	13.6	10.1	15.2	16.7	16.7	16.7	19.3	19.4
LnGrp LOS	B	B			B	B	B	B	B	B	B	B
Approach Vol, veh/h	643			779			295			190		
Approach Delay, s/veh	12.9			13.5			16.0			18.9		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	20.5		29.7	10.5	17.5		29.7				
Change Period (Y+Rc), s	5.5	5.5		5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	29.5	29.5		49.4	24.5	29.5		49.4				
Max Q Clear Time (g_c+I), s	4.1	4.1		16.1	4.2	4.4		13.8				
Green Ext Time (p_c), s	0.0	0.6		8.0	0.3	0.8		4.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.2											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	5	130	30	265	270	15	20	10	95	15	5	5
Future Volume (vph)	5	130	30	265	270	15	20	10	95	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1518	2955		1513	3104		1357	1412	1269	1515	1463	
Flt Permitted	0.57	1.00		0.65	1.00		0.75	0.94	1.00	0.75	1.00	
Satd. Flow (perm)	909	2955		1027	3104		1073	1348	1269	1190	1463	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	137	32	279	284	16	21	11	100	16	5	5
RTOR Reduction (vph)	0	20	0	0	3	0	0	0	78	0	4	0
Lane Group Flow (vph)	5	149	0	279	297	0	16	16	22	16	6	0
Confl. Peds. (#/hr)	7		1	1		7	8		1	1		8
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	26.8	17.0		26.8	25.9		11.9	11.9	11.9	11.9	11.9	
Effective Green, g (s)	26.8	17.0		26.8	25.9		11.9	11.9	11.9	11.9	11.9	
Actuated g/C Ratio	0.50	0.32		0.50	0.48		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	462	933		600	1494		237	298	280	263	323	
v/s Ratio Prot	0.00	0.05		c0.08	0.10						0.00	
v/s Ratio Perm	0.01			c0.15			0.01	0.01	c0.02	0.01		
v/c Ratio	0.01	0.16		0.47	0.20		0.07	0.05	0.08	0.06	0.02	
Uniform Delay, d1	6.8	13.3		8.3	8.0		16.6	16.5	16.6	16.5	16.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.1		0.0	0.0	0.0	0.0	0.0	
Delay (s)	6.8	13.4		8.5	8.1		16.6	16.5	16.7	16.6	16.4	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.2			8.3			16.6			16.5	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.7			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			53.8			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			47.7%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	75	70	140	65	45
Future Vol, veh/h	175	75	70	140	65	45
Conflicting Peds, #/hr	0	7	7	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	184	79	74	147	68	47
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	270	0	528	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1305	-	514	813
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1297	-	479	808
Mov Cap-2 Maneuver	-	-	-	-	561	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	709	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	2.6		11.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	641	-	-	1297	-	
HCM Lane V/C Ratio	0.181	-	-	0.057	-	
HCM Control Delay (s/veh)	11.9	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q (veh)	0.7	-	-	0.2	-	

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	15	210	120	150	75	0
Future Vol, veh/h	15	210	120	150	75	0
Conflicting Peds, #/hr	11	0	0	11	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	221	126	158	79	0
Major/Minor						
	Major1	Major2	Minor2			
Conflicting Flow All	295	0	-	0	472	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	256	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1278	-	-	-	600	844
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1262	-	-	-	577	834
Mov Cap-2 Maneuver	-	-	-	-	640	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	816	-
Approach						
	EB	WB	SB			
HCM Control Delay, s/v	0.5	0	11.4			
HCM LOS			B			
Minor Lane/Major Mvmt						
	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1262	-	-	-	640	
HCM Lane V/C Ratio	0.013	-	-	-	0.123	
HCM Control Delay (s/veh)	7.9	0	-	-	11.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.4	

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↗			↕	↗
Traffic Vol, veh/h	155	20	110	25	10	35	95	75	15	20	40	120
Future Vol, veh/h	155	20	110	25	10	35	95	75	15	20	40	120
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	163	21	116	26	11	37	100	79	16	21	42	126
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	10.4	9.6	9.9	9.1
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	89%	0%	36%	33%	0%
Vol Thru, %	0%	83%	11%	0%	14%	67%	0%
Vol Right, %	0%	17%	0%	100%	50%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	90	175	110	70	60	120
LT Vol	95	0	155	0	25	20	0
Through Vol	0	75	20	0	10	40	0
RT Vol	0	15	0	110	35	0	120
Lane Flow Rate	100	95	184	116	74	63	126
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.175	0.15	0.313	0.16	0.118	0.105	0.18
Departure Headway (Hd)	6.302	5.687	6.117	4.965	5.771	6	5.123
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	570	633	591	726	622	599	701
Service Time	4.027	3.403	3.822	2.67	3.801	3.725	2.848
HCM Lane V/C Ratio	0.175	0.15	0.311	0.16	0.119	0.105	0.18
HCM Control Delay, s/veh	10.4	9.4	11.6	8.6	9.6	9.4	9
HCM Lane LOS	B	A	B	A	A	A	A
HCM 95th-ile Q	0.6	0.5	1.3	0.6	0.4	0.4	0.7

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	80	590	350	90	80	80
Future Vol, veh/h	80	590	350	90	80	80
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	84	621	368	95	84	84
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	471	0	-	0	909	240
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	485	-
Critical Hdwy	4.12	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1094	-	-	-	278	767
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	591	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1086	-	-	-	242	762
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	587	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	1.4	0		19		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1086	-	-	-	242	762
HCM Lane V/C Ratio	0.078	-	-	-	0.348	0.111
HCM Control Delay (s/veh)	8.6	0.4	-	-	27.6	10.3
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q (veh)	0.3	-	-	-	1.5	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	265	90	55	190	85	115	450	55	80	315	100
Future Volume (veh/h)	210	265	90	55	190	85	115	450	55	80	315	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	221	279	95	58	200	89	121	474	58	84	332	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	445	566	188	324	488	215	162	667	85	116	474	157
Arrive On Green	0.13	0.21	0.21	0.07	0.15	0.15	0.25	0.25	0.25	0.21	0.21	0.21
Sat Flow, veh/h	1861	2731	909	1667	3325	1463	637	2622	335	546	2235	741
Grp Volume(v), veh/h	221	188	186	58	200	89	345	0	308	279	0	242
Grp Sat Flow(s),veh/h/ln	1861	1856	1784	1667	1663	1463	1813	0	1780	1818	0	1704
Q Serve(g_s), s	7.3	6.6	6.9	1.9	4.0	4.1	13.0	0.0	11.6	10.6	0.0	9.6
Cycle Q Clear(g_c), s	7.3	6.6	6.9	1.9	4.0	4.1	13.0	0.0	11.6	10.6	0.0	9.6
Prop In Lane	1.00		0.51	1.00		1.00	0.35		0.19	0.30		0.43
Lane Grp Cap(c), veh/h	445	385	370	324	488	215	461	0	453	385	0	361
V/C Ratio(X)	0.50	0.49	0.50	0.18	0.41	0.41	0.75	0.00	0.68	0.73	0.00	0.67
Avail Cap(c_a), veh/h	645	947	910	379	1247	549	986	0	968	988	0	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.3	25.9	26.0	20.6	28.7	28.7	25.4	0.0	24.9	27.2	0.0	26.8
Incr Delay (d2), s/veh	0.3	0.7	0.8	0.1	0.4	0.9	1.8	0.0	1.3	1.9	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.9	2.9	0.7	1.6	1.4	5.5	0.0	4.8	4.6	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.7	26.6	26.8	20.7	29.1	29.7	27.3	0.0	26.3	29.1	0.0	28.4
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	595			347			653			521		
Approach Delay, s/veh	25.2			27.8			26.8			28.8		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	23.5		9.6	20.6		20.4		14.1	16.1			
Change Period (Y+Rc), s	4.7		4.7	5.2		4.7		4.7	5.2			
Max Green Setting (Gmax), s	40.3		7.3	37.8		40.3		17.3	27.8			
Max Q Clear Time (g_c+I1), s	15.0		3.9	8.9		12.6		9.3	6.1			
Green Ext Time (p_c), s	3.5		0.0	1.9		2.8		0.2	1.2			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				27.0								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆	⬆		⬆			⬆	
Traffic Vol, veh/h	70	15	55	25	15	105	30	515	40	30	245	105
Future Vol, veh/h	70	15	55	25	15	105	30	515	40	30	245	105
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	74	16	58	26	16	111	32	542	42	32	258	111
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	723	1032	188	833	1066	296	371	0	0	588	0	0
Stage 1	380	380	-	631	631	-	-	-	-	-	-	-
Stage 2	343	652	-	202	435	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	358	279	841	263	222	703	1191	-	-	990	-	-
Stage 1	660	658	-	438	475	-	-	-	-	-	-	-
Stage 2	689	521	-	784	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	266	256	839	218	203	701	1189	-	-	987	-	-
Mov Cap-2 Maneuver	266	256	-	218	203	-	-	-	-	-	-	-
Stage 1	632	630	-	419	455	-	-	-	-	-	-	-
Stage 2	538	499	-	682	556	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v21.7			15.2		0.5		0.8					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	1189	-	-	361	212	701	987	-	-			
HCM Lane V/C Ratio	0.027	-	-	0.408	0.199	0.158	0.032	-	-			
HCM Control Delay (s/veh)	8.1	0.1	-	21.7	26.1	11.1	8.8	0.1	-			
HCM Lane LOS	A	A	-	C	D	B	A	A	-			
HCM 95th %tile Q (veh)	0.1	-	-	1.9	0.7	0.6	0.1	-	-			

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall No-Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	170	225	170	40	30	140
Future Volume (Veh/h)	170	225	170	40	30	140
Sign Control	Free		Stop		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	179	237	179	42	32	147
Pedestrians			7		1	
Lane Width (ft)			11.0		10.0	
Walking Speed (ft/s)			3.5		3.5	
Percent Blockage			0		0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		528	366	603	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		528	366	603	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	89		47	92	91	86
cM capacity (veh/h)	1634		340	500	366	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	179	237	221	179		
Volume Left	179	0	179	0		
Volume Right	0	237	0	147		
cSH	1634	1700	362	804		
Volume to Capacity	0.11	0.14	0.61	0.22		
Queue Length 95th (ft)	9	0	97	21		
Control Delay (s/veh)	7.5	0.0	29.4	10.8		
Lane LOS	A		D	B		
Approach Delay (s/veh)	3.2		29.4	10.8		
Approach LOS			D	B		
Intersection Summary						
Average Delay			12.0			
Intersection Capacity Utilization			44.5%	ICU Level of Service		A
Analysis Period (min)			15			

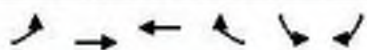
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	425	120	200	245	125	95	50	280	85	30	85
Future Volume (vph)	75	425	120	200	245	125	95	50	280	85	30	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85		1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.99	
Satd. Flow (prot)	1616	3145		3118	3214	1401		1638	2483	1474	1387	
Flt Permitted	0.59	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.99	
Satd. Flow (perm)	1012	3145		3118	3214	1401		1638	2483	1474	1387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	77	438	124	206	253	129	98	52	289	88	31	88
RTOR Reduction (vph)	0	26	0	0	0	65	0	0	199	0	71	0
Lane Group Flow (vph)	77	536	0	206	253	64	0	150	90	79	57	0
Confl. Peds. (#/hr)	14		1	1		14			10	10		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D,P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	27.6	17.9		9.7	21.7	35.7		12.7	22.4	14.0	14.0	
Effective Green, g (s)	27.6	17.9		9.7	21.7	35.7		12.7	22.4	14.0	14.0	
Actuated g/C Ratio	0.38	0.25		0.13	0.30	0.49		0.18	0.31	0.19	0.19	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	435	778		418	964	691		287	769	285	268	
v/s Ratio Prot	0.01	c0.17		c0.07	c0.08	0.02		c0.09	0.02	c0.05	0.04	
v/s Ratio Perm	0.05					0.03			0.02			
v/c Ratio	0.17	0.68		0.49	0.26	0.09		0.52	0.11	0.27	0.21	
Uniform Delay, d1	14.5	24.6		29.0	19.2	9.7		27.0	17.8	24.8	24.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	2.0		0.3	0.0	0.0		0.7	0.0	0.1	0.1	
Delay (s)	14.5	26.7		29.3	19.2	9.7		27.8	17.8	25.0	24.6	
Level of Service	B	C		C	B	A		C	B	C	C	
Approach Delay (s/veh)		25.2			20.7			21.2			24.8	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		22.8										
HCM 2000 Volume to Capacity ratio		0.50										
Actuated Cycle Length (s)		72.3							18.0			
Intersection Capacity Utilization		56.6%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall No-Build PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←	↑↑	←	↑↑	←	↑↑
Traffic Volume (veh/h)	485	500	380	50	115	515
Future Volume (veh/h)	485	500	380	50	115	515
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.95	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1736	1736	1750	1750	1750	1750
Adj Flow Rate, veh/h	511	526	400	53	121	542
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	600	1754	600	79	583	518
Arrive On Green	0.27	0.53	0.20	0.20	0.35	0.35
Sat Flow, veh/h	1654	3386	3020	385	1667	1483
Grp Volume(v), veh/h	511	526	225	228	121	542
Grp Sat Flow(s), veh/h/ln	1654	1650	1663	1655	1667	1483
Q Serve(g_s), s	20.2	7.6	10.7	10.9	4.4	30.0
Cycle Q Clear(g_c), s	20.2	7.6	10.7	10.9	4.4	30.0
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	600	1754	340	339	583	518
V/C Ratio(X)	0.85	0.30	0.66	0.67	0.21	1.05
Avail Cap(c_a), veh/h	734	1915	965	960	583	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	11.2	31.4	31.5	19.6	27.9
Incr Delay (d2), s/veh	7.6	0.1	1.6	1.7	0.1	51.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.2	2.5	4.3	4.4	1.7	7.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	26.1	11.3	33.0	33.2	19.7	79.8
LnGrp LOS	C	B	C	C	B	F
Approach Vol, veh/h	1037	453		663		
Approach Delay, s/veh	18.6	33.1		68.8		
Approach LOS	B	C		E		
Timer - Assigned Phs			4	6	7	8
Phs Duration (G+Y+Rc), s			50.8	35.0	28.1	22.8
Change Period (Y+Rc), s			5.2	5.0	5.0	5.2
Max Green Setting (Gmax), s			49.8	30.0	30.0	49.8
Max Q Clear Time (g_c+I1), s			9.6	32.0	22.2	12.9
Green Ext Time (p_c), s			3.1	0.0	0.8	2.2
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			37.1			
HCM 6th LOS			D			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall No-Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	235	340	85	190	230	90	110	380	230	55	310	265
Future Volume (veh/h)	235	340	85	190	230	90	110	380	230	55	310	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	247	358	89	200	242	95	116	400	242	58	326	279
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	299	589	145	237	422	161	335	563	336	313	486	407
Arrive On Green	0.16	0.20	0.20	0.16	0.20	0.20	0.09	0.29	0.29	0.07	0.27	0.27
Sat Flow, veh/h	1874	2973	730	1481	2082	792	1620	1945	1163	1770	1822	1527
Grp Volume(v), veh/h	247	223	224	200	169	168	116	332	310	58	316	289
Grp Sat Flow(s), veh/h/ln	1874	1869	1833	1481	1477	1397	1620	1616	1492	1770	1766	1584
Q Serve(g_s), s	8.8	7.5	7.6	9.0	7.1	7.5	3.4	12.6	12.8	1.5	11.0	11.2
Cycle Q Clear(g_c), s	8.8	7.5	7.6	9.0	7.1	7.5	3.4	12.6	12.8	1.5	11.0	11.2
Prop In Lane	1.00		0.40	1.00		0.57	1.00		0.78	1.00		0.96
Lane Grp Cap(c), veh/h	299	370	363	237	300	284	335	467	431	313	471	422
V/C Ratio(X)	0.83	0.60	0.62	0.84	0.57	0.59	0.35	0.71	0.72	0.19	0.67	0.69
Avail Cap(c_a), veh/h	696	1103	1082	544	865	819	773	949	876	832	1037	930
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	25.0	25.1	28.0	24.6	24.8	16.3	21.8	21.9	15.9	22.5	22.6
Incr Delay (d2), s/veh	2.2	1.9	2.0	3.2	2.4	2.8	0.2	2.4	2.7	0.1	2.0	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.9	3.3	3.4	3.2	2.6	2.6	1.2	4.7	4.4	0.6	4.4	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.1	26.9	27.2	31.1	27.0	27.5	16.6	24.2	24.6	16.0	24.5	25.0
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h		694			537			758			663	
Approach Delay, s/veh		28.1			28.7			23.2			23.9	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), 9.9	24.5	15.8	18.4	11.4	23.0	15.5	18.7					
Change Period (Y+Rc), s5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8					
Max Green Setting (Gm24)8s	40.3	25.2	* 41	24.8	40.3	25.5	40.2					
Max Q Clear Time (g_c+13)6s	14.8	11.0	9.6	5.4	13.2	10.8	9.5					
Green Ext Time (p_c), s 0.1	5.0	0.2	3.5	0.1	4.8	0.3	3.1					
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			25.8									
HCM 6th LOS			C									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

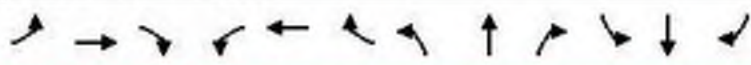
HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	235	480	30	30	310	80	30	115	30	180	115	195
Future Volume (vph)	235	480	30	30	310	80	30	115	30	180	115	195
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1559	3091		1605	2894		3162	3158		1555	1577	
Flt Permitted	0.28	1.00		0.45	1.00		0.56	1.00		0.56	1.00	
Satd. Flow (perm)	468	3091		764	2894		1875	3158		917	1577	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	247	505	32	32	326	84	32	121	32	189	121	205
RTOR Reduction (vph)	0	3	0	0	21	0	0	14	0	0	33	0
Lane Group Flow (vph)	247	534	0	32	389	0	32	139	0	189	293	0
Confl. Peds. (#/hr)	3					3				4		2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.9	32.4		22.8	18.8		31.4	27.8		44.8	36.7	
Effective Green, g (s)	40.9	32.4		22.8	18.8		31.4	27.8		44.8	36.7	
Actuated g/C Ratio	0.43	0.34		0.24	0.20		0.33	0.29		0.47	0.39	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	400	1053		218	572		667	923		514	608	
w/s Ratio Prot	c0.11	0.17		0.01	0.13		0.00	0.04		c0.05	c0.19	
w/s Ratio Perm	c0.15			0.03			0.01			0.13		
w/c Ratio	0.61	0.50		0.14	0.68		0.04	0.15		0.36	0.48	
Uniform Delay, d1	19.1	24.9		28.0	35.3		21.5	24.9		15.2	22.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.1		0.3	2.6		0.0	0.3		0.1	0.2	
Delay (s)	21.1	25.1		28.3	38.0		21.5	25.2		15.4	22.2	
Level of Service	C	C		C	D		C	C		B	C	
Approach Delay (s/veh)		23.8			37.3			24.6			19.7	
Approach LOS		C			D			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		25.9					HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		95.1					Sum of lost time (s)			18.8		
Intersection Capacity Utilization		65.7%					ICU Level of Service			C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱		↱	↱	↰	↱		↰	↱	↱
Traffic Volume (veh/h)	30	1005	1275	0	720	30	190	115	45	30	115	30
Future Volume (veh/h)	30	1005	1275	0	720	30	190	115	45	30	115	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	32	1058	0	0	758	32	200	121	47	32	121	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	328	1604		0	1452	647	781	514	191	723	447	115
Arrive On Green	0.50	0.50	0.00	0.00	0.50	0.50	0.09	0.23	0.23	0.03	0.17	0.17
Sat Flow, veh/h	692	3206	1430	0	2978	1294	3093	2269	843	3183	2579	661
Grp Volume(v), veh/h	32	1058	0	0	758	32	200	83	85	32	75	78
Grp Sat Flow(s), veh/h/ln	692	1603	1430	0	1451	1294	1546	1590	1522	1591	1637	1604
Q Serve(g_s), s	2.3	17.0	0.0	0.0	12.2	0.9	3.5	3.0	3.2	0.6	2.8	2.9
Cycle Q Clear(g_c), s	14.5	17.0	0.0	0.0	12.2	0.9	3.5	3.0	3.2	0.6	2.8	2.9
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.55	1.00		0.41
Lane Grp Cap(c), veh/h	328	1604		0	1452	647	781	361	345	723	284	278
V/C Ratio(X)	0.10	0.66		0.00	0.52	0.05	0.26	0.23	0.25	0.04	0.27	0.28
Avail Cap(c_a), veh/h	526	2521		0	2282	1018	1609	678	649	1055	698	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	12.9	0.0	0.0	11.7	8.9	20.2	21.8	21.9	22.0	24.8	24.8
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.0	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4	5.3	0.0	0.0	3.4	0.9	1.2	1.1	1.1	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.8	13.7	0.0	0.0	11.9	8.9	20.3	22.1	22.2	22.0	25.3	25.4
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h		1090			790			368			185	
Approach Delay, s/veh		13.8			11.8			21.1			24.8	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s		21.2		40.2	11.5	17.5		40.2				
Change Period (Y+Rc), s		5.5		5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s		29.5		54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+12), s		5.2		19.0	5.5	4.9		14.2				
Green Ext Time (p_c), s		0.0		15.6	0.5	0.8		4.8				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			15.1									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall No-Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↶↷		↰	↶↷		↰	↶	↷	↰	↶	↷
Traffic Volume (vph)	35	360	80	260	525	30	135	75	485	140	45	40
Future Volume (vph)	35	360	80	260	525	30	135	75	485	140	45	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%				0%
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	0.99	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3132		1527	3135		1444	1508	1344	1577	1539	
Flt Permitted	0.30	1.00		0.30	1.00		0.69	0.90	1.00	0.68	1.00	
Satd. Flow (perm)	524	3132		488	3135		1063	1391	1344	1130	1539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	375	83	271	547	31	141	78	505	146	47	42
RTOR Reduction (vph)	0	20	0	0	3	0	0	0	251	0	21	0
Lane Group Flow (vph)	36	438	0	271	575	0	106	113	254	146	68	0
Confl. Peds. (#/hr)	4		4	4		4	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	37.1	20.7		37.1	32.8		52.8	52.8	52.8	52.8	52.8	
Effective Green, g (s)	37.1	20.7		37.1	32.8		52.8	52.8	52.8	52.8	52.8	
Actuated g/C Ratio	0.35	0.20		0.35	0.31		0.50	0.50	0.50	0.50	0.50	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	229	617		334	979		534	699	675	568	773	
v/s Ratio Prot	0.01	0.14		c0.13	0.18						0.04	
v/s Ratio Perm	0.05			c0.16			0.10	0.08	c0.19	0.13		
v/c Ratio	0.15	0.70		0.81	0.58		0.19	0.16	0.37	0.25	0.08	
Uniform Delay, d1	22.9	39.3		34.7	30.3		14.4	14.1	16.0	14.9	13.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.8		13.2	0.9		0.8	0.4	1.5	1.0	0.2	
Delay (s)	23.0	43.2		47.9	31.3		15.2	14.6	17.6	15.9	13.8	
Level of Service	C	D		D	C		B	B	B	B	B	
Approach Delay (s/veh)		41.7			36.6			16.7			15.1	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		29.3					HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		105.0					Sum of lost time (s)		15.1			
Intersection Capacity Utilization		74.2%					ICU Level of Service		D			
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	210	75	70	140	0	65	0	45	35	0	35
Future Vol, veh/h	0	210	75	70	140	0	65	0	45	35	0	35
Conflicting Peds, #/hr	0	0	7	7	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	221	79	74	147	0	68	0	47	37	0	37
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	307	0	0	584	-	268	579	602	149
Stage 1	-	-	-	-	-	-	268	-	-	295	295	-
Stage 2	-	-	-	-	-	-	316	-	-	284	307	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	-	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	-	-	6.1	5.5	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	-	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	0	-	-	1265	-	0	426	0	776	429	416	903
Stage 1	0	-	-	-	-	0	742	0	-	718	673	-
Stage 2	0	-	-	-	-	0	699	0	-	727	665	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1257	-	-	386	-	771	383	387	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	483	-	-	472	453	-
Stage 1	-	-	-	-	-	-	742	-	-	718	630	-
Stage 2	-	-	-	-	-	-	626	-	-	682	661	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			2.7			12.2			11.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBT	EBR	WBL	WBT	SBLn1					
Capacity (veh/h)	483 771		-	-	1257	-	619					
HCM Lane V/C Ratio	0.142 0.061		-	-	0.059	-	0.119					
HCM Control Delay (s/veh)	13.7 10		-	-	8	0	11.6					
HCM Lane LOS	B B		-	-	A A	B B						
HCM 95th %tile Q (veh)	0.5 0.2		-	-	0.2	-	0.4					

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	→		←	→	←	→			←	→
Traffic Vol, veh/h	195	10	115	15	5	25	85	80	15	15	35	130
Future Vol, veh/h	195	10	115	15	5	25	85	80	15	15	35	130
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	205	11	121	16	5	26	89	84	16	16	37	137
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	10.9	9.3	9.8	9.2
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	95%	0%	33%	30%	0%
Vol Thru, %	0%	84%	5%	0%	11%	70%	0%
Vol Right, %	0%	16%	0%	100%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	95	205	115	45	50	130
LT Vol	85	0	195	0	15	15	0
Through Vol	0	80	10	0	5	35	0
RT Vol	0	15	0	115	25	0	130
Lane Flow Rate	89	100	216	121	47	53	137
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.157	0.159	0.359	0.162	0.076	0.088	0.192
Departure Headway (Hd)	6.331	5.714	6.093	4.909	5.774	6.006	5.15
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	570	631	593	735	623	600	701
Service Time	4.033	3.415	3.793	2.609	3.786	3.71	2.85
HCM Lane V/C Ratio	0.156	0.158	0.364	0.165	0.075	0.088	0.195
HCM Control Delay, s/veh	10.2	9.5	12.2	8.6	9.3	9.3	9.1
HCM Lane LOS	B	A	B	A	A	A	A
HCM 95th-ile Q	0.6	0.6	1.6	0.6	0.2	0.3	0.7

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	85	590	350	105	95	85
Future Vol, veh/h	85	590	350	105	95	85
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	89	621	368	111	100	89

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	487	0	0 927 248
Stage 1	-	-	- 432 -
Stage 2	-	-	- 495 -
Critical Hdwy	4.12	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.21	-	- 3.5 3.3
Pot Cap-1 Maneuver	1079	-	- 271 758
Stage 1	-	-	- 628 -
Stage 2	-	-	- 584 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1071	-	- 233 753
Mov Cap-2 Maneuver	-	-	- 233 -
Stage 1	-	-	- 544 -
Stage 2	-	-	- 580 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.4	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1071	-	-	-	233	753
HCM Lane V/C Ratio	0.084	-	-	-	0.429	0.119
HCM Control Delay (s/veh)	8.7	0.4	-	-	31.6	10.4
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q (veh)	0.3	-	-	-	2	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build B PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	280	90	65	220	105	115	430	65	100	295	100
Future Volume (veh/h)	210	280	90	65	220	105	115	430	65	100	295	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	221	295	95	68	232	111	121	453	68	105	311	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	432	563	178	324	491	217	163	639	100	144	443	156
Arrive On Green	0.13	0.20	0.20	0.07	0.15	0.15	0.25	0.25	0.25	0.21	0.21	0.21
Sat Flow, veh/h	1861	2771	875	1667	3325	1471	646	2539	398	681	2094	739
Grp Volume(v), veh/h	221	196	194	68	232	111	340	0	302	279	0	242
Grp Sat Flow(s),veh/h/ln	1861	1856	1790	1667	1663	1471	1813	0	1770	1811	0	1704
Q Serve(g_s), s	7.2	6.9	7.2	2.3	4.7	5.1	12.7	0.0	11.4	10.6	0.0	9.6
Cycle Q Clear(g_c), s	7.2	6.9	7.2	2.3	4.7	5.1	12.7	0.0	11.4	10.6	0.0	9.6
Prop In Lane	1.00		0.49	1.00		1.00	0.36		0.22	0.38		0.43
Lane Grp Cap(c), veh/h	432	377	364	324	491	217	456	0	446	383	0	361
V/C Ratio(X)	0.51	0.52	0.53	0.21	0.47	0.51	0.74	0.00	0.68	0.73	0.00	0.67
Avail Cap(c_a), veh/h	734	1003	967	438	1300	575	992	0	968	868	0	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	26.1	26.2	20.6	28.8	28.9	25.4	0.0	24.9	27.1	0.0	26.7
Incr Delay (d2), s/veh	0.3	0.8	0.9	0.1	0.5	1.4	1.8	0.0	1.4	2.0	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.0	3.0	0.9	1.8	1.8	5.4	0.0	4.7	4.6	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.5	27.0	27.1	20.7	29.3	30.3	27.2	0.0	26.2	29.0	0.0	28.3
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	611			411			642			521		
Approach Delay, s/veh	25.4			28.1			26.7			28.7		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	23.2		10.0	20.2		20.3		14.0	16.1			
Change Period (Y+Rc), s	4.7		4.7	5.2		4.7		4.7	5.2			
Max Green Setting (Gmax), s	40.3		10.3	39.8		35.3		21.3	28.8			
Max Q Clear Time (g_c+I1), s	14.7		4.3	9.2		12.6		9.2	7.1			
Green Ext Time (p_c), s	3.4		0.0	2.0		2.7		0.2	1.4			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	27.1											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+			+	
Traffic Vol, veh/h	70	15	55	25	15	105	30	535	40	30	265	105
Future Vol, veh/h	70	15	55	25	15	105	30	535	40	30	265	105
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	74	16	58	26	16	111	32	563	42	32	279	111
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	755	1074	198	865	1108	307	392	0	0	609	0	0
Stage 1	401	401	-	652	652	-	-	-	-	-	-	-
Stage 2	354	673	-	213	456	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	342	265	830	249	210	692	1170	-	-	972	-	-
Stage 1	644	646	-	426	465	-	-	-	-	-	-	-
Stage 2	681	511	-	772	569	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	252	242	828	205	192	690	1168	-	-	969	-	-
Mov Cap-2 Maneuver	252	242	-	205	192	-	-	-	-	-	-	-
Stage 1	616	617	-	407	444	-	-	-	-	-	-	-
Stage 2	528	488	-	669	543	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	23		15.8		0.6		0.8					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1168	-	-	345 200 690 969	-	-	-					
HCM Lane V/C Ratio	0.027	-	-	0.427 0.211 0.16 0.033	-	-	-					
HCM Control Delay (s/veh)	8.2	0.2	-	23 27.7 11.2 8.8	0.2	-	-					
HCM Lane LOS	A	A	-	C D B A A	-	-	-					
HCM 95th %tile Q (veh)	0.1	-	-	2.1 0.8 0.6 0.1	-	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build B PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	170	260	205	40	30	140
Future Volume (Veh/h)	170	260	205	40	30	140
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	179	274	216	42	32	147
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		528	366	640	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		528	366	640	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	89		36	92	91	86
cM capacity (veh/h)	1634		339	500	349	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	179	274	258	179		
Volume Left	179	0	216	0		
Volume Right	0	274	0	147		
cSH	1634	1700	357	788		
Volume to Capacity	0.11	0.16	0.72	0.23		
Queue Length 95th (ft)	9	0	136	22		
Control Delay (s/veh)	7.5	0.0	37.3	10.9		
Lane LOS	A		E	B		
Approach Delay (s/veh)	3.0		37.3	10.9		
Approach LOS			E	B		
Intersection Summary						
Average Delay			14.5			
Intersection Capacity Utilization			46.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build B PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	425	120	200	245	125	95	50	280	85	30	85
Future Volume (vph)	75	425	120	200	245	125	95	50	280	85	30	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1615	3145		3118	3214	1405		1638	2479	1474	1387	
Flt Permitted	0.59	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1009	3145		3118	3214	1405		1638	2479	1474	1387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	77	438	124	206	253	129	98	52	289	88	31	88
RTOR Reduction (vph)	0	26	0	0	0	60	0	0	208	0	65	0
Lane Group Flow (vph)	77	536	0	206	253	69	0	150	81	79	63	0
Confl. Peds. (#/hr)	14		1	1		14			10	10		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	27.1	18.3		8.8	21.7	42.1		13.1	21.9	20.4	20.4	
Effective Green, g (s)	27.1	18.3		8.8	21.7	42.1		13.1	21.9	20.4	20.4	
Actuated g/C Ratio	0.34	0.23		0.11	0.28	0.54		0.17	0.28	0.26	0.26	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	389	732		349	887	752		273	690	382	359	
v/s Ratio Prot	0.01	c0.17		c0.07	c0.08	0.02		c0.09	0.01	c0.05	0.05	
v/s Ratio Perm	0.05					0.03			0.02			
v/c Ratio	0.20	0.73		0.59	0.29	0.09		0.55	0.12	0.21	0.18	
Uniform Delay, d1	17.7	27.9		33.2	22.4	8.9		30.0	21.1	22.8	22.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.3		1.8	0.1	0.0		1.2	0.0	0.1	0.1	
Delay (s)	17.8	31.2		35.0	22.4	8.9		31.3	21.2	22.9	22.7	
Level of Service	B	C		C	C	A		C	C	C	C	
Approach Delay (s/veh)		29.5			23.9			24.6			22.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			25.9				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			78.6				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			56.6%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build B PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	495	500	380	50	115	525
Future Volume (veh/h)	495	500	380	50	115	525
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.94	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1736	1736	1750	1750	1750	1750
Adj Flow Rate, veh/h	521	526	400	53	121	553
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	580	1690	549	72	645	574
Arrive On Green	0.28	0.51	0.19	0.19	0.39	0.39
Sat Flow, veh/h	1654	3386	3018	385	1667	1483
Grp Volume(v), veh/h	521	526	225	228	121	553
Grp Sat Flow(s), veh/h/ln	1654	1650	1663	1652	1667	1483
Q Serve(g_s), s	25.0	9.4	12.9	13.1	4.9	36.9
Cycle Q Clear(g_c), s	25.0	9.4	12.9	13.1	4.9	36.9
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	580	1690	311	310	645	574
V/C Ratio(X)	0.90	0.31	0.72	0.74	0.19	0.96
Avail Cap(c_a), veh/h	696	2437	571	568	658	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	14.3	38.7	38.8	20.5	30.3
Incr Delay (d2), s/veh	12.5	0.1	2.4	2.5	0.1	27.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.3	5.4	5.4	1.9	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	35.3	14.4	41.1	41.3	20.6	58.1
LnGrp LOS	D	B	D	D	C	E
Approach Vol, veh/h		1047	453		674	
Approach Delay, s/veh		24.8	41.2		51.4	
Approach LOS		C	D		D	
Timer - Assigned Phs			4		6	7 8
Phs Duration (G+Y+Rc), s			57.1		44.2	32.9 24.2
Change Period (Y+Rc), s			5.2		5.0	5.0 5.2
Max Green Setting (Gmax), s			74.8		40.0	35.0 34.8
Max Q Clear Time (g_c+I1), s			11.4		38.9	27.0 15.1
Green Ext Time (p_c), s			3.1		0.3	0.9 2.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			36.5			
HCM 6th LOS			D			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build B PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	350	85	200	240	95	110	380	240	60	310	265
Future Volume (veh/h)	235	350	85	200	240	95	110	380	240	60	310	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	247	368	89	211	253	100	116	400	253	63	326	279
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	297	595	142	246	438	168	334	562	351	311	504	422
Arrive On Green	0.16	0.20	0.20	0.17	0.21	0.21	0.09	0.29	0.29	0.07	0.28	0.28
Sat Flow, veh/h	1874	2990	715	1481	2077	797	1620	1909	1193	1770	1822	1527
Grp Volume(v), veh/h	247	228	229	211	178	175	116	338	315	63	316	289
Grp Sat Flow(s),veh/h/ln	1874	1869	1836	1481	1477	1396	1620	1616	1486	1770	1766	1584
Q Serve(g_s), s	9.2	8.0	8.2	10.0	7.8	8.2	3.5	13.4	13.7	1.7	11.4	11.7
Cycle Q Clear(g_c), s	9.2	8.0	8.2	10.0	7.8	8.2	3.5	13.4	13.7	1.7	11.4	11.7
Prop In Lane	1.00		0.39	1.00		0.57	1.00		0.80	1.00		0.96
Lane Grp Cap(c), veh/h	297	372	365	246	312	294	334	476	438	311	488	438
V/C Ratio(X)	0.83	0.61	0.63	0.86	0.57	0.60	0.35	0.71	0.72	0.20	0.65	0.66
Avail Cap(c_a), veh/h	663	1180	1159	415	824	779	637	1173	1079	502	1110	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	26.3	26.4	29.2	25.5	25.7	16.8	22.7	22.8	16.5	23.0	23.1
Incr Delay (d2), s/veh	2.3	2.0	2.1	3.9	2.3	2.7	0.2	2.4	2.7	0.1	1.7	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.6	3.7	3.7	2.8	2.8	1.2	5.0	4.7	0.6	4.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.7	28.3	28.5	33.1	27.8	28.4	17.0	25.0	25.5	16.6	24.7	25.1
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h	704			564			769			668		
Approach Delay, s/veh	29.6			30.0			24.0			24.1		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.9	16.8	19.1	11.5	24.6	15.9	20.0					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	42.8	52.3	20.2	* 46	19.8	45.3	25.5	40.2				
Max Q Clear Time (g_c+I), s	13.7	15.7	12.0	10.2	5.5	13.7	11.2	10.2				
Green Ext Time (p_c), s	0.0	5.5	0.2	3.7	0.1	5.0	0.3	3.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	26.7											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall Build B PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	250	485	30	30	315	80	30	120	30	180	120	210
Future Volume (vph)	250	485	30	30	315	80	30	120	30	180	120	210
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1559	3091		1605	2895		3157	3149		1556	1575	
Flt Permitted	0.29	1.00		0.45	1.00		0.54	1.00		0.54	1.00	
Satd. Flow (perm)	476	3091		760	2895		1809	3149		887	1575	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	511	32	32	332	84	32	126	32	189	126	221
RTOR Reduction (vph)	0	4	0	0	20	0	0	14	0	0	39	0
Lane Group Flow (vph)	263	539	0	32	396	0	32	144	0	189	308	0
Confl. Peds. (#/hr)	3						3	2		4	4	2
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.9	32.5		22.4	18.5		26.7	23.1		40.1	32.0	
Effective Green, g (s)	40.9	32.5		22.4	18.5		26.7	23.1		40.1	32.0	
Actuated g/C Ratio	0.45	0.36		0.25	0.20		0.30	0.26		0.44	0.35	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	427	1111		224	592		587	804		484	557	
v/s Ratio Prot	c0.12	0.17		0.01	0.14		0.00	0.05		c0.05	c0.20	
v/s Ratio Perm	c0.16			0.03			0.01			0.12		
v/c Ratio	0.62	0.49		0.14	0.67		0.05	0.18		0.39	0.55	
Uniform Delay, d1	17.1	22.5		26.1	33.1		22.7	26.3		16.1	23.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.9	0.1		0.3	2.2		0.0	0.5		0.2	0.7	
Delay (s)	19.0	22.6		26.4	35.4		22.7	26.7		16.3	24.1	
Level of Service	B	C		C	D		C	C		B	C	
Approach Delay (s/veh)		21.4			34.7			26.1			21.4	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			24.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			90.4			Sum of lost time (s)			18.8			
Intersection Capacity Utilization			68.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build B PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱		↱	↱	↰	↱		↰	↱	↱
Traffic Volume (veh/h)	30	1005	1275	0	720	30	190	120	45	30	120	30
Future Volume (veh/h)	30	1005	1275	0	720	30	190	120	45	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	32	1058	0	0	758	32	200	126	47	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	332	1623		0	1469	655	767	515	184	712	445	110
Arrive On Green	0.51	0.51	0.00	0.00	0.51	0.51	0.09	0.22	0.22	0.03	0.17	0.17
Sat Flow, veh/h	692	3206	1430	0	2978	1294	3093	2295	821	3183	2602	641
Grp Volume(v), veh/h	32	1058	0	0	758	32	200	86	87	32	78	80
Grp Sat Flow(s), veh/h/ln	692	1603	1430	0	1451	1294	1546	1590	1526	1591	1637	1607
Q Serve(g_s), s	2.3	17.1	0.0	0.0	12.3	0.9	3.6	3.1	3.3	0.6	2.9	3.1
Cycle Q Clear(g_c), s	14.5	17.1	0.0	0.0	12.3	0.9	3.6	3.1	3.3	0.6	2.9	3.1
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.54	1.00		0.40
Lane Grp Cap(c), veh/h	332	1623		0	1469	655	767	357	342	712	280	275
V/C Ratio(X)	0.10	0.65		0.00	0.52	0.05	0.26	0.24	0.26	0.04	0.28	0.29
Avail Cap(c_a), veh/h	567	2712		0	2454	1095	1799	894	858	1037	454	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	12.8	0.0	0.0	11.6	8.8	20.6	22.3	22.4	22.5	25.3	25.4
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.0	0.2	0.0	0.1	0.3	0.3	0.0	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.3	0.0	0.0	3.4	0.0	1.2	1.1	1.2	0.2	1.1	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.7	13.5	0.0	0.0	11.8	8.8	20.7	22.6	22.7	22.5	25.9	26.0
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h	1090			790			373			190		
Approach Delay, s/veh	13.6			11.7			21.6			25.4		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s/7.8	21.3			41.2	11.6	17.5		41.2				
Change Period (Y+Rc), s 5.5	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s 39.5	39.5			59.4	29.5	19.5		59.4				
Max Q Clear Time (g_c+I), s 5.3	5.3			19.1	5.6	5.1		14.3				
Green Ext Time (p_c), s 0.0	0.0	0.8		16.5	0.5	0.7		4.9				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	15.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build B PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	35	360	95	270	525	30	150	75	495	140	45	40
Future Volume (vph)	35	360	95	270	525	30	150	75	495	140	45	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%				0%
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3117		1527	3135		1444	1504	1344	1577	1539	
Flt Permitted	0.32	1.00		0.29	1.00		0.70	0.89	1.00	0.68	1.00	
Satd. Flow (perm)	549	3117		467	3135		1063	1364	1344	1122	1539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	375	99	281	547	31	156	78	516	146	47	42
RTOR Reduction (vph)	0	24	0	0	4	0	0	0	268	0	22	0
Lane Group Flow (vph)	36	450	0	281	574	0	114	120	248	146	67	0
Confl. Peds. (#/hr)	4		4	4		4	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	39.4	21.0		39.4	35.2		50.5	50.5	50.5	50.5	50.5	
Effective Green, g (s)	39.4	21.0		39.4	35.2		50.5	50.5	50.5	50.5	50.5	
Actuated g/C Ratio	0.38	0.20		0.38	0.34		0.48	0.48	0.48	0.48	0.48	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	248	623		360	1050		511	656	646	539	740	
v/s Ratio Prot	0.01	0.14		c0.14	0.18						0.04	
v/s Ratio Perm	0.05			c0.16			0.11	0.09	c0.18	0.13		
v/c Ratio	0.15	0.72		0.78	0.55		0.22	0.18	0.38	0.27	0.09	
Uniform Delay, d1	21.4	39.3		33.4	28.4		15.8	15.5	17.3	16.3	14.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	4.3		9.7	0.7		1.0	0.6	1.7	1.2	0.2	
Delay (s)	21.5	43.5		43.1	29.1		16.9	16.1	19.1	17.5	15.0	
Level of Service	C	D		D	C		B	B	B	B	B	
Approach Delay (s/veh)		42.0			33.7			18.3			16.6	
Approach LOS		D			C			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			28.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			75.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	75	70	150	65	45
Future Vol, veh/h	185	75	70	150	65	45
Conflicting Peds, #/hr	0	7	7	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	195	79	74	158	68	47

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	281
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1293
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1285
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.5	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	631	-	-	1285	-
HCM Lane V/C Ratio	0.184	-	-	0.057	-
HCM Control Delay (s/veh)	12	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.7	-	-	0.2	-

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	195	125	90	55	0
Future Vol, veh/h	10	195	125	90	55	0
Conflicting Peds, #/hr	11	0	0	11	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	205	132	95	58	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	238	0	0 421 191
Stage 1	-	-	- 191 -
Stage 2	-	-	- 230 -
Critical Hdwy	4.1	-	- 5.8 5.9
Critical Hdwy Stg 1	-	-	- 4.8 -
Critical Hdwy Stg 2	-	-	- 4.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1341	-	- 636 870
Stage 1	-	-	- 874 -
Stage 2	-	-	- 845 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1325	-	- 615 859
Mov Cap-2 Maneuver	-	-	- 666 -
Stage 1	-	-	- 856 -
Stage 2	-	-	- 835 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.4	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1325	-	-	-	666
HCM Lane V/C Ratio	0.008	-	-	-	0.087
HCM Control Delay (s/veh)	7.7	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱			↰	↱
Traffic Vol, veh/h	145	10	105	15	5	25	85	70	15	15	35	115
Future Vol, veh/h	145	10	105	15	5	25	85	70	15	15	35	115
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	153	11	111	16	5	26	89	74	16	16	37	121
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	9.8	9	9.5	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	94%	0%	33%	30%	0%
Vol Thru, %	0%	82%	6%	0%	11%	70%	0%
Vol Right, %	0%	18%	0%	100%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	85	155	105	45	50	115
LT Vol	85	0	145	0	15	15	0
Through Vol	0	70	10	0	5	35	0
RT Vol	0	15	0	105	25	0	115
Lane Flow Rate	89	89	163	111	47	53	121
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.15	0.134	0.268	0.145	0.072	0.083	0.163
Departure Headway (Hd)	6.026	5.397	5.904	4.729	5.478	5.704	4.846
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	591	659	605	753	648	624	734
Service Time	3.798	3.168	3.671	2.496	3.567	3.476	2.618
HCM Lane V/C Ratio	0.151	0.135	0.269	0.147	0.073	0.085	0.165
HCM Control Delay, s/veh	9.9	9	10.8	8.3	9	9	8.6
HCM Lane LOS	A	A	B	A	A	A	A
HCM 95th-ile Q	0.5	0.5	1.1	0.5	0.2	0.3	0.6

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	80	595	355	100	90	80
Future Vol, veh/h	80	595	355	100	90	80
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	84	626	374	105	95	84

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	487	0	0 922 248
Stage 1	-	-	- 435 -
Stage 2	-	-	- 487 -
Critical Hdwy	4.12	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.21	-	- 3.5 3.3
Pot Cap-1 Maneuver	1079	-	- 273 758
Stage 1	-	-	- 626 -
Stage 2	-	-	- 589 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1071	-	- 237 753
Mov Cap-2 Maneuver	-	-	- 237 -
Stage 1	-	-	- 547 -
Stage 2	-	-	- 585 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.4	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1071	-	-	-	237	753
HCM Lane V/C Ratio	0.079	-	-	-	0.4	0.112
HCM Control Delay (s/veh)	8.6	0.4	-	-	30	10.4
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q (veh)	0.3	-	-	-	1.8	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	280	90	65	205	115	115	430	65	110	295	100
Future Volume (veh/h)	215	280	90	65	205	115	115	430	65	110	295	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	226	295	95	68	216	121	121	453	68	116	311	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	438	565	178	322	486	215	162	637	100	159	443	156
Arrive On Green	0.13	0.20	0.20	0.07	0.15	0.15	0.25	0.25	0.25	0.22	0.22	0.22
Sat Flow, veh/h	1861	2771	875	1667	3325	1471	646	2539	398	737	2054	725
Grp Volume(v), veh/h	226	196	194	68	216	121	340	0	302	285	0	247
Grp Sat Flow(s),veh/h/ln	1861	1856	1790	1667	1663	1471	1813	0	1770	1808	0	1707
Q Serve(g_s), s	7.5	7.0	7.2	2.3	4.4	5.7	12.9	0.0	11.5	10.9	0.0	9.9
Cycle Q Clear(g_c), s	7.5	7.0	7.2	2.3	4.4	5.7	12.9	0.0	11.5	10.9	0.0	9.9
Prop In Lane	1.00		0.49	1.00		1.00	0.36		0.22	0.41		0.42
Lane Grp Cap(c), veh/h	438	378	365	322	486	215	455	0	444	390	0	368
V/C Ratio(X)	0.52	0.52	0.53	0.21	0.44	0.56	0.75	0.00	0.68	0.73	0.00	0.67
Avail Cap(c_a), veh/h	630	941	907	367	1240	548	980	0	956	977	0	923
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	26.4	26.5	20.8	29.1	29.6	25.7	0.0	25.2	27.2	0.0	26.8
Incr Delay (d2), s/veh	0.4	0.8	0.9	0.1	0.5	1.7	1.8	0.0	1.4	2.0	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.1	3.1	0.9	1.7	2.1	5.5	0.0	4.8	4.7	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.8	27.2	27.4	20.9	29.6	31.3	27.6	0.0	26.6	29.2	0.0	28.4
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	616			405			642			532		
Approach Delay, s/veh	25.7			28.6			27.1			28.8		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	23.4			10.0			20.4			20.8		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	40.3			7.3			37.8			40.3		
Max Q Clear Time (g_c+I1), s	14.9			4.3			9.2			12.9		
Green Ext Time (p_c), s	3.4			0.0			2.0			2.8		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				27.4								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	15	55	35	15	115	30	545	50	40	275	105
Future Vol, veh/h	70	15	55	35	15	115	30	545	50	40	275	105
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	74	16	58	37	16	121	32	574	53	42	289	111
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	790	1126	203	907	1155	318	402	0	0	631	0	0
Stage 1	431	431	-	669	669	-	-	-	-	-	-	-
Stage 2	359	695	-	238	486	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	324	249	824	232	197	681	1160	-	-	954	-	-
Stage 1	621	630	-	416	457	-	-	-	-	-	-	-
Stage 2	677	502	-	747	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	223	822	188	177	679	1158	-	-	951	-	-
Mov Cap-2 Maneuver	229	223	-	188	177	-	-	-	-	-	-	-
Stage 1	593	592	-	397	436	-	-	-	-	-	-	-
Stage 2	513	479	-	636	519	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	25.7		17.6		0.6		1					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1158	-	-	318 185 679	951	-	-					
HCM Lane V/C Ratio	0.027	-	-	0.463 0.284 0.178	0.044	-	-					
HCM Control Delay (s/veh)	8.2	0.2	-	25.7 32 11.4	9	0.2	-					
HCM Lane LOS	A	A	-	D D B	A	A	-					
HCM 95th %tile Q (veh)	0.1	-	-	2.3 1.1 0.6	0.1	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	170	225	170	70	60	140
Future Volume (Veh/h)	170	225	170	70	60	140
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	179	237	179	74	63	147
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		544	366	603	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		544	366	603	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	89		42	85	83	86
cM capacity (veh/h)	1634		309	500	366	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	179	237	253	210		
Volume Left	179	0	179	0		
Volume Right	0	237	0	147		
cSH	1634	1700	348	683		
Volume to Capacity	0.11	0.14	0.73	0.31		
Queue Length 95th (ft)	9	0	137	33		
Control Delay (s/veh)	7.5	0.0	38.6	12.6		
Lane LOS	A		E	B		
Approach Delay (s/veh)	3.2		38.6	12.6		
Approach LOS			E	B		
Intersection Summary						
Average Delay			15.6			
Intersection Capacity Utilization			47.9%	ICU Level of Service	A	
Analysis Period (min)			15			

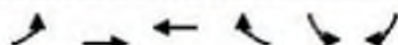
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	435	120	200	255	125	95	50	280	85	30	85
Future Volume (vph)	75	435	120	200	255	125	95	50	280	85	30	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1615	3147		3118	3214	1404		1638	2480	1474	1387	
Flt Permitted	0.58	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	991	3147		3118	3214	1404		1638	2480	1474	1387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	77	448	124	206	263	129	98	52	289	88	31	88
RTOR Reduction (vph)	0	25	0	0	0	60	0	0	207	0	66	0
Lane Group Flow (vph)	77	547	0	206	263	69	0	150	82	79	62	0
Confl. Peds. (#/hr)	14		1	1		14			10	10		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	27.8	18.6		9.2	22.1	42.1		13.2	22.4	20.0	20.0	
Effective Green, g (s)	27.8	18.6		9.2	22.1	42.1		13.2	22.4	20.0	20.0	
Actuated g/C Ratio	0.35	0.24		0.12	0.28	0.53		0.17	0.28	0.25	0.25	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	393	740		363	899	748		273	703	373	351	
v/s Ratio Prot	0.01	c0.17		c0.07	c0.08	0.02		c0.09	0.01	c0.05	0.04	
v/s Ratio Perm	0.05					0.03			0.02			
v/c Ratio	0.20	0.74		0.57	0.29	0.09		0.55	0.12	0.21	0.18	
Uniform Delay, d1	17.4	28.0		33.0	22.3	9.1		30.2	21.0	23.3	23.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.3		1.2	0.1	0.0		1.2	0.0	0.1	0.1	
Delay (s)	17.5	31.3		34.2	22.4	9.1		31.4	21.0	23.4	23.2	
Level of Service	B	C		C	C	A		C	C	C	C	
Approach Delay (s/veh)		29.7			23.6			24.5			23.2	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			25.9				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			79.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			56.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	500	510	390	50	115	530
Future Volume (veh/h)	500	510	390	50	115	530
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.95	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1736	1736	1750	1750	1750	1750
Adj Flow Rate, veh/h	526	537	411	53	121	558
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	606	1774	605	77	575	512
Arrive On Green	0.27	0.54	0.21	0.21	0.34	0.34
Sat Flow, veh/h	1654	3386	3031	376	1667	1483
Grp Volume(v), veh/h	526	537	231	233	121	558
Grp Sat Flow(s), veh/h/ln	1654	1650	1663	1657	1667	1483
Q Serve(g_s), s	21.1	7.8	11.1	11.3	4.5	30.0
Cycle Q Clear(g_c), s	21.1	7.8	11.1	11.3	4.5	30.0
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	606	1774	342	341	575	512
V/C Ratio(X)	0.87	0.30	0.68	0.69	0.21	1.09
Avail Cap(c_a), veh/h	722	1889	952	949	575	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	11.1	31.9	31.9	20.1	28.5
Incr Delay (d2), s/veh	9.2	0.1	1.7	1.8	0.1	66.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	2.6	4.5	4.5	1.7	29.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	27.8	11.2	33.6	33.8	20.3	95.2
LnGrp LOS	C	B	C	C	C	F
Approach Vol, veh/h		1063	464		679	
Approach Delay, s/veh		19.4	33.7		81.9	
Approach LOS		B	C		F	
Timer - Assigned Phs			4		6	7 8
Phs Duration (G+Y+Rc), s			52.0		35.0	28.9 23.1
Change Period (Y+Rc), s			5.2		5.0	5.0 5.2
Max Green Setting (Gmax), s			49.8		30.0	30.0 49.8
Max Q Clear Time (g_c+I1), s			9.8		32.0	23.1 13.3
Green Ext Time (p_c), s			3.1		0.0	0.8 2.3
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			41.6			
HCM 6th LOS			D			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰		↰	↰		↰	↰		↰	↰	
Traffic Volume (veh/h)	235	355	85	200	245	95	110	380	240	60	310	265
Future Volume (veh/h)	235	355	85	200	245	95	110	380	240	60	310	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	247	374	89	211	258	100	116	400	253	63	326	279
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	297	601	141	248	445	167	331	554	346	308	495	415
Arrive On Green	0.16	0.20	0.20	0.17	0.21	0.21	0.09	0.29	0.29	0.07	0.27	0.27
Sat Flow, veh/h	1874	3001	706	1481	2089	787	1620	1909	1193	1770	1822	1527
Grp Volume(v), veh/h	247	231	232	211	180	178	116	338	315	63	316	289
Grp Sat Flow(s),veh/h/ln	1874	1869	1838	1481	1477	1398	1620	1616	1486	1770	1766	1584
Q Serve(g_s), s	9.1	8.1	8.3	9.9	7.8	8.2	3.5	13.4	13.7	1.7	11.3	11.6
Cycle Q Clear(g_c), s	9.1	8.1	8.3	9.9	7.8	8.2	3.5	13.4	13.7	1.7	11.3	11.6
Prop In Lane	1.00		0.38	1.00		0.56	1.00		0.80	1.00		0.96
Lane Grp Cap(c), veh/h	297	374	368	248	314	298	331	469	431	308	480	431
V/C Ratio(X)	0.83	0.62	0.63	0.85	0.57	0.60	0.35	0.72	0.73	0.20	0.66	0.67
Avail Cap(c_a), veh/h	668	1058	1041	522	830	786	750	910	837	798	995	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	26.1	26.2	28.9	25.2	25.4	16.9	22.8	22.9	16.6	23.1	23.2
Incr Delay (d2), s/veh	2.3	2.0	2.1	3.2	2.3	2.7	0.2	2.5	2.9	0.1	1.9	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.6	3.7	3.6	2.8	2.8	1.2	5.0	4.7	0.6	4.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.5	28.1	28.3	32.1	27.6	28.1	17.1	25.3	25.8	16.7	25.0	25.4
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h	710			569			769			668		
Approach Delay, s/veh	29.3			29.4			24.3			24.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.4	16.8	19.1	11.5	24.1	15.9	20.0					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I), s	15.7	15.7	15.7	10.3	5.5	13.6	11.1	10.2				
Green Ext Time (p_c), s	0.1	5.1	0.2	3.6	0.1	4.8	0.3	3.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	26.7											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↷		↰	↷		↰	↷		↰	↷	
Traffic Volume (vph)	250	480	30	30	310	85	30	120	30	185	120	210
Future Volume (vph)	250	480	30	30	310	85	30	120	30	185	120	210
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1559	3091		1605	2889		3156	3149		1555	1575	
Flt Permitted	0.28	1.00		0.45	1.00		0.55	1.00		0.56	1.00	
Satd. Flow (perm)	461	3091		764	2889		1811	3149		913	1575	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	505	32	32	326	89	32	126	32	195	126	221
RTOR Reduction (vph)	0	3	0	0	22	0	0	14	0	0	34	0
Lane Group Flow (vph)	263	534	0	32	393	0	32	144	0	195	313	0
Confl. Peds. (#/hr)	3						3	2		4	4	
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.3	33.8		23.2	19.2		31.4	27.8		45.1	37.0	
Effective Green, g (s)	42.3	33.8		23.2	19.2		31.4	27.8		45.1	37.0	
Actuated g/C Ratio	0.44	0.35		0.24	0.20		0.32	0.29		0.47	0.38	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	410	1079		217	573		637	904		508	602	
v/s Ratio Prot	c0.12	0.17		0.01	0.14		0.00	0.05		c0.05	c0.20	
v/s Ratio Perm	c0.16			0.03			0.01			0.13		
v/c Ratio	0.64	0.49		0.15	0.69		0.05	0.16		0.38	0.52	
Uniform Delay, d1	19.3	24.8		28.5	36.0		22.3	25.8		15.9	23.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.1		0.3	2.7		0.0	0.4		0.2	0.3	
Delay (s)	21.9	24.9		28.9	38.7		22.4	26.1		16.1	23.4	
Level of Service	C	C		C	D		C	C		B	C	
Approach Delay (s/veh)		23.9			38.0			25.5			20.8	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			26.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			96.8			Sum of lost time (s)		18.8				
Intersection Capacity Utilization			68.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1005	1275	0	720	30	190	120	45	30	120	30
Future Volume (veh/h)	30	1005	1275	0	720	30	190	120	45	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	32	1058	0	0	758	32	200	126	47	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	328	1604		0	1452	647	777	520	186	721	451	111
Arrive On Green	0.50	0.50	0.00	0.00	0.50	0.50	0.09	0.23	0.23	0.03	0.17	0.17
Sat Flow, veh/h	692	3206	1430	0	2978	1294	3093	2295	821	3183	2602	641
Grp Volume(v), veh/h	32	1058	0	0	758	32	200	86	87	32	78	80
Grp Sat Flow(s),veh/h/ln	692	1603	1430	0	1451	1294	1546	1590	1526	1591	1637	1607
Q Serve(g_s), s	2.3	17.0	0.0	0.0	12.2	0.9	3.5	3.0	3.2	0.6	2.9	3.0
Cycle Q Clear(g_c), s	14.5	17.0	0.0	0.0	12.2	0.9	3.5	3.0	3.2	0.6	2.9	3.0
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.54	1.00		0.40
Lane Grp Cap(c), veh/h	328	1604		0	1452	647	777	361	346	721	284	279
V/C Ratio(X)	0.10	0.66		0.00	0.52	0.05	0.26	0.24	0.25	0.04	0.27	0.29
Avail Cap(c_a), veh/h	526	2521		0	2282	1018	1604	678	651	1053	698	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	12.9	0.0	0.0	11.7	8.9	20.2	21.9	21.9	22.0	24.8	24.9
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.0	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.3	0.0	0.0	3.4	0.9	1.2	1.1	1.1	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.8	13.7	0.0	0.0	11.9	8.9	20.3	22.1	22.2	22.0	25.3	25.4
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h	1090			790			373			190		
Approach Delay, s/veh	13.8			11.8			21.2			24.8		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s/7.8	21.2			40.2	11.5	17.5		40.2				
Change Period (Y+Rc), s 5.5	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s 29.5	29.5			54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+I), s 12.6	5.2			19.0	5.5	5.0		14.2				
Green Ext Time (p_c), s 0.0	0.8			15.6	0.5	0.8		4.8				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	15.1											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	360	95	280	525	30	155	75	505	140	45	40
Future Volume (vph)	35	360	95	280	525	30	155	75	505	140	45	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%				0%
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3117		1527	3135		1444	1503	1344	1577	1539	
Flt Permitted	0.32	1.00		0.30	1.00		0.70	0.88	1.00	0.67	1.00	
Satd. Flow (perm)	544	3117		475	3135		1063	1353	1344	1119	1539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	375	99	292	547	31	161	78	526	146	47	42
RTOR Reduction (vph)	0	25	0	0	3	0	0	0	271	0	22	0
Lane Group Flow (vph)	36	449	0	292	575	0	116	123	255	146	67	0
Confl. Peds. (#/hr)	4		4	4		4	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	39.0	21.4		39.0	34.7		50.9	50.9	50.9	50.9	50.9	
Effective Green, g (s)	39.0	21.4		39.0	34.7		50.9	50.9	50.9	50.9	50.9	
Actuated g/C Ratio	0.37	0.20		0.37	0.33		0.48	0.48	0.48	0.48	0.48	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	245	635		352	1036		515	655	651	542	746	
v/s Ratio Prot	0.01	0.14		c0.14	0.18						0.04	
v/s Ratio Perm	0.05			c0.17			0.11	0.09	c0.19	0.13		
v/c Ratio	0.15	0.71		0.83	0.55		0.23	0.19	0.39	0.27	0.09	
Uniform Delay, d1	21.6	38.9		34.1	28.8		15.6	15.3	17.2	16.0	14.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.7		14.2	0.7		1.0	0.6	1.8	1.2	0.2	
Delay (s)	21.7	42.6		48.3	29.5		16.7	16.0	19.0	17.3	14.8	
Level of Service	C	D		D	C		B	B	B	B	B	
Approach Delay (s/veh)		41.1			35.8			18.1			16.3	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			29.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			76.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection

Int Delay, s/veh 3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	75	70	140	65	45
Future Vol, veh/h	175	75	70	140	65	45
Conflicting Peds, #/hr	0	7	7	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	184	79	74	147	68	47

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	270
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.1	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.2	-
Pot Cap-1 Maneuver	-	1305	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1297	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.6	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	641	-	-	1297	-
HCM Lane V/C Ratio	0.181	-	-	0.057	-
HCM Control Delay (s/veh)	11.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.7	-	-	0.2	-

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	185	115	90	55	0
Future Vol, veh/h	10	185	115	90	55	0
Conflicting Peds, #/hr	11	0	0	11	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	195	121	95	58	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	227	0	0 400 180
Stage 1	-	-	- 180 -
Stage 2	-	-	- 220 -
Critical Hdwy	4.1	-	- 5.8 5.9
Critical Hdwy Stg 1	-	-	- 4.8 -
Critical Hdwy Stg 2	-	-	- 4.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1353	-	- 652 881
Stage 1	-	-	- 882 -
Stage 2	-	-	- 852 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1336	-	- 630 870
Mov Cap-2 Maneuver	-	-	- 676 -
Stage 1	-	-	- 863 -
Stage 2	-	-	- 842 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.4	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1336	-	-	-	676
HCM Lane V/C Ratio	0.008	-	-	-	0.086
HCM Control Delay (s/veh)	7.7	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←		←		←	←			←	←
Traffic Vol, veh/h	145	10	95	15	5	25	75	70	15	15	35	115
Future Vol, veh/h	145	10	95	15	5	25	75	70	15	15	35	115
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	153	11	100	16	5	26	79	74	16	16	37	121
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	9.8	8.9	9.3	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	94%	0%	33%	30%	0%
Vol Thru, %	0%	82%	6%	0%	11%	70%	0%
Vol Right, %	0%	18%	0%	100%	56%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	75	85	155	95	45	50	115
LT Vol	75	0	145	0	15	15	0
Through Vol	0	70	10	0	5	35	0
RT Vol	0	15	0	95	25	0	115
Lane Flow Rate	79	89	163	100	47	53	121
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.132	0.133	0.266	0.13	0.071	0.083	0.162
Departure Headway (Hd)	6	5.371	5.871	4.697	5.433	5.665	4.807
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	594	664	609	757	653	629	741
Service Time	3.766	3.136	3.637	2.462	3.517	3.429	2.571
HCM Lane V/C Ratio	0.133	0.134	0.268	0.132	0.072	0.084	0.163
HCM Control Delay, s/veh	9.7	9	10.8	8.2	8.9	8.9	8.5
HCM Lane LOS	A	A	B	A	A	A	A
HCM 95th-ile Q	0.5	0.5	1.1	0.4	0.2	0.3	0.6

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	80	590	350	90	80	80
Future Vol, veh/h	80	590	350	90	80	80
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	84	621	368	95	84	84

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	471	0	0 909 240
Stage 1	-	-	- 424 -
Stage 2	-	-	- 485 -
Critical Hdwy	4.12	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.21	-	- 3.5 3.3
Pot Cap-1 Maneuver	1094	-	- 278 767
Stage 1	-	-	- 634 -
Stage 2	-	-	- 591 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1086	-	- 242 762
Mov Cap-2 Maneuver	-	-	- 242 -
Stage 1	-	-	- 555 -
Stage 2	-	-	- 587 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.4	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1086	-	-	-	242	762
HCM Lane V/C Ratio	0.078	-	-	-	0.348	0.111
HCM Control Delay (s/veh)	8.6	0.4	-	-	27.6	10.3
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q (veh)	0.3	-	-	-	1.5	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	265	90	55	190	85	115	440	55	80	305	115
Future Volume (veh/h)	225	265	90	55	190	85	115	440	55	80	305	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	237	279	95	58	200	89	121	463	58	84	321	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	456	583	194	330	483	214	162	651	85	115	454	179
Arrive On Green	0.13	0.21	0.21	0.07	0.15	0.15	0.25	0.25	0.25	0.21	0.21	0.21
Sat Flow, veh/h	1861	2731	909	1667	3325	1471	648	2605	340	539	2124	840
Grp Volume(v), veh/h	237	188	186	58	200	89	339	0	303	283	0	243
Grp Sat Flow(s),veh/h/ln	1861	1856	1784	1667	1663	1471	1812	0	1781	1818	0	1685
Q Serve(g_s), s	7.9	6.6	6.9	1.9	4.1	4.1	12.9	0.0	11.5	10.9	0.0	9.9
Cycle Q Clear(g_c), s	7.9	6.6	6.9	1.9	4.1	4.1	12.9	0.0	11.5	10.9	0.0	9.9
Prop In Lane	1.00		0.51	1.00		1.00	0.36		0.19	0.30		0.50
Lane Grp Cap(c), veh/h	456	396	381	330	483	214	453	0	445	388	0	360
V/C Ratio(X)	0.52	0.47	0.49	0.18	0.41	0.42	0.75	0.00	0.68	0.73	0.00	0.67
Avail Cap(c_a), veh/h	637	935	899	383	1233	545	974	0	957	977	0	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	25.8	25.9	20.5	29.1	29.2	25.9	0.0	25.4	27.5	0.0	27.1
Incr Delay (d2), s/veh	0.3	0.7	0.7	0.1	0.4	1.0	1.9	0.0	1.4	2.0	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.9	2.9	0.7	1.6	1.5	5.5	0.0	4.8	4.7	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.8	26.4	26.6	20.6	29.6	30.1	27.8	0.0	26.8	29.4	0.0	28.7
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	611			347			642			526		
Approach Delay, s/veh	25.1			28.2			27.3			29.1		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	23.4			9.6			21.2			20.7		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	40.3			7.3			37.8			40.3		
Max Q Clear Time (g_c+I1), s	14.9			3.9			8.9			12.9		
Green Ext Time (p_c), s	3.4			0.0			1.9			2.8		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				27.3								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	15	55	25	15	105	30	540	40	30	270	105
Future Vol, veh/h	70	15	55	25	15	105	30	540	40	30	270	105
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	74	16	58	26	16	111	32	568	42	32	284	111
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	762	1084	201	872	1118	309	397	0	0	614	0	0
Stage 1	406	406	-	657	657	-	-	-	-	-	-	-
Stage 2	356	678	-	215	461	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	338	262	826	246	207	690	1165	-	-	968	-	-
Stage 1	640	643	-	423	462	-	-	-	-	-	-	-
Stage 2	679	509	-	770	566	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	248	239	824	203	189	688	1163	-	-	965	-	-
Mov Cap-2 Maneuver	248	239	-	203	189	-	-	-	-	-	-	-
Stage 1	612	614	-	404	441	-	-	-	-	-	-	-
Stage 2	526	486	-	667	541	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	23.4		15.8		0.6		0.8					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1163	-	-	340 198 688	965	-	-					
HCM Lane V/C Ratio	0.027	-	-	0.433 0.213 0.161	0.033	-	-					
HCM Control Delay (s/veh)	8.2	0.2	-	23.4 28 11.2	8.9	0.2	-					
HCM Lane LOS	A	A	-	C D B	A	A	-					
HCM 95th %tile Q (veh)	0.1	-	-	2.1 0.8 0.6	0.1	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	170	225	170	40	30	140
Future Volume (Veh/h)	170	225	170	40	30	140
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	179	237	179	42	32	147
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		528	366	603	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		528	366	603	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	89		47	92	91	86
cM capacity (veh/h)	1634		340	500	366	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	179	237	221	179		
Volume Left	179	0	179	0		
Volume Right	0	237	0	147		
cSH	1634	1700	362	804		
Volume to Capacity	0.11	0.14	0.61	0.22		
Queue Length 95th (ft)	9	0	97	21		
Control Delay (s/veh)	7.5	0.0	29.4	10.8		
Lane LOS	A		D	B		
Approach Delay (s/veh)	3.2		29.4	10.8		
Approach LOS			D	B		
Intersection Summary						
Average Delay	12.0					
Intersection Capacity Utilization	44.5%			ICU Level of Service		A
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	425	125	220	250	125	95	50	300	85	30	85
Future Volume (vph)	75	425	125	220	250	125	95	50	300	85	30	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1615	3142		3118	3214	1404		1638	2481	1474	1387	
Flt Permitted	0.59	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	1001	3142		3118	3214	1404		1638	2481	1474	1387	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	77	438	129	227	258	129	98	52	309	88	31	88
RTOR Reduction (vph)	0	27	0	0	0	60	0	0	220	0	66	0
Lane Group Flow (vph)	77	540	0	227	258	69	0	150	89	79	62	0
Confl. Peds. (#/hr)	14		1	1		14			10	10		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	28.3	18.6		9.7	22.7	42.7		13.2	22.9	20.0	20.0	
Effective Green, g (s)	28.3	18.6		9.7	22.7	42.7		13.2	22.9	20.0	20.0	
Actuated g/C Ratio	0.36	0.23		0.12	0.29	0.54		0.17	0.29	0.25	0.25	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	399	735		380	917	754		271	714	370	348	
v/s Ratio Prot	0.01	c0.17		c0.07	c0.08	0.02		c0.09	0.02	c0.05	0.04	
v/s Ratio Perm	0.06					0.03			0.02			
v/c Ratio	0.19	0.73		0.60	0.28	0.09		0.55	0.12	0.21	0.18	
Uniform Delay, d1	17.3	28.2		33.1	22.1	9.0		30.4	20.9	23.5	23.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.3		1.7	0.1	0.0		1.4	0.0	0.1	0.1	
Delay (s)	17.4	31.5		34.7	22.1	9.0		31.8	20.9	23.6	23.4	
Level of Service	B	C		C	C	A		C	C	C	C	
Approach Delay (s/veh)		29.8			24.0			24.5			23.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			26.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			79.5				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			57.5%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	485	505	30	0	380	50	35	15	0	115	15	515
Future Volume (veh/h)	485	505	30	0	380	50	35	15	0	115	15	515
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		0.95	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1736	1736	1723	1723	1750	1750	1723	1723	1723	1750	1723	1750
Adj Flow Rate, veh/h	511	532	33	0	400	53	38	16	0	121	16	542
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.95	0.92	0.95
Percent Heavy Veh, %	1	1	2	2	0	0	2	2	2	0	2	0
Cap, veh/h	605	1682	104	85	595	78	85	597	0	568	15	493
Arrive On Green	0.27	0.53	0.53	0.00	0.20	0.20	0.35	0.35	0.00	0.35	0.35	0.35
Sat Flow, veh/h	1654	3151	195	846	2932	385	851	1723	0	1419	42	1424
Grp Volume(v), veh/h	511	278	287	0	225	228	38	16	0	121	0	558
Grp Sat Flow(s),veh/h/ln	1654	1650	1696	846	1663	1655	851	1723	0	1419	0	1466
Q Serve(g_s), s	20.0	8.0	8.1	0.0	10.6	10.8	0.0	0.5	0.0	5.2	0.0	29.5
Cycle Q Clear(g_c), s	20.0	8.0	8.1	0.0	10.6	10.8	29.5	0.5	0.0	5.8	0.0	29.5
Prop In Lane	1.00		0.11	1.00		0.23	1.00		0.00	1.00		0.97
Lane Grp Cap(c), veh/h	605	881	906	85	337	336	85	597	0	568	0	508
V/C Ratio(X)	0.84	0.32	0.32	0.00	0.67	0.68	0.45	0.03	0.00	0.21	0.00	1.10
Avail Cap(c_a), veh/h	1184	1662	1709	189	543	540	85	597	0	568	0	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.3	11.1	11.1	0.0	31.3	31.4	42.6	18.4	0.0	20.3	0.0	27.8
Incr Delay (d2), s/veh	2.5	0.2	0.1	0.0	1.7	1.8	3.7	0.0	0.0	0.1	0.0	69.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	2.7	2.8	0.0	4.3	4.3	0.9	0.2	0.0	1.7	0.0	19.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.8	11.3	11.3	0.0	33.0	33.2	46.3	18.4	0.0	20.4	0.0	97.4
LnGrp LOS	C	B	B		C	C	D	B		C		F
Approach Vol, veh/h	1076			453			54			679		
Approach Delay, s/veh	15.8			33.1			38.0			83.7		
Approach LOS	B			C			D			F		
Timer - Assigned Phs	2			4			6			7		
Phs Duration (G+Y+Rc), s	34.5			50.7			34.5			28.2		
Change Period (Y+Rc), s	* 5			5.2			5.0			5.0		
Max Green Setting (Gmax), s	* 30			85.8			29.0			53.0		
Max Q Clear Time (g_c+I1), s	31.5			10.1			31.5			22.0		
Green Ext Time (p_c), s	0.0			2.9			0.0			1.2		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	40.2											
HCM 6th LOS	D											
Notes												

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	350	85	200	240	95	110	380	240	60	310	270
Future Volume (veh/h)	240	350	85	200	240	95	110	380	240	60	310	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	253	368	89	211	253	100	116	400	253	63	326	284
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	304	594	142	248	432	166	330	554	347	309	491	419
Arrive On Green	0.16	0.20	0.20	0.17	0.21	0.21	0.09	0.29	0.29	0.07	0.27	0.27
Sat Flow, veh/h	1874	2990	715	1481	2077	797	1620	1909	1193	1770	1806	1541
Grp Volume(v), veh/h	253	228	229	211	178	175	116	338	315	63	319	291
Grp Sat Flow(s),veh/h/ln	1874	1869	1836	1481	1477	1396	1620	1616	1486	1770	1766	1581
Q Serve(g_s), s	9.3	7.9	8.1	9.9	7.7	8.1	3.5	13.4	13.6	1.7	11.4	11.7
Cycle Q Clear(g_c), s	9.3	7.9	8.1	9.9	7.7	8.1	3.5	13.4	13.6	1.7	11.4	11.7
Prop In Lane	1.00		0.39	1.00		0.57	1.00		0.80	1.00		0.97
Lane Grp Cap(c), veh/h	304	371	365	248	307	290	330	469	432	309	480	430
V/C Ratio(X)	0.83	0.62	0.63	0.85	0.58	0.60	0.35	0.72	0.73	0.20	0.66	0.68
Avail Cap(c_a), veh/h	671	1062	1044	524	833	788	751	914	841	801	999	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	26.1	26.1	28.8	25.4	25.6	16.8	22.7	22.8	16.5	23.0	23.1
Incr Delay (d2), s/veh	2.3	2.0	2.1	3.2	2.4	2.9	0.2	2.5	2.9	0.1	1.9	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.6	3.6	3.6	2.8	2.8	1.2	5.0	4.7	0.6	4.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.2	28.1	28.3	32.0	27.9	28.4	17.1	25.2	25.6	16.6	24.9	25.4
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h	710			564			769			673		
Approach Delay, s/veh	29.2			29.6			24.2			24.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.4	16.7	19.0	11.5	24.1	16.1	19.6					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I), s	15.6	15.6	11.9	10.1	5.5	13.7	11.3	10.1				
Green Ext Time (p_c), s	0.1	5.1	0.2	3.6	0.1	4.8	0.3	3.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	26.7											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Poplar Way/33rd Avenue W & Alderwood Mall Blvd

Alderwood Mall Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	250	480	30	30	310	80	30	120	30	180	120	210
Future Volume (vph)	250	480	30	30	310	80	30	120	30	180	120	210
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1559	3091		1605	2894		3156	3149		1555	1575	
Flt Permitted	0.28	1.00		0.45	1.00		0.54	1.00		0.56	1.00	
Satd. Flow (perm)	466	3091		764	2894		1803	3149		913	1575	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	505	32	32	326	84	32	126	32	189	126	221
RTOR Reduction (vph)	0	3	0	0	21	0	0	14	0	0	34	0
Lane Group Flow (vph)	263	534	0	32	389	0	32	144	0	189	313	0
Confl. Peds. (#/hr)	3						3	2		4	4	2
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.0	33.5		23.0	19.0		31.4	27.8		44.9	36.8	
Effective Green, g (s)	42.0	33.5		23.0	19.0		31.4	27.8		44.9	36.8	
Actuated g/C Ratio	0.44	0.35		0.24	0.20		0.33	0.29		0.47	0.38	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	410	1075		217	570		638	909		508	601	
v/s Ratio Prot	c0.12	0.17		0.01	0.13		0.00	0.05		c0.05	c0.20	
v/s Ratio Perm	c0.16			0.03			0.01			0.13		
v/c Ratio	0.64	0.50		0.15	0.68		0.05	0.16		0.37	0.52	
Uniform Delay, d1	19.3	24.8		28.5	35.9		22.1	25.5		15.8	22.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.1		0.3	2.7		0.0	0.4		0.2	0.4	
Delay (s)	21.8	24.9		28.8	38.5		22.1	25.9		15.9	23.3	
Level of Service	C	C		C	D		C	C		B	C	
Approach Delay (s/veh)		23.9			37.8			25.3			20.7	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			26.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			96.3			Sum of lost time (s)			18.8			
Intersection Capacity Utilization			67.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1005	1275	0	720	30	190	120	45	30	120	30
Future Volume (veh/h)	30	1005	1275	0	720	30	190	120	45	30	120	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	32	1058	0	0	758	32	200	126	47	32	126	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	328	1604		0	1452	647	777	520	186	721	451	111
Arrive On Green	0.50	0.50	0.00	0.00	0.50	0.50	0.09	0.23	0.23	0.03	0.17	0.17
Sat Flow, veh/h	692	3206	1430	0	2978	1294	3093	2295	821	3183	2602	641
Grp Volume(v), veh/h	32	1058	0	0	758	32	200	86	87	32	78	80
Grp Sat Flow(s),veh/h/ln	692	1603	1430	0	1451	1294	1546	1590	1526	1591	1637	1607
Q Serve(g_s), s	2.3	17.0	0.0	0.0	12.2	0.9	3.5	3.0	3.2	0.6	2.9	3.0
Cycle Q Clear(g_c), s	14.5	17.0	0.0	0.0	12.2	0.9	3.5	3.0	3.2	0.6	2.9	3.0
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.54	1.00		0.40
Lane Grp Cap(c), veh/h	328	1604		0	1452	647	777	361	346	721	284	279
V/C Ratio(X)	0.10	0.66		0.00	0.52	0.05	0.26	0.24	0.25	0.04	0.27	0.29
Avail Cap(c_a), veh/h	526	2521		0	2282	1018	1604	678	651	1053	698	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	12.9	0.0	0.0	11.7	8.9	20.2	21.9	21.9	22.0	24.8	24.9
Incr Delay (d2), s/veh	0.2	0.8	0.0	0.0	0.2	0.0	0.1	0.2	0.3	0.0	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.3	0.0	0.0	3.4	0.9	1.2	1.1	1.1	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.8	13.7	0.0	0.0	11.9	8.9	20.3	22.1	22.2	22.0	25.3	25.4
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h	1090			790			373			190		
Approach Delay, s/veh	13.8			11.8			21.2			24.8		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s/7.8	21.2			40.2	11.5	17.5		40.2				
Change Period (Y+Rc), s 5.5	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s 29.5	29.5			54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+1.0), s 5.2	5.2			19.0	5.5	5.0		14.2				
Green Ext Time (p_c), s 0.0	0.0	0.8		15.6	0.5	0.8		4.8				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	15.1											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	375	85	280	540	30	140	75	505	140	45	40
Future Volume (vph)	35	375	85	280	540	30	140	75	505	140	45	40
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%				0%
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3129		1527	3136		1444	1506	1344	1577	1539	
Flt Permitted	0.31	1.00		0.29	1.00		0.70	0.90	1.00	0.68	1.00	
Satd. Flow (perm)	529	3129		471	3136		1063	1378	1344	1126	1539	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	391	89	292	562	31	146	78	526	146	47	42
RTOR Reduction (vph)	0	21	0	0	3	0	0	0	268	0	22	0
Lane Group Flow (vph)	36	459	0	292	591	0	108	116	258	146	67	0
Confl. Peds. (#/hr)	4		4	4		4	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	39.3	21.7		39.3	35.0		50.6	50.6	50.6	50.6	50.6	
Effective Green, g (s)	39.3	21.7		39.3	35.0		50.6	50.6	50.6	50.6	50.6	
Actuated g/C Ratio	0.37	0.21		0.37	0.33		0.48	0.48	0.48	0.48	0.48	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	242	646		353	1045		512	664	647	542	741	
v/s Ratio Prot	0.01	0.15		c0.14	0.19						0.04	
v/s Ratio Perm	0.05			c0.17			0.10	0.08	c0.19	0.13		
v/c Ratio	0.15	0.71		0.83	0.57		0.21	0.17	0.40	0.27	0.09	
Uniform Delay, d1	21.5	38.7		34.0	28.8		15.7	15.4	17.4	16.2	14.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.8		14.0	0.8		0.9	0.6	1.8	1.2	0.2	
Delay (s)	21.6	42.6		48.0	29.5		16.6	16.0	19.3	17.4	15.0	
Level of Service	C	D		D	C		B	B	B	B	B	
Approach Delay (s/veh)		41.1			35.6			18.4			16.5	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			29.5			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			76.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	3.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	25	20	30	25	15
Future Vol, veh/h	30	25	20	30	25	15
Conflicting Peds, #/hr	0	0	0	0	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	32	26	21	32	26	16
Major/Minor						
	Major1	Major2	Minor1			
Conflicting Flow All	0	0	58	0	120	50
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.1	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.2	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1559	-	873	1015
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1559	-	860	1011
Mov Cap-2 Maneuver	-	-	-	-	825	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	931	-
Approach						
	EB	WB	NB			
HCM Control Delay, s/v	0	2.9	9.3			
HCM LOS	A					
Minor Lane/Major Mvmt						
	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	886	-	-	1559	-	
HCM Lane V/C Ratio	0.048	-	-	0.014	-	
HCM Control Delay (s/veh)	9.3	-	-	7.3	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q (veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	60	55	25	15	0
Future Vol, veh/h	0	60	55	25	15	0
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	0	60	55	25	15	0
Major/Minor						
	Major1	Major2	Minor2			
Conflicting Flow All	83	0	-	0	131	71
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	60	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1527	-	-	-	887	1003
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1522	-	-	-	882	1000
Mov Cap-2 Maneuver	-	-	-	-	845	-
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	974	-
Approach						
	EB	WB	SB			
HCM Control Delay, s/v	0	0	9.3			
HCM LOS			A			
Minor Lane/Major Mvmt						
	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1522	-	-	-	845	
HCM Lane V/C Ratio	-	-	-	-	0.018	
HCM Control Delay (s/veh)	0	-	-	-	9.3	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q (veh)	0	-	-	-	0.1	

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↗			↕	↗
Traffic Vol, veh/h	25	20	35	0	10	0	25	15	15	15	35	45
Future Vol, veh/h	25	20	35	0	10	0	25	15	15	15	35	45
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	20	35	0	10	0	25	15	15	15	35	45
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	7.7	8	7.7	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	56%	0%	0%	30%	0%
Vol Thru, %	0%	50%	44%	0%	100%	70%	0%
Vol Right, %	0%	50%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	30	45	35	10	50	45
LT Vol	25	0	25	0	0	15	0
Through Vol	0	15	20	0	10	35	0
RT Vol	0	15	0	35	0	0	45
Lane Flow Rate	25	30	45	35	10	50	45
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.036	0.036	0.064	0.04	0.014	0.067	0.05
Departure Headway (Hd)	5.205	4.354	5.138	4.159	4.942	4.834	3.982
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	680	810	701	866	728	732	885
Service Time	3.001	2.149	2.839	1.859	2.944	2.622	1.77
HCM Lane V/C Ratio	0.037	0.037	0.064	0.04	0.014	0.068	0.051
HCM Control Delay, s/veh	8.2	7.3	8.2	7	8	8	7
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.1	0.1	0.2	0.1	0	0.2	0.2

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	15	185	765	20	10	20
Future Vol, veh/h	15	185	765	20	10	20
Conflicting Peds, #/hr	4	0	0	4	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	16	195	805	21	11	21

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	830	0	0 954 417
Stage 1	-	-	- 820 -
Stage 2	-	-	- 134 -
Critical Hdwy	4.28	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.29	-	- 3.5 3.3
Pot Cap-1 Maneuver	754	-	- 260 590
Stage 1	-	-	- 398 -
Stage 2	-	-	- 884 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	751	-	- 252 588
Mov Cap-2 Maneuver	-	-	- 252 -
Stage 1	-	-	- 387 -
Stage 2	-	-	- 881 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.8	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	751	-	-	-	252	588
HCM Lane V/C Ratio	0.021	-	-	-	0.042	0.036
HCM Control Delay (s/veh)	9.9	0.1	-	-	19.9	11.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	55	170	5	30	15	55	240	35	20	390	50
Future Volume (veh/h)	50	55	170	5	30	15	55	240	35	20	390	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	53	58	179	5	32	16	58	253	37	21	411	53
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	522	451	401	309	585	259	105	476	73	32	657	89
Arrive On Green	0.07	0.24	0.24	0.01	0.18	0.18	0.19	0.19	0.19	0.22	0.22	0.22
Sat Flow, veh/h	1847	1843	1638	1589	3169	1402	548	2492	379	150	3042	411
Grp Volume(v), veh/h	53	58	179	5	32	16	184	0	164	258	0	227
Grp Sat Flow(s),veh/h/ln	1847	1843	1638	1589	1585	1402	1735	0	1684	1837	0	1765
Q Serve(g_s), s	1.3	1.4	5.3	0.1	0.5	0.5	5.5	0.0	5.0	7.3	0.0	6.6
Cycle Q Clear(g_c), s	1.3	1.4	5.3	0.1	0.5	0.5	5.5	0.0	5.0	7.3	0.0	6.6
Prop In Lane	1.00		1.00	1.00		1.00	0.32		0.23	0.08		0.23
Lane Grp Cap(c), veh/h	522	451	401	309	585	259	332	0	322	397	0	381
V/C Ratio(X)	0.10	0.13	0.45	0.02	0.05	0.06	0.55	0.00	0.51	0.65	0.00	0.60
Avail Cap(c_a), veh/h	1213	1125	1000	999	1656	733	922	0	895	1138	0	1093
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	16.8	18.3	16.2	19.2	19.2	20.9	0.0	20.7	20.4	0.0	20.1
Incr Delay (d2), s/veh	0.0	0.1	0.6	0.0	0.0	0.1	1.1	0.0	0.9	1.3	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.6	1.9	0.0	0.2	0.2	2.1	0.0	1.9	3.0	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.4	16.9	18.8	16.2	19.2	19.3	21.9	0.0	21.6	21.7	0.0	21.2
LnGrp LOS	B	B	B	B	B	B	C		C	C		C
Approach Vol, veh/h	290			53			348			485		
Approach Delay, s/veh	18.0			18.9			21.8			21.5		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	15.6			5.2			19.2			17.0		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	30.3			25.3			34.8			35.3		
Max Q Clear Time (g_c+I1), s	7.5			2.1			7.3			9.3		
Green Ext Time (p_c), s	1.7			0.0			1.2			2.5		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				20.6								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	5	0	0	10	0	5	5	115	10	15	295	10
Future Vol, veh/h	5	0	0	10	0	5	5	115	10	15	295	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	3	3	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	11	0	5	5	121	11	16	311	11

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	427	501	168	328	501	69	329	0
Stage 1	356	356	-	140	140	-	-	-
Stage 2	71	145	-	188	361	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-
Pot Cap-1 Maneuver	359	333	619	607	475	986	1192	-
Stage 1	454	461	-	854	785	-	-	-
Stage 2	715	602	-	801	629	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	350	324	615	597	462	984	1184	-
Mov Cap-2 Maneuver	350	324	-	597	462	-	-	-
Stage 1	449	452	-	848	780	-	-	-
Stage 2	708	598	-	791	616	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v15.4		10.3	0.3	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1184	-	-	350	597	984	1451	-
HCM Lane V/C Ratio	0.004	-	-	0.015	0.018	0.005	0.011	-
HCM Control Delay (s/veh)	8.1	0	-	15.4	11.1	8.7	7.5	0
HCM Lane LOS	A	A	-	C	B	A	A	A
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	0	-

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	65	55	10	15	20
Future Volume (Veh/h)	45	65	55	10	15	20
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	45	65	55	10	15	20
Pedestrians				4	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		122	95	160	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		122	95	160	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	97		93	99	98	98
cM capacity (veh/h)	1607		792	762	697	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	45	65	65	35		
Volume Left	45	0	55	0		
Volume Right	0	65	0	20		
cSH	1607	1700	787	867		
Volume to Capacity	0.03	0.04	0.08	0.04		
Queue Length 95th (ft)	2	0	7	3		
Control Delay (s/veh)	7.3	0.0	10.0	9.3		
Lane LOS	A		A	A		
Approach Delay (s/veh)	3.0		10.0	9.3		
Approach LOS			A	A		
Intersection Summary						
Average Delay			6.2			
Intersection Capacity Utilization			21.8%	ICU Level of Service	A	
Analysis Period (min)			15			

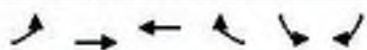
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	80	25	35	100	40	5	5	15	65	10	75
Future Volume (vph)	45	80	25	35	100	40	5	5	15	65	10	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85		1.00	0.85	1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.99	
Satd. Flow (prot)	1543	2988		3027	3121	1374		1423	2152	1431	1318	
Flt Permitted	0.68	1.00		0.95	1.00	1.00		0.97	1.00	0.95	0.99	
Satd. Flow (perm)	1114	2988		3027	3121	1374		1423	2152	1431	1318	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	84	26	37	105	42	5	5	16	68	11	79
RTOR Reduction (vph)	0	18	0	0	0	17	0	0	15	0	56	0
Lane Group Flow (vph)	47	92	0	37	105	25	0	10	1	61	41	0
Confl. Peds. (#/hr)	9		1	1		9			4	4		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D,P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	18.6	16.4		2.2	16.3	32.9		2.8	5.0	16.6	16.6	
Effective Green, g (s)	18.6	16.4		2.2	16.3	32.9		2.8	5.0	16.6	16.6	
Actuated g/C Ratio	0.33	0.29		0.04	0.29	0.59		0.05	0.09	0.30	0.30	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	387	875		118	908	807		71	192	424	390	
v/s Ratio Prot	0.00	0.03		c0.01	0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	c0.04					0.01			0.00			
v/c Ratio	0.12	0.10		0.31	0.11	0.03		0.14	0.00	0.14	0.10	
Uniform Delay, d1	12.8	14.4		26.1	14.5	4.8		25.4	23.2	14.4	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.5	0.0	0.0		0.3	0.0	0.0	0.0	
Delay (s)	12.9	14.4		26.7	14.5	4.8		25.7	23.2	14.5	14.3	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		14.0			14.8			24.2			14.4	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		14.9										
HCM 2000 Volume to Capacity ratio		0.14										
Actuated Cycle Length (s)		56.0										
Intersection Capacity Utilization		41.7%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall No-Build AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↰	↰		↰	↰
Traffic Volume (veh/h)	110	115	165	15	25	485
Future Volume (veh/h)	110	115	165	15	25	485
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97			0.95	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No		No		
Adj Sat Flow, veh/h/ln	1668	1668	1682	1682	1750	1750
Adj Flow Rate, veh/h	116	121	174	16	26	511
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	5	0	0
Cap, veh/h	454	1229	546	50	627	558
Arrive On Green	0.09	0.39	0.19	0.19	0.38	0.38
Sat Flow, veh/h	1589	3253	3033	268	1667	1483
Grp Volume(v), veh/h	116	121	93	97	26	511
Grp Sat Flow(s), veh/h/ln	1589	1585	1598	1618	1667	1483
Q Serve(g_s), s	2.5	1.1	2.2	2.2	0.4	14.2
Cycle Q Clear(g_c), s	2.5	1.1	2.2	2.2	0.4	14.2
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	454	1229	296	300	627	558
V/C Ratio(X)	0.26	0.10	0.32	0.32	0.04	0.92
Avail Cap(c_a), veh/h	1418	3651	1840	1864	1156	1029
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	8.4	15.2	15.3	8.5	12.8
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.7	0.3	0.7	0.7	0.1	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	12.5	8.4	15.5	15.5	8.6	15.5
LnGrp LOS	B	A	B	B	A	B
Approach Vol, veh/h		237	190		537	
Approach Delay, s/veh		10.4	15.5		15.1	
Approach LOS		B	B		B	
Timer - Assigned Phs			4		6	7
Phs Duration (G+Y+Rc), s			22.0		21.3	8.8
Change Period (Y+Rc), s			5.2		5.0	5.0
Max Green Setting (Gmax), s			49.8		30.0	30.0
Max Q Clear Time (g_c+I1), s			3.1		16.2	4.5
Green Ext Time (p_c), s			0.1		0.1	0.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			14.0			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall No-Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	80	140	130	30	75	25	70	105	120	95	505	245
Future Volume (veh/h)	80	140	130	30	75	25	70	105	120	95	505	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	82	143	133	31	77	26	71	107	122	97	515	250
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	234	378	324	48	239	77	357	520	462	617	779	377
Arrive On Green	0.13	0.20	0.20	0.03	0.11	0.11	0.08	0.33	0.33	0.10	0.34	0.34
Sat Flow, veh/h	1847	1874	1805	1416	2094	673	1581	1577	1403	1744	2271	1098
Grp Volume(v), veh/h	82	140	136	31	51	52	71	107	122	97	394	371
Grp Sat Flow(s), veh/h/ln	1847	1843	1637	1416	1412	1355	1581	1577	1403	1744	1739	1630
Q Serve(g_s), s	2.3	3.8	4.1	1.2	1.9	2.0	1.6	2.8	3.7	1.9	11.1	11.1
Cycle Q Clear(g_c), s	2.3	3.8	4.1	1.2	1.9	2.0	1.6	2.8	3.7	1.9	11.1	11.1
Prop In Lane	1.00		0.98	1.00		0.50	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	234	372	330	48	161	154	357	520	462	617	596	559
V/C Ratio(X)	0.35	0.38	0.41	0.64	0.31	0.34	0.20	0.21	0.26	0.16	0.66	0.66
Avail Cap(c_a), veh/h	819	1297	1152	620	987	947	908	1105	983	1201	1218	1142
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.9	19.8	20.0	27.4	23.4	23.5	11.2	13.9	14.2	10.2	16.1	16.1
Incr Delay (d2), s/veh	0.3	0.8	1.0	5.3	1.6	1.8	0.1	0.2	0.4	0.0	1.5	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	0	1.6	1.6	0.5	0.7	0.7	0.5	0.9	1.1	0.6	4.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.3	20.6	21.0	32.7	25.0	25.3	11.3	14.1	14.5	10.2	17.6	17.7
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		358			134			300			862	
Approach Delay, s/veh		21.4			26.9			13.6			16.8	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.7	23.7	6.8	16.4	9.9	24.4	11.8	11.4				
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gm), s	40.3	25.2	* 41	24.8	40.3	25.5	40.2					
Max Q Clear Time (g_c+I), s	5.7	3.2	6.1	3.6	13.1	4.3	4.0					
Green Ext Time (p_c), s	0.1	1.7	0.0	2.2	0.1	6.3	0.1	0.8				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			18.0									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	240	150	35	35	675	90	35	135	35	45	135	115
Future Volume (vph)	240	150	35	35	675	90	35	135	35	45	135	115
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2860		1575	2882		3162	3159		1499	1561	
Flt Permitted	0.16	1.00		0.62	1.00		0.58	1.00		0.49	1.00	
Satd. Flow (perm)	249	2860		1043	2882		1939	3159		780	1561	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	158	37	37	711	95	37	142	37	47	142	121
RTOR Reduction (vph)	0	13	0	0	9	0	0	22	0	0	26	0
Lane Group Flow (vph)	253	182	0	37	797	0	37	157	0	47	237	0
Confl. Peds. (#/hr)	1					1				1		4
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	54.3	46.1		35.4	31.7		19.7	16.1		31.4	23.3	
Effective Green, g (s)	54.3	46.1		35.4	31.7		19.7	16.1		31.4	23.3	
Actuated g/C Ratio	0.57	0.48		0.37	0.33		0.21	0.17		0.33	0.25	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	372	1386		408	960		447	534		337	382	
v/s Ratio Prot	c0.13	0.06		0.00	c0.28		0.00	0.05		c0.02	c0.15	
v/s Ratio Perm	0.26			0.03			0.01			0.03		
v/c Ratio	0.68	0.13		0.09	0.83		0.08	0.29		0.13	0.62	
Uniform Delay, d1	14.6	13.4		19.1	29.2		30.2	34.5		22.1	31.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.0		0.0	5.9		0.0	0.1		0.0	2.2	
Delay (s)	18.6	13.4		19.2	35.1		30.3	34.6		22.2	34.2	
Level of Service	B	B		B	D		C	C		C	C	
Approach Delay (s/veh)		16.4			34.4			33.9			32.4	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		29.6			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.71										
Actuated Cycle Length (s)		95.1			Sum of lost time (s)			18.8				
Intersection Capacity Utilization		73.0%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall No-Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↖	↗		↖	↗	↗	↖		↗	↖	
Traffic Volume (veh/h)	35	680	1135	0	830	35	170	135	20	35	135	35
Future Volume (veh/h)	35	680	1135	0	830	35	170	135	20	35	135	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	37	716	0	0	874	37	179	142	21	37	142	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	249	1452		0	1335	596	784	673	98	797	490	124
Arrive On Green	0.46	0.46	0.00	0.00	0.46	0.46	0.08	0.25	0.25	0.04	0.19	0.19
Sat Flow, veh/h	585	3129	1395	0	2952	1283	2967	2673	388	3183	2587	655
Grp Volume(v), veh/h	37	716	0	0	874	37	179	80	83	37	88	91
Grp Sat Flow(s), veh/h/ln	585	1564	1395	0	1438	1283	1483	1525	1536	1591	1637	1605
Q Serve(g_s), s	3.3	10.1	0.0	0.0	14.8	1.0	2.9	2.6	2.7	0.6	2.9	3.1
Cycle Q Clear(g_c), s	18.1	10.1	0.0	0.0	14.8	1.0	2.9	2.6	2.7	0.6	2.9	3.1
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.25	1.00		0.41
Lane Grp Cap(c), veh/h	249	1452		0	1335	596	784	384	386	797	310	304
V/C Ratio(X)	0.15	0.49		0.00	0.65	0.06	0.23	0.21	0.21	0.05	0.28	0.30
Avail Cap(c_a), veh/h	433	2440		0	2243	1001	1682	711	715	1205	788	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	11.8	0.0	0.0	13.1	9.4	17.5	18.7	18.7	19.1	22.0	22.0
Incr Delay (d2), s/veh	0.5	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4	3.0	0.0	0.0	4.0	0.0	0.9	0.9	0.9	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.5	12.2	0.0	0.0	13.5	9.4	17.7	18.9	19.0	19.2	22.5	22.6
LnGrp LOS	C	B			B	A	B	B	B	B	C	C
Approach Vol, veh/h		753			911			342			216	
Approach Delay, s/veh		12.6			13.3			18.3			22.0	
Approach LOS		B			B			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4			35.0	10.8	17.5		35.0				
Change Period (Y+Rc), s	5.5			5.6	5.5	* 5.5		5.6				
Max Green Setting (Gm), s	29.5			49.4	24.5	* 31		49.4				
Max Q Clear Time (g_c+2), s	4.7			20.1	4.9	5.1		16.8				
Green Ext Time (p_c), s	0.0	0.7		9.3	0.4	1.0		5.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			14.7									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall No-Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	135	30	290	300	15	15	10	90	15	5	5
Future Volume (vph)	5	135	30	290	300	15	15	10	90	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.99	0.99	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2958		1513	3107		1355	1419	1269	1515	1462	
Flt Permitted	0.55	1.00		0.64	1.00		0.75	0.96	1.00	0.74	1.00	
Satd. Flow (perm)	881	2958		1022	3107		1072	1378	1269	1193	1462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	142	32	305	316	16	16	11	95	16	5	5
RTOR Reduction (vph)	0	19	0	0	3	0	0	0	74	0	4	0
Lane Group Flow (vph)	5	155	0	305	329	0	13	14	21	16	6	0
Confl. Peds. (#/hr)	8		1	1		8	9		1	1		9
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D,P+P	NA		D,P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	27.3	16.9		27.3	26.4		12.0	12.0	12.0	12.0	12.0	
Effective Green, g (s)	27.3	16.9		27.3	26.4		12.0	12.0	12.0	12.0	12.0	
Actuated g/C Ratio	0.50	0.31		0.50	0.49		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	452	918		606	1507		236	303	279	263	322	
v/s Ratio Prot	0.00	0.05		c0.10	0.11						0.00	
v/s Ratio Perm	0.01			c0.16			0.01	0.01	c0.02	0.01		
v/c Ratio	0.01	0.16		0.50	0.21		0.05	0.04	0.07	0.06	0.01	
Uniform Delay, d1	6.7	13.6		8.4	8.0		16.7	16.6	16.8	16.7	16.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.0		0.0	0.0	0.0	0.0	0.0	
Delay (s)	6.7	13.7		8.6	8.1		16.7	16.7	16.8	16.7	16.6	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.5			8.4			16.8			16.7	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			54.4			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			49.4%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	70	20	20	25	0	25	0	15	35	0	40
Future Vol, veh/h	0	70	20	20	25	0	25	0	15	35	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	5	5	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	95	95	92	95	92	95	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	3	3	3	2	2	2
Mvmt Flow	0	74	21	21	26	0	26	0	16	38	0	43
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	95	0	0	176	153	90	166	163	27
Stage 1	-	-	-	-	-	-	85	85	-	68	68	-
Stage 2	-	-	-	-	-	-	91	68	-	98	95	-
Critical Hdwy	-	-	-	4.1	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1512	-	0	784	737	965	798	729	1048
Stage 1	0	-	-	-	-	0	920	822	-	942	838	-
Stage 2	0	-	-	-	-	0	914	836	-	908	816	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1512	-	-	742	727	961	773	719	1047
Mov Cap-2 Maneuver	-	-	-	-	-	-	743	707	-	761	697	-
Stage 1	-	-	-	-	-	-	920	822	-	942	826	-
Stage 2	-	-	-	-	-	-	863	824	-	889	816	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			3.3			9.7			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1						
Capacity (veh/h)	812	-	-	1512	-	891						
HCM Lane V/C Ratio	0.052	-	-	0.014	-	0.091						
HCM Control Delay (s/veh)	9.7	-	-	7.4	0	9.4						
HCM Lane LOS	A	-	-	A	A	A						
HCM 95th %tile Q (veh)	0.2	-	-	0	-	0.3						

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	→		←	→	←	→			←	→
Traffic Vol, veh/h	80	20	55	0	10	0	25	35	15	15	35	60
Future Vol, veh/h	80	20	55	0	10	0	25	35	15	15	35	60
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	80	20	55	0	10	0	25	35	15	15	35	60
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	8.4	8.2	8.1	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	80%	0%	0%	30%	0%
Vol Thru, %	0%	70%	20%	0%	100%	70%	0%
Vol Right, %	0%	30%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	50	100	55	10	50	60
LT Vol	25	0	80	0	0	15	0
Through Vol	0	35	20	0	10	35	0
RT Vol	0	15	0	55	0	0	60
Lane Flow Rate	25	50	100	55	10	50	60
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.038	0.067	0.149	0.065	0.014	0.071	0.071
Departure Headway (Hd)	5.52	4.807	5.352	4.249	5.127	5.142	4.289
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	651	748	672	845	700	699	838
Service Time	3.234	2.521	3.066	1.963	3.147	2.856	2.003
HCM Lane V/C Ratio	0.038	0.067	0.149	0.065	0.014	0.072	0.072
HCM Control Delay, s/veh	8.5	7.9	9	7.3	8.2	8.2	7.3
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.1	0.2	0.5	0.2	0	0.2	0.2

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	20	180	745	35	25	25
Future Vol, veh/h	20	180	745	35	25	25
Conflicting Peds, #/hr	4	0	0	4	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	21	189	784	37	26	26

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	825	0	0	948	415
Stage 1	-	-	-	807	-
Stage 2	-	-	-	141	-
Critical Hdwy	4.28	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	5.8	-
Follow-up Hdwy	2.29	-	-	3.5	3.3
Pot Cap-1 Maneuver	758	-	-	263	592
Stage 1	-	-	-	404	-
Stage 2	-	-	-	877	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	755	-	-	253	590
Mov Cap-2 Maneuver	-	-	-	253	-
Stage 1	-	-	-	390	-
Stage 2	-	-	-	874	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.1	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	755	-	-	-	253	590
HCM Lane V/C Ratio	0.028	-	-	-	0.104	0.045
HCM Control Delay (s/veh)	9.9	0.1	-	-	20.9	11.4
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.3	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	70	170	15	45	35	55	210	45	40	355	50
Future Volume (veh/h)	50	70	170	15	45	35	55	210	45	40	355	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	53	74	179	16	47	37	58	221	47	42	374	53
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	510	418	371	314	585	260	112	442	98	66	610	91
Arrive On Green	0.07	0.23	0.23	0.03	0.18	0.18	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1847	1843	1637	1589	3169	1407	582	2304	509	309	2859	424
Grp Volume(v), veh/h	53	74	179	16	47	37	173	0	153	249	0	220
Grp Sat Flow(s),veh/h/ln	1847	1843	1637	1589	1585	1407	1733	0	1663	1829	0	1763
Q Serve(g_s), s	1.2	1.8	5.4	0.4	0.7	1.2	5.1	0.0	4.7	7.0	0.0	6.4
Cycle Q Clear(g_c), s	1.2	1.8	5.4	0.4	0.7	1.2	5.1	0.0	4.7	7.0	0.0	6.4
Prop In Lane	1.00		1.00	1.00		1.00	0.34		0.31	0.17		0.24
Lane Grp Cap(c), veh/h	510	418	371	314	585	260	332	0	319	391	0	376
V/C Ratio(X)	0.10	0.18	0.48	0.05	0.08	0.14	0.52	0.00	0.48	0.64	0.00	0.59
Avail Cap(c_a), veh/h	879	643	572	699	1107	491	1079	0	1035	1784	0	1719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	17.7	19.0	16.2	19.1	19.4	20.6	0.0	20.4	20.3	0.0	20.0
Incr Delay (d2), s/veh	0.0	0.1	0.7	0.0	0.0	0.2	0.9	0.0	0.8	1.3	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	1.9	0.1	0.2	0.4	2.0	0.0	1.7	2.9	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.3	17.8	19.8	16.2	19.2	19.6	21.5	0.0	21.2	21.6	0.0	21.1
LnGrp LOS	B	B	B	B	B	B	C		C	C		C
Approach Vol, veh/h	306			100			326			469		
Approach Delay, s/veh	18.7			18.8			21.4			21.4		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	15.6			6.3			18.1			16.8		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	35.3			15.3			19.8			55.3		
Max Q Clear Time (g_c+I1), s	7.1			2.4			7.4			9.0		
Green Ext Time (p_c), s	1.6			0.0			1.0			2.5		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				20.5								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+			+	
Traffic Vol, veh/h	5	0	0	10	0	5	5	130	10	15	310	10
Future Vol, veh/h	5	0	0	10	0	5	5	130	10	15	310	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	3	3	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	11	0	5	5	137	11	16	326	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	450	532	176	351	532	77	344	0	0	151	0	0
Stage 1	371	371	-	156	156	-	-	-	-	-	-	-
Stage 2	79	161	-	195	376	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	344	317	610	584	456	975	1176	-	-	1435	-	-
Stage 1	443	452	-	836	772	-	-	-	-	-	-	-
Stage 2	706	590	-	794	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	335	308	606	574	443	973	1168	-	-	1432	-	-
Mov Cap-2 Maneuver	335	308	-	574	443	-	-	-	-	-	-	-
Stage 1	438	443	-	830	767	-	-	-	-	-	-	-
Stage 2	699	586	-	783	607	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	15.9		10.5		0.3		0.3					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1168	-	-	335 574 973	1432	-	-					
HCM Lane V/C Ratio	0.005	-	-	0.016 0.018 0.005	0.011	-	-					
HCM Control Delay (s/veh)	8.1	0	-	15.9 11.4 8.7	7.5	0	-					
HCM Lane LOS	A	A	-	C B A	A	A	-					
HCM 95th %tile Q (veh)	0	-	-	0 0.1 0	0	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	105	95	10	15	20
Future Volume (Veh/h)	45	105	95	10	15	20
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	45	105	95	10	15	20
Pedestrians				4	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		122	95	200	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		122	95	200	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	97		88	99	98	98
cM capacity (veh/h)	1607		791	762	662	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	45	105	105	35		
Volume Left	45	0	95	0		
Volume Right	0	105	0	20		
cSH	1607	1700	788	844		
Volume to Capacity	0.03	0.06	0.13	0.04		
Queue Length 95th (ft)	2	0	11	3		
Control Delay (s/veh)	7.3	0.0	10.3	9.5		
Lane LOS	A		B	A		
Approach Delay (s/veh)	2.2		10.3	9.5		
Approach LOS			B	A		
Intersection Summary						
Average Delay				6.0		
Intersection Capacity Utilization				24.2%	ICU Level of Service	A
Analysis Period (min)				15		

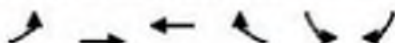
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	75	20	35	100	40	5	5	15	60	10	75
Future Volume (vph)	45	75	20	35	100	40	5	5	15	60	10	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1543	3001		3027	3121	1375		1423	2152	1431	1316	
Flt Permitted	0.69	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1114	3001		3027	3121	1375		1423	2152	1431	1316	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	79	21	37	105	42	5	5	16	63	11	79
RTOR Reduction (vph)	0	15	0	0	0	17	0	0	15	0	55	0
Lane Group Flow (vph)	47	85	0	37	105	25	0	10	1	57	41	0
Confl. Peds. (#/hr)	9		1	1		9			4	4		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	17.8	15.7		2.1	15.6	32.3		2.7	4.8	16.7	16.7	
Effective Green, g (s)	17.8	15.7		2.1	15.6	32.3		2.7	4.8	16.7	16.7	
Actuated g/C Ratio	0.32	0.28		0.04	0.28	0.59		0.05	0.09	0.30	0.30	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	376	853		115	882	804		69	187	432	398	
v/s Ratio Prot	0.00	0.03		c0.01	0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	c0.04					0.01			0.00			
v/c Ratio	0.13	0.10		0.32	0.12	0.03		0.14	0.01	0.13	0.10	
Uniform Delay, d1	13.1	14.5		25.9	14.7	4.8		25.1	23.0	14.0	13.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.6	0.0	0.0		0.4	0.0	0.1	0.0	
Delay (s)	13.1	14.6		26.4	14.7	4.8		25.5	23.0	14.0	13.9	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		14.1			14.8			24.0			13.9	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		14.8			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.14										
Actuated Cycle Length (s)		55.2			Sum of lost time (s)			18.0				
Intersection Capacity Utilization		41.7%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↶	↶		↰	↰
Traffic Volume (veh/h)	115	115	160	15	25	485
Future Volume (veh/h)	115	115	160	15	25	485
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97			0.95	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No		No		
Adj Sat Flow, veh/h/ln	1668	1668	1682	1682	1750	1750
Adj Flow Rate, veh/h	121	121	168	16	26	511
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	5	0	0
Cap, veh/h	458	1232	543	51	627	558
Arrive On Green	0.09	0.39	0.18	0.18	0.38	0.38
Sat Flow, veh/h	1589	3253	3022	276	1667	1483
Grp Volume(v), veh/h	121	121	90	94	26	511
Grp Sat Flow(s), veh/h/ln	1589	1585	1598	1616	1667	1483
Q Serve(g_s), s	2.6	1.1	2.1	2.2	0.4	14.2
Cycle Q Clear(g_c), s	2.6	1.1	2.1	2.2	0.4	14.2
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	458	1232	295	299	627	558
V/C Ratio(X)	0.26	0.10	0.31	0.31	0.04	0.92
Avail Cap(c_a), veh/h	867	5101	1835	1856	1729	1539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.5	8.4	15.3	15.3	8.6	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.7	0.7	0.1	10.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	12.6	8.4	15.5	15.5	8.6	15.5
LnGrp LOS	B	A	B	B	A	B
Approach Vol, veh/h		242	184		537	
Approach Delay, s/veh		10.5	15.5		15.2	
Approach LOS		B	B		B	
Timer - Assigned Phs			4	6	7	8
Phs Duration (G+Y+Rc), s			22.1	21.3	8.8	13.2
Change Period (Y+Rc), s			5.2	5.0	5.0	5.2
Max Green Setting (Gmax), s			69.8	45.0	15.0	49.8
Max Q Clear Time (g_c+I1), s			3.1	16.2	4.6	4.2
Green Ext Time (p_c), s			0.1	0.1	0.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			14.1			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	145	125	40	85	30	70	105	125	95	495	240
Future Volume (veh/h)	80	145	125	40	85	30	70	105	125	95	495	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	82	148	128	41	87	31	71	107	128	97	505	245
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	233	380	304	59	241	82	361	524	466	612	784	379
Arrive On Green	0.13	0.20	0.20	0.04	0.12	0.12	0.08	0.33	0.33	0.10	0.35	0.35
Sat Flow, veh/h	1847	1937	1552	1416	2063	699	1581	1577	1403	1744	2272	1097
Grp Volume(v), veh/h	82	140	136	41	58	60	71	107	128	97	386	364
Grp Sat Flow(s),veh/h/ln	1847	1843	1646	1416	1412	1350	1581	1577	1403	1744	1739	1630
Q Serve(g_s), s	2.4	3.9	4.2	1.7	2.2	2.4	1.6	2.8	3.9	2.0	10.9	11.0
Cycle Q Clear(g_c), s	2.4	3.9	4.2	1.7	2.2	2.4	1.6	2.8	3.9	2.0	10.9	11.0
Prop In Lane	1.00		0.94	1.00		0.52	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	233	362	323	59	165	158	361	524	466	612	600	562
V/C Ratio(X)	0.35	0.39	0.42	0.70	0.35	0.38	0.20	0.20	0.27	0.16	0.64	0.65
Avail Cap(c_a), veh/h	492	966	863	370	733	700	633	1769	1574	1039	2101	1969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	20.4	20.5	27.5	23.7	23.8	11.2	13.9	14.3	10.3	16.0	16.1
Incr Delay (d2), s/veh	0.3	0.8	1.0	5.4	1.8	2.1	0.1	0.2	0.4	0.0	1.4	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	1.6	0.6	0.8	0.8	0.5	0.9	1.1	0.6	4.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.6	21.2	21.5	32.9	25.5	25.9	11.2	14.2	14.7	10.3	17.4	17.6
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	358			159			306			847		
Approach Delay, s/veh	21.9			27.6			13.7			16.7		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.0	7.2	16.2	10.0	24.8	11.8	11.6					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	19.8	65.3	15.2	* 31	14.8	70.3	15.5	30.2				
Max Q Clear Time (g_c+I+O), s	14.0	5.9	3.7	6.2	3.6	13.0	4.4	4.4				
Green Ext Time (p_c), s	0.1	1.8	0.0	2.0	0.0	6.9	0.1	0.9				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	18.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis

110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↰	
Traffic Volume (vph)	245	155	35	35	665	90	35	140	35	45	140	125
Future Volume (vph)	245	155	35	35	665	90	35	140	35	45	140	125
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2862		1575	2882		3150	3153		1499	1558	
Flt Permitted	0.17	1.00		0.63	1.00		0.56	1.00		0.48	1.00	
Satd. Flow (perm)	262	2862		1038	2882		1869	3153		764	1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	163	37	37	700	95	37	147	37	47	147	132
RTOR Reduction (vph)	0	16	0	0	10	0	0	19	0	0	25	0
Lane Group Flow (vph)	258	184	0	37	785	0	37	165	0	47	254	0
Confl. Peds. (#/hr)	1						1	4		1	1	4
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	50.9	42.8		34.0	30.4		18.5	15.0		30.2	22.2	
Effective Green, g (s)	50.9	42.8		34.0	30.4		18.5	15.0		30.2	22.2	
Actuated g/C Ratio	0.56	0.47		0.38	0.34		0.20	0.17		0.33	0.25	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	358	1353		411	968		431	522		340	382	
v/s Ratio Prot	c0.13	0.06		0.00	c0.27		0.00	0.05		c0.02	c0.16	
v/s Ratio Perm	0.28			0.03			0.01			0.03		
v/c Ratio	0.72	0.14		0.09	0.81		0.09	0.32		0.14	0.67	
Uniform Delay, d1	14.0	13.4		18.1	27.4		29.0	33.2		20.9	30.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	0.0		0.1	5.0		0.1	0.1		0.1	3.4	
Delay (s)	19.9	13.5		18.2	32.4		29.1	33.4		20.9	34.2	
Level of Service	B	B		B	C		C	C		C	C	
Approach Delay (s/veh)		17.1			31.8			32.6			32.3	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			28.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			90.5			Sum of lost time (s)		18.8				
Intersection Capacity Utilization			74.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	665	1110	0	815	35	165	140	20	35	140	35
Future Volume (veh/h)	35	665	1110	0	815	35	165	140	20	35	140	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	37	700	0	0	858	37	174	147	21	37	147	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	256	1462		0	1344	599	773	670	94	793	492	120
Arrive On Green	0.47	0.47	0.00	0.00	0.47	0.47	0.08	0.25	0.25	0.04	0.19	0.19
Sat Flow, veh/h	594	3129	1395	0	2952	1283	2967	2686	377	3183	2606	638
Grp Volume(v), veh/h	37	700	0	0	858	37	174	82	86	37	91	93
Grp Sat Flow(s), veh/h/ln	594	1564	1395	0	1438	1283	1483	1525	1538	1591	1637	1608
Q Serve(g_s), s	3.2	9.8	0.0	0.0	14.4	1.0	2.9	2.7	2.8	0.6	3.0	3.2
Cycle Q Clear(g_c), s	17.6	9.8	0.0	0.0	14.4	1.0	2.9	2.7	2.8	0.6	3.0	3.2
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	256	1462		0	1344	599	773	381	384	793	309	304
V/C Ratio(X)	0.14	0.48		0.00	0.64	0.06	0.23	0.22	0.22	0.05	0.29	0.31
Avail Cap(c_a), veh/h	553	3023		0	2779	1240	1672	780	787	1199	477	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.5	11.6	0.0	0.0	12.9	9.3	17.7	18.9	18.9	19.2	22.1	22.2
Incr Delay (d2), s/veh	0.4	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.9	0.0	0.0	3.9	0.0	0.9	0.9	1.0	0.2	1.1	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.0	12.0	0.0	0.0	13.2	9.3	17.8	19.1	19.2	19.3	22.7	22.8
LnGrp LOS	B	B			B	A	B	B	B	B	C	C
Approach Vol, veh/h	737			895			342			221		
Approach Delay, s/veh	12.4			13.1			18.5			22.1		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	21.4		35.3	10.8	17.5		35.3				
Change Period (Y+Rc), s	4.5	5.5		5.6	5.5	* 5.5		5.6				
Max Green Setting (Gmax), s	61.4	32.5		61.4	24.5	* 19		61.4				
Max Q Clear Time (g_c+I), s	4.8	4.8		19.6	4.9	5.2		16.4				
Green Ext Time (p_c), s	0.0	0.8		10.1	0.4	0.8		5.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.6											
HCM 6th LOS	B											
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↗↘		↗	↗	↗	↗	↗	↗
Traffic Volume (vph)	5	130	45	290	290	15	35	10	95	15	5	5
Future Volume (vph)	5	130	45	290	290	15	35	10	95	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2923		1513	3106		1355	1394	1269	1515	1462	
Flt Permitted	0.56	1.00		0.64	1.00		0.75	0.89	1.00	0.74	1.00	
Satd. Flow (perm)	890	2923		1012	3106		1072	1267	1269	1181	1462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	137	47	305	305	16	37	11	100	16	5	5
RTOR Reduction (vph)	0	31	0	0	4	0	0	0	78	0	4	0
Lane Group Flow (vph)	5	153	0	305	317	0	24	24	22	16	6	0
Confl. Peds. (#/hr)	8		1	1		8	9		1	1		9
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	27.3	16.9		27.3	26.4		12.0	12.0	12.0	12.0	12.0	
Effective Green, g (s)	27.3	16.9		27.3	26.4		12.0	12.0	12.0	12.0	12.0	
Actuated g/C Ratio	0.50	0.31		0.50	0.49		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	457	908		603	1507		236	279	279	260	322	
v/s Ratio Prot	0.00	0.05		c0.10	0.10						0.00	
v/s Ratio Perm	0.01			c0.16			c0.02	0.02	0.02	0.01		
v/c Ratio	0.01	0.17		0.51	0.21		0.10	0.09	0.08	0.06	0.02	
Uniform Delay, d1	6.8	13.6		8.5	8.0		16.9	16.8	16.8	16.8	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.1		0.1	0.0	0.0	0.0	0.0	
Delay (s)	6.8	13.7		8.7	8.1		17.0	16.9	16.9	16.8	16.6	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.6			8.4			16.9			16.7	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			54.4			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			49.4%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Intersection

Int Delay, s/veh 3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	20	20	35	25	15
Future Vol, veh/h	40	20	20	35	25	15
Conflicting Peds, #/hr	0	0	0	0	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	42	21	21	37	26	16

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	63
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1553
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1553
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.7	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	877	-	-	1553	-
HCM Lane V/C Ratio	0.048	-	-	0.014	-
HCM Control Delay (s/veh)	9.3	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	70	65	25	15	0
Future Vol, veh/h	0	70	65	25	15	0
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	0	70	65	25	15	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	93	0	-	0	151	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	70	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1514	-	-	-	867	991
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1509	-	-	-	862	988
Mov Cap-2 Maneuver	-	-	-	-	832	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	966	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0	0		9.4		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1509	-	-	-	832	
HCM Lane V/C Ratio	-	-	-	-	0.018	
HCM Control Delay (s/veh)	0	-	-	-	9.4	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q (veh)	0	-	-	-	0.1	

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←		←		←	←			←	←
Traffic Vol, veh/h	25	20	45	0	10	0	35	15	15	15	35	45
Future Vol, veh/h	25	20	45	0	10	0	35	15	15	15	35	45
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	25	20	45	0	10	0	35	15	15	15	35	45
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	7.7	8.1	7.8	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	56%	0%	0%	30%	0%
Vol Thru, %	0%	50%	44%	0%	100%	70%	0%
Vol Right, %	0%	50%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	30	45	45	10	50	45
LT Vol	35	0	25	0	0	15	0
Through Vol	0	15	20	0	10	35	0
RT Vol	0	15	0	45	0	0	45
Lane Flow Rate	35	30	45	45	10	50	45
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.052	0.037	0.065	0.052	0.014	0.067	0.05
Departure Headway (Hd)	5.327	4.474	5.165	4.186	4.98	4.958	4.105
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	676	805	697	860	722	727	878
Service Time	3.027	2.174	2.87	1.89	2.986	2.658	1.805
HCM Lane V/C Ratio	0.052	0.037	0.065	0.052	0.014	0.069	0.051
HCM Control Delay, s/veh	8.3	7.3	8.2	7.1	8.1	8	7
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.2	0.1	0.2	0.2	0	0.2	0.2

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	15	185	750	30	20	20
Future Vol, veh/h	15	185	750	30	20	20
Conflicting Peds, #/hr	4	0	0	4	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	16	195	789	32	21	21
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	825	0	-	0	943	415
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	4.28	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.29	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	758	-	-	-	265	592
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	755	-	-	-	257	590
Mov Cap-2 Maneuver	-	-	-	-	257	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	881	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.8	0		15.8		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	755	-	-	-	257	590
HCM Lane V/C Ratio	0.021	-	-	-	0.082	0.036
HCM Control Delay (s/veh)	9.9	0.1	-	-	20.3	11.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.3	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	70	170	15	45	45	55	215	45	50	355	55
Future Volume (veh/h)	55	70	170	15	45	45	55	215	45	50	355	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	58	74	179	16	47	47	58	226	47	53	374	58
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	511	423	376	316	581	258	109	441	95	81	597	97
Arrive On Green	0.07	0.23	0.23	0.03	0.18	0.18	0.19	0.19	0.19	0.22	0.22	0.22
Sat Flow, veh/h	1847	1843	1637	1589	3169	1407	574	2321	502	376	2760	448
Grp Volume(v), veh/h	58	74	179	16	47	47	175	0	156	257	0	228
Grp Sat Flow(s),veh/h/ln	1847	1843	1637	1589	1585	1407	1733	0	1664	1826	0	1758
Q Serve(g_s), s	1.4	1.8	5.4	0.4	0.7	1.6	5.2	0.0	4.8	7.4	0.0	6.7
Cycle Q Clear(g_c), s	1.4	1.8	5.4	0.4	0.7	1.6	5.2	0.0	4.8	7.4	0.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	0.33		0.30	0.21		0.25
Lane Grp Cap(c), veh/h	511	423	376	316	581	258	329	0	316	395	0	381
V/C Ratio(X)	0.11	0.17	0.48	0.05	0.08	0.18	0.53	0.00	0.49	0.65	0.00	0.60
Avail Cap(c_a), veh/h	1190	1118	993	973	1647	731	916	0	879	1124	0	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	17.7	19.1	16.2	19.4	19.8	20.9	0.0	20.8	20.5	0.0	20.2
Incr Delay (d2), s/veh	0.0	0.1	0.7	0.0	0.0	0.2	1.0	0.0	0.9	1.4	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	2.0	0.1	0.2	0.5	2.0	0.0	1.8	3.0	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.4	17.9	19.8	16.3	19.5	20.0	21.9	0.0	21.6	21.8	0.0	21.3
LnGrp LOS	B	B	B	B	B	C	C		C	C		C
Approach Vol, veh/h	311			110			331			485		
Approach Delay, s/veh	18.7			19.2			21.8			21.6		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	15.6		6.3	18.4		17.1		8.9	15.7			
Change Period (Y+Rc), s	4.7		4.7	5.2		4.7		4.7	5.2			
Max Green Setting (Gmax), s	30.3		25.3	34.8		35.3		25.3	29.8			
Max Q Clear Time (g_c+I1), s	7.2		2.4	7.4		9.4		3.4	3.6			
Green Ext Time (p_c), s	1.6		0.0	1.3		2.5		0.1	0.3			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	20.7											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	0	20	0	15	5	140	20	20	320	10
Future Vol, veh/h	5	0	0	20	0	15	5	140	20	20	320	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	3	3	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	21	0	16	5	147	21	21	337	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	476	573	181	382	568	87	355	0	0	171	0	0
Stage 1	392	392	-	171	171	-	-	-	-	-	-	-
Stage 2	84	181	-	211	397	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	327	297	604	556	435	961	1165	-	-	1411	-	-
Stage 1	428	440	-	820	761	-	-	-	-	-	-	-
Stage 2	701	576	-	777	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	314	287	600	544	421	959	1157	-	-	1408	-	-
Mov Cap-2 Maneuver	314	287	-	544	421	-	-	-	-	-	-	-
Stage 1	423	429	-	814	756	-	-	-	-	-	-	-
Stage 2	686	572	-	762	591	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	16.7		10.6		0.2		0.5					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1157	-	-	314 544 959	1408	-	-					
HCM Lane V/C Ratio	0.005	-	-	0.017 0.039 0.016	0.015	-	-					
HCM Control Delay (s/veh)	8.1	0	-	16.7 11.9 8.8	7.6	0.1	-					
HCM Lane LOS	A	A	-	C B A	A	A	-					
HCM 95th %tile Q (veh)	0	-	-	0.1 0.1 0.1	0	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	65	55	20	25	75
Future Volume (Veh/h)	100	65	55	20	25	75
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	100	65	55	20	25	75
Pedestrians				4	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		292	205	270	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		292	205	270	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	94		90	97	96	93
cM capacity (veh/h)	1607		555	639	583	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	100	65	75	100		
Volume Left	100	0	55	0		
Volume Right	0	65	0	75		
cSH	1607	1700	576	882		
Volume to Capacity	0.06	0.04	0.13	0.11		
Queue Length 95th (ft)	5	0	11	10		
Control Delay (s/veh)	7.4	0.0	12.2	9.6		
Lane LOS	A		B	A		
Approach Delay (s/veh)	4.5		12.2	9.6		
Approach LOS			B	A		
Intersection Summary						
Average Delay	7.7					
Intersection Capacity Utilization	24.7%			ICU Level of Service	A	
Analysis Period (min)	15					

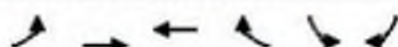
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	85	20	35	110	40	5	5	15	60	10	75
Future Volume (vph)	45	85	20	35	110	40	5	5	15	60	10	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1544	3011		3027	3121	1374		1423	2152	1431	1316	
Flt Permitted	0.68	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1103	3011		3027	3121	1374		1423	2152	1431	1316	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	89	21	37	116	42	5	5	16	63	11	79
RTOR Reduction (vph)	0	15	0	0	0	17	0	0	15	0	56	0
Lane Group Flow (vph)	47	95	0	37	116	25	0	10	1	57	40	0
Confl. Peds. (#/hr)	9		1	1		9			4	4		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	18.5	16.3		2.2	16.3	32.9		2.8	5.0	16.6	16.6	
Effective Green, g (s)	18.5	16.3		2.2	16.3	32.9		2.8	5.0	16.6	16.6	
Actuated g/C Ratio	0.33	0.29		0.04	0.29	0.59		0.05	0.09	0.30	0.30	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	382	877		119	910	808		71	192	424	390	
v/s Ratio Prot	0.00	0.03		c0.01	c0.04	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	0.04					0.01			0.00			
v/c Ratio	0.12	0.11		0.31	0.13	0.03		0.14	0.01	0.13	0.10	
Uniform Delay, d1	12.9	14.5		26.1	14.6	4.8		25.4	23.2	14.4	14.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.5	0.0	0.0		0.3	0.0	0.1	0.0	
Delay (s)	13.0	14.5		26.7	14.6	4.8		25.7	23.2	14.4	14.3	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		14.0			14.8			24.2			14.4	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			14.9				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.14									
Actuated Cycle Length (s)			55.9				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			41.7%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build AM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↶	↶		↰	↰
Traffic Volume (veh/h)	120	125	170	15	25	490
Future Volume (veh/h)	120	125	170	15	25	490
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97			0.95	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1668	1668	1682	1682	1750	1750
Adj Flow Rate, veh/h	126	132	179	16	26	516
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	5	5	0	0
Cap, veh/h	452	1229	543	48	632	562
Arrive On Green	0.09	0.39	0.18	0.18	0.38	0.38
Sat Flow, veh/h	1589	3253	3041	261	1667	1483
Grp Volume(v), veh/h	126	132	96	99	26	516
Grp Sat Flow(s), veh/h/ln	1589	1585	1598	1620	1667	1483
Q Serve(g_s), s	2.7	1.2	2.3	2.3	0.4	14.5
Cycle Q Clear(g_c), s	2.7	1.2	2.3	2.3	0.4	14.5
Prop In Lane	1.00			0.16	1.00	1.00
Lane Grp Cap(c), veh/h	452	1229	294	298	632	562
V/C Ratio(X)	0.28	0.11	0.33	0.33	0.04	0.92
Avail Cap(c_a), veh/h	1400	3608	1819	1844	1143	1017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	8.6	15.5	15.5	8.6	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	3.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.3	0.7	0.7	0.1	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	12.7	8.6	15.7	15.8	8.6	16.0
LnGrp LOS	B	A	B	B	A	B
Approach Vol, veh/h		258	195		542	
Approach Delay, s/veh		10.6	15.8		15.6	
Approach LOS		B	B		B	
Timer - Assigned Phs			4		6	7 8
Phs Duration (G+Y+Rc), s			22.2		21.6	8.9 13.2
Change Period (Y+Rc), s			5.2		5.0	5.0 5.2
Max Green Setting (Gmax), s			49.8		30.0	30.0 49.8
Max Q Clear Time (g_c+I1), s			3.2		16.5	4.7 4.3
Green Ext Time (p_c), s			0.2		0.1	0.0 0.2
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			14.4			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	150	125	40	90	30	70	105	125	95	495	240
Future Volume (veh/h)	80	150	125	40	90	30	70	105	125	95	495	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	82	153	128	41	92	31	71	107	128	97	505	245
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	234	395	307	59	254	82	356	511	454	603	766	370
Arrive On Green	0.13	0.20	0.20	0.04	0.12	0.12	0.08	0.32	0.32	0.10	0.34	0.34
Sat Flow, veh/h	1847	1965	1528	1416	2094	673	1581	1577	1403	1744	2272	1097
Grp Volume(v), veh/h	82	143	138	41	61	62	71	107	128	97	386	364
Grp Sat Flow(s),veh/h/ln	1847	1843	1651	1416	1412	1355	1581	1577	1403	1744	1739	1630
Q Serve(g_s), s	2.3	3.9	4.2	1.6	2.3	2.4	1.6	2.8	3.9	2.0	10.9	11.0
Cycle Q Clear(g_c), s	2.3	3.9	4.2	1.6	2.3	2.4	1.6	2.8	3.9	2.0	10.9	11.0
Prop In Lane	1.00		0.93	1.00		0.50	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	234	370	332	59	171	164	356	511	454	603	586	549
V/C Ratio(X)	0.35	0.39	0.42	0.69	0.35	0.38	0.20	0.21	0.28	0.16	0.66	0.66
Avail Cap(c_a), veh/h	816	1293	1159	618	984	944	905	1101	980	1185	1215	1138
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	20.0	20.1	27.3	23.3	23.4	11.4	14.2	14.5	10.4	16.3	16.3
Incr Delay (d2), s/veh	0.3	0.8	1.0	5.3	1.8	2.1	0.1	0.2	0.4	0.0	1.5	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	1.6	0.6	0.8	0.8	0.5	0.9	1.1	0.6	4.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.4	20.8	21.1	32.6	25.1	25.4	11.5	14.4	14.9	10.5	17.8	18.0
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	363			164			306			847		
Approach Delay, s/veh	21.5			27.1			13.9			17.1		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.4	7.2	16.4	10.0	24.1	11.8	11.8					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I+A), s	5.9	5.9	3.6	6.2	3.6	13.0	4.3	4.4				
Green Ext Time (p_c), s	0.1	1.7	0.0	2.2	0.1	6.2	0.1	1.0				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	18.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↶↷		↰	↶↷		↰	↶↷		↰	↶↷	
Traffic Volume (vph)	245	150	35	35	660	95	35	140	35	50	140	125
Future Volume (vph)	245	150	35	35	660	95	35	140	35	50	140	125
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1472	2860		1575	2878		3150	3153		1499	1558	
Flt Permitted	0.16	1.00		0.63	1.00		0.54	1.00		0.49	1.00	
Satd. Flow (perm)	253	2860		1043	2878		1802	3153		781	1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	158	37	37	695	100	37	147	37	53	147	132
RTOR Reduction (vph)	0	13	0	0	9	0	0	21	0	0	27	0
Lane Group Flow (vph)	258	182	0	37	786	0	37	163	0	53	252	0
Confl. Peds. (#/hr)	1						1	4		1	1	4
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	54.2	46.0		35.2	31.5		20.1	16.5		31.8	23.7	
Effective Green, g (s)	54.2	46.0		35.2	31.5		20.1	16.5		31.8	23.7	
Actuated g/C Ratio	0.57	0.48		0.37	0.33		0.21	0.17		0.33	0.25	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	373	1379		405	950		430	545		340	387	
v/s Ratio Prot	c0.13	0.06		0.00	c0.27		0.00	0.05		c0.02	c0.16	
v/s Ratio Perm	0.26			0.03			0.01			0.03		
v/c Ratio	0.69	0.13		0.09	0.83		0.09	0.30		0.16	0.65	
Uniform Delay, d1	14.9	13.7		19.5	29.4		30.1	34.4		22.1	32.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.0		0.1	5.7		0.1	0.1		0.1	3.0	
Delay (s)	19.3	13.7		19.5	35.1		30.2	34.5		22.2	35.1	
Level of Service	B	B		B	D		C	C		C	D	
Approach Delay (s/veh)		16.9			34.4			33.8			33.1	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			29.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			95.4			Sum of lost time (s)		18.8				
Intersection Capacity Utilization			74.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	665	1110	0	815	35	165	140	20	35	140	35
Future Volume (veh/h)	35	665	1110	0	815	35	165	140	20	35	140	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	37	700	0	0	858	37	174	147	21	37	147	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	251	1436		0	1321	589	786	680	96	805	501	123
Arrive On Green	0.46	0.46	0.00	0.00	0.46	0.46	0.08	0.25	0.25	0.04	0.19	0.19
Sat Flow, veh/h	594	3129	1395	0	2952	1283	2967	2686	377	3183	2606	638
Grp Volume(v), veh/h	37	700	0	0	858	37	174	82	86	37	91	93
Grp Sat Flow(s),veh/h/ln	594	1564	1395	0	1438	1283	1483	1525	1538	1591	1637	1608
Q Serve(g_s), s	3.2	9.7	0.0	0.0	14.4	1.0	2.8	2.7	2.7	0.6	3.0	3.1
Cycle Q Clear(g_c), s	17.6	9.7	0.0	0.0	14.4	1.0	2.8	2.7	2.7	0.6	3.0	3.1
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	251	1436		0	1321	589	786	386	389	805	314	309
V/C Ratio(X)	0.15	0.49		0.00	0.65	0.06	0.22	0.21	0.22	0.05	0.29	0.30
Avail Cap(c_a), veh/h	448	2474		0	2274	1014	1702	720	726	1219	799	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	11.8	0.0	0.0	13.0	9.4	17.3	18.4	18.4	18.7	21.6	21.6
Incr Delay (d2), s/veh	0.5	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.9	0.0	0.0	3.9	1.0	0.9	0.9	0.9	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.3	12.2	0.0	0.0	13.4	9.4	17.4	18.6	18.7	18.8	22.1	22.2
LnGrp LOS	C	B			B	A	B	B	B	B	C	C
Approach Vol, veh/h	737			895			342			221		
Approach Delay, s/veh	12.6			13.3			18.0			21.6		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	21.3		34.3	10.7	17.5		34.3				
Change Period (Y+Rc), s	4.5	5.5		5.6	5.5	* 5.5		5.6				
Max Green Setting (Gmax), s	29.5	29.5		49.4	24.5	* 31		49.4				
Max Q Clear Time (g_c+I), s	4.7	4.7		19.6	4.8	5.1		16.4				
Green Ext Time (p_c), s	0.0	0.7		9.1	0.4	1.0		5.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.6											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	5	130	45	300	290	15	35	10	105	15	5	5
Future Volume (vph)	5	130	45	300	290	15	35	10	105	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2923		1513	3106		1355	1394	1269	1515	1462	
Flt Permitted	0.56	1.00		0.64	1.00		0.75	0.89	1.00	0.74	1.00	
Satd. Flow (perm)	890	2923		1012	3106		1072	1267	1269	1181	1462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	137	47	316	305	16	37	11	111	16	5	5
RTOR Reduction (vph)	0	32	0	0	3	0	0	0	87	0	4	0
Lane Group Flow (vph)	5	152	0	316	318	0	24	24	24	16	6	0
Confl. Peds. (#/hr)	8		1	1		8	9		1	1		9
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	27.6	17.0		27.6	26.7		12.0	12.0	12.0	12.0	12.0	
Effective Green, g (s)	27.6	17.0		27.6	26.7		12.0	12.0	12.0	12.0	12.0	
Actuated g/C Ratio	0.50	0.31		0.50	0.49		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	459	908		607	1516		235	277	278	259	320	
v/s Ratio Prot	0.00	0.05		c0.10	0.10						0.00	
v/s Ratio Perm	0.01			c0.16			c0.02	0.02	0.02	0.01		
v/c Ratio	0.01	0.17		0.52	0.21		0.10	0.09	0.09	0.06	0.02	
Uniform Delay, d1	6.7	13.7		8.5	8.0		17.0	17.0	17.0	16.9	16.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.4	0.1		0.1	0.0	0.0	0.0	0.0	
Delay (s)	6.7	13.8		8.9	8.1		17.1	17.0	17.0	16.9	16.7	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.6			8.5			17.1			16.9	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.0			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			54.7			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			50.0%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	20	20	25	25	15
Future Vol, veh/h	30	20	20	25	25	15
Conflicting Peds, #/hr	0	0	0	0	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	32	21	21	26	26	16

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	53
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1566
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1566
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	3.3	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	891	-	-	1566	-
HCM Lane V/C Ratio	0.047	-	-	0.013	-
HCM Control Delay (s/veh)	9.2	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	45	40	15	10	0
Future Vol, veh/h	0	45	40	15	10	0
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	0	45	40	15	10	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	58	0	0 96 51
Stage 1	-	-	- 51 -
Stage 2	-	-	- 45 -
Critical Hdwy	4.1	-	- 5.8 5.9
Critical Hdwy Stg 1	-	-	- 4.8 -
Critical Hdwy Stg 2	-	-	- 4.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1559	-	- 923 1027
Stage 1	-	-	- 985 -
Stage 2	-	-	- 990 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1554	-	- 917 1024
Mov Cap-2 Maneuver	-	-	- 868 -
Stage 1	-	-	- 982 -
Stage 2	-	-	- 987 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1554	-	-	-	868
HCM Lane V/C Ratio	-	-	-	-	0.012
HCM Control Delay (s/veh)	0	-	-	-	9.2
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		←	←		←		←	←			←	←
Traffic Vol, veh/h	20	10	15	0	5	0	15	10	5	5	20	25
Future Vol, veh/h	20	10	15	0	5	0	15	10	5	5	20	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	10	15	0	5	0	15	10	5	5	20	25
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	7.5	7.8	7.6	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	67%	0%	0%	20%	0%
Vol Thru, %	0%	67%	33%	0%	100%	80%	0%
Vol Right, %	0%	33%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	15	30	15	5	25	25
LT Vol	15	0	20	0	0	5	0
Through Vol	0	10	10	0	5	20	0
RT Vol	0	5	0	15	0	0	25
Lane Flow Rate	15	15	30	15	5	25	25
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.021	0.018	0.041	0.016	0.006	0.033	0.027
Departure Headway (Hd)	5.111	4.377	4.968	3.934	4.667	4.7	3.9
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	698	814	717	903	760	759	913
Service Time	2.858	2.123	2.724	1.689	2.736	2.445	1.644
HCM Lane V/C Ratio	0.021	0.018	0.042	0.017	0.007	0.033	0.027
HCM Control Delay, s/veh	8	7.2	7.9	6.8	7.8	7.6	6.8
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1	0	0	0.1	0.1

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	15	180	745	20	10	20
Future Vol, veh/h	15	180	745	20	10	20
Conflicting Peds, #/hr	4	0	0	4	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	9	9	4	4	0	0
Mvmt Flow	16	189	784	21	11	21

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	809	0	930
Stage 1	-	-	799
Stage 2	-	-	131
Critical Hdwy	4.28	-	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.29	-	3.5
Pot Cap-1 Maneuver	769	-	270
Stage 1	-	-	408
Stage 2	-	-	887
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	766	-	262
Mov Cap-2 Maneuver	-	-	262
Stage 1	-	-	397
Stage 2	-	-	884

Approach	EB	WB	SB
HCM Control Delay, s/v	0.8	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	766	-	-	-	262	597
HCM Lane V/C Ratio	0.021	-	-	-	0.04	0.035
HCM Control Delay (s/veh)	9.8	0.1	-	-	19.3	11.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q (veh)	0.1	-	-	-	0.1	0.1

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	55	170	5	30	15	55	220	35	20	365	65
Future Volume (veh/h)	65	55	170	5	30	15	55	220	35	20	365	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1668	1668	1668	1762	1762	1762	1845	1845	1845
Adj Flow Rate, veh/h	68	58	179	5	32	16	58	232	37	21	384	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	6	6	6	7	7	7	1	1	1
Cap, veh/h	539	468	416	319	579	257	110	460	76	32	613	114
Arrive On Green	0.08	0.25	0.25	0.01	0.18	0.18	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1847	1843	1638	1589	3169	1407	582	2430	403	153	2889	537
Grp Volume(v), veh/h	68	58	179	5	32	16	173	0	154	252	0	221
Grp Sat Flow(s),veh/h/ln	1847	1843	1638	1589	1585	1407	1733	0	1683	1837	0	1741
Q Serve(g_s), s	1.6	1.4	5.3	0.1	0.5	0.5	5.2	0.0	4.7	7.2	0.0	6.6
Cycle Q Clear(g_c), s	1.6	1.4	5.3	0.1	0.5	0.5	5.2	0.0	4.7	7.2	0.0	6.6
Prop In Lane	1.00		1.00	1.00		1.00	0.34		0.24	0.08		0.31
Lane Grp Cap(c), veh/h	539	468	416	319	579	257	328	0	319	390	0	369
V/C Ratio(X)	0.13	0.12	0.43	0.02	0.06	0.06	0.53	0.00	0.48	0.65	0.00	0.60
Avail Cap(c_a), veh/h	1202	1114	990	1003	1640	728	912	0	886	1126	0	1067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	16.5	18.0	15.9	19.4	19.4	21.0	0.0	20.8	20.7	0.0	20.5
Incr Delay (d2), s/veh	0.0	0.1	0.5	0.0	0.0	0.1	1.0	0.0	0.8	1.3	0.0	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	1.9	0.0	0.2	0.2	2.0	0.0	1.8	3.0	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.3	16.6	18.5	15.9	19.5	19.5	22.0	0.0	21.7	22.1	0.0	21.6
LnGrp LOS	B	B	B	B	B	B	C		C	C		C
Approach Vol, veh/h	305			53			327			473		
Approach Delay, s/veh	17.6			19.1			21.8			21.9		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			3			6			7		
Phs Duration (G+Y+Rc), s	15.6			5.2			16.9			9.3		
Change Period (Y+Rc), s	4.7			4.7			4.7			4.7		
Max Green Setting (Gmax), s	30.3			25.3			35.3			25.3		
Max Q Clear Time (g_c+I1), s	7.2			2.1			9.2			3.6		
Green Ext Time (p_c), s	1.6			0.0			2.4			0.1		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	20.6											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+			+	
Traffic Vol, veh/h	5	0	0	10	0	5	5	140	10	15	315	10
Future Vol, veh/h	5	0	0	10	0	5	5	140	10	15	315	10
Conflicting Peds, #/hr	0	0	0	0	0	0	7	0	3	3	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	100	100	100	0	0	0	7	7	7	1	1	1
Mvmt Flow	5	0	0	11	0	5	5	147	11	16	332	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	461	548	179	364	548	82	350	0	0	161	0	0
Stage 1	377	377	-	166	166	-	-	-	-	-	-	-
Stage 2	84	171	-	198	382	-	-	-	-	-	-	-
Critical Hdwy	8.9	7.9	8.6	7.5	6.5	6.9	4.24	-	-	4.12	-	-
Critical Hdwy Stg 1	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.9	6.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.5	5	4.3	3.5	4	3.3	2.27	-	-	2.21	-	-
Pot Cap-1 Maneuver	337	309	606	572	447	968	1170	-	-	1423	-	-
Stage 1	439	449	-	825	765	-	-	-	-	-	-	-
Stage 2	701	583	-	791	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	328	300	602	562	434	966	1162	-	-	1420	-	-
Mov Cap-2 Maneuver	328	300	-	562	434	-	-	-	-	-	-	-
Stage 1	434	440	-	819	760	-	-	-	-	-	-	-
Stage 2	694	579	-	780	603	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	16.2			10.6			0.3			0.3		
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	1162	-	-	328	562	966	1420	-	-			
HCM Lane V/C Ratio	0.005	-	-	0.016	0.019	0.005	0.011	-	-			
HCM Control Delay (s/veh)	8.1	0	-	16.2	11.5	8.7	7.6	0	-			
HCM Lane LOS	A	A	-	C	B	A	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	0	-	-			

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	50	40	10	10	10
Future Volume (Veh/h)	40	50	40	10	10	10
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	50	40	10	10	10
Pedestrians				4	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		99	85	135	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		99	85	135	1
tC, single (s)	4.1		7.2	6.6	6.6	6.3
tC, 2 stage (s)						
tF (s)	2.2		3.6	4.1	4.1	3.4
p0 queue free %	98		95	99	99	99
cM capacity (veh/h)	1607		834	774	721	1063
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	40	50	50	20		
Volume Left	40	0	40	0		
Volume Right	0	50	0	10		
cSH	1607	1700	821	859		
Volume to Capacity	0.02	0.03	0.06	0.02		
Queue Length 95th (ft)	2	0	5	2		
Control Delay (s/veh)	7.3	0.0	9.7	9.3		
Lane LOS	A		A	A		
Approach Delay (s/veh)	3.2		9.7	9.3		
Approach LOS			A	A		
Intersection Summary						
Average Delay				6.0		
Intersection Capacity Utilization				20.9%	ICU Level of Service	A
Analysis Period (min)				15		

HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	80	25	55	100	40	5	5	35	60	10	75
Future Volume (vph)	45	80	25	55	100	40	5	5	35	60	10	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98		1.00	0.99	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85		1.00	0.85	1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1543	2988		3027	3121	1372		1423	2159	1431	1316	
Flt Permitted	0.69	1.00		0.95	1.00	1.00		0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1114	2988		3027	3121	1372		1423	2159	1431	1316	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	84	26	58	105	42	5	5	37	63	11	79
RTOR Reduction (vph)	0	18	0	0	0	17	0	0	33	0	57	0
Lane Group Flow (vph)	47	92	0	58	105	25	0	10	4	57	39	0
Confl. Peds. (#/hr)	9		1	1		9			4	4		
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	16%	16%	16%	3%	3%	3%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	20.9	17.0		3.9	18.8	34.9		2.9	6.8	16.1	16.1	
Effective Green, g (s)	20.9	17.0		3.9	18.8	34.9		2.9	6.8	16.1	16.1	
Actuated g/C Ratio	0.36	0.29		0.07	0.32	0.60		0.05	0.12	0.28	0.28	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	417	877		203	1013	826		71	253	397	365	
v/s Ratio Prot	0.00	0.03		c0.02	0.03	0.01		c0.01	0.00	c0.04	0.03	
v/s Ratio Perm	c0.04					0.01			0.00			
v/c Ratio	0.11	0.10		0.29	0.10	0.03		0.14	0.02	0.14	0.11	
Uniform Delay, d1	12.2	14.9		25.7	13.7	4.7		26.3	22.6	15.7	15.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.0		0.3	0.0	0.0		0.3	0.0	0.1	0.0	
Delay (s)	12.2	14.9		26.0	13.7	4.7		26.6	22.6	15.8	15.6	
Level of Service	B	B		C	B	A		C	C	B	B	
Approach Delay (s/veh)		14.1			15.3			23.5			15.7	
Approach LOS		B			B			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			15.8				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.15									
Actuated Cycle Length (s)			57.9				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			41.7%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	120	30	0	160	15	35	15	0	25	15	475
Future Volume (veh/h)	105	120	30	0	160	15	35	15	0	25	15	475
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.98	1.00		0.95	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1668	1668	1723	1723	1682	1682	1723	1723	1723	1750	1723	1750
Adj Flow Rate, veh/h	111	126	33	0	168	16	38	16	0	26	16	500
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.95	0.92	0.95
Percent Heavy Veh, %	6	6	2	2	5	5	2	2	2	0	2	0
Cap, veh/h	431	921	233	157	523	49	234	703	0	729	19	580
Arrive On Green	0.08	0.37	0.37	0.00	0.18	0.18	0.41	0.41	0.00	0.41	0.41	0.41
Sat Flow, veh/h	1589	2492	630	1227	2938	276	885	1723	0	1419	45	1421
Grp Volume(v), veh/h	111	78	81	0	90	94	38	16	0	26	0	516
Grp Sat Flow(s), veh/h/ln	1589	1585	1537	1227	1598	1616	885	1723	0	1419	0	1467
Q Serve(g_s), s	2.5	1.5	1.6	0.0	2.3	2.3	1.9	0.3	0.0	0.5	0.0	14.7
Cycle Q Clear(g_c), s	2.5	1.5	1.6	0.0	2.3	2.3	16.6	0.3	0.0	0.8	0.0	14.7
Prop In Lane	1.00		0.41	1.00		0.17	1.00		0.00	1.00		0.97
Lane Grp Cap(c), veh/h	431	585	568	157	284	288	234	703	0	729	0	599
V/C Ratio(X)	0.26	0.13	0.14	0.00	0.32	0.33	0.16	0.02	0.00	0.04	0.00	0.86
Avail Cap(c_a), veh/h	2065	2927	2840	708	1002	1014	461	1145	0	1077	0	959
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	9.6	9.6	0.0	16.4	16.5	20.0	8.1	0.0	8.3	0.0	12.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.2	0.2	0.3	0.0	0.0	0.0	0.0	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	0.4	0.0	0.7	0.8	0.4	0.1	0.0	0.1	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.7	9.6	9.7	0.0	16.7	16.7	20.3	8.1	0.0	8.3	0.0	15.1
LnGrp LOS	B	A	A		B	B	C	A		A		B
Approach Vol, veh/h	270			184			54			542		
Approach Delay, s/veh	11.3			16.7			16.7			14.8		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			7		
Phs Duration (G+Y+Rc), s	23.7			22.2			23.7			8.8		
Change Period (Y+Rc), s	* 5			5.2			5.0			5.2		
Max Green Setting (Gmax), s	* 31			84.8			30.0			51.0		
Max Q Clear Time (g_c+I1), s	18.6			3.6			16.7			4.5		
Green Ext Time (p_c), s	0.1			0.1			0.7			0.0		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.3											
HCM 6th LOS	B											
Notes												

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	145	125	40	85	30	70	105	125	95	495	245
Future Volume (veh/h)	85	145	125	40	85	30	70	105	125	95	495	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1940	1940	1940	1486	1486	1486	1660	1660	1660	1831	1831	1831
Adj Flow Rate, veh/h	87	148	128	41	87	31	71	107	128	97	505	250
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	5	5	5	3	3	3	2	2	2
Cap, veh/h	240	391	313	59	245	83	354	513	456	603	763	376
Arrive On Green	0.13	0.20	0.20	0.04	0.12	0.12	0.08	0.33	0.33	0.10	0.34	0.34
Sat Flow, veh/h	1847	1937	1552	1416	2063	699	1581	1577	1403	1744	2255	1112
Grp Volume(v), veh/h	87	140	136	41	58	60	71	107	128	97	389	366
Grp Sat Flow(s),veh/h/ln	1847	1843	1647	1416	1412	1350	1581	1577	1403	1744	1739	1627
Q Serve(g_s), s	2.5	3.8	4.2	1.7	2.2	2.4	1.6	2.9	3.9	2.0	11.1	11.1
Cycle Q Clear(g_c), s	2.5	3.8	4.2	1.7	2.2	2.4	1.6	2.9	3.9	2.0	11.1	11.1
Prop In Lane	1.00		0.94	1.00		0.52	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	240	372	332	59	168	160	354	513	456	603	588	551
V/C Ratio(X)	0.36	0.38	0.41	0.70	0.35	0.37	0.20	0.21	0.28	0.16	0.66	0.66
Avail Cap(c_a), veh/h	812	1286	1149	615	978	935	900	1095	974	1182	1208	1130
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.0	20.0	20.1	27.4	23.5	23.6	11.4	14.2	14.5	10.5	16.4	16.4
Incr Delay (d2), s/veh	0.3	0.8	1.0	5.4	1.7	2.0	0.1	0.2	0.4	0.0	1.5	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.6	1.6	0.6	0.8	0.8	0.5	0.9	1.1	0.6	4.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.4	20.8	21.1	32.8	25.3	25.6	11.5	14.4	14.9	10.5	17.9	18.1
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	363			159			306			852		
Approach Delay, s/veh	21.5			27.3			14.0			17.1		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.6	7.2	16.5	10.0	24.3	12.0	11.7					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I+O), s	5.9	5.9	3.7	6.2	3.6	13.1	4.5	4.4				
Green Ext Time (p_c), s	0.1	1.7	0.0	2.2	0.1	6.2	0.1	1.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	18.5											
HCM 6th LOS	B											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	150	35	35	660	90	35	140	35	45	140	125
Future Volume (vph)	245	150	35	35	660	90	35	140	35	45	140	125
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Lane Util. Factor	0.91	0.91		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	0.93	
Flt Protected	0.95	0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1339	2717		1575	2881		3150	3153		1499	1558	
Flt Permitted	0.17	0.53		0.55	1.00		0.59	1.00		0.49	1.00	
Satd. Flow (perm)	244	1478		909	2881		1950	3153		771	1558	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	258	158	37	37	695	95	37	147	37	47	147	132
RTOR Reduction (vph)	0	7	0	0	9	0	0	21	0	0	26	0
Lane Group Flow (vph)	129	317	0	37	781	0	37	163	0	47	253	0
Confl. Peds. (#/hr)	1						1	4		1	1	4
Confl. Bikes (#/hr)							1					
Heavy Vehicles (%)	7%	7%	7%	4%	4%	4%	2%	2%	2%	5%	5%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	46.3	46.3		32.9	29.2		19.1	15.6		31.1	23.1	
Effective Green, g (s)	46.3	46.3		32.9	29.2		19.1	15.6		31.1	23.1	
Actuated g/C Ratio	0.53	0.53		0.38	0.34		0.22	0.18		0.36	0.27	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	4.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	286	965		372	969		477	566		366	414	
v/s Ratio Prot	c0.06	0.05		0.00	c0.27		0.00	0.05		c0.02	c0.16	
v/s Ratio Perm	0.18	0.13		0.03			0.01			0.03		
v/c Ratio	0.45	0.33		0.10	0.81		0.08	0.29		0.13	0.61	
Uniform Delay, d1	12.8	11.5		17.1	26.2		26.7	30.8		18.6	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		0.1	4.7		0.1	0.1		0.1	1.9	
Delay (s)	13.2	11.5		17.3	30.9		26.8	30.9		18.6	29.8	
Level of Service	B	B		B	C		C	C		B	C	
Approach Delay (s/veh)		12.0			30.3			30.2			28.2	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			25.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			86.8			Sum of lost time (s)		18.8				
Intersection Capacity Utilization			68.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	665	1110	0	815	35	165	140	20	35	140	35
Future Volume (veh/h)	35	665	1110	0	815	35	165	140	20	35	140	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1647	1647	1647	0	1514	1514	1606	1606	1606	1723	1723	1723
Adj Flow Rate, veh/h	37	700	0	0	858	37	174	147	21	37	147	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	0	3	3	7	7	7	2	2	2
Cap, veh/h	251	1436		0	1321	589	786	680	96	805	501	123
Arrive On Green	0.46	0.46	0.00	0.00	0.46	0.46	0.08	0.25	0.25	0.04	0.19	0.19
Sat Flow, veh/h	594	3129	1395	0	2952	1283	2967	2686	377	3183	2606	638
Grp Volume(v), veh/h	37	700	0	0	858	37	174	82	86	37	91	93
Grp Sat Flow(s),veh/h/ln	594	1564	1395	0	1438	1283	1483	1525	1538	1591	1637	1608
Q Serve(g_s), s	3.2	9.7	0.0	0.0	14.4	1.0	2.8	2.7	2.7	0.6	3.0	3.1
Cycle Q Clear(g_c), s	17.6	9.7	0.0	0.0	14.4	1.0	2.8	2.7	2.7	0.6	3.0	3.1
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	251	1436		0	1321	589	786	386	389	805	314	309
V/C Ratio(X)	0.15	0.49		0.00	0.65	0.06	0.22	0.21	0.22	0.05	0.29	0.30
Avail Cap(c_a), veh/h	448	2474		0	2274	1014	1702	720	726	1219	799	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	11.8	0.0	0.0	13.0	9.4	17.3	18.4	18.4	18.7	21.6	21.6
Incr Delay (d2), s/veh	0.5	0.4	0.0	0.0	0.4	0.0	0.1	0.2	0.2	0.0	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.9	0.0	0.0	3.9	1.0	0.9	0.9	0.9	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.3	12.2	0.0	0.0	13.4	9.4	17.4	18.6	18.7	18.8	22.1	22.2
LnGrp LOS	C	B			B	A	B	B	B	B	C	C
Approach Vol, veh/h	737			895			342			221		
Approach Delay, s/veh	12.6			13.3			18.0			21.6		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	21.3		34.3	10.7	17.5		34.3				
Change Period (Y+Rc), s	4.5	5.5		5.6	5.5	* 5.5		5.6				
Max Green Setting (Gmax), s	29.5	29.5		49.4	24.5	* 31		49.4				
Max Q Clear Time (g_c+I), s	4.7	4.7		19.6	4.8	5.1		16.4				
Green Ext Time (p_c), s	0.0	0.7		9.1	0.4	1.0		5.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	14.6											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	5	145	35	300	310	15	25	10	105	15	5	5
Future Volume (vph)	5	145	35	300	310	15	25	10	105	15	5	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1517	2953		1513	3108		1355	1403	1269	1515	1462	
Flt Permitted	0.55	1.00		0.63	1.00		0.75	0.92	1.00	0.74	1.00	
Satd. Flow (perm)	872	2953		1007	3108		1072	1312	1269	1187	1462	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	153	37	316	326	16	26	11	111	16	5	5
RTOR Reduction (vph)	0	21	0	0	3	0	0	0	87	0	4	0
Lane Group Flow (vph)	5	169	0	316	339	0	18	19	24	16	6	0
Confl. Peds. (#/hr)	8		1	1		8	9		1	1		9
Heavy Vehicles (%)	7%	7%	7%	1%	1%	1%	8%	8%	8%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	27.6	17.0		27.6	26.7		12.0	12.0	12.0	12.0	12.0	
Effective Green, g (s)	27.6	17.0		27.6	26.7		12.0	12.0	12.0	12.0	12.0	
Actuated g/C Ratio	0.50	0.31		0.50	0.49		0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	450	917		606	1517		235	287	278	260	320	
v/s Ratio Prot	0.00	0.06		c0.10	0.11						0.00	
v/s Ratio Perm	0.01			c0.16			0.02	0.01	c0.02	0.01		
v/c Ratio	0.01	0.18		0.52	0.22		0.08	0.07	0.09	0.06	0.02	
Uniform Delay, d1	6.7	13.8		8.5	8.0		17.0	16.9	17.0	16.9	16.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.4	0.1		0.1	0.0	0.0	0.0	0.0	
Delay (s)	6.7	13.9		8.9	8.1		17.0	16.9	17.0	16.9	16.7	
Level of Service	A	B		A	A		B	B	B	B	B	
Approach Delay (s/veh)		13.7			8.5			17.0			16.9	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.9			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			54.7			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			50.0%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	195	80	75	155	75	50
Future Vol, veh/h	195	80	75	155	75	50
Conflicting Peds, #/hr	0	7	7	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	205	84	79	163	79	53
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	296	0	577	254
Stage 1	-	-	-	-	254	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1277	-	482	790
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1269	-	446	785
Mov Cap-2 Maneuver	-	-	-	-	536	-
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	686	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	2.6		12.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	614	-	-	1269	-	
HCM Lane V/C Ratio	0.214	-	-	0.062	-	
HCM Control Delay (s/veh)	12.5	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q (veh)	0.8	-	-	0.2	-	

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	235	135	165	80	0
Future Vol, veh/h	15	235	135	165	80	0
Conflicting Peds, #/hr	12	0	0	12	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	247	142	174	84	0
Major/Minor						
	Major1	Major2		Minor2		
Conflicting Flow All	328	0	-	0	524	241
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	283	-
Critical Hdwy	4.1	-	-	-	5.8	5.9
Critical Hdwy Stg 1	-	-	-	-	4.8	-
Critical Hdwy Stg 2	-	-	-	-	4.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1243	-	-	-	564	819
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1226	-	-	-	541	808
Mov Cap-2 Maneuver	-	-	-	-	614	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	797	-
Approach						
	EB	WB		SB		
HCM Control Delay, s/v	0.5	0		11.8		
HCM LOS				B		
Minor Lane/Major Mvmt						
	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1226	-	-	-	614	
HCM Lane V/C Ratio	0.013	-	-	-	0.137	
HCM Control Delay (s/veh)	8	0	-	-	11.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q (veh)	0	-	-	-	0.5	

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖			↕	↗
Traffic Vol, veh/h	175	20	120	25	10	35	105	85	15	20	45	135
Future Vol, veh/h	175	20	120	25	10	35	105	85	15	20	45	135
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	184	21	126	26	11	37	111	89	16	21	47	142
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	11.1	9.8	10.3	9.5
HCM LOS	B	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	90%	0%	36%	31%	0%
Vol Thru, %	0%	85%	10%	0%	14%	69%	0%
Vol Right, %	0%	15%	0%	100%	50%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	100	195	120	70	65	135
LT Vol	105	0	175	0	25	20	0
Through Vol	0	85	20	0	10	45	0
RT Vol	0	15	0	120	35	0	135
Lane Flow Rate	111	105	205	126	74	68	142
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.198	0.171	0.356	0.178	0.122	0.117	0.208
Departure Headway (Hd)	6.447	5.834	6.24	5.081	5.966	6.135	5.27
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	557	616	577	706	601	585	681
Service Time	4.179	3.565	3.969	2.81	4.004	3.868	3.002
HCM Lane V/C Ratio	0.199	0.17	0.355	0.178	0.123	0.116	0.209
HCM Control Delay, s/veh	10.8	9.8	12.4	8.9	9.8	9.7	9.4
HCM Lane LOS	B	A	B	A	A	A	A
HCM 95th-ile Q	0.7	0.6	1.6	0.6	0.4	0.4	0.8

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	90	655	385	100	90	90
Future Vol, veh/h	90	655	385	100	90	90
Conflicting Peds, #/hr	9	0	0	9	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	95	689	405	105	95	95
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	519	0	-	0	1008	264
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	541	-
Critical Hdwy	4.12	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1050	-	-	-	240	741
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	553	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	201	735
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	549	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	1.5	0		24.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1042	-	-	-	201	735
HCM Lane V/C Ratio	0.091	-	-	-	0.471	0.129
HCM Control Delay (s/veh)	8.8	0.5	-	-	37.9	10.6
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q (veh)	0.3	-	-	-	2.3	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	295	100	60	215	95	125	500	60	90	350	110
Future Volume (veh/h)	235	295	100	60	215	95	125	500	60	90	350	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	247	311	105	63	226	100	132	526	63	95	368	116
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	436	577	191	304	459	201	165	690	86	124	498	165
Arrive On Green	0.14	0.21	0.21	0.07	0.14	0.14	0.26	0.26	0.26	0.22	0.22	0.22
Sat Flow, veh/h	1861	2734	905	1667	3325	1456	629	2636	330	555	2229	738
Grp Volume(v), veh/h	247	209	207	63	226	100	381	0	340	311	0	268
Grp Sat Flow(s),veh/h/ln	1861	1856	1783	1667	1663	1456	1813	0	1781	1817	0	1705
Q Serve(g_s), s	9.0	8.1	8.4	2.3	5.1	5.2	15.9	0.0	14.1	13.0	0.0	11.8
Cycle Q Clear(g_c), s	9.0	8.1	8.4	2.3	5.1	5.2	15.9	0.0	14.1	13.0	0.0	11.8
Prop In Lane	1.00		0.51	1.00		1.00	0.35		0.19	0.31		0.43
Lane Grp Cap(c), veh/h	436	392	377	304	459	201	475	0	467	406	0	381
V/C Ratio(X)	0.57	0.53	0.55	0.21	0.49	0.50	0.80	0.00	0.73	0.77	0.00	0.70
Avail Cap(c_a), veh/h	758	796	765	714	1222	535	677	0	665	791	0	742
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	28.4	28.5	22.5	32.3	32.4	28.0	0.0	27.3	29.5	0.0	29.0
Incr Delay (d2), s/veh	0.4	0.8	0.9	0.1	0.6	1.4	3.9	0.0	1.8	2.3	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	3.6	3.6	0.9	2.0	1.9	7.1	0.0	6.0	5.7	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.1	29.3	29.5	22.6	32.9	33.8	31.8	0.0	29.2	31.8	0.0	30.8
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	663			389			721			579		
Approach Delay, s/veh	27.8			31.5			30.6			31.3		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	25.9		10.0	22.3		22.8		15.9	16.4			
Change Period (Y+Rc), s	4.7		4.7	5.2		4.7		4.7	5.2			
Max Green Setting (Gmax), s	30.3		25.3	34.8		35.3		25.3	29.8			
Max Q Clear Time (g_c+I1), s	17.9		4.3	10.4		15.0		11.0	7.2			
Green Ext Time (p_c), s	3.1		0.1	2.1		2.9		0.3	1.4			
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	30.1											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⬆			⬆	⬆		⬆			⬆	
Traffic Vol, veh/h	75	15	60	25	15	120	35	575	45	35	270	120
Future Vol, veh/h	75	15	60	25	15	120	35	575	45	35	270	120
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	79	16	63	26	16	126	37	605	47	37	284	126

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	808	1154	208	933	1194	331	412	0	0	657	0	0
Stage 1	423	423	-	708	708	-	-	-	-	-	-	-
Stage 2	385	731	-	225	486	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	316	241	818	222	187	668	1151	-	-	933	-	-
Stage 1	627	634	-	394	438	-	-	-	-	-	-	-
Stage 2	656	486	-	760	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	219	215	816	178	167	665	1149	-	-	929	-	-
Mov Cap-2 Maneuver	219	215	-	178	167	-	-	-	-	-	-	-
Stage 1	594	599	-	372	414	-	-	-	-	-	-	-
Stage 2	485	459	-	646	522	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v28.2		16.8	0.6	0.9
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBRELn1	WBLn1	WBLn2	SBL	SBT	SBR	
Capacity (veh/h)	1149	-	-	309	174	665	929	-	-
HCM Lane V/C Ratio	0.032	-	-	0.511	0.242	0.19	0.04	-	-
HCM Control Delay (s/veh)	8.2	0.2	-	28.2	32.2	11.7	9	0.2	-
HCM Lane LOS	A	A	-	D	D	B	A	A	-
HCM 95th %tile Q (veh)	0.1	-	-	2.7	0.9	0.7	0.1	-	-

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall No-Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	190	250	190	45	35	155
Future Volume (Veh/h)	190	250	190	45	35	155
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	200	263	200	47	37	163
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				0	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		589	408	671	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		589	408	671	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	88		32	90	89	85
cM capacity (veh/h)	1634		295	467	330	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	200	263	247	200		
Volume Left	200	0	200	0		
Volume Right	0	263	0	163		
cSH	1634	1700	317	763		
Volume to Capacity	0.12	0.15	0.78	0.26		
Queue Length 95th (ft)	10	0	155	26		
Control Delay (s/veh)	7.5	0.0	46.8	11.4		
Lane LOS	A		E	B		
Approach Delay (s/veh)	3.2		46.8	11.4		
Approach LOS			E	B		
Intersection Summary						
Average Delay	16.9					
Intersection Capacity Utilization	48.2%		ICU Level of Service		A	
Analysis Period (min)	15					

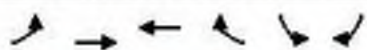
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	470	135	220	275	140	110	55	315	95	35	95
Future Volume (vph)	80	470	135	220	275	140	110	55	315	95	35	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.97		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.98	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85		1.00	0.85	1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.99	
Satd. Flow (prot)	1615	3144		3118	3214	1396		1637	2480	1474	1388	
Flt Permitted	0.57	1.00		0.95	1.00	1.00		0.96	1.00	0.95	0.99	
Satd. Flow (perm)	975	3144		3118	3214	1396		1637	2480	1474	1388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	485	139	227	284	144	113	57	325	98	36	98
RTOR Reduction (vph)	0	27	0	0	0	72	0	0	222	0	72	0
Lane Group Flow (vph)	82	597	0	227	284	72	0	170	103	88	72	0
Confl. Peds. (#/hr)	16		1	1		16			11	11		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D,P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	29.8	19.5		10.3	23.8	37.8		13.5	23.8	14.0	14.0	
Effective Green, g (s)	29.8	19.5		10.3	23.8	37.8		13.5	23.8	14.0	14.0	
Actuated g/C Ratio	0.40	0.26		0.14	0.32	0.50		0.18	0.32	0.19	0.19	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	436	814		426	1015	700		293	783	274	258	
v/s Ratio Prot	0.01	c0.19		c0.07	c0.09	0.02		c0.10	0.02	c0.06	0.05	
v/s Ratio Perm	0.06					0.03			0.02			
v/c Ratio	0.18	0.73		0.53	0.27	0.10		0.58	0.13	0.32	0.27	
Uniform Delay, d1	14.4	25.5		30.2	19.3	9.8		28.3	18.3	26.5	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	0.0	2.9		0.6	0.0	0.0		1.8	0.0	0.2	0.2	
Delay (s)	14.5	28.4		30.9	19.3	9.8		30.1	18.4	26.7	26.5	
Level of Service	B	C		C	B	A		C	B	C	C	
Approach Delay (s/veh)		26.8			21.2			22.4			26.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		24.0										
HCM 2000 Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		75.3							18.0			
Intersection Capacity Utilization		71.0%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall No-Build PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↱		↰	↱
Traffic Volume (veh/h)	540	560	425	55	130	575
Future Volume (veh/h)	540	560	425	55	130	575
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.94	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1736	1736	1750	1750	1750	1750
Adj Flow Rate, veh/h	568	589	447	58	137	605
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	620	1836	620	80	551	491
Arrive On Green	0.29	0.56	0.21	0.21	0.33	0.33
Sat Flow, veh/h	1654	3386	3025	378	1667	1483
Grp Volume(v), veh/h	568	589	252	253	137	605
Grp Sat Flow(s), veh/h/ln	1654	1650	1663	1654	1667	1483
Q Serve(g_s), s	23.6	8.7	12.8	12.9	5.4	30.0
Cycle Q Clear(g_c), s	23.6	8.7	12.8	12.9	5.4	30.0
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	620	1836	351	349	551	491
V/C Ratio(X)	0.92	0.32	0.72	0.73	0.25	1.23
Avail Cap(c_a), veh/h	687	1836	913	908	551	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	10.8	33.2	33.3	22.1	30.3
Incr Delay (d2), s/veh	15.9	0.1	2.0	2.2	0.2	121.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh	18.9	2.9	5.2	5.2	2.1	37.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	34.7	10.9	35.3	35.5	22.3	151.9
LnGrp LOS	C	B	D	D	C	F
Approach Vol, veh/h	1157	505		742		
Approach Delay, s/veh	22.6	35.4		128.0		
Approach LOS	C	D		F		
Timer - Assigned Phs			4	6	7	8
Phs Duration (G+Y+Rc), s			55.7	35.0	31.3	24.3
Change Period (Y+Rc), s			5.2	5.0	5.0	5.2
Max Green Setting (Gmax), s			49.8	30.0	30.0	49.8
Max Q Clear Time (g_c+I1), s			10.7	32.0	25.6	14.9
Green Ext Time (p_c), s			3.5	0.0	0.7	2.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh		57.8				
HCM 6th LOS		E				

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall No-Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	265	375	95	210	255	100	120	425	260	60	345	295
Future Volume (veh/h)	265	375	95	210	255	100	120	425	260	60	345	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	279	395	100	221	268	105	126	447	274	63	363	311
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	326	606	152	255	431	164	310	592	360	286	526	444
Arrive On Green	0.17	0.20	0.20	0.17	0.21	0.21	0.08	0.31	0.31	0.07	0.29	0.29
Sat Flow, veh/h	1874	2959	741	1481	2081	793	1620	1931	1175	1770	1815	1534
Grp Volume(v), veh/h	279	248	247	221	188	185	126	374	347	63	353	321
Grp Sat Flow(s), veh/h/ln	1874	1869	1831	1481	1477	1397	1620	1616	1490	1770	1766	1583
Q Serve(g_s), s	11.3	9.5	9.7	11.3	9.0	9.5	4.1	16.3	16.5	1.8	13.9	14.1
Cycle Q Clear(g_c), s	11.3	9.5	9.7	11.3	9.0	9.5	4.1	16.3	16.5	1.8	13.9	14.1
Prop In Lane	1.00		0.40	1.00		0.57	1.00		0.79	1.00		0.97
Lane Grp Cap(c), veh/h	326	382	375	255	306	289	310	496	457	286	512	459
V/C Ratio(X)	0.86	0.65	0.66	0.87	0.62	0.64	0.41	0.75	0.76	0.22	0.69	0.70
Avail Cap(c_a), veh/h	611	968	949	477	760	718	688	833	768	729	910	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	28.5	28.6	31.5	28.2	28.3	18.2	24.4	24.5	17.8	24.6	24.7
Incr Delay (d2), s/veh	2.5	2.2	2.4	3.4	2.8	3.3	0.3	2.8	3.2	0.1	2.0	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.2	4.3	4.4	4.2	3.3	3.3	1.5	6.2	5.8	0.7	5.7	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.9	30.7	31.0	34.9	31.0	31.7	18.5	27.3	27.7	17.9	26.7	27.1
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h		774			594			847			737	
Approach Delay, s/veh		31.9			32.7			26.1			26.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.4	28.7	18.3	20.8	11.7	27.3	18.1	21.0				
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gm), s	40.3	25.2	* 41	24.8	40.3	25.5	40.2					
Max Q Clear Time (g_c+I), s	18.5	13.3	11.7	6.1	16.1	13.3	11.5					
Green Ext Time (p_c), s	0.1	5.5	0.2	3.9	0.1	5.3	0.3	3.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			29.0									
HCM 6th LOS			C									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰↱	↰↱		↰	↱	
Traffic Volume (vph)	265	530	35	35	345	85	35	125	35	200	125	220
Future Volume (vph)	265	530	35	35	345	85	35	125	35	200	125	220
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1558	3090		1605	2896		3162	3153		1554	1575	
Flt Permitted	0.25	1.00		0.42	1.00		0.52	1.00		0.55	1.00	
Satd. Flow (perm)	425	3090		722	2896		1746	3153		902	1575	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	279	558	37	37	363	89	37	132	37	211	132	232
RTOR Reduction (vph)	0	3	0	0	19	0	0	16	0	0	34	0
Lane Group Flow (vph)	279	592	0	37	433	0	37	153	0	211	330	0
Confl. Peds. (#/hr)	4					4				5		2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.0	36.4		25.0	20.9		32.4	28.8		46.0	37.9	
Effective Green, g (s)	45.0	36.4		25.0	20.9		32.4	28.8		46.0	37.9	
Actuated g/C Ratio	0.45	0.36		0.25	0.21		0.32	0.29		0.46	0.38	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	409	1120		215	602		614	904		500	594	
v/s Ratio Prot	c0.13	0.19		0.01	0.15		0.00	0.05		c0.06	c0.21	
v/s Ratio Perm	c0.17			0.04			0.02			0.14		
v/c Ratio	0.68	0.52		0.17	0.71		0.06	0.16		0.42	0.55	
Uniform Delay, d1	19.7	25.2		28.9	37.0		23.3	26.8		17.1	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	0.2		0.3	3.4		0.0	0.4		0.2	0.6	
Delay (s)	23.4	25.4		29.3	40.4		23.3	27.2		17.4	25.2	
Level of Service	C	C		C	D		C	C		B	C	
Approach Delay (s/veh)		24.8			39.6			26.5			22.3	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		27.7					HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio		0.65										
Actuated Cycle Length (s)		100.4					Sum of lost time (s)			18.6		
Intersection Capacity Utilization		70.9%					ICU Level of Service			C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall No-Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱		↱	↱	↰	↱	↱	↰	↱	↱
Traffic Volume (veh/h)	35	1120	1420	0	805	35	210	125	50	35	125	35
Future Volume (veh/h)	35	1120	1420	0	805	35	210	125	50	35	125	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	37	1179	0	0	847	37	221	132	53	37	132	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	308	1691		0	1531	683	731	483	185	679	408	111
Arrive On Green	0.53	0.53	0.00	0.00	0.53	0.53	0.09	0.21	0.21	0.04	0.16	0.16
Sat Flow, veh/h	637	3206	1430	0	2978	1294	3093	2246	863	3183	2544	691
Grp Volume(v), veh/h	37	1179	0	0	847	37	221	92	93	37	83	86
Grp Sat Flow(s), veh/h/ln	637	1603	1430	0	1451	1294	1546	1590	1519	1591	1637	1598
Q Serve(g_s), s	3.1	20.6	0.0	0.0	14.6	1.0	4.3	3.6	3.8	0.7	3.4	3.6
Cycle Q Clear(g_c), s	17.7	20.6	0.0	0.0	14.6	1.0	4.3	3.6	3.8	0.7	3.4	3.6
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.57	1.00		0.43
Lane Grp Cap(c), veh/h	308	1691		0	1531	683	731	342	326	679	262	256
V/C Ratio(X)	0.12	0.70		0.00	0.55	0.05	0.30	0.27	0.29	0.05	0.32	0.33
Avail Cap(c_a), veh/h	435	2329		0	2108	940	1462	626	598	969	645	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	13.2	0.0	0.0	11.8	8.6	22.3	24.5	24.6	24.5	27.8	27.9
Incr Delay (d2), s/veh	0.3	0.9	0.0	0.0	0.2	0.0	0.2	0.3	0.4	0.0	0.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh	4	6.5	0.0	0.0	4.1	1.1	1.5	1.3	1.4	0.3	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.0	14.1	0.0	0.0	12.0	8.6	22.5	24.8	24.9	24.5	28.5	28.7
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h		1216			884			406			206	
Approach Delay, s/veh		14.3			11.9			23.6			27.9	
Approach LOS		B			B			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	21.6		45.1	12.3	17.5		45.1				
Change Period (Y+Rc), s	5.5	5.5		5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	29.5	29.5		54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+2), s	5.8	22.6		6.3	5.6	5.6		16.6				
Green Ext Time (p_c), s	0.0	0.8		16.9	0.5	0.9		5.6				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	15.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall No-Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	400	85	290	585	35	150	85	540	155	50	45
Future Volume (vph)	35	400	85	290	585	35	150	85	540	155	50	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%				0%
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	0.98	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		0.98	0.99	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3133		1527	3133		1444	1509	1344	1577	1538	
Flt Permitted	0.28	1.00		0.27	1.00		0.69	0.90	1.00	0.67	1.00	
Satd. Flow (perm)	487	3133		445	3133		1053	1390	1344	1116	1538	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	417	89	302	609	36	156	89	562	161	52	47
RTOR Reduction (vph)	0	19	0	0	4	0	0	0	268	0	25	0
Lane Group Flow (vph)	36	487	0	302	641	0	119	126	295	161	74	0
Confl. Peds. (#/hr)	5		5	5		5	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	40.7	22.5		40.7	36.4		49.2	49.2	49.2	49.2	49.2	
Effective Green, g (s)	40.7	22.5		40.7	36.4		49.2	49.2	49.2	49.2	49.2	
Actuated g/C Ratio	0.39	0.21		0.39	0.35		0.47	0.47	0.47	0.47	0.47	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	234	671		360	1086		493	651	629	522	720	
v/s Ratio Prot	0.01	0.16		c0.15	0.20						0.05	
v/s Ratio Perm	0.05			c0.18			0.11	0.09	c0.22	0.14		
v/c Ratio	0.15	0.72		0.83	0.59		0.24	0.19	0.46	0.30	0.10	
Uniform Delay, d1	20.7	38.3		33.7	28.1		16.7	16.3	19.0	17.3	15.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	4.0		14.9	0.9		1.1	0.6	2.5	1.5	0.2	
Delay (s)	20.8	42.4		48.7	29.0		17.8	16.9	21.5	18.8	15.8	
Level of Service	C	D		D	C		B	B	C	B	B	
Approach Delay (s/veh)		40.9			35.3			20.2			17.7	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			30.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			79.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	225	80	75	150	0	70	0	45	35	0	35
Future Vol, veh/h	0	225	80	75	150	0	70	0	45	35	0	35
Conflicting Peds, #/hr	0	0	7	7	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	95	95	95	95	92	95	92	95	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	0	237	84	79	158	0	74	0	47	38	0	38
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	328	0	0	623	602	286	619	644	160
Stage 1	-	-	-	-	-	-	286	286	-	316	316	-
Stage 2	-	-	-	-	-	-	337	316	-	303	328	-
Critical Hdwy	-	-	-	4.1	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	-	-	-	2.2	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1243	-	0	401	416	758	401	391	885
Stage 1	0	-	-	-	-	0	726	679	-	695	655	-
Stage 2	0	-	-	-	-	0	681	659	-	706	647	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1235	-	-	360	384	753	356	361	883
Mov Cap-2 Maneuver	-	-	-	-	-	-	463	467	-	449	431	-
Stage 1	-	-	-	-	-	-	726	674	-	695	609	-
Stage 2	-	-	-	-	-	-	605	613	-	662	642	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			2.7			13.5			11.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	SBLn1						
Capacity (veh/h)	545	-	-	1235	-	595						
HCM Lane V/C Ratio	0.222	-	-	0.064	-	0.128						
HCM Control Delay (s/veh)	13.5	-	-	8.1	0	11.9						
HCM Lane LOS	B	-	-	A	A	B						
HCM 95th %tile Q (veh)	0.8	-	-	0.2	-	0.4						

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱			↰	↱
Traffic Vol, veh/h	210	10	125	20	5	25	95	90	15	15	40	140
Future Vol, veh/h	210	10	125	20	5	25	95	90	15	15	40	140
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	221	11	132	21	5	26	100	95	16	16	42	147
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	11.5	9.6	10.2	9.5
HCM LOS	B	A	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	95%	0%	40%	27%	0%
Vol Thru, %	0%	86%	5%	0%	10%	73%	0%
Vol Right, %	0%	14%	0%	100%	50%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	105	220	125	50	55	140
LT Vol	95	0	210	0	20	15	0
Through Vol	0	90	10	0	5	40	0
RT Vol	0	15	0	125	25	0	140
Lane Flow Rate	100	111	232	132	53	58	147
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.18	0.18	0.399	0.184	0.088	0.099	0.217
Departure Headway (Hd)	6.469	5.861	6.21	5.023	5.996	6.139	5.291
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	556	613	581	714	598	585	679
Service Time	4.196	3.588	3.936	2.749	4.031	3.867	3.019
HCM Lane V/C Ratio	0.18	0.181	0.399	0.185	0.089	0.099	0.216
HCM Control Delay, s/veh	10.6	9.9	13	8.9	9.6	9.5	9.5
HCM Lane LOS	B	A	B	A	A	A	A
HCM 95th-ile Q	0.7	0.7	1.9	0.7	0.3	0.3	0.8

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	95	640	380	115	105	95
Future Vol, veh/h	95	640	380	115	105	95
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	100	674	400	121	111	100

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	529	0	0 1012 269
Stage 1	-	-	- 469 -
Stage 2	-	-	- 543 -
Critical Hdwy	4.12	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.21	-	- 3.5 3.3
Pot Cap-1 Maneuver	1041	-	- 239 735
Stage 1	-	-	- 602 -
Stage 2	-	-	- 552 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1034	-	- 199 730
Mov Cap-2 Maneuver	-	-	- 199 -
Stage 1	-	-	- 505 -
Stage 2	-	-	- 548 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.6	0	28
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1034	-	-	-	199	730
HCM Lane V/C Ratio	0.097	-	-	-	0.555	0.137
HCM Control Delay (s/veh)	8.9	0.5	-	-	43.6	10.7
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q (veh)	0.3	-	-	-	3	0.5

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	305	100	70	240	115	125	465	70	105	320	105
Future Volume (veh/h)	230	305	100	70	240	115	125	465	70	105	320	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	242	321	105	74	253	121	132	489	74	111	337	111
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	426	570	183	308	471	208	168	652	103	147	464	160
Arrive On Green	0.14	0.21	0.21	0.07	0.14	0.14	0.26	0.26	0.26	0.22	0.22	0.22
Sat Flow, veh/h	1861	2757	885	1667	3325	1467	651	2531	400	671	2116	730
Grp Volume(v), veh/h	242	214	212	74	253	121	368	0	327	300	0	259
Grp Sat Flow(s),veh/h/ln	1861	1856	1787	1667	1663	1467	1812	0	1770	1811	0	1706
Q Serve(g_s), s	8.5	8.1	8.4	2.6	5.6	6.1	14.9	0.0	13.3	12.2	0.0	11.0
Cycle Q Clear(g_c), s	8.5	8.1	8.4	2.6	5.6	6.1	14.9	0.0	13.3	12.2	0.0	11.0
Prop In Lane	1.00		0.50	1.00		1.00	0.36		0.23	0.37		0.43
Lane Grp Cap(c), veh/h	426	384	370	308	471	208	467	0	456	397	0	374
V/C Ratio(X)	0.57	0.56	0.57	0.24	0.54	0.58	0.79	0.00	0.72	0.75	0.00	0.69
Avail Cap(c_a), veh/h	770	820	789	724	1258	555	697	0	681	812	0	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	28.0	28.1	22.0	31.4	31.6	27.2	0.0	26.6	28.8	0.0	28.3
Incr Delay (d2), s/veh	0.4	0.9	1.0	0.1	0.7	1.9	2.9	0.0	1.6	2.2	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	3.6	3.6	1.0	2.2	2.2	6.5	0.0	5.6	5.3	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.3	29.0	29.2	22.1	32.1	33.5	30.1	0.0	28.2	30.9	0.0	30.0
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	668			448			695			559		
Approach Delay, s/veh	27.3			30.8			29.2			30.5		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	25.0			10.3			21.5			22.0		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	30.3			25.3			34.8			35.3		
Max Q Clear Time (g_c+I1), s	16.9			4.6			10.4			14.2		
Green Ext Time (p_c), s	3.1			0.1			2.1			2.8		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				29.3								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+	+		+			+	
Traffic Vol, veh/h	75	15	60	25	15	115	35	580	45	35	285	115
Future Vol, veh/h	75	15	60	25	15	115	35	580	45	35	285	115
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	79	16	63	26	16	121	37	611	47	37	300	121
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	825	1174	214	947	1211	334	423	0	0	663	0	0
Stage 1	437	437	-	714	714	-	-	-	-	-	-	-
Stage 2	388	737	-	233	497	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	308	235	812	217	182	665	1140	-	-	928	-	-
Stage 1	617	627	-	391	436	-	-	-	-	-	-	-
Stage 2	654	483	-	752	546	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	215	210	810	173	162	662	1138	-	-	924	-	-
Mov Cap-2 Maneuver	215	210	-	173	162	-	-	-	-	-	-	-
Stage 1	584	593	-	369	412	-	-	-	-	-	-	-
Stage 2	487	456	-	639	516	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	29.1		17.2		0.6		0.9					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1138	-	-	303 169 662	924	-	-					
HCM Lane V/C Ratio	0.032	-	-	0.521 0.249 0.183	0.04	-	-					
HCM Control Delay (s/veh)	8.3	0.2	-	29.1 33.2 11.7	9.1	0.2	-					
HCM Lane LOS	A	A	-	D D B	A	A	-					
HCM 95th %tile Q (veh)	0.1	-	-	2.8 0.9 0.7	0.1	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	185	280	220	40	35	155
Future Volume (Veh/h)	185	280	220	40	35	155
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	195	295	232	42	37	163
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		579	398	693	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		579	398	693	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	88		23	91	89	85
cM capacity (veh/h)	1634		300	475	322	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	195	295	274	200		
Volume Left	195	0	232	0		
Volume Right	0	295	0	163		
cSH	1634	1700	318	754		
Volume to Capacity	0.12	0.17	0.86	0.27		
Queue Length 95th (ft)	10	0	194	27		
Control Delay (s/veh)	7.5	0.0	58.6	11.5		
Lane LOS	A		F	B		
Approach Delay (s/veh)	3.0		58.6	11.5		
Approach LOS			F	B		
Intersection Summary						
Average Delay	20.5					
Intersection Capacity Utilization	49.5%			ICU Level of Service		A
Analysis Period (min)	15					

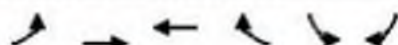
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	460	130	220	270	135	105	50	305	90	35	95
Future Volume (vph)	80	460	130	220	270	135	105	50	305	90	35	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1612	3145		3118	3214	1394		1636	2477	1474	1388	
Flt Permitted	0.57	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	960	3145		3118	3214	1394		1636	2477	1474	1388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	474	134	227	278	139	108	52	314	93	36	98
RTOR Reduction (vph)	0	17	0	0	0	60	0	0	219	0	42	0
Lane Group Flow (vph)	82	591	0	227	278	79	0	160	95	84	101	0
Confl. Peds. (#/hr)	16		1	1		16			11	11		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	36.1	24.1		12.0	30.1	50.7		15.0	27.0	20.6	20.6	
Effective Green, g (s)	36.1	24.1		12.0	30.1	50.7		15.0	27.0	20.6	20.6	
Actuated g/C Ratio	0.40	0.27		0.13	0.34	0.57		0.17	0.30	0.23	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	429	844		417	1078	787		273	745	338	318	
v/s Ratio Prot	0.01	c0.19		c0.07	0.09	0.02		c0.10	0.02	0.06	c0.07	
v/s Ratio Perm	0.06					0.03			0.02			
v/c Ratio	0.19	0.70		0.54	0.26	0.10		0.59	0.13	0.25	0.32	
Uniform Delay, d1	16.9	29.5		36.3	21.7	9.0		34.5	22.8	28.2	28.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	2.2		0.8	0.0	0.0		2.1	0.0	0.1	0.2	
Delay (s)	17.0	31.7		37.1	21.7	9.0		36.6	22.8	28.4	28.9	
Level of Service	B	C		D	C	A		D	C	C	C	
Approach Delay (s/veh)		30.0			24.4			27.4			28.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.5				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			89.7				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			70.1%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	535	545	415	55	125	570
Future Volume (veh/h)	535	545	415	55	125	570
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.94	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1736	1736	1750	1750	1750	1750
Adj Flow Rate, veh/h	563	574	437	58	132	600
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	620	1827	614	81	555	494
Arrive On Green	0.29	0.55	0.21	0.21	0.33	0.33
Sat Flow, veh/h	1654	3386	3017	386	1667	1483
Grp Volume(v), veh/h	563	574	247	248	132	600
Grp Sat Flow(s), veh/h/ln	1654	1650	1663	1653	1667	1483
Q Serve(g_s), s	23.3	8.5	12.4	12.6	5.2	30.0
Cycle Q Clear(g_c), s	23.3	8.5	12.4	12.6	5.2	30.0
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	620	1827	348	346	555	494
V/C Ratio(X)	0.91	0.31	0.71	0.72	0.24	1.22
Avail Cap(c_a), veh/h	693	1827	919	914	555	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	10.9	33.1	33.1	21.8	30.1
Incr Delay (d2), s/veh	14.6	0.1	2.0	2.1	0.2	114.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	2.8	5.0	5.1	2.0	15.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	33.4	10.9	35.0	35.2	21.9	144.3
LnGrp LOS	C	B	D	D	C	F
Approach Vol, veh/h		1137	495		732	
Approach Delay, s/veh		22.1	35.1		122.2	
Approach LOS		C	D		F	
Timer - Assigned Phs			4	6	7	8
Phs Duration (G+Y+Rc), s			55.1	35.0	31.0	24.1
Change Period (Y+Rc), s			5.2	5.0	5.0	5.2
Max Green Setting (Gmax), s			49.8	30.0	30.0	49.8
Max Q Clear Time (g_c+I1), s			10.5	32.0	25.3	14.6
Green Ext Time (p_c), s			3.4	0.0	0.7	2.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			55.8			
HCM 6th LOS			E			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	380	90	215	260	100	120	415	260	65	340	285
Future Volume (veh/h)	255	380	90	215	260	100	120	415	260	65	340	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	268	400	95	226	274	105	126	437	274	68	358	300
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	315	612	144	260	452	169	313	580	361	289	530	437
Arrive On Green	0.17	0.20	0.20	0.18	0.22	0.22	0.08	0.30	0.30	0.07	0.29	0.29
Sat Flow, veh/h	1874	3001	706	1481	2095	782	1620	1913	1190	1770	1836	1516
Grp Volume(v), veh/h	268	248	247	226	191	188	126	369	342	68	344	314
Grp Sat Flow(s),veh/h/ln	1874	1869	1838	1481	1477	1399	1620	1616	1487	1770	1766	1586
Q Serve(g_s), s	10.9	9.5	9.7	11.7	9.1	9.6	4.2	16.2	16.4	2.0	13.5	13.8
Cycle Q Clear(g_c), s	10.9	9.5	9.7	11.7	9.1	9.6	4.2	16.2	16.4	2.0	13.5	13.8
Prop In Lane	1.00		0.38	1.00		0.56	1.00		0.80	1.00		0.96
Lane Grp Cap(c), veh/h	315	381	375	260	319	302	313	490	450	289	509	457
V/C Ratio(X)	0.85	0.65	0.66	0.87	0.60	0.62	0.40	0.75	0.76	0.24	0.68	0.69
Avail Cap(c_a), veh/h	608	964	948	475	756	716	690	829	763	726	906	814
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	28.7	28.7	31.5	27.7	27.9	18.2	24.7	24.8	18.0	24.7	24.8
Incr Delay (d2), s/veh	2.5	2.2	2.4	3.5	2.6	3.0	0.3	2.8	3.2	0.2	1.9	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	4.4	4.4	4.3	3.3	3.3	1.5	6.2	5.8	0.8	5.6	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.3	30.9	31.1	34.9	30.3	30.9	18.6	27.6	28.0	18.1	26.6	27.0
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h	763			605			837			726		
Approach Delay, s/veh	32.2			32.2			26.4			26.0		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.5	18.6	20.8	11.8	27.4	17.7	21.7					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I+Y), s	14.0	18.4	13.7	11.7	6.2	15.8	12.9	11.6				
Green Ext Time (p_c), s	0.1	5.4	0.2	3.9	0.1	5.2	0.3	3.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	29.0											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	525	35	35	345	85	35	130	35	195	130	225
Future Volume (vph)	270	525	35	35	345	85	35	130	35	195	130	225
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	3059		1605	2896		3157	3142		1539	1560	
Flt Permitted	0.26	1.00		0.43	1.00		0.51	1.00		0.55	1.00	
Satd. Flow (perm)	420	3059		725	2896		1678	3142		885	1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	553	37	37	363	89	37	137	37	205	137	237
RTOR Reduction (vph)	0	3	0	0	19	0	0	15	0	0	34	0
Lane Group Flow (vph)	284	587	0	37	433	0	37	159	0	205	340	0
Confl. Peds. (#/hr)	4					4	2		5	5		2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.5	36.9		25.1	21.0		32.4	28.8		45.9	37.8	
Effective Green, g (s)	45.5	36.9		25.1	21.0		32.4	28.8		45.9	37.8	
Actuated g/C Ratio	0.45	0.37		0.25	0.21		0.32	0.29		0.46	0.38	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	410	1119		216	603		592	897		489	585	
v/s Ratio Prot	c0.14	0.19		0.01	0.15		0.00	0.05		c0.06	c0.22	
v/s Ratio Perm	c0.18			0.04			0.02			0.13		
v/c Ratio	0.69	0.52		0.17	0.72		0.06	0.18		0.42	0.58	
Uniform Delay, d1	19.7	25.1		29.1	37.1		23.5	27.1		17.4	25.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	0.2		0.4	3.4		0.0	0.4		0.2	1.0	
Delay (s)	23.8	25.3		29.5	40.6		23.5	27.5		17.6	26.1	
Level of Service	C	C		C	D		C	C		B	C	
Approach Delay (s/veh)		24.8			39.7			26.8			23.1	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			100.8			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			71.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘		↗	↘	↰	↗		↰	↗	↘
Traffic Volume (veh/h)	35	1095	1385	0	785	35	205	130	50	35	130	35
Future Volume (veh/h)	35	1095	1385	0	785	35	205	130	50	35	130	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	37	1153	0	0	826	37	216	137	53	37	137	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	314	1675		0	1516	676	733	491	182	687	418	109
Arrive On Green	0.52	0.52	0.00	0.00	0.52	0.52	0.09	0.22	0.22	0.04	0.16	0.16
Sat Flow, veh/h	650	3206	1430	0	2978	1294	3093	2270	842	3183	2566	672
Grp Volume(v), veh/h	37	1153	0	0	826	37	216	94	96	37	86	88
Grp Sat Flow(s), veh/h/ln	650	1603	1430	0	1451	1294	1546	1590	1522	1591	1637	1602
Q Serve(g_s), s	3.0	19.8	0.0	0.0	14.0	1.0	4.1	3.6	3.9	0.7	3.4	3.6
Cycle Q Clear(g_c), s	17.0	19.8	0.0	0.0	14.0	1.0	4.1	3.6	3.9	0.7	3.4	3.6
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.55	1.00		0.42
Lane Grp Cap(c), veh/h	314	1675		0	1516	676	733	344	329	687	267	261
V/C Ratio(X)	0.12	0.69		0.00	0.54	0.05	0.29	0.27	0.29	0.05	0.32	0.34
Avail Cap(c_a), veh/h	454	2367		0	2142	956	1484	637	609	983	655	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	13.1	0.0	0.0	11.8	8.7	21.9	24.0	24.1	23.9	27.3	27.3
Incr Delay (d2), s/veh	0.3	0.9	0.0	0.0	0.2	0.0	0.2	0.3	0.4	0.0	0.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.2	0.0	0.0	3.9	1.1	1.4	1.3	1.4	0.3	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.7	14.0	0.0	0.0	12.0	8.7	22.1	24.4	24.5	24.0	27.9	28.1
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h	1190			863			406			211		
Approach Delay, s/veh	14.1			11.8			23.2			27.3		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4			44.1	12.1	17.5		44.1				
Change Period (Y+Rc), s	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	29.5			54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+I), s	5.9			21.8	6.1	5.6		16.0				
Green Ext Time (p_c), s	0.0	0.8		16.7	0.5	0.9		5.4				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↶↷		↰	↶↷		↰	↶	↷	↰	↶	↷
Traffic Volume (vph)	35	390	100	290	570	35	165	85	535	150	50	45
Future Volume (vph)	35	390	100	290	570	35	165	85	535	150	50	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3118		1527	3132		1444	1505	1344	1577	1538	
Flt Permitted	0.30	1.00		0.27	1.00		0.69	0.89	1.00	0.67	1.00	
Satd. Flow (perm)	503	3118		441	3132		1053	1358	1344	1105	1538	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	406	104	302	594	36	172	89	557	156	52	47
RTOR Reduction (vph)	0	24	0	0	4	0	0	0	270	0	25	0
Lane Group Flow (vph)	36	486	0	302	626	0	126	135	287	156	74	0
Confl. Peds. (#/hr)	5		5	5		5	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	40.7	22.6		40.7	36.4		49.2	49.2	49.2	49.2	49.2	
Effective Green, g (s)	40.7	22.6		40.7	36.4		49.2	49.2	49.2	49.2	49.2	
Actuated g/C Ratio	0.39	0.22		0.39	0.35		0.47	0.47	0.47	0.47	0.47	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	240	671		358	1085		493	636	629	517	720	
v/s Ratio Prot	0.01	0.16		c0.15	0.20						0.05	
v/s Ratio Perm	0.05			c0.18			0.12	0.10	c0.21	0.14		
v/c Ratio	0.15	0.72		0.84	0.58		0.26	0.21	0.46	0.30	0.10	
Uniform Delay, d1	20.7	38.3		33.9	28.0		16.8	16.5	18.9	17.3	15.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	4.0		15.8	0.8		1.2	0.8	2.4	1.5	0.3	
Delay (s)	20.8	42.3		49.7	28.8		18.1	17.2	21.2	18.8	15.9	
Level of Service	C	D		D	C		B	B	C	B	B	
Approach Delay (s/veh)		40.9			35.6			20.1			17.6	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			30.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			79.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	200	80	75	160	70	45
Future Vol, veh/h	200	80	75	160	70	45
Conflicting Peds, #/hr	0	7	7	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	211	84	79	168	74	47
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	302	0	588	260
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1270	-	475	784
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1262	-	439	779
Mov Cap-2 Maneuver	-	-	-	-	531	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	682	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	2.6		12.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	607	-	-	1262	-	
HCM Lane V/C Ratio	0.199	-	-	0.063	-	
HCM Control Delay (s/veh)	12.4	-	-	8	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q (veh)	0.7	-	-	0.2	-	

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	210	135	95	60	0
Future Vol, veh/h	10	210	135	95	60	0
Conflicting Peds, #/hr	12	0	0	12	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	221	142	100	63	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	254	0	0 451 204
Stage 1	-	-	- 204 -
Stage 2	-	-	- 247 -
Critical Hdwy	4.1	-	- 5.8 5.9
Critical Hdwy Stg 1	-	-	- 4.8 -
Critical Hdwy Stg 2	-	-	- 4.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1323	-	- 614 856
Stage 1	-	-	- 864 -
Stage 2	-	-	- 832 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1305	-	- 592 845
Mov Cap-2 Maneuver	-	-	- 650 -
Stage 1	-	-	- 844 -
Stage 2	-	-	- 821 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.4	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1305	-	-	-	650
HCM Lane V/C Ratio	0.008	-	-	-	0.097
HCM Control Delay (s/veh)	7.8	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱			↰	↱
Traffic Vol, veh/h	160	10	115	20	5	25	95	75	15	15	40	125
Future Vol, veh/h	160	10	115	20	5	25	95	75	15	15	40	125
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	168	11	121	21	5	26	100	79	16	16	42	132
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	10.2	9.3	9.8	9
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	94%	0%	40%	27%	0%
Vol Thru, %	0%	83%	6%	0%	10%	73%	0%
Vol Right, %	0%	17%	0%	100%	50%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	90	170	115	50	55	125
LT Vol	95	0	160	0	20	15	0
Through Vol	0	75	10	0	5	40	0
RT Vol	0	15	0	115	25	0	125
Lane Flow Rate	100	95	179	121	53	58	132
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.171	0.145	0.298	0.162	0.084	0.093	0.181
Departure Headway (Hd)	6.139	5.516	6	4.822	5.762	5.807	4.962
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	579	643	594	736	626	611	714
Service Time	3.929	3.306	3.785	2.606	3.762	3.598	2.752
HCM Lane V/C Ratio	0.173	0.148	0.301	0.164	0.085	0.095	0.185
HCM Control Delay, s/veh	10.2	9.3	11.3	8.6	9.3	9.2	8.9
HCM Lane LOS	B	A	B	A	A	A	A
HCM 95th-ile Q	0.6	0.5	1.2	0.6	0.3	0.3	0.7

Intersection

Int Delay, s/veh 4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	85	645	385	105	100	90
Future Vol, veh/h	85	645	385	105	100	90
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	89	679	405	111	105	95

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	524	0	0 993 266
Stage 1	-	-	- 469 -
Stage 2	-	-	- 524 -
Critical Hdwy	4.12	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.21	-	- 3.5 3.3
Pot Cap-1 Maneuver	1046	-	- 246 738
Stage 1	-	-	- 602 -
Stage 2	-	-	- 564 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1039	-	- 209 733
Mov Cap-2 Maneuver	-	-	- 209 -
Stage 1	-	-	- 515 -
Stage 2	-	-	- 560 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.5	0	25.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1039	-	-	-	209	733
HCM Lane V/C Ratio	0.086	-	-	-	0.504	0.129
HCM Control Delay (s/veh)	8.8	0.5	-	-	38.5	10.6
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q (veh)	0.3	-	-	-	2.5	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	305	100	70	225	125	125	470	70	115	320	110
Future Volume (veh/h)	235	305	100	70	225	125	125	470	70	115	320	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	247	321	105	74	237	132	132	495	74	121	337	116
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	434	580	186	308	474	209	166	654	102	158	459	165
Arrive On Green	0.14	0.21	0.21	0.07	0.14	0.14	0.26	0.26	0.26	0.22	0.22	0.22
Sat Flow, veh/h	1861	2757	885	1667	3325	1467	645	2541	397	711	2060	742
Grp Volume(v), veh/h	247	214	212	74	237	132	371	0	330	308	0	266
Grp Sat Flow(s),veh/h/ln	1861	1856	1787	1667	1663	1467	1813	0	1770	1809	0	1704
Q Serve(g_s), s	8.9	8.3	8.6	2.7	5.3	6.8	15.4	0.0	13.7	12.8	0.0	11.6
Cycle Q Clear(g_c), s	8.9	8.3	8.6	2.7	5.3	6.8	15.4	0.0	13.7	12.8	0.0	11.6
Prop In Lane	1.00		0.50	1.00		1.00	0.36		0.22	0.39		0.44
Lane Grp Cap(c), veh/h	434	391	376	308	474	209	466	0	455	403	0	380
V/C Ratio(X)	0.57	0.55	0.56	0.24	0.50	0.63	0.80	0.00	0.72	0.76	0.00	0.70
Avail Cap(c_a), veh/h	761	801	771	713	1228	542	681	0	665	792	0	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.3	28.4	28.5	22.3	31.9	32.6	28.0	0.0	27.4	29.4	0.0	28.9
Incr Delay (d2), s/veh	0.4	0.9	1.0	0.1	0.6	2.3	3.4	0.0	1.6	2.3	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	3.7	3.7	1.0	2.1	2.5	6.9	0.0	5.8	5.6	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.7	29.3	29.5	22.5	32.5	34.9	31.4	0.0	29.0	31.6	0.0	30.6
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	673			443			701			574		
Approach Delay, s/veh	27.7			31.6			30.3			31.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			3			4			6		
Phs Duration (G+Y+Rc), s	25.5			10.4			22.2			22.7		
Change Period (Y+Rc), s	4.7			4.7			5.2			4.7		
Max Green Setting (Gmax), s	30.3			25.3			34.8			35.3		
Max Q Clear Time (g_c+I1), s	17.4			4.7			10.6			14.8		
Green Ext Time (p_c), s	3.0			0.1			2.1			2.9		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				30.0								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	15	60	40	15	125	35	590	55	40	295	115
Future Vol, veh/h	75	15	60	40	15	125	35	590	55	40	295	115
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	79	16	63	42	16	132	37	621	58	42	311	121
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	851	1216	219	978	1247	345	434	0	0	684	0	0
Stage 1	458	458	-	729	729	-	-	-	-	-	-	-
Stage 2	393	758	-	249	518	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	296	224	806	206	174	654	1129	-	-	912	-	-
Stage 1	602	616	-	383	429	-	-	-	-	-	-	-
Stage 2	650	475	-	736	534	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	199	198	804	162	154	651	1127	-	-	908	-	-
Mov Cap-2 Maneuver	199	198	-	162	154	-	-	-	-	-	-	-
Stage 1	569	577	-	361	405	-	-	-	-	-	-	-
Stage 2	472	448	-	618	500	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	32.5		20.4		0.6		0.9					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1127	-	-	284 160 651	908	-	-					
HCM Lane V/C Ratio	0.033	-	-	0.556 0.362 0.202	0.046	-	-					
HCM Control Delay (s/veh)	8.3	0.2	-	32.5 39.7 11.9	9.2	0.2	-					
HCM Lane LOS	A	A	-	D E B	A	A	-					
HCM 95th %tile Q (veh)	0.1	-	-	3.1 1.5 0.8	0.1	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	185	245	185	70	65	155
Future Volume (Veh/h)	185	245	185	70	65	155
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	195	258	195	74	68	163
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		594	398	656	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		594	398	656	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	88		28	84	80	85
cM capacity (veh/h)	1634		272	475	338	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	195	258	269	231		
Volume Left	195	0	195	0		
Volume Right	0	258	0	163		
cSH	1634	1700	308	658		
Volume to Capacity	0.12	0.15	0.87	0.35		
Queue Length 95th (ft)	10	0	197	39		
Control Delay (s/veh)	7.5	0.0	61.7	13.4		
Lane LOS	A		F	B		
Approach Delay (s/veh)	3.2		61.7	13.4		
Approach LOS			F	B		
Intersection Summary						
Average Delay	22.2					
Intersection Capacity Utilization	50.8%		ICU Level of Service		A	
Analysis Period (min)	15					

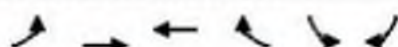
HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	470	130	220	280	135	105	50	305	90	35	95
Future Volume (vph)	80	470	130	220	280	135	105	50	305	90	35	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1614	3148		3118	3214	1400		1636	2476	1474	1388	
Flt Permitted	0.55	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	941	3148		3118	3214	1400		1636	2476	1474	1388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	485	134	227	289	139	108	52	314	93	36	98
RTOR Reduction (vph)	0	25	0	0	0	64	0	0	227	0	73	0
Lane Group Flow (vph)	82	594	0	227	289	75	0	160	87	84	70	0
Confl. Peds. (#/hr)	16		1	1		16			11	11		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D,P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	29.2	20.2		9.0	23.2	43.6		13.6	22.6	20.4	20.4	
Effective Green, g (s)	29.2	20.2		9.0	23.2	43.6		13.6	22.6	20.4	20.4	
Actuated g/C Ratio	0.36	0.25		0.11	0.29	0.54		0.17	0.28	0.25	0.25	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	388	783		345	918	751		274	689	370	348	
v/s Ratio Prot	0.02	c0.19		c0.07	c0.09	0.02		c0.10	0.01	c0.06	0.05	
v/s Ratio Perm	0.06					0.03			0.02			
v/c Ratio	0.21	0.76		0.66	0.31	0.10		0.58	0.13	0.23	0.20	
Uniform Delay, d1	17.5	28.2		34.6	22.8	9.2		31.2	21.9	24.1	24.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	3.8		3.4	0.1	0.0		2.0	0.0	0.1	0.1	
Delay (s)	17.6	32.0		38.1	22.8	9.2		33.2	21.9	24.3	24.1	
Level of Service	B	C		D	C	A		C	C	C	C	
Approach Delay (s/veh)		30.3			25.2			25.8			24.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			81.2				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			70.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build PM



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↶↶	↶↶		↰	↶↶
Traffic Volume (veh/h)	540	555	425	55	125	575
Future Volume (veh/h)	540	555	425	55	125	575
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98			0.94	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1736	1736	1750	1750	1750	1750
Adj Flow Rate, veh/h	568	584	447	58	132	605
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	601	1768	553	71	613	545
Arrive On Green	0.30	0.54	0.19	0.19	0.37	0.37
Sat Flow, veh/h	1654	3386	3023	378	1667	1483
Grp Volume(v), veh/h	568	584	252	253	132	605
Grp Sat Flow(s), veh/h/ln	1654	1650	1663	1652	1667	1483
Q Serve(g_s), s	28.6	10.6	15.4	15.6	5.8	39.0
Cycle Q Clear(g_c), s	28.6	10.6	15.4	15.6	5.8	39.0
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	601	1768	313	311	613	545
V/C Ratio(X)	0.94	0.33	0.80	0.81	0.22	1.11
Avail Cap(c_a), veh/h	837	2358	373	371	613	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	13.9	41.2	41.3	23.0	33.5
Incr Delay (d2), s/veh	14.7	0.1	9.6	10.5	0.1	72.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	3.8	7.0	7.1	2.3	10.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	37.9	13.9	50.8	51.8	23.1	105.6
LnGrp LOS	D	B	D	D	C	F
Approach Vol, veh/h		1152	505		737	
Approach Delay, s/veh		25.8	51.3		90.8	
Approach LOS		C	D		F	
Timer - Assigned Phs			4	6	7	8
Phs Duration (G+Y+Rc), s			62.0	44.0	36.9	25.2
Change Period (Y+Rc), s			5.2	5.0	5.0	5.2
Max Green Setting (Gmax), s			75.8	39.0	47.0	23.8
Max Q Clear Time (g_c+I1), s			12.6	41.0	30.6	17.6
Green Ext Time (p_c), s			3.5	0.0	1.3	1.3
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			51.2			
HCM 6th LOS			D			

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (veh/h)	255	385	90	215	265	100	120	415	260	65	340	285
Future Volume (veh/h)	255	385	90	215	265	100	120	415	260	65	340	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	268	405	95	226	279	105	126	437	274	68	358	300
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	314	618	144	260	457	168	312	579	360	288	529	437
Arrive On Green	0.17	0.21	0.21	0.18	0.22	0.22	0.08	0.30	0.30	0.07	0.29	0.29
Sat Flow, veh/h	1874	3009	699	1481	2106	772	1620	1913	1190	1770	1836	1516
Grp Volume(v), veh/h	268	250	250	226	194	190	126	369	342	68	344	314
Grp Sat Flow(s),veh/h/ln	1874	1869	1839	1481	1477	1401	1620	1616	1487	1770	1766	1586
Q Serve(g_s), s	10.9	9.7	9.8	11.7	9.3	9.7	4.2	16.2	16.4	2.0	13.6	13.8
Cycle Q Clear(g_c), s	10.9	9.7	9.8	11.7	9.3	9.7	4.2	16.2	16.4	2.0	13.6	13.8
Prop In Lane	1.00		0.38	1.00		0.55	1.00		0.80	1.00		0.96
Lane Grp Cap(c), veh/h	314	384	378	260	321	304	312	489	450	288	509	457
V/C Ratio(X)	0.85	0.65	0.66	0.87	0.60	0.63	0.40	0.75	0.76	0.24	0.68	0.69
Avail Cap(c_a), veh/h	606	961	945	474	754	715	688	827	761	724	903	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	28.7	28.8	31.6	27.8	28.0	18.3	24.8	24.9	18.1	24.8	24.9
Incr Delay (d2), s/veh	2.5	2.3	2.4	3.5	2.6	3.0	0.3	2.9	3.2	0.2	1.9	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	4.4	4.5	4.3	3.4	3.4	1.5	6.2	5.8	0.8	5.6	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.4	31.0	31.2	35.1	30.4	31.0	18.6	27.7	28.1	18.2	26.7	27.1
LnGrp LOS	C	C	C	D	C	C	B	C	C	B	C	C
Approach Vol, veh/h	768			610			837			726		
Approach Delay, s/veh	32.2			32.3			26.5			26.1		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.5	18.6	21.0	11.8	27.4	17.7	21.9					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I+Y), s	14.0	18.4	13.7	11.8	6.2	15.8	12.9	11.7				
Green Ext Time (p_c), s	0.1	5.4	0.2	3.9	0.1	5.2	0.3	3.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	29.1											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	270	520	35	35	340	90	35	130	35	200	130	225
Future Volume (vph)	270	520	35	35	340	90	35	130	35	200	130	225
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	0.91	0.91		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1404	2922		1605	2890		3157	3142		1539	1560	
Flt Permitted	0.26	0.92		0.40	1.00		0.51	1.00		0.55	1.00	
Satd. Flow (perm)	383	2690		683	2890		1701	3142		887	1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	547	37	37	358	95	37	137	37	211	137	237
RTOR Reduction (vph)	0	4	0	0	21	0	0	15	0	0	33	0
Lane Group Flow (vph)	244	620	0	37	432	0	37	159	0	211	341	0
Confl. Peds. (#/hr)	4					4	2		5	5		2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	44.5	44.5		25.0	20.9		32.5	28.9		46.1	38.0	
Effective Green, g (s)	44.5	44.5		25.0	20.9		32.5	28.9		46.1	38.0	
Actuated g/C Ratio	0.45	0.45		0.25	0.21		0.33	0.29		0.46	0.38	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	363	1240		208	604		605	908		496	592	
v/s Ratio Prot	c0.13	0.09		0.01	0.15		0.00	0.05		c0.06	c0.22	
v/s Ratio Perm	c0.17	0.13		0.04			0.02			0.14		
v/c Ratio	0.67	0.50		0.18	0.71		0.06	0.18		0.43	0.58	
Uniform Delay, d1	19.7	19.8		28.8	36.8		23.1	26.6		17.0	24.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	0.1		0.4	3.3		0.0	0.4		0.2	0.8	
Delay (s)	23.6	19.9		29.2	40.1		23.1	27.0		17.2	25.4	
Level of Service	C	B		C	D		C	C		B	C	
Approach Delay (s/veh)		20.9			39.3			26.4			22.5	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		26.1			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.65										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			18.6				
Intersection Capacity Utilization		72.5%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘		↗	↘	↰	↗		↰	↗	↘
Traffic Volume (veh/h)	35	1095	1385	0	785	35	205	130	50	35	130	35
Future Volume (veh/h)	35	1095	1385	0	785	35	205	130	50	35	130	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	37	1153	0	0	826	37	216	137	53	37	137	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	314	1675		0	1516	676	733	491	182	687	418	109
Arrive On Green	0.52	0.52	0.00	0.00	0.52	0.52	0.09	0.22	0.22	0.04	0.16	0.16
Sat Flow, veh/h	650	3206	1430	0	2978	1294	3093	2270	842	3183	2566	672
Grp Volume(v), veh/h	37	1153	0	0	826	37	216	94	96	37	86	88
Grp Sat Flow(s), veh/h/ln	650	1603	1430	0	1451	1294	1546	1590	1522	1591	1637	1602
Q Serve(g_s), s	3.0	19.8	0.0	0.0	14.0	1.0	4.1	3.6	3.9	0.7	3.4	3.6
Cycle Q Clear(g_c), s	17.0	19.8	0.0	0.0	14.0	1.0	4.1	3.6	3.9	0.7	3.4	3.6
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.55	1.00		0.42
Lane Grp Cap(c), veh/h	314	1675		0	1516	676	733	344	329	687	267	261
V/C Ratio(X)	0.12	0.69		0.00	0.54	0.05	0.29	0.27	0.29	0.05	0.32	0.34
Avail Cap(c_a), veh/h	454	2367		0	2142	956	1484	637	609	983	655	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	13.1	0.0	0.0	11.8	8.7	21.9	24.0	24.1	23.9	27.3	27.3
Incr Delay (d2), s/veh	0.3	0.9	0.0	0.0	0.2	0.0	0.2	0.3	0.4	0.0	0.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.2	0.0	0.0	3.9	1.1	1.4	1.3	1.4	0.3	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.7	14.0	0.0	0.0	12.0	8.7	22.1	24.4	24.5	24.0	27.9	28.1
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h	1190			863			406			211		
Approach Delay, s/veh	14.1			11.8			23.2			27.3		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4			44.1	12.1	17.5		44.1				
Change Period (Y+Rc), s	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	29.5			54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+I), s	5.9			21.8	6.1	5.6		16.0				
Green Ext Time (p_c), s	0.0	0.8		16.7	0.5	0.9		5.4				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Traffic Volume (vph)	35	390	105	300	570	35	165	85	545	150	50	45
Future Volume (vph)	35	390	105	300	570	35	165	85	545	150	50	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3114		1527	3132		1444	1505	1344	1577	1538	
Flt Permitted	0.30	1.00		0.27	1.00		0.69	0.89	1.00	0.66	1.00	
Satd. Flow (perm)	511	3114		435	3132		1053	1357	1344	1103	1538	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	406	109	312	594	36	172	89	568	156	52	47
RTOR Reduction (vph)	0	25	0	0	4	0	0	0	275	0	25	0
Lane Group Flow (vph)	36	490	0	313	626	0	126	135	293	156	74	0
Confl. Peds. (#/hr)	5		5	5		5	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	41.6	22.7		41.6	37.3		48.3	48.3	48.3	48.3	48.3	
Effective Green, g (s)	41.6	22.7		41.6	37.3		48.3	48.3	48.3	48.3	48.3	
Actuated g/C Ratio	0.40	0.22		0.40	0.36		0.46	0.46	0.46	0.46	0.46	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	247	673		368	1112		484	624	618	507	707	
v/s Ratio Prot	0.01	0.16		0.15	0.20						0.05	
v/s Ratio Perm	0.05			0.18			0.12	0.10	0.22	0.14		
v/c Ratio	0.15	0.73		0.85	0.56		0.26	0.22	0.47	0.31	0.10	
Uniform Delay, d1	20.1	38.3		33.6	27.3		17.4	17.0	19.6	17.8	16.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	4.1		16.3	0.7		1.3	0.8	2.6	1.6	0.3	
Delay (s)	20.2	42.4		49.9	28.0		18.7	17.8	22.2	19.4	16.4	
Level of Service	C	D		D	C		B	B	C	B	B	
Approach Delay (s/veh)		40.9			35.3			20.9			18.2	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			30.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			79.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection

Int Delay, s/veh 3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	190	80	75	150	70	45
Future Vol, veh/h	190	80	75	150	70	45
Conflicting Peds, #/hr	0	7	7	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-3	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	200	84	79	158	74	47

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	291
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1282
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1274
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.7	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	616	-	-	1274	-
HCM Lane V/C Ratio	0.197	-	-	0.062	-
HCM Control Delay (s/veh)	12.3	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q (veh)	0.7	-	-	0.2	-

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	200	125	95	60	0
Future Vol, veh/h	10	200	125	95	60	0
Conflicting Peds, #/hr	12	0	0	12	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-3	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	211	132	100	63	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	244	0	0 431 194
Stage 1	-	-	- 194 -
Stage 2	-	-	- 237 -
Critical Hdwy	4.1	-	- 5.8 5.9
Critical Hdwy Stg 1	-	-	- 4.8 -
Critical Hdwy Stg 2	-	-	- 4.8 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1334	-	- 629 866
Stage 1	-	-	- 871 -
Stage 2	-	-	- 840 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1316	-	- 607 854
Mov Cap-2 Maneuver	-	-	- 660 -
Stage 1	-	-	- 852 -
Stage 2	-	-	- 829 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.4	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1316	-	-	-	660
HCM Lane V/C Ratio	0.008	-	-	-	0.096
HCM Control Delay (s/veh)	7.8	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱			↰	↱
Traffic Vol, veh/h	160	10	105	20	5	25	85	75	15	15	40	125
Future Vol, veh/h	160	10	105	20	5	25	85	75	15	15	40	125
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	168	11	111	21	5	26	89	79	16	16	42	132
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay, s/veh	10.2	9.2	9.6	8.9
HCM LOS	B	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	94%	0%	40%	27%	0%
Vol Thru, %	0%	83%	6%	0%	10%	73%	0%
Vol Right, %	0%	17%	0%	100%	50%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	90	170	105	50	55	125
LT Vol	85	0	160	0	20	15	0
Through Vol	0	75	10	0	5	40	0
RT Vol	0	15	0	105	25	0	125
Lane Flow Rate	89	95	179	111	53	58	132
Geometry Grp	5	5	5	5	4b	5	5
Degree of Util (X)	0.152	0.144	0.297	0.147	0.084	0.093	0.18
Departure Headway (Hd)	6.112	5.49	5.97	4.792	5.712	5.767	4.922
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	582	647	598	741	631	616	721
Service Time	3.901	3.278	3.75	2.572	3.712	3.554	2.708
HCM Lane V/C Ratio	0.153	0.147	0.299	0.15	0.084	0.094	0.183
HCM Control Delay, s/veh	10	9.2	11.3	8.4	9.2	9.2	8.8
HCM Lane LOS	A	A	B	A	A	A	A
HCM 95th-ile Q	0.5	0.5	1.2	0.5	0.3	0.3	0.7

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↑	↑
Traffic Vol, veh/h	85	640	380	95	90	90
Future Vol, veh/h	85	640	380	95	90	90
Conflicting Peds, #/hr	8	0	0	8	6	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	-3	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	89	674	400	100	95	95

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	508	0	0 979 258
Stage 1	-	-	- 458 -
Stage 2	-	-	- 521 -
Critical Hdwy	4.12	-	- 6.8 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 5.8 -
Follow-up Hdwy	2.21	-	- 3.5 3.3
Pot Cap-1 Maneuver	1060	-	- 251 747
Stage 1	-	-	- 609 -
Stage 2	-	-	- 566 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1053	-	- 214 742
Mov Cap-2 Maneuver	-	-	- 214 -
Stage 1	-	-	- 523 -
Stage 2	-	-	- 562 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.5	0	22.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1053	-	-	-	214	742
HCM Lane V/C Ratio	0.085	-	-	-	0.443	0.128
HCM Control Delay (s/veh)	8.7	0.5	-	-	34.5	10.6
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q (veh)	0.3	-	-	-	2.1	0.4

HCM 6th Signalized Intersection Summary
104: 33rd Avenue W & 188th St SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	290	100	60	210	95	125	475	60	85	330	120
Future Volume (veh/h)	245	290	100	60	210	95	125	475	60	85	330	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1954	1954	1954	1750	1750	1750	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	258	305	105	63	221	100	132	500	63	89	347	126
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	1	1	1
Cap, veh/h	451	592	200	315	464	205	167	665	87	117	472	180
Arrive On Green	0.14	0.22	0.22	0.07	0.14	0.14	0.26	0.26	0.26	0.22	0.22	0.22
Sat Flow, veh/h	1861	2719	917	1667	3325	1467	652	2599	342	534	2152	821
Grp Volume(v), veh/h	258	206	204	63	221	100	367	0	328	303	0	259
Grp Sat Flow(s),veh/h/ln	1861	1856	1781	1667	1663	1467	1812	0	1780	1818	0	1689
Q Serve(g_s), s	9.2	7.8	8.1	2.3	4.9	5.0	15.1	0.0	13.5	12.5	0.0	11.3
Cycle Q Clear(g_c), s	9.2	7.8	8.1	2.3	4.9	5.0	15.1	0.0	13.5	12.5	0.0	11.3
Prop In Lane	1.00		0.52	1.00		1.00	0.36		0.19	0.29		0.49
Lane Grp Cap(c), veh/h	451	404	388	315	464	205	464	0	455	399	0	371
V/C Ratio(X)	0.57	0.51	0.53	0.20	0.48	0.49	0.79	0.00	0.72	0.76	0.00	0.70
Avail Cap(c_a), veh/h	772	807	774	732	1238	546	686	0	674	802	0	745
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	27.6	27.7	21.8	31.7	31.8	27.8	0.0	27.2	29.2	0.0	28.8
Incr Delay (d2), s/veh	0.4	0.7	0.8	0.1	0.6	1.3	3.1	0.0	1.6	2.2	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.5	3.4	0.9	2.0	1.8	6.7	0.0	5.7	5.5	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.5	28.3	28.5	21.9	32.3	33.1	30.9	0.0	28.8	31.5	0.0	30.6
LnGrp LOS	C	C	C	C	C	C	C		C	C		C
Approach Vol, veh/h	668			384			695			562		
Approach Delay, s/veh	26.9			30.8			29.9			31.1		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			3			6			7		
Phs Duration (G+Y+Rc), s	25.2			10.0			22.3			16.2		
Change Period (Y+Rc), s	4.7			4.7			4.7			4.7		
Max Green Setting (Gmax), s	30.3			25.3			35.3			25.3		
Max Q Clear Time (g_c+I1), s	17.1			4.3			14.5			11.2		
Green Ext Time (p_c), s	3.0			0.1			2.9			0.3		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	29.5											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	15	60	25	15	115	35	590	45	35	290	115
Future Vol, veh/h	75	15	60	25	15	115	35	590	45	35	290	115
Conflicting Peds, #/hr	0	0	1	1	0	0	2	0	5	5	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	1	1	1	1	1	1
Mvmt Flow	79	16	63	26	16	121	37	621	47	37	305	121
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	835	1189	216	960	1226	339	428	0	0	673	0	0
Stage 1	442	442	-	724	724	-	-	-	-	-	-	-
Stage 2	393	747	-	236	502	-	-	-	-	-	-	-
Critical Hdwy	6.9	5.9	6.6	7.52	6.52	6.92	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	4.9	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.21	-	-	2.21	-	-
Pot Cap-1 Maneuver	303	231	809	213	179	660	1135	-	-	921	-	-
Stage 1	613	624	-	385	431	-	-	-	-	-	-	-
Stage 2	650	479	-	749	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	210	206	807	170	159	657	1133	-	-	917	-	-
Mov Cap-2 Maneuver	210	206	-	170	159	-	-	-	-	-	-	-
Stage 1	580	589	-	363	407	-	-	-	-	-	-	-
Stage 2	483	452	-	635	513	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	30.1		17.4		0.6		0.9					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1133	-	-	297 166 657	917	-	-					
HCM Lane V/C Ratio	0.033	-	-	0.532 0.254 0.184	0.04	-	-					
HCM Control Delay (s/veh)	8.3	0.2	-	30.1 33.9 11.7	9.1	0.2	-					
HCM Lane LOS	A	A	-	D D B	A	A	-					
HCM 95th %tile Q (veh)	0.1	-	-	2.9 1 0.7	0.1	-	-					

HCM Unsignalized Intersection Capacity Analysis
106: Mall Access Road & 188th St SW

Alderwood Mall Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	185	245	185	40	35	155
Future Volume (Veh/h)	185	245	185	40	35	155
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	195	258	195	42	37	163
Pedestrians				7	1	
Lane Width (ft)				11.0	10.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	0	
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	237					
pX, platoon unblocked						
vC, conflicting volume	1		579	398	656	1
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1		579	398	656	1
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	88		35	91	89	85
cM capacity (veh/h)	1634		301	475	338	1086
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	195	258	237	200		
Volume Left	195	0	195	0		
Volume Right	0	258	0	163		
cSH	1634	1700	322	770		
Volume to Capacity	0.12	0.15	0.74	0.26		
Queue Length 95th (ft)	10	0	138	26		
Control Delay (s/veh)	7.5	0.0	41.8	11.3		
Lane LOS	A		E	B		
Approach Delay (s/veh)	3.2		41.8	11.3		
Approach LOS			E	B		
Intersection Summary						
Average Delay	15.3					
Intersection Capacity Utilization	47.4%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis
107: Mall Access Road & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	460	135	240	270	135	105	50	325	90	35	95
Future Volume (vph)	80	460	135	240	270	135	105	50	325	90	35	95
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	11	11	11	10	10	10
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00		1.00	0.88	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97		1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85		1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (prot)	1614	3142		3118	3214	1397		1636	2479	1474	1388	
Flt Permitted	0.58	1.00		0.95	1.00	1.00		0.97	1.00	0.95	1.00	
Satd. Flow (perm)	980	3142		3118	3214	1397		1636	2479	1474	1388	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	474	139	247	278	139	108	52	335	93	36	98
RTOR Reduction (vph)	0	29	0	0	0	67	0	0	235	0	74	0
Lane Group Flow (vph)	82	584	0	247	278	72	0	160	100	84	69	0
Confl. Peds. (#/hr)	16		1	1		16			11	11		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	D.P+P	NA		Prot	NA	pm+ov	Split	NA	pm+ov	Split	NA	
Protected Phases	7	4		3	8	6	2	2	3	6	6	
Permitted Phases	8					8			2			
Actuated Green, G (s)	29.7	20.0		9.7	24.1	40.1		13.2	22.9	16.0	16.0	
Effective Green, g (s)	29.7	20.0		9.7	24.1	40.1		13.2	22.9	16.0	16.0	
Actuated g/C Ratio	0.39	0.26		0.13	0.31	0.52		0.17	0.30	0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	0.7		2.0	2.0	0.7	0.7	
Lane Grp Cap (vph)	424	817		393	1007	728		280	738	306	288	
v/s Ratio Prot	0.01	c0.19		c0.08	c0.09	0.02		c0.10	0.02	c0.06	0.05	
v/s Ratio Perm	0.06					0.03			0.02			
v/c Ratio	0.19	0.71		0.63	0.28	0.10		0.57	0.14	0.27	0.24	
Uniform Delay, d1	15.3	25.9		31.9	19.8	9.3		29.3	19.8	25.6	25.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	2.5		2.3	0.1	0.0		1.7	0.0	0.2	0.2	
Delay (s)	15.3	28.4		34.2	19.9	9.3		31.0	19.8	25.8	25.5	
Level of Service	B	C		C	B	A		C	B	C	C	
Approach Delay (s/veh)		26.8			23.0			23.4			25.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		24.7										
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		76.9										
Intersection Capacity Utilization		70.9%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
108: 184th Street SW & 33rd Avenue W

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	525	550	30	0	415	55	35	15	0	125	15	560
Future Volume (veh/h)	525	550	30	0	415	55	35	15	0	125	15	560
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		0.94	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1736	1736	1723	1723	1750	1750	1723	1723	1723	1750	1723	1750
Adj Flow Rate, veh/h	553	579	33	0	437	58	38	16	0	132	16	589
Peak Hour Factor	0.95	0.95	0.92	0.92	0.95	0.95	0.92	0.92	0.92	0.95	0.92	0.95
Percent Heavy Veh, %	1	1	2	2	0	0	2	2	2	0	2	0
Cap, veh/h	634	1789	102	88	626	83	88	536	0	520	12	444
Arrive On Green	0.29	0.56	0.56	0.00	0.21	0.21	0.31	0.31	0.00	0.31	0.31	0.31
Sat Flow, veh/h	1654	3168	180	810	2930	386	815	1723	0	1419	39	1427
Grp Volume(v), veh/h	553	301	311	0	247	248	38	16	0	132	0	605
Grp Sat Flow(s),veh/h/ln	1654	1650	1699	810	1663	1653	815	1723	0	1419	0	1466
Q Serve(g_s), s	20.4	8.0	8.0	0.0	11.2	11.4	0.0	0.5	0.0	5.8	0.0	25.5
Cycle Q Clear(g_c), s	20.4	8.0	8.0	0.0	11.2	11.4	25.5	0.5	0.0	6.4	0.0	25.5
Prop In Lane	1.00		0.11	1.00		0.23	1.00		0.00	1.00		0.97
Lane Grp Cap(c), veh/h	634	931	959	88	355	354	88	536	0	520	0	456
V/C Ratio(X)	0.87	0.32	0.32	0.00	0.69	0.70	0.43	0.03	0.00	0.25	0.00	1.33
Avail Cap(c_a), veh/h	1425	1806	1861	130	442	440	88	536	0	520	0	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	9.5	9.5	0.0	29.8	29.8	41.0	19.6	0.0	21.9	0.0	28.2
Incr Delay (d2), s/veh	3.0	0.1	0.1	0.0	2.9	3.2	3.3	0.0	0.0	0.2	0.0	161.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	2.5	2.6	0.0	4.6	4.6	0.8	0.2	0.0	1.9	0.0	29.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.6	9.7	9.7	0.0	32.6	33.0	44.3	19.7	0.0	22.1	0.0	190.1
LnGrp LOS	B	A	A		C	C	D	B		C		F
Approach Vol, veh/h	1165			495			54			737		
Approach Delay, s/veh	14.4			32.8			37.0			160.0		
Approach LOS	B			C			D			F		
Timer - Assigned Phs	2			4			6			7		
Phs Duration (G+Y+Rc), s	30.5			51.5			30.5			28.8		
Change Period (Y+Rc), s	* 5			5.2			5.0			5.0		
Max Green Setting (Gmax), s	* 26			89.8			25.0			63.0		
Max Q Clear Time (g_c+I1), s	27.5			10.0			27.5			22.4		
Green Ext Time (p_c), s	0.0			3.2			0.0			1.3		
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	62.4											
HCM 6th LOS	E											
Notes												

HCM 6th Signalized Intersection Summary
109: 36th Avenue W & 188th Street SW/188th St SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	380	90	215	260	100	120	415	260	65	340	295
Future Volume (veh/h)	265	380	90	215	260	100	120	415	260	65	340	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1967	1967	1967	1555	1555	1555	1701	1701	1701	1859	1859	1859
Adj Flow Rate, veh/h	279	400	95	226	274	105	126	437	274	68	358	311
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	326	612	144	260	439	164	309	580	361	289	520	445
Arrive On Green	0.17	0.20	0.20	0.18	0.21	0.21	0.08	0.30	0.30	0.07	0.29	0.29
Sat Flow, veh/h	1874	3001	706	1481	2095	782	1620	1913	1190	1770	1803	1544
Grp Volume(v), veh/h	279	248	247	226	191	188	126	369	342	68	351	318
Grp Sat Flow(s),veh/h/ln	1874	1869	1838	1481	1477	1399	1620	1616	1487	1770	1766	1581
Q Serve(g_s), s	11.4	9.5	9.7	11.7	9.2	9.6	4.2	16.2	16.4	2.0	13.8	14.1
Cycle Q Clear(g_c), s	11.4	9.5	9.7	11.7	9.2	9.6	4.2	16.2	16.4	2.0	13.8	14.1
Prop In Lane	1.00		0.38	1.00		0.56	1.00		0.80	1.00		0.98
Lane Grp Cap(c), veh/h	326	381	375	260	310	294	309	490	450	289	509	456
V/C Ratio(X)	0.86	0.65	0.66	0.87	0.62	0.64	0.41	0.75	0.76	0.24	0.69	0.70
Avail Cap(c_a), veh/h	608	964	948	475	756	716	686	829	763	726	906	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	28.7	28.7	31.5	28.2	28.3	18.3	24.7	24.8	18.0	24.8	24.9
Incr Delay (d2), s/veh	2.5	2.2	2.4	3.5	2.8	3.3	0.3	2.8	3.2	0.2	2.0	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	4.4	4.4	4.3	3.4	3.4	1.5	6.2	5.8	0.8	5.7	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.0	30.9	31.1	34.9	31.0	31.6	18.6	27.6	28.0	18.1	26.8	27.2
LnGrp LOS	C	C	C	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h	774			605			837			737		
Approach Delay, s/veh	32.1			32.7			26.4			26.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.5	18.6	20.8	11.8	27.4	18.2	21.3					
Change Period (Y+Rc), s	5.2	4.7	4.8	* 4.8	5.2	4.7	4.5	4.8				
Max Green Setting (Gmax), s	40.3	40.3	25.2	* 41	24.8	40.3	25.5	40.2				
Max Q Clear Time (g_c+I+Y), s	18.4	18.4	13.7	11.7	6.2	16.1	13.4	11.6				
Green Ext Time (p_c), s	0.1	5.4	0.2	3.9	0.1	5.3	0.3	3.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	29.1											
HCM 6th LOS	C											
Notes												

HCM Signalized Intersection Capacity Analysis
110: Alderwood Mall Blvd & 33rd Avenue W

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	520	35	35	340	85	35	130	35	195	130	225
Future Volume (vph)	270	520	35	35	340	85	35	130	35	195	130	225
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	10	10	12	12	10	10	12	12	12	10	12	10
Grade (%)		-3%			3%			0%			-3%	
Total Lost time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.97	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.97		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	3059		1605	2895		3157	3142		1539	1560	
Flt Permitted	0.26	1.00		0.43	1.00		0.50	1.00		0.55	1.00	
Satd. Flow (perm)	424	3059		730	2895		1676	3142		886	1560	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	284	547	37	37	358	89	37	137	37	205	137	237
RTOR Reduction (vph)	0	3	0	0	19	0	0	15	0	0	34	0
Lane Group Flow (vph)	284	581	0	37	428	0	37	159	0	205	340	0
Confl. Peds. (#/hr)	4					4	2		5	5		2
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.3	36.7		24.9	20.8		32.5	28.9		45.9	37.8	
Effective Green, g (s)	45.3	36.7		24.9	20.8		32.5	28.9		45.9	37.8	
Actuated g/C Ratio	0.45	0.36		0.25	0.21		0.32	0.29		0.46	0.38	
Clearance Time (s)	4.7	4.7		4.5	4.7		4.5	3.7		4.7	4.7	
Vehicle Extension (s)	2.0	2.0		3.0	2.0		3.0	0.2		2.0	2.0	
Lane Grp Cap (vph)	411	1115		216	598		594	902		490	586	
v/s Ratio Prot	c0.14	0.19		0.01	0.15		0.00	0.05		c0.06	c0.22	
v/s Ratio Perm	c0.17			0.04			0.02			0.14		
v/c Ratio	0.69	0.52		0.17	0.72		0.06	0.18		0.42	0.58	
Uniform Delay, d1	19.7	25.1		29.2	37.1		23.3	26.9		17.3	25.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.2		0.4	3.4		0.0	0.4		0.2	0.9	
Delay (s)	23.8	25.3		29.5	40.5		23.4	27.3		17.5	26.0	
Level of Service	C	C		C	D		C	C		B	C	
Approach Delay (s/veh)		24.8			39.7			26.6			23.0	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			100.6			Sum of lost time (s)			18.6			
Intersection Capacity Utilization			71.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
111: Poplar Way & 196th Street SW

Alderwood Mall Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↗	↘		↗	↘	↰	↗		↰	↗	↘
Traffic Volume (veh/h)	35	1095	1385	0	785	35	205	130	50	35	130	35
Future Volume (veh/h)	35	1095	1385	0	785	35	205	130	50	35	130	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1688	1688	1688	0	1527	1527	1674	1674	1674	1723	1723	1723
Adj Flow Rate, veh/h	37	1153	0	0	826	37	216	137	53	37	137	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	0	2	2	2	2	2	2	2	2
Cap, veh/h	314	1675		0	1516	676	733	491	182	687	418	109
Arrive On Green	0.52	0.52	0.00	0.00	0.52	0.52	0.09	0.22	0.22	0.04	0.16	0.16
Sat Flow, veh/h	650	3206	1430	0	2978	1294	3093	2270	842	3183	2566	672
Grp Volume(v), veh/h	37	1153	0	0	826	37	216	94	96	37	86	88
Grp Sat Flow(s), veh/h/ln	650	1603	1430	0	1451	1294	1546	1590	1522	1591	1637	1602
Q Serve(g_s), s	3.0	19.8	0.0	0.0	14.0	1.0	4.1	3.6	3.9	0.7	3.4	3.6
Cycle Q Clear(g_c), s	17.0	19.8	0.0	0.0	14.0	1.0	4.1	3.6	3.9	0.7	3.4	3.6
Prop In Lane	1.00		1.00	0.00		1.00	1.00		0.55	1.00		0.42
Lane Grp Cap(c), veh/h	314	1675		0	1516	676	733	344	329	687	267	261
V/C Ratio(X)	0.12	0.69		0.00	0.54	0.05	0.29	0.27	0.29	0.05	0.32	0.34
Avail Cap(c_a), veh/h	454	2367		0	2142	956	1484	637	609	983	655	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	13.1	0.0	0.0	11.8	8.7	21.9	24.0	24.1	23.9	27.3	27.3
Incr Delay (d2), s/veh	0.3	0.9	0.0	0.0	0.2	0.0	0.2	0.3	0.4	0.0	0.7	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	6.2	0.0	0.0	3.9	1.1	1.4	1.3	1.4	0.3	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.7	14.0	0.0	0.0	12.0	8.7	22.1	24.4	24.5	24.0	27.9	28.1
LnGrp LOS	B	B			B	A	C	C	C	C	C	C
Approach Vol, veh/h	1190			863			406			211		
Approach Delay, s/veh	14.1			11.8			23.2			27.3		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.4			44.1	12.1	17.5		44.1				
Change Period (Y+Rc), s	5.5			5.6	5.5	5.5		5.6				
Max Green Setting (Gmax), s	29.5			54.4	24.5	29.5		54.4				
Max Q Clear Time (g_c+I), s	5.9			21.8	6.1	5.6		16.0				
Green Ext Time (p_c), s	0.0	0.8		16.7	0.5	0.9		5.4				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis
112: 33rd Avenue W/Driveway & 184th Street SW

Alderwood Mall Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	405	90	300	585	35	155	85	545	150	50	45
Future Volume (vph)	35	405	90	300	585	35	155	85	545	150	50	45
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	10	11	11	10	10	10	11	11	11
Grade (%)		-3%			3%			0%			0%	
Total Lost time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1613	3130		1527	3133		1444	1508	1344	1577	1538	
Flt Permitted	0.29	1.00		0.27	1.00		0.69	0.90	1.00	0.67	1.00	
Satd. Flow (perm)	497	3130		436	3133		1053	1378	1344	1113	1538	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	422	94	312	609	36	161	89	568	156	52	47
RTOR Reduction (vph)	0	20	0	0	4	0	0	0	271	0	25	0
Lane Group Flow (vph)	36	496	0	313	641	0	121	129	297	156	74	0
Confl. Peds. (#/hr)	5		5	5		5	7		6	6		7
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	8			4			2		2	6		
Actuated Green, G (s)	41.7	22.8		41.7	37.4		48.2	48.2	48.2	48.2	48.2	
Effective Green, g (s)	41.7	22.8		41.7	37.4		48.2	48.2	48.2	48.2	48.2	
Actuated g/C Ratio	0.40	0.22		0.40	0.36		0.46	0.46	0.46	0.46	0.46	
Clearance Time (s)	5.2	5.2		5.2	5.2		4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	2.0	3.5		2.0	3.5		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	243	679		369	1115		483	632	616	510	706	
v/s Ratio Prot	0.01	0.16		0.15	0.20						0.05	
v/s Ratio Perm	0.05			0.18			0.11	0.09	0.22	0.14		
v/c Ratio	0.15	0.73		0.85	0.58		0.25	0.20	0.48	0.31	0.10	
Uniform Delay, d1	20.1	38.2		33.5	27.4		17.4	17.0	19.7	17.9	16.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	4.2		15.8	0.8		1.2	0.7	2.7	1.5	0.3	
Delay (s)	20.2	42.4		49.3	28.1		18.6	17.7	22.4	19.4	16.4	
Level of Service	C	D		D	C		B	B	C	B	B	
Approach Delay (s/veh)		41.0			35.0			21.1			18.3	
Approach LOS		D			D			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			30.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			105.0			Sum of lost time (s)			15.1			
Intersection Capacity Utilization			79.8%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way No-Build AM



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	↑	↑	←	↑
Traffic Volume (veh/h)	65	25	365	70	95	785
Future Volume (veh/h)	65	25	365	70	95	785
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach No			No			No
Adj Sat Flow, veh/h/ln	1695	1695	1565	1565	1790	1790
Adj Flow Rate, veh/h	68	26	384	74	100	826
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	5	5
Cap, veh/h	95	85	1183	999	805	1515
Arrive On Green	0.06	0.06	0.76	0.76	0.03	0.57
Sat Flow, veh/h	1615	1437	1565	1322	1704	1790
Grp Volume(v), veh/h	68	26	384	74	100	826
Grp Sat Flow(s), veh/h/ln	1615	1437	1565	1322	1704	1790
Q Serve(g_s), s	3.7	1.6	7.1	1.3	1.1	26.0
Cycle Q Clear(g_c), s	3.7	1.6	7.1	1.3	1.1	26.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	95	85	1183	999	805	1515
V/C Ratio(X)	0.72	0.31	0.32	0.07	0.12	0.55
Avail Cap(c_a), veh/h	736	655	1183	999	934	1515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.79	0.79	0.78	0.78
Uniform Delay (d), s/veh	41.6	40.6	3.6	2.8	2.3	8.6
Incr Delay (d2), s/veh	3.7	0.8	0.6	0.1	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/h	6	0.6	1.7	0.3	0.2	10.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	45.3	41.3	4.1	3.0	2.3	9.7
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	94		458			926
Approach Delay, s/veh	44.2		3.9			8.9
Approach LOS	D		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.2	72.5			80.7	9.3
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gm), s	25.5				40.5	41.0
Max Q Clear Time (g_c+I), s	9.1				28.0	5.7
Green Ext Time (p_c), s	0.1	3.2			6.2	0.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			9.6			
HCM 6th LOS			A			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	LT	LT	TH	TH	LT	LT
Traffic Volume (vph)	25	10	350	35	10	850
Future Volume (vph)	25	10	350	35	10	850
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Frt	0.95		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	803		1577	1340	1638	1725
Flt Permitted	0.96		1.00	1.00	0.53	1.00
Satd. Flow (perm)	803		1577	1340	926	1725
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	11	368	37	11	895
RTOR Reduction (vph)	10	0	0	9	0	0
Lane Group Flow (vph)	27	0	368	28	11	895
Confl. Peds. (#/hr)	2	2				
Heavy Vehicles (%)	100%	100%	11%	11%	3%	3%
Turn Type	Perm		NA	Perm	D.P+P	NA
Protected Phases			2		1	6
Permitted Phases	8			2	2	
Actuated Green, G (s)	5.9		68.1	68.1	69.1	74.1
Effective Green, g (s)	5.9		68.1	68.1	69.1	74.1
Actuated g/C Ratio	0.07		0.76	0.76	0.77	0.82
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	52		1193	1013	718	1420
v/s Ratio Prot			0.23		0.00	c0.52
v/s Ratio Perm	c0.03			0.02	0.01	
v/c Ratio	0.51		0.30	0.02	0.01	0.63
Uniform Delay, d1	40.6		3.4	2.7	2.4	2.9
Progression Factor	1.00		2.33	3.42	1.00	1.00
Incremental Delay, d2	3.5		0.6	0.0	0.0	2.1
Delay (s)	44.1		8.7	9.3	2.4	5.0
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	44.1		8.8			5.0
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			7.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			61.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱		↰	↱		↰	↱		↰	↱
Traffic Vol, veh/h	5	0	10	5	0	5	10	120	10	5	260	5
Future Vol, veh/h	5	0	10	5	0	5	10	120	10	5	260	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	20	20	20	6	6	6	2	2	2
Mvmt Flow	5	0	11	5	0	5	11	126	11	5	274	5

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	445	- 279	450 449	136 281
Stage 1	289	- -	158 158	- -
Stage 2	156	- -	292 291	- -
Critical Hdwy	7.7	- 6.5	7.3 6.7	6.4 4.16
Critical Hdwy Stg 1	6.7	- -	6.3 5.7	- -
Critical Hdwy Stg 2	6.7	- -	6.3 5.7	- -
Follow-up Hdwy	3.5	- 3.3	3.68 4.18	3.48 2.254
Pot Cap-1 Maneuver	489	0 747	490 479	867 1259
Stage 1	689	0 -	803 734	- -
Stage 2	829	0 -	679 640	- -
Platoon blocked, %				- -
Mov Cap-1 Maneuver	480	- 746	477 470	864 1257
Mov Cap-2 Maneuver	480	- -	477 470	- -
Stage 1	681	- -	793 725	- -
Stage 2	817	- -	667 636	- -

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.8		11	0.6	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	EBLn2WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1257	-	- 480	746 615	1437	-	-
HCM Lane V/C Ratio	0.008	-	- 0.011	0.014 0.017	0.004	-	-
HCM Control Delay (s/veh)	7.9	0	- 12.6	9.9 11	7.5	0	-
HCM Lane LOS	A	A	- B	A B	A	A	-
HCM 95th %tile Q (veh)	0	-	- 0	0 0.1	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y			Y
Traffic Vol, veh/h	5	5	5	0	0	160
Future Vol, veh/h	5	5	5	0	0	160
Conflicting Peds, #/hr	0	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	3	3
Mvmt Flow	5	5	5	0	0	168
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	174	6	0	0	6	0
Stage 1	6	-	-	-	-	-
Stage 2	168	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.13	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.227	-
Pot Cap-1 Maneuver	845	1083	-	-	1608	-
Stage 1	1023	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	844	1082	-	-	1606	-
Mov Cap-2 Maneuver	844	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s/v	8.8	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT		
Capacity (veh/h)	-	-	948	1606	-	
HCM Lane V/C Ratio	-	-	0.011	-	-	
HCM Control Delay (s/veh)	-	-	8.8	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q (veh)	-	-	0	0	-	

MOVEMENT SUMMARY

Site: 211 [2046 No-Build AM (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: AM Peak-Hour
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist ft]				mph
South: Ash Way (NB)														
3u	U	10	5.0	12	5.0	0.322	11.7	LOS B	2.5	65.8	0.12	0.50	0.12	36.5
3	L2	105	5.0	130	5.0	0.322	9.5	LOS A	2.5	65.8	0.12	0.50	0.12	35.8
8	T1	225	5.0	278	5.0	0.322	4.5	LOS A	2.5	65.8	0.12	0.50	0.12	35.9
Approach		340	5.0	420	5.0	0.322	6.2	LOS A	2.5	65.8	0.12	0.50	0.12	35.9
North: Ash Way (SB)														
4	T1	550	5.0	679	5.0	0.586	5.6	LOS A	4.5	116.5	0.48	0.53	0.48	35.6
14	R2	10	5.0	12	5.0	0.586	5.5	LOS A	4.5	116.5	0.48	0.53	0.48	34.7
Approach		560	5.0	691	5.0	0.586	5.6	LOS A	4.5	116.5	0.48	0.53	0.48	35.6
West: 18th Avenue W (EB)														
5	L2	10	3.0	12	3.0	0.381	14.8	LOS B	2.6	67.5	0.83	0.87	0.83	34.1
12	R2	205	3.0	253	3.0	0.381	9.6	LOS A	2.6	67.5	0.83	0.87	0.83	33.3
Approach		215	3.0	265	3.0	0.381	9.8	LOS A	2.6	67.5	0.83	0.87	0.83	33.3
All Vehicles		1115	4.6	1377	4.6	0.586	6.6	LOS A	4.5	116.5	0.44	0.58	0.44	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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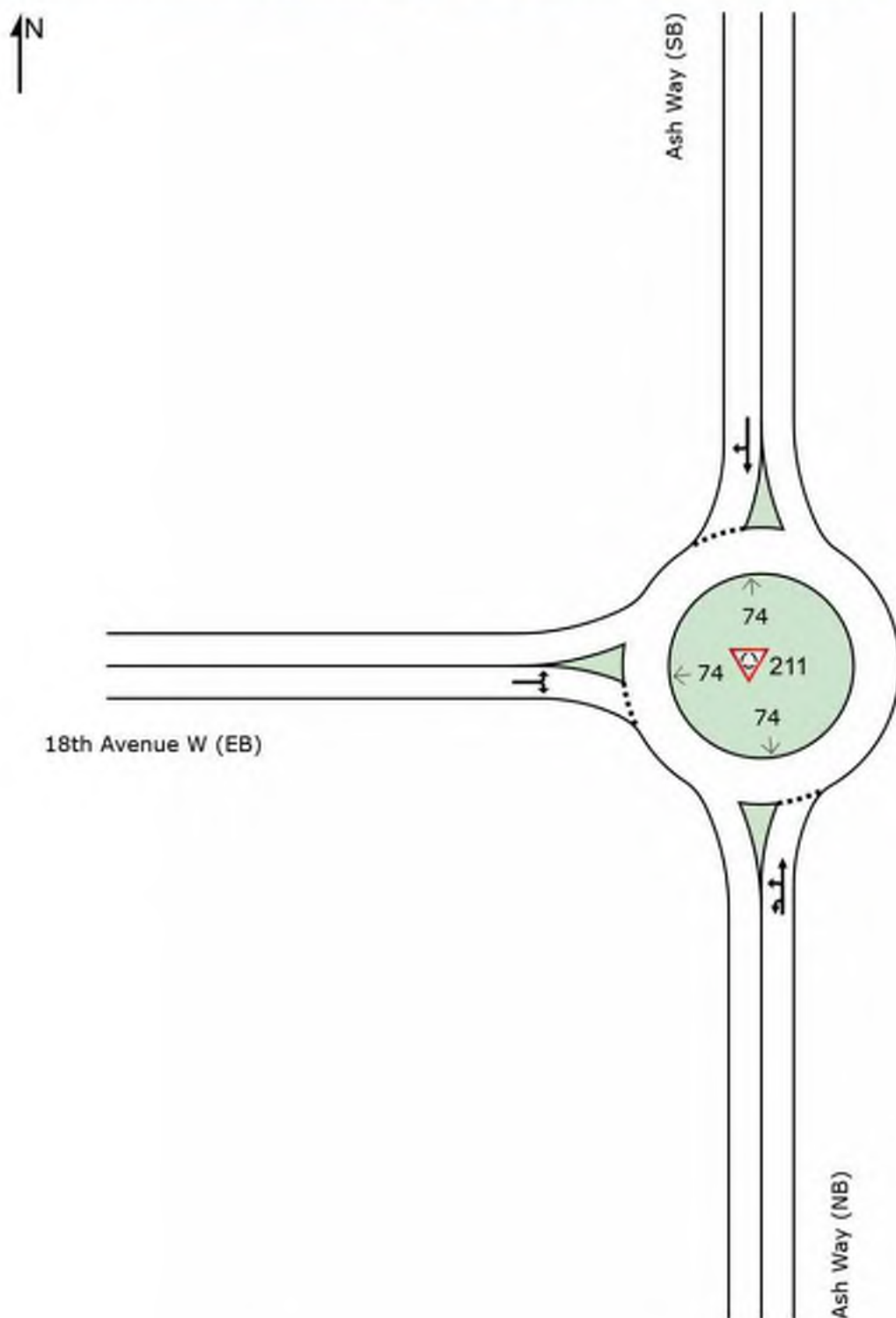
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SITE LAYOUT

▼ Site: 211 [2046 No-Build AM (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: AM Peak-Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way A Build AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	170	45	375	170	115	780
Future Volume (veh/h)	170	45	375	170	115	780
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1695	1695	1565	1565	1790	1790
Adj Flow Rate, veh/h	179	47	395	179	121	821
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	5	5
Cap, veh/h	214	190	1065	899	651	1383
Arrive On Green	0.13	0.13	0.68	0.68	0.08	1.00
Sat Flow, veh/h	1615	1437	1565	1321	1704	1790
Grp Volume(v), veh/h	179	47	395	179	121	821
Grp Sat Flow(s), veh/h/ln	1615	1437	1565	1321	1704	1790
Q Serve(g_s), s	9.7	2.6	9.7	4.5	2.0	0.0
Cycle Q Clear(g_c), s	9.7	2.6	9.7	4.5	2.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	214	190	1065	899	651	1383
V/C Ratio(X)	0.84	0.25	0.37	0.20	0.19	0.59
Avail Cap(c_a), veh/h	377	335	1065	899	721	1383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.77	0.77	0.73	0.73
Uniform Delay (d), s/veh	38.1	35.0	6.1	5.3	4.1	0.0
Incr Delay (d2), s/veh	3.3	0.2	0.8	0.4	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.9	2.8	1.1	0.5	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	41.4	35.3	6.9	5.7	4.2	1.4
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	226		574			942
Approach Delay, s/veh	40.1		6.5			1.7
Approach LOS	D		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.3	65.7			74.1	15.9
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	7.5	48.5			60.5	21.0
Max Q Clear Time (g_c+I1), s	4.0	11.7			2.0	11.7
Green Ext Time (p_c), s	0.0	5.0			11.6	0.2
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			8.3			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way A Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Volume (vph)	40	15	360	45	15	855
Future Volume (vph)	40	15	360	45	15	855
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	808		1577	1340	1638	1725
Flt Permitted	0.97		1.00	1.00	0.52	1.00
Satd. Flow (perm)	808		1577	1340	899	1725
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	16	379	47	16	900
RTOR Reduction (vph)	14	0	0	13	0	0
Lane Group Flow (vph)	44	0	379	34	16	900
Confl. Peds. (#/hr)	2	2				
Heavy Vehicles (%)	100%	100%	11%	11%	3%	3%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	8.7		64.3	64.3	66.3	71.3
Effective Green, g (s)	8.7		64.3	64.3	66.3	71.3
Actuated g/C Ratio	0.10		0.71	0.71	0.74	0.79
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	78		1126	957	678	1366
v/s Ratio Prot	c0.05		0.24		0.00	c0.52
v/s Ratio Perm				0.03	0.02	
v/c Ratio	0.56		0.34	0.04	0.02	0.66
Uniform Delay, d1	38.8		4.8	3.8	3.2	4.1
Progression Factor	1.00		0.39	0.12	1.00	1.00
Incremental Delay, d2	4.8		0.8	0.1	0.0	2.5
Delay (s)	43.7		2.6	0.5	3.2	6.6
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	43.7		2.4			6.5
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			6.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↖			↗			↖	
Traffic Vol, veh/h	5	0	10	5	0	5	10	130	10	5	270	5
Future Vol, veh/h	5	0	10	5	0	5	10	130	10	5	270	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	20	20	20	6	6	6	2	2	2
Mvmt Flow	5	0	11	5	0	5	11	137	11	5	284	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	466	-	289	471	470	147	291	0	0	152	0	0
Stage 1	299	-	-	169	169	-	-	-	-	-	-	-
Stage 2	167	-	-	302	301	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.3	6.7	6.4	4.16	-	-	4.12	-	-
Critical Hdwy Stg 1	6.7	-	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.68	4.18	3.48	2.254	-	-	2.218	-	-
Pot Cap-1 Maneuver	472	0	737	474	466	855	1248	-	-	1429	-	-
Stage 1	679	0	-	792	726	-	-	-	-	-	-	-
Stage 2	817	0	-	670	634	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	464	-	736	461	457	852	1246	-	-	1424	-	-
Mov Cap-2 Maneuver	464	-	-	461	457	-	-	-	-	-	-	-
Stage 1	671	-	-	782	717	-	-	-	-	-	-	-
Stage 2	804	-	-	658	630	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	10.9			11.1			0.5			0.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1246	-	-	464	736	598	1424	-	-			
HCM Lane V/C Ratio	0.008	-	-	0.011	0.014	0.018	0.004	-	-			
HCM Control Delay (s/veh)	7.9	0	-	12.8	10	11.1	7.5	0	-			
HCM Lane LOS	A	A	-	B	B	B	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0	0	0.1	0	-	-			

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	10	0	5	10	5	0	5	0	0	160	0
Future Vol, veh/h	0	10	0	5	10	5	0	5	0	0	160	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	3	3	2
Mvmt Flow	0	11	0	5	11	5	0	5	0	0	168	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	181	174	168	180	174	6	168	0	0	6	0	0
Stage 1	168	168	-	6	6	-	-	-	-	-	-	-
Stage 2	13	6	-	174	168	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	781	719	876	810	740	1083	1410	-	-	1608	-	-
Stage 1	834	759	-	1022	892	-	-	-	-	-	-	-
Stage 2	1007	891	-	857	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	769	718	876	800	739	1082	1410	-	-	1606	-	-
Mov Cap-2 Maneuver	769	718	-	800	739	-	-	-	-	-	-	-
Stage 1	834	759	-	1021	891	-	-	-	-	-	-	-
Stage 2	990	890	-	845	781	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	10.1		9.5		0		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1410	-	-	718	818	1606	-	-				
HCM Lane V/C Ratio	-	-	-	0.015	0.026	-	-	-				
HCM Control Delay (s/veh)	0	-	-	10.1	9.5	0	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

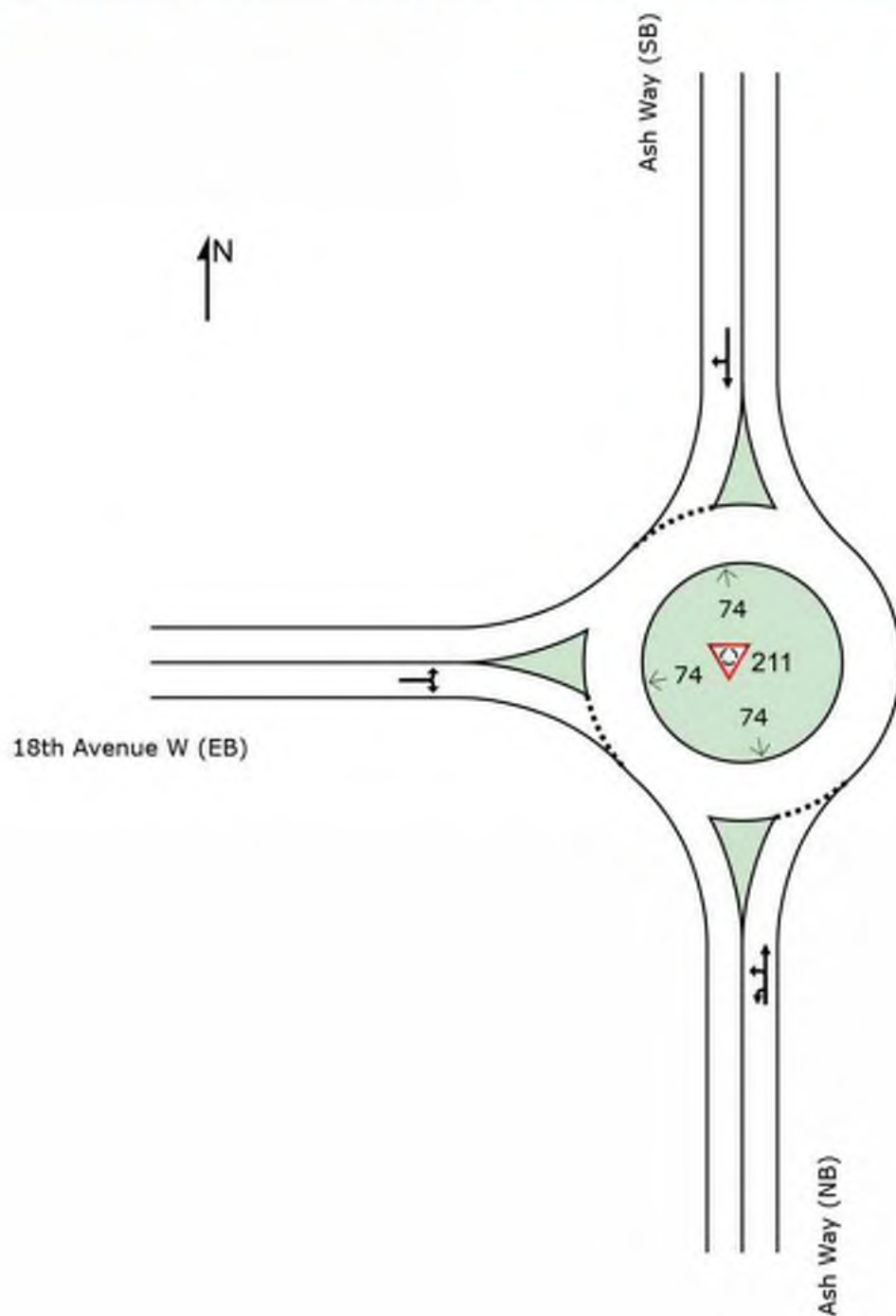
Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	5	10	10	125	265	5
Future Vol, veh/h	5	10	10	125	265	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	11	136	288	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	449	291	293	0	-	0
Stage 1	291	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	568	748	1269	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	563	748	1269	-	-	-
Mov Cap-2 Maneuver	563	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	10.5	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1269	-	674	-	-	
HCM Lane V/C Ratio	0.009	-	0.024	-	-	
HCM Control Delay (s/veh)	7.9	0	10.5	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0.1	-	-	

SITE LAYOUT

 Site: 211 [2046 Build AM Alt A (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: AM Peak-Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

 Site: 211 [2046 Build AM Alt A (Site Folder: Ash Way at 18th Avenue W)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Existing Roundabout
Site Category: AM Peak-Hour
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh]	[Dist ft]				
			veh/h	%	veh/h	%				v/c	sec				veh
South: Ash Way (NB)															
3u	U	All MCs	12	5.0	12	5.0	0.344	11.7	LOS B	2.8	73.0	0.13	0.50	0.13	34.1
3	L2	All MCs	142	5.0	142	5.0	0.344	9.5	LOS A	2.8	73.0	0.13	0.50	0.13	34.1
8	T1	All MCs	296	5.0	296	5.0	0.344	4.4	LOS A	2.8	73.0	0.13	0.50	0.13	34.9
Approach			451	5.0	451	5.0	0.344	6.2	LOS A	2.8	73.0	0.13	0.50	0.13	34.6
North: Ash Way (SB)															
4	T1	All MCs	691	5.0	691	5.0	0.604	5.8	LOS A	4.7	122.3	0.51	0.50	0.51	34.5
14	R2	All MCs	12	5.0	12	5.0	0.604	5.6	LOS A	4.7	122.3	0.51	0.50	0.51	34.2
Approach			704	5.0	704	5.0	0.604	5.8	LOS A	4.7	122.3	0.51	0.50	0.51	34.5
West: 18th Avenue W (EB)															
5	L2	All MCs	12	3.0	12	3.0	0.405	15.3	LOS B	2.9	73.6	0.85	0.76	0.88	32.3
12	R2	All MCs	259	3.0	259	3.0	0.405	10.2	LOS B	2.9	73.6	0.85	0.76	0.88	32.7
Approach			272	3.0	272	3.0	0.405	10.4	LOS B	2.9	73.6	0.85	0.76	0.88	32.6
All Vehicles			1426	4.6	1426	4.6	0.604	6.8	LOS A	4.7	122.3	0.45	0.55	0.46	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Transportation\Traffic Analysis\03_Synchro\SIDRA Analysis\03_Build\ASH A\2046\211Ash Way at 18th Ave RAB - AM.sip9

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way D Build AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	25	395	65	95	800
Future Volume (veh/h)	65	25	395	65	95	800
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1695	1695	1565	1565	1790	1790
Adj Flow Rate, veh/h	68	26	416	68	100	842
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	5	5
Cap, veh/h	94	84	1184	1000	782	1516
Arrive On Green	0.06	0.06	0.76	0.76	0.08	1.00
Sat Flow, veh/h	1615	1437	1565	1322	1704	1790
Grp Volume(v), veh/h	68	26	416	68	100	842
Grp Sat Flow(s), veh/h/ln	1615	1437	1565	1322	1704	1790
Q Serve(g_s), s	3.7	1.6	7.9	1.2	1.2	0.0
Cycle Q Clear(g_c), s	3.7	1.6	7.9	1.2	1.2	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	94	84	1184	1000	782	1516
V/C Ratio(X)	0.72	0.31	0.35	0.07	0.13	0.56
Avail Cap(c_a), veh/h	251	223	1184	1000	911	1516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.84	0.84	0.73	0.73
Uniform Delay (d), s/veh	41.7	40.6	3.6	2.8	2.3	0.0
Incr Delay (d2), s/veh	3.9	0.8	0.7	0.1	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.6	1.9	0.2	0.2	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	45.6	41.4	4.3	2.9	2.3	1.1
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	94		484			942
Approach Delay, s/veh	44.4		4.1			1.2
Approach LOS	D		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.2	72.6			80.8	9.2
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	10.5	52.5			67.5	14.0
Max Q Clear Time (g_c+I1), s	3.2	9.9			2.0	5.7
Green Ext Time (p_c), s	0.1	4.6			12.4	0.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			4.8			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way D Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	L	R	L	R
Traffic Volume (vph)	40	15	360	45	15	855
Future Volume (vph)	40	15	360	45	15	855
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	808		1577	1340	1638	1725
Flt Permitted	0.97		1.00	1.00	0.52	1.00
Satd. Flow (perm)	808		1577	1340	901	1725
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	16	379	47	16	900
RTOR Reduction (vph)	15	0	0	13	0	0
Lane Group Flow (vph)	43	0	379	34	16	900
Confl. Peds. (#/hr)	2	2				
Heavy Vehicles (%)	100%	100%	11%	11%	3%	3%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	8.1		64.9	64.9	66.9	71.9
Effective Green, g (s)	8.1		64.9	64.9	66.9	71.9
Actuated g/C Ratio	0.09		0.72	0.72	0.74	0.80
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	72		1137	966	686	1378
v/s Ratio Prot	c0.05		0.24		0.00	c0.52
v/s Ratio Perm				0.03	0.02	
v/c Ratio	0.60		0.33	0.04	0.02	0.65
Uniform Delay, d1	39.4		4.6	3.6	3.0	3.8
Progression Factor	1.00		0.73	0.66	1.00	1.00
Incremental Delay, d2	9.4		0.8	0.1	0.0	2.4
Delay (s)	48.8		4.1	2.4	3.0	6.2
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	48.8		3.9			6.2
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			7.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱		↰			↰			↱	
Traffic Vol, veh/h	5	0	10	5	0	5	10	115	10	5	255	5
Future Vol, veh/h	5	0	10	5	0	5	10	115	10	5	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	20	20	20	6	6	6	2	2	2
Mvmt Flow	5	0	11	5	0	5	11	121	11	5	268	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	434	-	273	439	438	131	275	0	0	136	0	0
Stage 1	283	-	-	153	153	-	-	-	-	-	-	-
Stage 2	151	-	-	286	285	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.3	6.7	6.4	4.16	-	-	4.12	-	-
Critical Hdwy Stg 1	6.7	-	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.68	4.18	3.48	2.254	-	-	2.218	-	-
Pot Cap-1 Maneuver	498	0	753	498	486	873	1265	-	-	1448	-	-
Stage 1	695	0	-	809	738	-	-	-	-	-	-	-
Stage 2	835	0	-	684	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	489	-	752	485	477	870	1263	-	-	1443	-	-
Mov Cap-2 Maneuver	489	-	-	485	477	-	-	-	-	-	-	-
Stage 1	687	-	-	799	729	-	-	-	-	-	-	-
Stage 2	822	-	-	672	640	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	10.7			10.9			0.6			0.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1263	-	-	489	752	623	1443	-	-			
HCM Lane V/C Ratio	0.008	-	-	0.011	0.014	0.017	0.004	-	-			
HCM Control Delay (s/veh)	7.9	0	-	12.4	9.9	10.9	7.5	0	-			
HCM Lane LOS	A	A	-	B	A	B	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0	0	0.1	0	-	-			

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	25	5	0	5	25	15	5	0	170	0
Future Vol, veh/h	0	0	25	5	0	5	25	15	5	0	170	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	3	3	2
Mvmt Flow	0	0	27	5	0	5	27	16	5	0	179	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	254	255	179	267	253	20	179	0	0	22	0	0
Stage 1	179	179	-	74	74	-	-	-	-	-	-	-
Stage 2	75	76	-	193	179	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	699	649	864	721	678	1065	1397	-	-	1587	-	-
Stage 1	823	751	-	952	844	-	-	-	-	-	-	-
Stage 2	934	832	-	840	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	685	635	864	687	664	1064	1397	-	-	1585	-	-
Mov Cap-2 Maneuver	685	635	-	687	664	-	-	-	-	-	-	-
Stage 1	807	751	-	932	826	-	-	-	-	-	-	-
Stage 2	911	815	-	814	774	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	9.3		9.4		4.3		0					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1397	-	-	864	835	1585	-	-				
HCM Lane V/C Ratio	0.019	-	-	0.031	0.013	-	-	-				
HCM Control Delay (s/veh)	7.6	0	-	9.3	9.4	0	-	-				
HCM Lane LOS	A	A	-	A	A	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.1	0	0	-	-				

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	0	0	115	255	5
Future Vol, veh/h	5	0	0	115	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	125	277	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	405	280	282
Stage 1	280	-	-
Stage 2	125	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	602	759	1280
Stage 1	767	-	-
Stage 2	901	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	602	759	1280
Mov Cap-2 Maneuver	602	-	-
Stage 1	767	-	-
Stage 2	901	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11	0	0
HCM LOS	B		

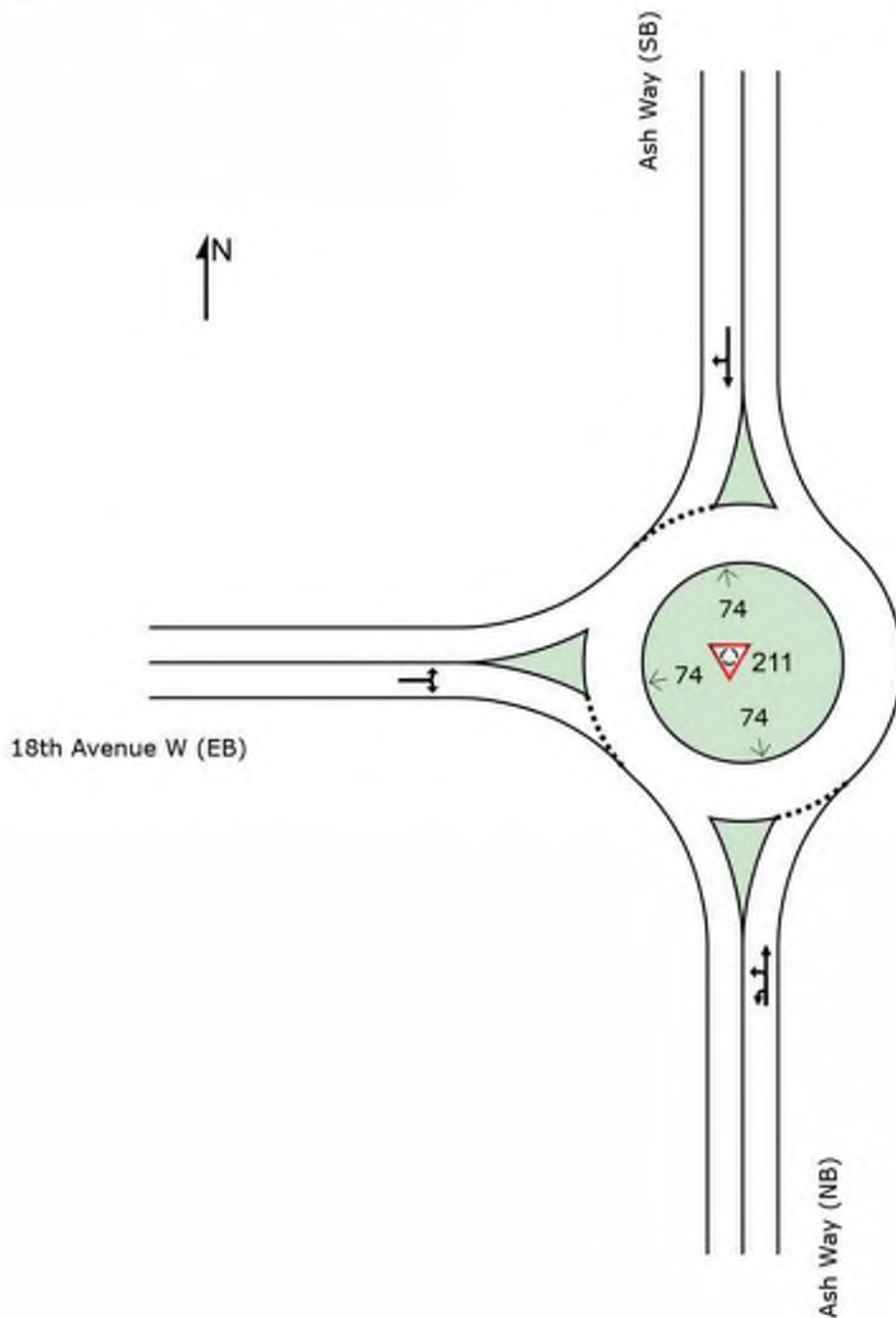
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1280	-	602	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s/veh)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q (veh)	0	-	0	-	-

SITE LAYOUT

 Site: 211 [2046 Build AM Alt D (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: AM Peak-Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 211 [2046 Build AM Alt D (Site Folder: Ash Way at 18th Avenue W)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Existing Roundabout
Site Category: AM Peak-Hour
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				mph
			veh/h	%	veh/h	%	v/c	sec			ft				
South: Ash Way (NB)															
3u	U	All MCs	12	5.0	12	5.0	0.344	11.7	LOS B	2.8	73.0	0.13	0.50	0.13	34.1
3	L2	All MCs	142	5.0	142	5.0	0.344	9.5	LOS A	2.8	73.0	0.13	0.50	0.13	34.1
8	T1	All MCs	296	5.0	296	5.0	0.344	4.4	LOS A	2.8	73.0	0.13	0.50	0.13	34.9
Approach			451	5.0	451	5.0	0.344	6.2	LOS A	2.8	73.0	0.13	0.50	0.13	34.6
North: Ash Way (SB)															
4	T1	All MCs	691	5.0	691	5.0	0.604	5.8	LOS A	4.7	122.3	0.51	0.50	0.51	34.5
14	R2	All MCs	12	5.0	12	5.0	0.604	5.6	LOS A	4.7	122.3	0.51	0.50	0.51	34.2
Approach			704	5.0	704	5.0	0.604	5.8	LOS A	4.7	122.3	0.51	0.50	0.51	34.5
West: 18th Avenue W (EB)															
5	L2	All MCs	12	3.0	12	3.0	0.405	15.3	LOS B	2.9	73.6	0.85	0.76	0.88	32.3
12	R2	All MCs	259	3.0	259	3.0	0.405	10.2	LOS B	2.9	73.6	0.85	0.76	0.88	32.7
Approach			272	3.0	272	3.0	0.405	10.4	LOS B	2.9	73.6	0.85	0.76	0.88	32.6
All Vehicles			1426	4.6	1426	4.6	0.604	6.8	LOS A	4.7	122.3	0.45	0.55	0.46	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Transportation\Traffic Analysis\03_Synchro\SIDRA Analysis\03_Build\ASH D\2046\211Ash Way at 18th Ave RAB - AM.sip9

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way A Build AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	170	45	375	170	115	780
Future Volume (veh/h)	170	45	375	170	115	780
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1695	1695	1565	1565	1790	1790
Adj Flow Rate, veh/h	179	47	395	179	121	821
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	5	5
Cap, veh/h	214	190	1065	899	651	1383
Arrive On Green	0.13	0.13	0.68	0.68	0.08	1.00
Sat Flow, veh/h	1615	1437	1565	1321	1704	1790
Grp Volume(v), veh/h	179	47	395	179	121	821
Grp Sat Flow(s), veh/h/ln	1615	1437	1565	1321	1704	1790
Q Serve(g_s), s	9.7	2.6	9.7	4.5	2.0	0.0
Cycle Q Clear(g_c), s	9.7	2.6	9.7	4.5	2.0	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	214	190	1065	899	651	1383
V/C Ratio(X)	0.84	0.25	0.37	0.20	0.19	0.59
Avail Cap(c_a), veh/h	377	335	1065	899	721	1383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.77	0.77	0.73	0.73
Uniform Delay (d), s/veh	38.1	35.0	6.1	5.3	4.1	0.0
Incr Delay (d2), s/veh	3.3	0.2	0.8	0.4	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.9	2.8	1.1	0.5	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	41.4	35.3	6.9	5.7	4.2	1.4
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	226		574			942
Approach Delay, s/veh	40.1		6.5			1.7
Approach LOS	D		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.3	65.7			74.1	15.9
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	7.5	48.5			60.5	21.0
Max Q Clear Time (g_c+I1), s	4.0	11.7			2.0	11.7
Green Ext Time (p_c), s	0.0	5.0			11.6	0.2
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			8.3			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way A Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	L	R	L	R
Traffic Volume (vph)	40	15	360	45	15	855
Future Volume (vph)	40	15	360	45	15	855
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	808		1577	1340	1638	1725
Flt Permitted	0.97		1.00	1.00	0.52	1.00
Satd. Flow (perm)	808		1577	1340	899	1725
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	16	379	47	16	900
RTOR Reduction (vph)	14	0	0	13	0	0
Lane Group Flow (vph)	44	0	379	34	16	900
Confl. Peds. (#/hr)	2	2				
Heavy Vehicles (%)	100%	100%	11%	11%	3%	3%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	8.7		64.3	64.3	66.3	71.3
Effective Green, g (s)	8.7		64.3	64.3	66.3	71.3
Actuated g/C Ratio	0.10		0.71	0.71	0.74	0.79
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	78		1126	957	678	1366
v/s Ratio Prot	c0.05		0.24		0.00	c0.52
v/s Ratio Perm				0.03	0.02	
v/c Ratio	0.56		0.34	0.04	0.02	0.66
Uniform Delay, d1	38.8		4.8	3.8	3.2	4.1
Progression Factor	1.00		0.39	0.12	1.00	1.00
Incremental Delay, d2	4.8		0.8	0.1	0.0	2.5
Delay (s)	43.7		2.6	0.5	3.2	6.6
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	43.7		2.4			6.5
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			6.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↖			↖			↗	
Traffic Vol, veh/h	5	0	10	5	0	5	10	130	10	5	270	5
Future Vol, veh/h	5	0	10	5	0	5	10	130	10	5	270	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	20	20	20	6	6	6	2	2	2
Mvmt Flow	5	0	11	5	0	5	11	137	11	5	284	5

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	466	-	289	471	470	147	291	0
Stage 1	299	-	-	169	169	-	-	-
Stage 2	167	-	-	302	301	-	-	-
Critical Hdwy	7.7	-	6.5	7.3	6.7	6.4	4.16	-
Critical Hdwy Stg 1	6.7	-	-	6.3	5.7	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.3	5.7	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.68	4.18	3.48	2.254	-
Pot Cap-1 Maneuver	472	0	737	474	466	855	1248	-
Stage 1	679	0	-	792	726	-	-	-
Stage 2	817	0	-	670	634	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	464	-	736	461	457	852	1246	-
Mov Cap-2 Maneuver	464	-	-	461	457	-	-	-
Stage 1	671	-	-	782	717	-	-	-
Stage 2	804	-	-	658	630	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	10.9	11.1	0.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	464	736	598	1424	-	-
HCM Lane V/C Ratio	0.008	-	-	0.011	0.014	0.018	0.004	-	-
HCM Control Delay (s/veh)	7.9	0	-	12.8	10	11.1	7.5	0	-
HCM Lane LOS	A	A	-	B	B	B	A	A	-
HCM 95th %tile Q (veh)	0	-	-	0	0	0.1	0	-	-

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	10	0	5	10	5	0	5	0	0	160	0
Future Vol, veh/h	0	10	0	5	10	5	0	5	0	0	160	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	3	3	2
Mvmt Flow	0	11	0	5	11	5	0	5	0	0	168	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	181	174	168	180	174	6	168	0	0	6	0	0
Stage 1	168	168	-	6	6	-	-	-	-	-	-	-
Stage 2	13	6	-	174	168	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	781	719	876	810	740	1083	1410	-	-	1608	-	-
Stage 1	834	759	-	1022	892	-	-	-	-	-	-	-
Stage 2	1007	891	-	857	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	769	718	876	800	739	1082	1410	-	-	1606	-	-
Mov Cap-2 Maneuver	769	718	-	800	739	-	-	-	-	-	-	-
Stage 1	834	759	-	1021	891	-	-	-	-	-	-	-
Stage 2	990	890	-	845	781	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s/v	10.1		9.5			0			0			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1410	-	-	718	818	1606	-	-				
HCM Lane V/C Ratio	-	-	-	0.015	0.026	-	-	-				
HCM Control Delay (s/veh)	0	-	-	10.1	9.5	0	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	5	10	10	125	265	5
Future Vol, veh/h	5	10	10	125	265	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	11	136	288	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	449	291	293	0	-	0
Stage 1	291	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	568	748	1269	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	563	748	1269	-	-	-
Mov Cap-2 Maneuver	563	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	10.5	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1269	-	674	-	-	
HCM Lane V/C Ratio	0.009	-	0.024	-	-	
HCM Control Delay (s/veh)	7.9	0	10.5	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0.1	-	-	

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way D Build AM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	25	395	65	95	800
Future Volume (veh/h)	65	25	395	65	95	800
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1695	1695	1565	1565	1790	1790
Adj Flow Rate, veh/h	68	26	416	68	100	842
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	5	5
Cap, veh/h	94	84	1184	1000	782	1516
Arrive On Green	0.06	0.06	0.76	0.76	0.08	1.00
Sat Flow, veh/h	1615	1437	1565	1322	1704	1790
Grp Volume(v), veh/h	68	26	416	68	100	842
Grp Sat Flow(s), veh/h/ln	1615	1437	1565	1322	1704	1790
Q Serve(g_s), s	3.7	1.6	7.9	1.2	1.2	0.0
Cycle Q Clear(g_c), s	3.7	1.6	7.9	1.2	1.2	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	94	84	1184	1000	782	1516
V/C Ratio(X)	0.72	0.31	0.35	0.07	0.13	0.56
Avail Cap(c_a), veh/h	251	223	1184	1000	911	1516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.84	0.84	0.73	0.73
Uniform Delay (d), s/veh	41.7	40.6	3.6	2.8	2.3	0.0
Incr Delay (d2), s/veh	3.9	0.8	0.7	0.1	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.6	1.9	0.2	0.2	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	45.6	41.4	4.3	2.9	2.3	1.1
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	94		484			942
Approach Delay, s/veh	44.4		4.1			1.2
Approach LOS	D		A			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.2	72.6			80.8	9.2
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	10.5	52.5			67.5	14.0
Max Q Clear Time (g_c+I1), s	3.2	9.9			2.0	5.7
Green Ext Time (p_c), s	0.1	4.6			12.4	0.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			4.8			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way D Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	T	T
Traffic Volume (vph)	40	15	360	45	15	855
Future Volume (vph)	40	15	360	45	15	855
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	808		1577	1340	1638	1725
Flt Permitted	0.97		1.00	1.00	0.52	1.00
Satd. Flow (perm)	808		1577	1340	901	1725
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	16	379	47	16	900
RTOR Reduction (vph)	15	0	0	13	0	0
Lane Group Flow (vph)	43	0	379	34	16	900
Confl. Peds. (#/hr)	2	2				
Heavy Vehicles (%)	100%	100%	11%	11%	3%	3%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	8.1		64.9	64.9	66.9	71.9
Effective Green, g (s)	8.1		64.9	64.9	66.9	71.9
Actuated g/C Ratio	0.09		0.72	0.72	0.74	0.80
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	72		1137	966	686	1378
v/s Ratio Prot	c0.05		0.24		0.00	c0.52
v/s Ratio Perm				0.03	0.02	
v/c Ratio	0.60		0.33	0.04	0.02	0.65
Uniform Delay, d1	39.4		4.6	3.6	3.0	3.8
Progression Factor	1.00		0.73	0.66	1.00	1.00
Incremental Delay, d2	9.4		0.8	0.1	0.0	2.4
Delay (s)	48.8		4.1	2.4	3.0	6.2
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	48.8		3.9			6.2
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			7.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	5	0	5	10	115	10	5	255	5
Future Vol, veh/h	5	0	10	5	0	5	10	115	10	5	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	4	4	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	20	20	20	6	6	6	2	2	2
Mvmt Flow	5	0	11	5	0	5	11	121	11	5	268	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	434	-	273	439	438	131	275	0	0	136	0	0
Stage 1	283	-	-	153	153	-	-	-	-	-	-	-
Stage 2	151	-	-	286	285	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.3	6.7	6.4	4.16	-	-	4.12	-	-
Critical Hdwy Stg 1	6.7	-	-	6.3	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.3	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.68	4.18	3.48	2.254	-	-	2.218	-	-
Pot Cap-1 Maneuver	498	0	753	498	486	873	1265	-	-	1448	-	-
Stage 1	695	0	-	809	738	-	-	-	-	-	-	-
Stage 2	835	0	-	684	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	489	-	752	485	477	870	1263	-	-	1443	-	-
Mov Cap-2 Maneuver	489	-	-	485	477	-	-	-	-	-	-	-
Stage 1	687	-	-	799	729	-	-	-	-	-	-	-
Stage 2	822	-	-	672	640	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	10.7		10.9		0.6		0.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1263	-	-	489	752	623	1443	-	-			
HCM Lane V/C Ratio	0.008	-	-	0.011	0.014	0.017	0.004	-	-			
HCM Control Delay (s/veh)	7.9	0	-	12.4	9.9	10.9	7.5	0	-			
HCM Lane LOS	A	A	-	B	A	B	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0	0	0.1	0	-	-			

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	25	5	0	5	25	15	5	0	170	0
Future Vol, veh/h	0	0	25	5	0	5	25	15	5	0	170	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	3	3	2
Mvmt Flow	0	0	27	5	0	5	27	16	5	0	179	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	254	255	179	267	253	20	179	0	0	22	0	0
Stage 1	179	179	-	74	74	-	-	-	-	-	-	-
Stage 2	75	76	-	193	179	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	699	649	864	721	678	1065	1397	-	-	1587	-	-
Stage 1	823	751	-	952	844	-	-	-	-	-	-	-
Stage 2	934	832	-	840	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	685	635	864	687	664	1064	1397	-	-	1585	-	-
Mov Cap-2 Maneuver	685	635	-	687	664	-	-	-	-	-	-	-
Stage 1	807	751	-	932	826	-	-	-	-	-	-	-
Stage 2	911	815	-	814	774	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	9.3		9.4		4.3		0					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1397	-	-	864	835	1585	-	-				
HCM Lane V/C Ratio	0.019	-	-	0.031	0.013	-	-	-				
HCM Control Delay (s/veh)	7.6	0	-	9.3	9.4	0	-	-				
HCM Lane LOS	A	A	-	A	A	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.1	0	0	-	-				

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	5	0	0	115	255	5
Future Vol, veh/h	5	0	0	115	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	125	277	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	405	280	282	0	-	0
Stage 1	280	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	602	759	1280	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	602	759	1280	-	-	-
Mov Cap-2 Maneuver	602	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	11	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1280	-	602	-	-	
HCM Lane V/C Ratio	-	-	0.009	-	-	
HCM Control Delay (s/veh)	0	-	11	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q (veh)	0	-	0	-	-	

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way No-Build PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	175	120	900	30	35	605
Future Volume (veh/h)	175	120	900	30	35	605
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1750	1750	1660	1660	1776	1776
Adj Flow Rate, veh/h	184	126	947	32	37	637
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	3	3	6	6
Cap, veh/h	225	200	1152	971	295	1368
Arrive On Green	0.13	0.13	0.69	0.69	0.05	1.00
Sat Flow, veh/h	1667	1483	1660	1400	1691	1776
Grp Volume(v), veh/h	184	126	947	32	37	637
Grp Sat Flow(s), veh/h/ln	1667	1483	1660	1400	1691	1776
Q Serve(g_s), s	9.7	7.2	36.6	0.6	0.6	0.0
Cycle Q Clear(g_c), s	9.7	7.2	36.6	0.6	0.6	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	225	200	1152	971	295	1368
V/C Ratio(X)	0.82	0.63	0.82	0.03	0.13	0.47
Avail Cap(c_a), veh/h	759	676	1152	971	447	1368
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.52	0.52	0.91	0.91
Uniform Delay (d), s/veh	37.8	36.8	9.8	4.3	11.2	0.0
Incr Delay (d2), s/veh	2.8	1.2	3.6	0.0	0.1	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1	2.7	11.2	0.2	0.3	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	40.6	38.0	13.4	4.4	11.3	1.0
LnGrp LOS	D	D	B	A	B	A
Approach Vol, veh/h	310		979			674
Approach Delay, s/veh	39.6		13.1			1.6
Approach LOS	D		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	66.9			73.9	16.1
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gm), s	25.5				40.5	41.0
Max Q Clear Time (g_c+2), s	38.6				2.0	11.7
Green Ext Time (p_c), s	0.0	0.0			7.2	0.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			13.3			
HCM 6th LOS			B			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	LT	TH	TH	LT	LT	TH
Traffic Volume (vph)	35	15	1015	25	10	585
Future Volume (vph)	35	15	1015	25	10	585
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	817		1699	1399	1654	1741
Flt Permitted	0.96		1.00	1.00	0.16	1.00
Satd. Flow (perm)	817		1699	1399	293	1741
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	16	1057	26	10	609
RTOR Reduction (vph)	15	0	0	6	0	0
Lane Group Flow (vph)	37	0	1057	20	10	609
Confl. Peds. (#/hr)	1	1		6	6	
Heavy Vehicles (%)	97%	97%	3%	3%	2%	2%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	6.9		67.1	67.1	68.1	73.1
Effective Green, g (s)	6.9		67.1	67.1	68.1	73.1
Actuated g/C Ratio	0.08		0.75	0.75	0.76	0.81
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	62		1266	1043	236	1414
v/s Ratio Prot	c0.05		c0.62		0.00	c0.35
v/s Ratio Perm				0.01	0.03	
v/c Ratio	0.60		0.83	0.01	0.04	0.43
Uniform Delay, d1	40.2		7.7	2.9	6.9	2.4
Progression Factor	1.00		0.62	1.02	1.00	1.00
Incremental Delay, d2	10.7		4.1	0.0	0.0	0.9
Delay (s)	50.9		8.9	3.0	7.0	3.3
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	50.9		8.8			3.4
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			8.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			70.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	25	5	0	5	20	460	10	5	225	5
Future Vol, veh/h	5	0	25	5	0	5	20	460	10	5	225	5
Conflicting Peds, #/hr	1	0	1	1	0	1	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	3	3	3
Mvmt Flow	5	0	26	5	0	5	21	484	11	5	237	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	795	-	251	798	796	493	252	0	0	497	0	0
Stage 1	260	-	-	534	534	-	-	-	-	-	-	-
Stage 2	535	-	-	264	262	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.1	6.5	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.5	4	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	270	0	776	306	322	580	1325	-	-	1062	-	-
Stage 1	717	0	-	534	528	-	-	-	-	-	-	-
Stage 2	487	0	-	746	695	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	259	-	769	289	310	579	1313	-	-	1060	-	-
Mov Cap-2 Maneuver	259	-	-	289	310	-	-	-	-	-	-	-
Stage 1	695	-	-	521	515	-	-	-	-	-	-	-
Stage 2	472	-	-	716	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.4	14.6	0.3	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBRE	NBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1313	-	-	259	769	386	1060	-	-
HCM Lane V/C Ratio	0.016	-	-	0.02	0.034	0.027	0.005	-	-
HCM Control Delay (s/veh)	7.8	0	-	19.2	9.8	14.6	8.4	0	-
HCM Lane LOS	A	A	-	C	A	B	A	A	-
HCM 95th %tile Q (veh)	0	-	-	0.1	0.1	0.1	0	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	5	30	5	5	100
Future Vol, veh/h	0	5	30	5	5	100
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	4	4	1	1
Mvmt Flow	0	5	32	5	5	105
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	155	40	0	0	42	0
Stage 1	40	-	-	-	-	-
Stage 2	115	-	-	-	-	-
Critical Hdwy	5.8	5.9	-	-	4.11	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	863	1041	-	-	1573	-
Stage 1	994	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	856	1036	-	-	1565	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s/v	8.5	0	0.3			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1036	1565	-	
HCM Lane V/C Ratio	-	-	0.005	0.003	-	
HCM Control Delay (s/veh)	-	-	8.5	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q (veh)	-	-	0	0	-	

MOVEMENT SUMMARY

Site: 211 [2046 No-Build PM (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: PM Peak-Hour
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist ft]				mph
South: Ash Way (NB)														
3u	U	5	2.0	5	2.0	0.777	12.0	LOS B	14.4	365.4	0.40	0.44	0.40	36.1
3	L2	220	2.0	244	2.0	0.777	9.8	LOS A	14.4	365.4	0.40	0.44	0.40	35.4
8	T1	705	2.0	783	2.0	0.777	4.8	LOS A	14.4	365.4	0.40	0.44	0.40	35.5
Approach		930	2.0	1033	2.0	0.777	6.0	LOS A	14.4	365.4	0.40	0.44	0.40	35.5
North: Ash Way (SB)														
4	T1	395	2.0	429	2.0	0.399	5.8	LOS A	2.5	63.5	0.50	0.57	0.50	35.6
14	R2	15	2.0	16	2.0	0.399	5.7	LOS A	2.5	63.5	0.50	0.57	0.50	34.7
Approach		410	2.0	446	2.0	0.399	5.8	LOS A	2.5	63.5	0.50	0.57	0.50	35.6
West: 18th Avenue W (EB)														
5	L2	20	6.0	22	6.0	0.187	12.1	LOS B	1.1	28.9	0.61	0.69	0.61	35.2
12	R2	130	6.0	141	6.0	0.187	6.9	LOS A	1.1	28.9	0.61	0.69	0.61	34.4
Approach		150	6.0	163	6.0	0.187	7.6	LOS A	1.1	28.9	0.61	0.69	0.61	34.5
All Vehicles		1490	2.4	1642	2.4	0.777	6.1	LOS A	14.4	365.4	0.45	0.50	0.45	35.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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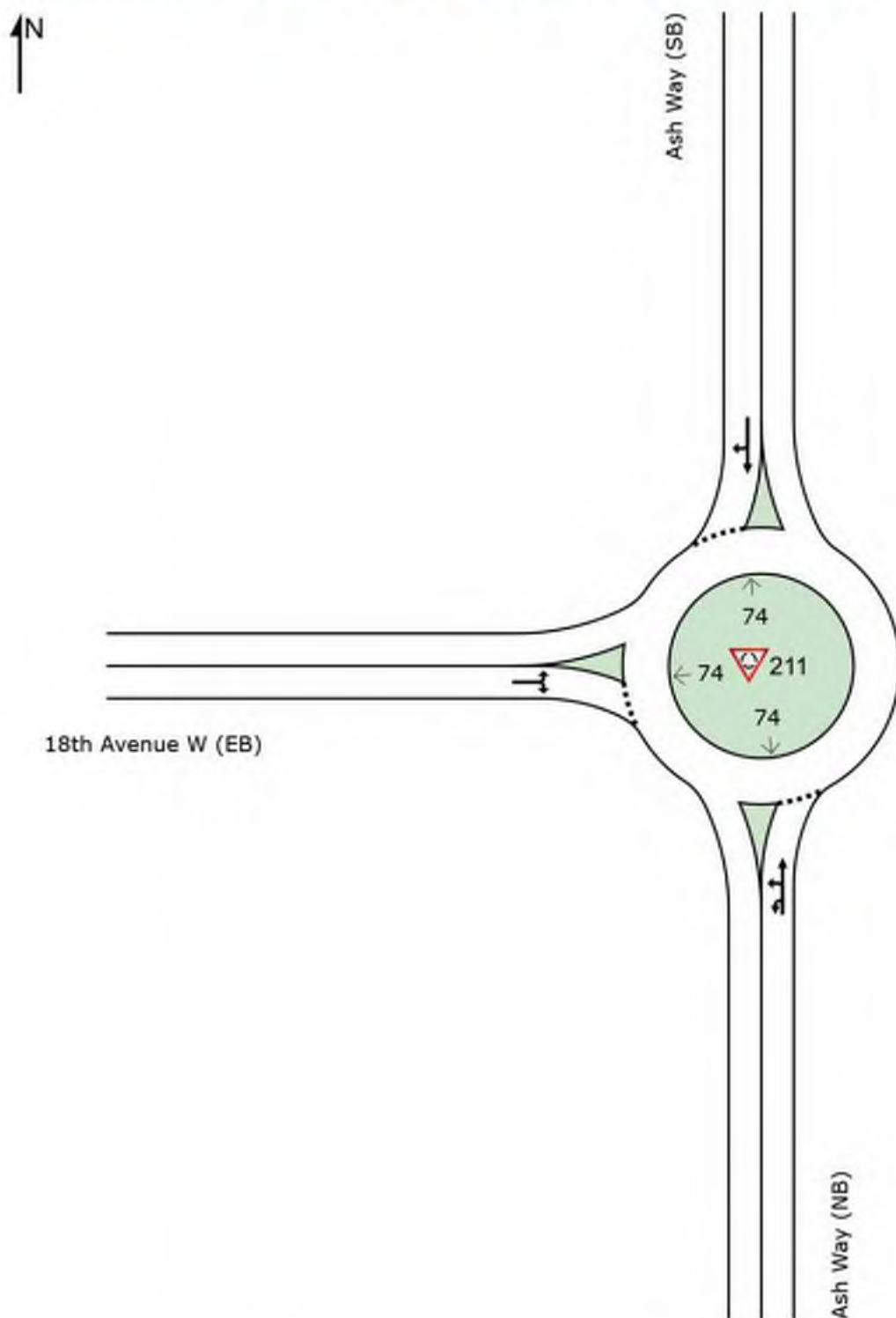
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SITE LAYOUT

▼ Site: 211 [2046 No-Build PM (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: PM Peak-Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way A Build PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	←	↑	↑	←	←
Traffic Volume (veh/h)	270	145	935	125	55	630
Future Volume (veh/h)	270	145	935	125	55	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1750	1750	1660	1660	1776	1776
Adj Flow Rate, veh/h	284	153	984	132	58	663
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	3	3	6	6
Cap, veh/h	322	286	1044	879	183	1265
Arrive On Green	0.19	0.19	0.63	0.63	0.07	1.00
Sat Flow, veh/h	1667	1483	1660	1399	1691	1776
Grp Volume(v), veh/h	284	153	984	132	58	663
Grp Sat Flow(s), veh/h/ln	1667	1483	1660	1399	1691	1776
Q Serve(g_s), s	14.9	8.4	48.6	3.5	1.1	0.0
Cycle Q Clear(g_c), s	14.9	8.4	48.6	3.5	1.1	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	322	286	1044	879	183	1265
V/C Ratio(X)	0.88	0.53	0.94	0.15	0.32	0.52
Avail Cap(c_a), veh/h	426	379	1044	879	267	1265
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.32	0.32	0.87	0.87
Uniform Delay (d), s/veh	35.3	32.7	15.2	6.9	19.3	0.0
Incr Delay (d2), s/veh	13.1	0.6	7.1	0.1	0.3	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	3.0	17.0	0.9	0.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	48.4	33.3	22.4	7.0	19.6	1.4
LnGrp LOS	D	C	C	A	B	A
Approach Vol, veh/h	437		1116			721
Approach Delay, s/veh	43.1		20.6			2.8
Approach LOS	D		C			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.6	61.1			68.6	21.4
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	7.5	46.5			58.5	23.0
Max Q Clear Time (g_c+I1), s	3.1	50.6			2.0	16.9
Green Ext Time (p_c), s	0.0	0.0			8.1	0.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			19.3			
HCM 6th LOS			B			

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way A Build PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	L	L
Traffic Volume (vph)	50	20	1060	40	15	620
Future Volume (vph)	50	20	1060	40	15	620
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	819		1699	1399	1654	1741
Flt Permitted	0.97		1.00	1.00	0.12	1.00
Satd. Flow (perm)	819		1699	1399	209	1741
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	21	1104	42	16	646
RTOR Reduction (vph)	19	0	0	9	0	0
Lane Group Flow (vph)	54	0	1104	33	16	646
Confl. Peds. (#/hr)	1	1		6	6	
Heavy Vehicles (%)	97%	97%	3%	3%	2%	2%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	9.7		64.2	64.2	65.3	70.3
Effective Green, g (s)	9.7		64.2	64.2	65.3	70.3
Actuated g/C Ratio	0.11		0.71	0.71	0.73	0.78
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	88		1211	997	169	1359
v/s Ratio Prot	c0.07		c0.65		0.00	c0.37
v/s Ratio Perm				0.02	0.07	
v/c Ratio	0.62		0.91	0.03	0.09	0.48
Uniform Delay, d1	38.4		10.6	3.8	10.8	3.4
Progression Factor	1.00		2.45	2.24	1.00	1.00
Incremental Delay, d2	8.7		5.4	0.0	0.1	1.2
Delay (s)	47.1		31.3	8.5	10.9	4.6
Level of Service	D		C	A	B	A
Approach Delay (s/veh)	47.1		30.5			4.8
Approach LOS	D		C			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			22.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↖			↖			↖	
Traffic Vol, veh/h	5	0	25	5	0	5	20	485	10	5	245	5
Future Vol, veh/h	5	0	25	5	0	5	20	485	10	5	245	5
Conflicting Peds, #/hr	1	0	1	1	0	1	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	3	3	3
Mvmt Flow	5	0	26	5	0	5	21	511	11	5	258	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	843	-	272	846	844	520	273	0	0	524	0	0
Stage 1	281	-	-	561	561	-	-	-	-	-	-	-
Stage 2	562	-	-	285	283	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.1	6.5	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.5	4	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	248	0	754	284	302	560	1302	-	-	1038	-	-
Stage 1	697	0	-	516	513	-	-	-	-	-	-	-
Stage 2	469	0	-	727	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	238	-	747	267	290	559	1291	-	-	1036	-	-
Mov Cap-2 Maneuver	238	-	-	267	290	-	-	-	-	-	-	-
Stage 1	675	-	-	503	500	-	-	-	-	-	-	-
Stage 2	454	-	-	697	671	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	11.8			15.3			0.3			0.2		
HCM LOS	B			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1291	-	-	238	747	361	1036	-	-			
HCM Lane V/C Ratio	0.016	-	-	0.022	0.035	0.029	0.005	-	-			
HCM Control Delay (s/veh)	7.8	0	-	20.5	10	15.3	8.5	0	-			
HCM Lane LOS	A	A	-	C	B	C	A	A	-			
HCM 95th %tile Q (veh)	0.1	-	-	0.1	0.1	0.1	0	-	-			

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	10	0	0	10	5	0	30	5	5	100	0
Future Vol, veh/h	0	10	0	0	10	5	0	30	5	5	100	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	4	4	1	1	2
Mvmt Flow	0	11	0	0	11	5	0	32	5	5	105	0
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	158	157	105	161	155	40	105	0	0	42	0	0
Stage 1	115	115	-	40	40	-	-	-	-	-	-	-
Stage 2	43	42	-	121	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	808	735	949	831	756	1041	1486	-	-	1573	-	-
Stage 1	890	800	-	987	867	-	-	-	-	-	-	-
Stage 2	971	860	-	906	816	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	793	729	949	816	750	1036	1486	-	-	1566	-	-
Mov Cap-2 Maneuver	793	729	-	816	750	-	-	-	-	-	-	-
Stage 1	890	798	-	982	863	-	-	-	-	-	-	-
Stage 2	954	856	-	891	814	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s/v	10		9.5			0			0.3			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1486	-	-	729	824	1566	-	-				
HCM Lane V/C Ratio	-	-	-	0.015	0.02	0.003	-	-				
HCM Control Delay (s/veh)	0	-	-	10	9.5	7.3	0	-				
HCM Lane LOS	A	-	-	B	A	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

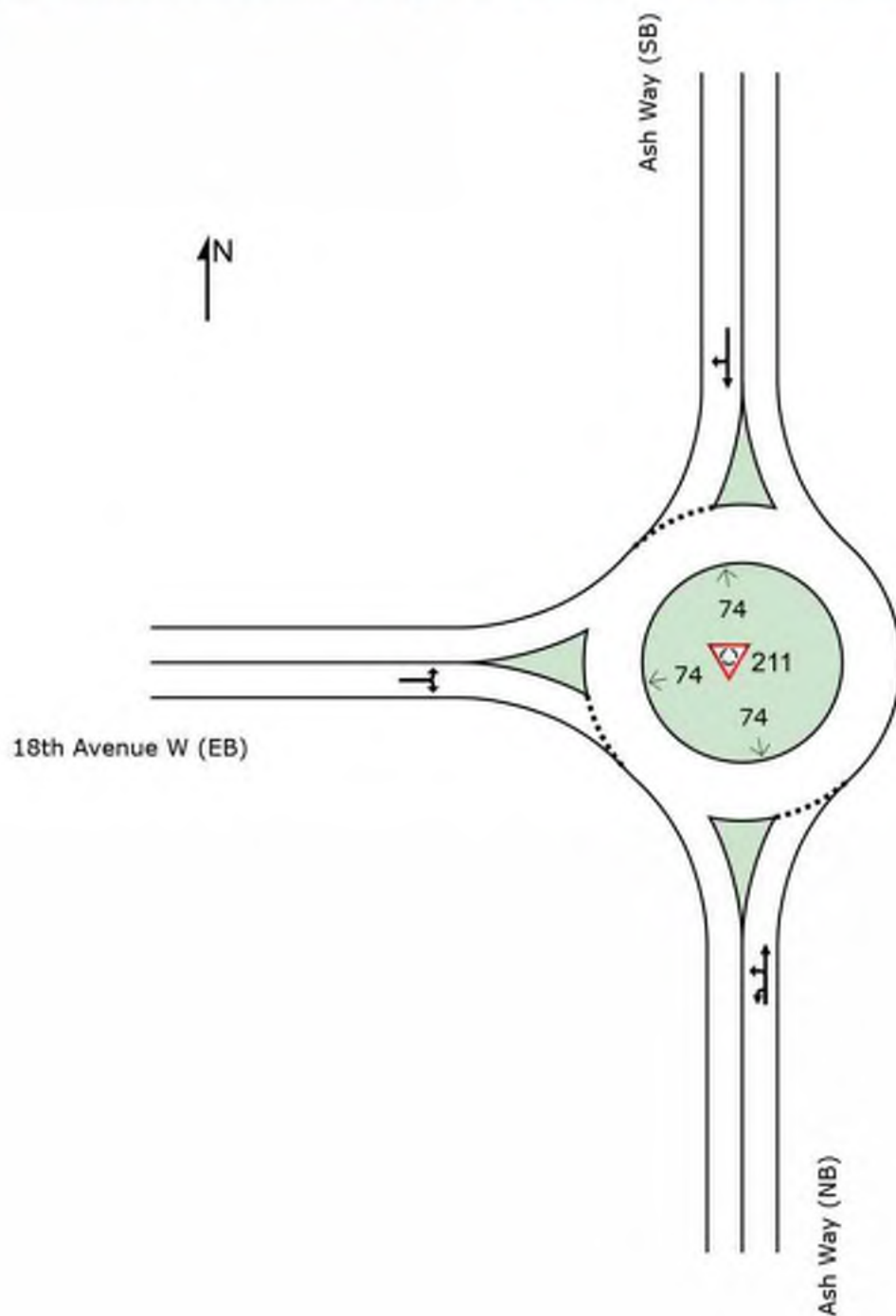
Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	5	10	10	480	240	5
Future Vol, veh/h	5	10	10	480	240	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	11	522	261	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	808	264	266	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	350	775	1298	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	346	775	1298	-	-	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	11.8	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1298	-	548	-	-	
HCM Lane V/C Ratio	0.008	-	0.03	-	-	
HCM Control Delay (s/veh)	7.8	0	11.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0.1	-	-	

SITE LAYOUT

 Site: 211 [2046 Build PM Alt A (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: PM Peak-Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 211 [2046 Build PM Alt A (Site Folder: Ash Way at 18th Avenue W)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Existing Roundabout
Site Category: PM Peak-Hour
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				mph
			veh/h	%	veh/h	%	v/c	sec			ft				
South: Ash Way (NB)															
3u	U	All MCs	5	2.0	5	2.0	0.818	12.1	LOS B	17.9	455.7	0.47	0.42	0.47	33.6
3	L2	All MCs	261	2.0	261	2.0	0.818	9.9	LOS A	17.9	455.7	0.47	0.42	0.47	33.6
8	T1	All MCs	822	2.0	822	2.0	0.818	4.9	LOS A	17.9	455.7	0.47	0.42	0.47	34.3
Approach			1089	2.0	1089	2.0	0.818	6.1	LOS A	17.9	455.7	0.47	0.42	0.47	34.1
North: Ash Way (SB)															
4	T1	All MCs	462	2.0	462	2.0	0.438	6.0	LOS A	2.9	72.9	0.54	0.54	0.54	34.5
14	R2	All MCs	16	2.0	16	2.0	0.438	5.8	LOS A	2.9	72.9	0.54	0.54	0.54	34.2
Approach			478	2.0	478	2.0	0.438	6.0	LOS A	2.9	72.9	0.54	0.54	0.54	34.5
West: 18th Avenue W (EB)															
5	L2	All MCs	22	6.0	22	6.0	0.216	12.4	LOS B	1.3	33.9	0.65	0.66	0.65	33.4
12	R2	All MCs	158	6.0	158	6.0	0.216	7.2	LOS A	1.3	33.9	0.65	0.66	0.65	33.9
Approach			179	6.0	179	6.0	0.216	7.8	LOS A	1.3	33.9	0.65	0.66	0.65	33.8
All Vehicles			1746	2.4	1746	2.4	0.818	6.3	LOS A	17.9	455.7	0.51	0.47	0.51	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Transportation\Traffic Analysis\03_Synchro\SIDRA Analysis\03_Build\ASH A\2046\211Ash Way at 18th Ave RAB - PM.sip9

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way D Build PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	←	↑	↑	←	←
Traffic Volume (veh/h)	175	125	955	30	35	650
Future Volume (veh/h)	175	125	955	30	35	650
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1750	1750	1660	1660	1776	1776
Adj Flow Rate, veh/h	184	132	1005	32	37	684
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	3	3	6	6
Cap, veh/h	222	197	1155	974	254	1372
Arrive On Green	0.13	0.13	0.70	0.70	0.05	1.00
Sat Flow, veh/h	1667	1483	1660	1400	1691	1776
Grp Volume(v), veh/h	184	132	1005	32	37	684
Grp Sat Flow(s), veh/h/ln	1667	1483	1660	1400	1691	1776
Q Serve(g_s), s	9.7	7.6	42.0	0.6	0.6	0.0
Cycle Q Clear(g_c), s	9.7	7.6	42.0	0.6	0.6	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	222	197	1155	974	254	1372
V/C Ratio(X)	0.83	0.67	0.87	0.03	0.15	0.50
Avail Cap(c_a), veh/h	333	297	1155	974	368	1372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.46	0.46	0.87	0.87
Uniform Delay (d), s/veh	38.0	37.1	10.6	4.3	13.6	0.0
Incr Delay (d2), s/veh	6.4	1.5	4.5	0.0	0.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	2.8	12.9	0.2	0.3	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	44.4	38.6	15.0	4.3	13.7	1.1
LnGrp LOS	D	D	B	A	B	A
Approach Vol, veh/h	316		1037			721
Approach Delay, s/veh	42.0		14.7			1.8
Approach LOS	D		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	67.1			74.0	16.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	8.5	50.5			63.5	18.0
Max Q Clear Time (g_c+I1), s	2.6	44.0			2.0	11.7
Green Ext Time (p_c), s	0.0	4.6			8.5	0.3
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			14.4			
HCM 6th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way D Build PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Volume (vph)	50	20	1060	40	15	620
Future Volume (vph)	50	20	1060	40	15	620
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	819		1699	1399	1654	1741
Flt Permitted	0.97		1.00	1.00	0.13	1.00
Satd. Flow (perm)	819		1699	1399	225	1741
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	21	1104	42	16	646
RTOR Reduction (vph)	17	0	0	11	0	0
Lane Group Flow (vph)	56	0	1104	31	16	646
Confl. Peds. (#/hr)	1	1		6	6	
Heavy Vehicles (%)	97%	97%	3%	3%	2%	2%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	8.8		65.2	65.2	66.2	71.2
Effective Green, g (s)	8.8		65.2	65.2	66.2	71.2
Actuated g/C Ratio	0.10		0.72	0.72	0.74	0.79
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	80		1230	1013	181	1377
v/s Ratio Prot	c0.07		c0.65		0.00	c0.37
v/s Ratio Perm				0.02	0.06	
v/c Ratio	0.70		0.90	0.03	0.09	0.47
Uniform Delay, d1	39.3		9.8	3.5	10.0	3.1
Progression Factor	1.00		0.26	0.03	1.00	1.00
Incremental Delay, d2	19.2		5.9	0.0	0.1	1.1
Delay (s)	58.6		8.4	0.1	10.0	4.3
Level of Service	E		A	A	B	A
Approach Delay (s/veh)	58.6		8.1			4.4
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			8.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱		↰			↰			↱	
Traffic Vol, veh/h	5	0	25	5	0	5	20	470	10	5	230	5
Future Vol, veh/h	5	0	25	5	0	5	20	470	10	5	230	5
Conflicting Peds, #/hr	1	0	1	1	0	1	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	3	3	3
Mvmt Flow	5	0	26	5	0	5	21	495	11	5	242	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	811	-	256	814	812	504	257	0	0	508	0	0
Stage 1	265	-	-	545	545	-	-	-	-	-	-	-
Stage 2	546	-	-	269	267	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.1	6.5	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.5	4	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	262	0	771	299	315	572	1320	-	-	1052	-	-
Stage 1	713	0	-	526	522	-	-	-	-	-	-	-
Stage 2	480	0	-	741	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	252	-	764	282	303	571	1308	-	-	1050	-	-
Mov Cap-2 Maneuver	252	-	-	282	303	-	-	-	-	-	-	-
Stage 1	691	-	-	513	509	-	-	-	-	-	-	-
Stage 2	465	-	-	711	682	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	11.5			14.8			0.3			0.2		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1308	-	-	252	764	378	1050	-	-			
HCM Lane V/C Ratio	0.016	-	-	0.021	0.034	0.028	0.005	-	-			
HCM Control Delay (s/veh)	7.8	0	-	19.6	9.9	14.8	8.4	0	-			
HCM Lane LOS	A	A	-	C	A	B	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0.1	0.1	0.1	0	-	-			

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	25	5	0	5	25	40	5	5	110	0
Future Vol, veh/h	0	0	25	5	0	5	25	40	5	5	110	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	4	4	1	1	2
Mvmt Flow	0	0	27	5	0	5	27	42	5	5	116	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	227	232	116	244	230	50	116	0	0	52	0	0
Stage 1	126	126	-	104	104	-	-	-	-	-	-	-
Stage 2	101	106	-	140	126	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	728	668	936	744	696	1028	1473	-	-	1560	-	-
Stage 1	878	792	-	923	823	-	-	-	-	-	-	-
Stage 2	905	807	-	888	809	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	712	650	936	707	677	1023	1473	-	-	1553	-	-
Mov Cap-2 Maneuver	712	650	-	707	677	-	-	-	-	-	-	-
Stage 1	861	790	-	901	803	-	-	-	-	-	-	-
Stage 2	883	788	-	860	807	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	9		9.4		2.7		0.3					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1473	-	-	936	836	1553	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.029	0.013	0.003	-	-				
HCM Control Delay (s/veh)	7.5	0	-	9	9.4	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.1	0	0	-	-				

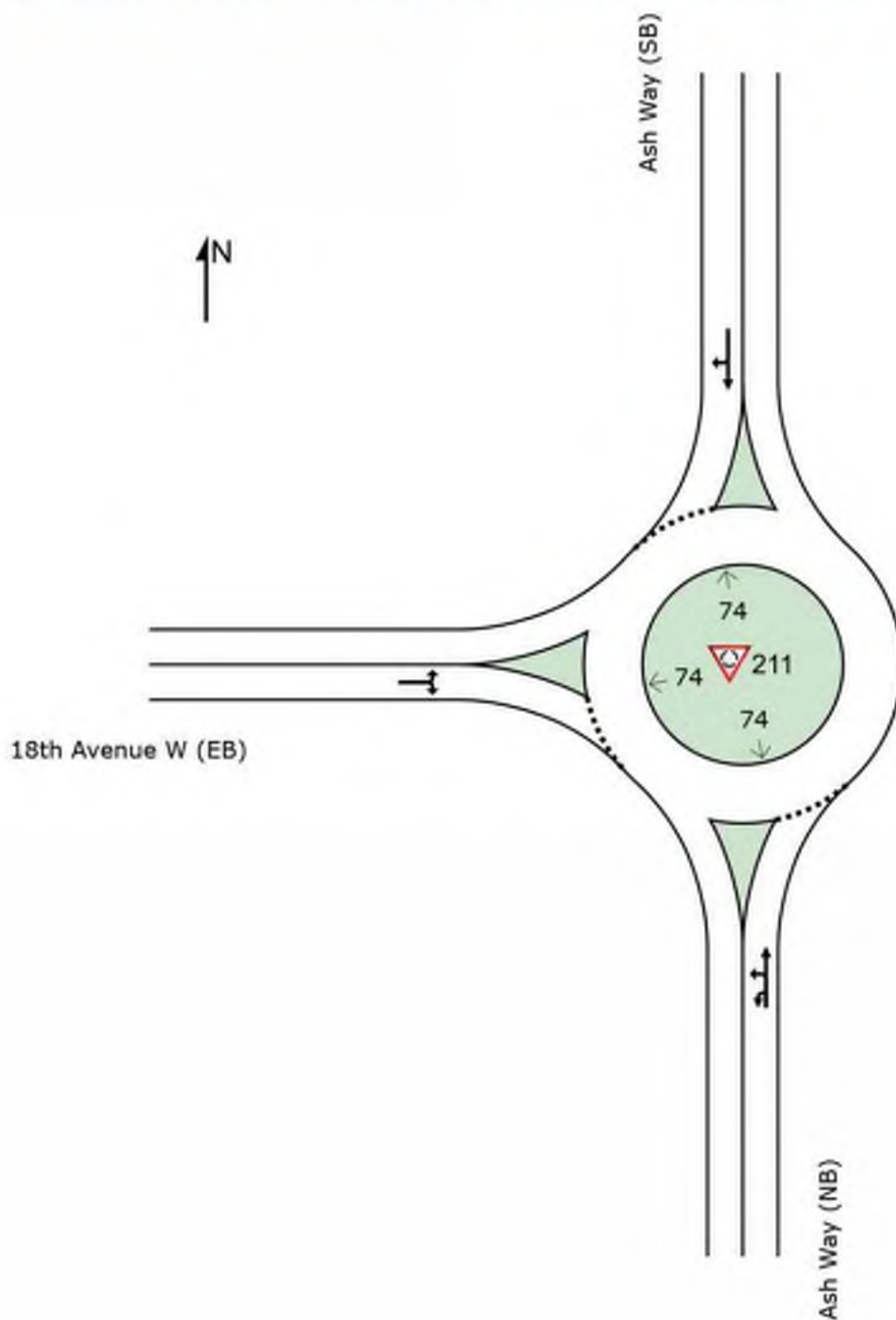
Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	5	0	0	470	230	5
Future Vol, veh/h	5	0	0	470	230	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	511	250	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	764	253	255	0	-	0
Stage 1	253	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	372	786	1310	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	372	786	1310	-	-	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	14.8	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1310	-	372	-	-	
HCM Lane V/C Ratio	-	-	0.015	-	-	
HCM Control Delay (s/veh)	0	-	14.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q (veh)	0	-	0	-	-	

SITE LAYOUT

Site: 211 [2046 Build PM Alt D (Site Folder: Ash Way at 18th Avenue W)]

Existing Roundabout
Site Category: PM Peak-Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 211 [2046 Build PM Alt D (Site Folder: Ash Way at 18th Avenue W)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Existing Roundabout
Site Category: PM Peak-Hour
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				mph
			veh/h	%	veh/h	%	v/c	sec			ft				
South: Ash Way (NB)															
3u	U	All MCs	5	2.0	5	2.0	0.818	12.1	LOS B	17.9	455.7	0.47	0.42	0.47	33.6
3	L2	All MCs	261	2.0	261	2.0	0.818	9.9	LOS A	17.9	455.7	0.47	0.42	0.47	33.6
8	T1	All MCs	822	2.0	822	2.0	0.818	4.9	LOS A	17.9	455.7	0.47	0.42	0.47	34.3
Approach			1089	2.0	1089	2.0	0.818	6.1	LOS A	17.9	455.7	0.47	0.42	0.47	34.1
North: Ash Way (SB)															
4	T1	All MCs	462	2.0	462	2.0	0.438	6.0	LOS A	2.9	72.9	0.54	0.54	0.54	34.5
14	R2	All MCs	16	2.0	16	2.0	0.438	5.8	LOS A	2.9	72.9	0.54	0.54	0.54	34.2
Approach			478	2.0	478	2.0	0.438	6.0	LOS A	2.9	72.9	0.54	0.54	0.54	34.5
West: 18th Avenue W (EB)															
5	L2	All MCs	22	6.0	22	6.0	0.216	12.4	LOS B	1.3	33.9	0.65	0.66	0.65	33.4
12	R2	All MCs	158	6.0	158	6.0	0.216	7.2	LOS A	1.3	33.9	0.65	0.66	0.65	33.9
Approach			179	6.0	179	6.0	0.216	7.8	LOS A	1.3	33.9	0.65	0.66	0.65	33.8
All Vehicles			1746	2.4	1746	2.4	0.818	6.3	LOS A	17.9	455.7	0.51	0.47	0.51	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

Intersection and Approach LOS values are based on average delay for all movements (v/c not used).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\brad.lincoln\KHEverett Link Extension (EVLE) - Documents\Phase 2 Planning and Environmental\Task5-DEIS\Resource_Areas\Transportation\Traffic Analysis\03_Synchro\SIDRA Analysis\03_Build\ASH D\2046\211Ash Way at 18th Ave RAB - PM.sip9

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way A Build PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	270	145	935	125	55	630
Future Volume (veh/h)	270	145	935	125	55	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1750	1750	1660	1660	1776	1776
Adj Flow Rate, veh/h	284	153	984	132	58	663
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	3	3	6	6
Cap, veh/h	322	286	1044	879	183	1265
Arrive On Green	0.19	0.19	0.63	0.63	0.07	1.00
Sat Flow, veh/h	1667	1483	1660	1399	1691	1776
Grp Volume(v), veh/h	284	153	984	132	58	663
Grp Sat Flow(s), veh/h/ln	1667	1483	1660	1399	1691	1776
Q Serve(g_s), s	14.9	8.4	48.6	3.5	1.1	0.0
Cycle Q Clear(g_c), s	14.9	8.4	48.6	3.5	1.1	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	322	286	1044	879	183	1265
V/C Ratio(X)	0.88	0.53	0.94	0.15	0.32	0.52
Avail Cap(c_a), veh/h	426	379	1044	879	267	1265
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.32	0.32	0.87	0.87
Uniform Delay (d), s/veh	35.3	32.7	15.2	6.9	19.3	0.0
Incr Delay (d2), s/veh	13.1	0.6	7.1	0.1	0.3	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	3.0	17.0	0.9	0.7	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	48.4	33.3	22.4	7.0	19.6	1.4
LnGrp LOS	D	C	C	A	B	A
Approach Vol, veh/h	437		1116			721
Approach Delay, s/veh	43.1		20.6			2.8
Approach LOS	D		C			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.6	61.1			68.6	21.4
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	7.5	46.5			58.5	23.0
Max Q Clear Time (g_c+I1), s	3.1	50.6			2.0	16.9
Green Ext Time (p_c), s	0.0	0.0			8.1	0.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			19.3			
HCM 6th LOS			B			

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way A Build PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	T	T
Traffic Volume (vph)	50	20	1060	40	15	620
Future Volume (vph)	50	20	1060	40	15	620
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	819		1699	1399	1654	1741
Flt Permitted	0.97		1.00	1.00	0.12	1.00
Satd. Flow (perm)	819		1699	1399	209	1741
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	21	1104	42	16	646
RTOR Reduction (vph)	19	0	0	9	0	0
Lane Group Flow (vph)	54	0	1104	33	16	646
Confl. Peds. (#/hr)	1	1		6	6	
Heavy Vehicles (%)	97%	97%	3%	3%	2%	2%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	9.7		64.2	64.2	65.3	70.3
Effective Green, g (s)	9.7		64.2	64.2	65.3	70.3
Actuated g/C Ratio	0.11		0.71	0.71	0.73	0.78
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	88		1211	997	169	1359
v/s Ratio Prot	c0.07		c0.65		0.00	c0.37
v/s Ratio Perm				0.02	0.07	
v/c Ratio	0.62		0.91	0.03	0.09	0.48
Uniform Delay, d1	38.4		10.6	3.8	10.8	3.4
Progression Factor	1.00		2.45	2.24	1.00	1.00
Incremental Delay, d2	8.7		5.4	0.0	0.1	1.2
Delay (s)	47.1		31.3	8.5	10.9	4.6
Level of Service	D		C	A	B	A
Approach Delay (s/veh)	47.1		30.5			4.8
Approach LOS	D		C			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			22.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱		↰			↰			↰	
Traffic Vol, veh/h	5	0	25	5	0	5	20	485	10	5	245	5
Future Vol, veh/h	5	0	25	5	0	5	20	485	10	5	245	5
Conflicting Peds, #/hr	1	0	1	1	0	1	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	3	3	3
Mvmt Flow	5	0	26	5	0	5	21	511	11	5	258	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	843	-	272	846	844	520	273	0	0	524	0	0
Stage 1	281	-	-	561	561	-	-	-	-	-	-	-
Stage 2	562	-	-	285	283	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.1	6.5	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.5	4	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	248	0	754	284	302	560	1302	-	-	1038	-	-
Stage 1	697	0	-	516	513	-	-	-	-	-	-	-
Stage 2	469	0	-	727	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	238	-	747	267	290	559	1291	-	-	1036	-	-
Mov Cap-2 Maneuver	238	-	-	267	290	-	-	-	-	-	-	-
Stage 1	675	-	-	503	500	-	-	-	-	-	-	-
Stage 2	454	-	-	697	671	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	11.8			15.3			0.3			0.2		
HCM LOS	B			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1291	-	-	238	747	361	1036	-	-			
HCM Lane V/C Ratio	0.016	-	-	0.022	0.035	0.029	0.005	-	-			
HCM Control Delay (s/veh)	7.8	0	-	20.5	10	15.3	8.5	0	-			
HCM Lane LOS	A	A	-	C	B	C	A	A	-			
HCM 95th %tile Q (veh)	0.1	-	-	0.1	0.1	0.1	0	-	-			

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	10	0	0	10	5	0	30	5	5	100	0
Future Vol, veh/h	0	10	0	0	10	5	0	30	5	5	100	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	4	4	1	1	2
Mvmt Flow	0	11	0	0	11	5	0	32	5	5	105	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	158	157	105	161	155	40	105	0	0	42	0	0
Stage 1	115	115	-	40	40	-	-	-	-	-	-	-
Stage 2	43	42	-	121	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	808	735	949	831	756	1041	1486	-	-	1573	-	-
Stage 1	890	800	-	987	867	-	-	-	-	-	-	-
Stage 2	971	860	-	906	816	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	793	729	949	816	750	1036	1486	-	-	1566	-	-
Mov Cap-2 Maneuver	793	729	-	816	750	-	-	-	-	-	-	-
Stage 1	890	798	-	982	863	-	-	-	-	-	-	-
Stage 2	954	856	-	891	814	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	10			9.5			0			0.3		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1486	-	-	729	824	1566	-	-				
HCM Lane V/C Ratio	-	-	-	0.015	0.02	0.003	-	-				
HCM Control Delay (s/veh)	0	-	-	10	9.5	7.3	0	-				
HCM Lane LOS	A	-	-	B	A	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	5	10	10	480	240	5
Future Vol, veh/h	5	10	10	480	240	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	11	522	261	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	808	264	266	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	350	775	1298	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	346	775	1298	-	-	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	11.8	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1298	-	548	-	-	
HCM Lane V/C Ratio	0.008	-	0.03	-	-	
HCM Control Delay (s/veh)	7.8	0	11.8	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q (veh)	0	-	0.1	-	-	

HCM 6th Signalized Intersection Summary
206: Ash Way & PnR Mid Access

Ash Way D Build PM

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	175	125	955	30	35	650
Future Volume (veh/h)	175	125	955	30	35	650
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1750	1750	1660	1660	1776	1776
Adj Flow Rate, veh/h	184	132	1005	32	37	684
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	3	3	6	6
Cap, veh/h	222	197	1155	974	254	1372
Arrive On Green	0.13	0.13	0.70	0.70	0.05	1.00
Sat Flow, veh/h	1667	1483	1660	1400	1691	1776
Grp Volume(v), veh/h	184	132	1005	32	37	684
Grp Sat Flow(s), veh/h/ln	1667	1483	1660	1400	1691	1776
Q Serve(g_s), s	9.7	7.6	42.0	0.6	0.6	0.0
Cycle Q Clear(g_c), s	9.7	7.6	42.0	0.6	0.6	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	222	197	1155	974	254	1372
V/C Ratio(X)	0.83	0.67	0.87	0.03	0.15	0.50
Avail Cap(c_a), veh/h	333	297	1155	974	368	1372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.46	0.46	0.87	0.87
Uniform Delay (d), s/veh	38.0	37.1	10.6	4.3	13.6	0.0
Incr Delay (d2), s/veh	6.4	1.5	4.5	0.0	0.1	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	2.8	12.9	0.2	0.3	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	44.4	38.6	15.0	4.3	13.7	1.1
LnGrp LOS	D	D	B	A	B	A
Approach Vol, veh/h	316		1037			721
Approach Delay, s/veh	42.0		14.7			1.8
Approach LOS	D		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	67.1			74.0	16.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.0
Max Green Setting (Gmax), s	8.5	50.5			63.5	18.0
Max Q Clear Time (g_c+I1), s	2.6	44.0			2.0	11.7
Green Ext Time (p_c), s	0.0	4.6			8.5	0.3
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			14.4			
HCM 6th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						

HCM Signalized Intersection Capacity Analysis
207: Ash Way

Ash Way D Build PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	T	T
Traffic Volume (vph)	50	20	1060	40	15	620
Future Volume (vph)	50	20	1060	40	15	620
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Grade (%)	0%		0%			-3%
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	819		1699	1399	1654	1741
Flt Permitted	0.97		1.00	1.00	0.13	1.00
Satd. Flow (perm)	819		1699	1399	225	1741
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	21	1104	42	16	646
RTOR Reduction (vph)	17	0	0	11	0	0
Lane Group Flow (vph)	56	0	1104	31	16	646
Confl. Peds. (#/hr)	1	1		6	6	
Heavy Vehicles (%)	97%	97%	3%	3%	2%	2%
Turn Type	Prot		NA	Perm	D.P+P	NA
Protected Phases	8		2		1	6
Permitted Phases				2	2	
Actuated Green, G (s)	8.8		65.2	65.2	66.2	71.2
Effective Green, g (s)	8.8		65.2	65.2	66.2	71.2
Actuated g/C Ratio	0.10		0.72	0.72	0.74	0.79
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	80		1230	1013	181	1377
v/s Ratio Prot	c0.07		c0.65		0.00	c0.37
v/s Ratio Perm				0.02	0.06	
v/c Ratio	0.70		0.90	0.03	0.09	0.47
Uniform Delay, d1	39.3		9.8	3.5	10.0	3.1
Progression Factor	1.00		0.26	0.03	1.00	1.00
Incremental Delay, d2	19.2		5.9	0.0	0.1	1.1
Delay (s)	58.6		8.4	0.1	10.0	4.3
Level of Service	E		A	A	B	A
Approach Delay (s/veh)	58.6		8.1			4.4
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay (s/veh)			8.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.88			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗		↖			↗			↖	
Traffic Vol, veh/h	5	0	25	5	0	5	20	470	10	5	230	5
Future Vol, veh/h	5	0	25	5	0	5	20	470	10	5	230	5
Conflicting Peds, #/hr	1	0	1	1	0	1	10	0	2	2	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	3	3	3
Mvmt Flow	5	0	26	5	0	5	21	495	11	5	242	5
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	811	-	256	814	812	504	257	0	0	508	0	0
Stage 1	265	-	-	545	545	-	-	-	-	-	-	-
Stage 2	546	-	-	269	267	-	-	-	-	-	-	-
Critical Hdwy	7.7	-	6.5	7.1	6.5	6.2	4.1	-	-	4.13	-	-
Critical Hdwy Stg 1	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	-	3.3	3.5	4	3.3	2.2	-	-	2.227	-	-
Pot Cap-1 Maneuver	262	0	771	299	315	572	1320	-	-	1052	-	-
Stage 1	713	0	-	526	522	-	-	-	-	-	-	-
Stage 2	480	0	-	741	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	252	-	764	282	303	571	1308	-	-	1050	-	-
Mov Cap-2 Maneuver	252	-	-	282	303	-	-	-	-	-	-	-
Stage 1	691	-	-	513	509	-	-	-	-	-	-	-
Stage 2	465	-	-	711	682	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	11.5			14.8			0.3			0.2		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1308	-	-	252	764	378	1050	-	-			
HCM Lane V/C Ratio	0.016	-	-	0.021	0.034	0.028	0.005	-	-			
HCM Control Delay (s/veh)	7.8	0	-	19.6	9.9	14.8	8.4	0	-			
HCM Lane LOS	A	A	-	C	A	B	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0.1	0.1	0.1	0	-	-			

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	0	0	25	5	0	5	25	40	5	5	110	0
Future Vol, veh/h	0	0	25	5	0	5	25	40	5	5	110	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	95	92	95	92	95	95	95	95	92
Heavy Vehicles, %	2	2	2	0	2	0	2	4	4	1	1	2
Mvmt Flow	0	0	27	5	0	5	27	42	5	5	116	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	227	232	116	244	230	50	116	0	0	52	0	0
Stage 1	126	126	-	104	104	-	-	-	-	-	-	-
Stage 2	101	106	-	140	126	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	6.5	5.92	5.9	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	5.5	4.92	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	728	668	936	744	696	1028	1473	-	-	1560	-	-
Stage 1	878	792	-	923	823	-	-	-	-	-	-	-
Stage 2	905	807	-	888	809	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	712	650	936	707	677	1023	1473	-	-	1553	-	-
Mov Cap-2 Maneuver	712	650	-	707	677	-	-	-	-	-	-	-
Stage 1	861	790	-	901	803	-	-	-	-	-	-	-
Stage 2	883	788	-	860	807	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	9		9.4		2.7		0.3					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1473	-	-	936	836	1553	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.029	0.013	0.003	-	-				
HCM Control Delay (s/veh)	7.5	0	-	9	9.4	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.1	0	0	-	-				

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	0	0	470	230	5
Future Vol, veh/h	5	0	0	470	230	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	511	250	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	764	253	255	0	-	0
Stage 1	253	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	372	786	1310	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	372	786	1310	-	-	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	14.8	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1310	-	372	-	-	
HCM Lane V/C Ratio	-	-	0.015	-	-	
HCM Control Delay (s/veh)	0	-	14.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q (veh)	0	-	0	-	-	

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	5	15	110	10	35	90
Future Vol, veh/h	5	15	110	10	35	90
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	7	7
Mvmt Flow	5	16	116	11	37	95

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	296	127	0
Stage 1	127	-	-
Stage 2	169	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	634	909	-
Stage 1	866	-	-
Stage 2	818	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	612	903	-
Mov Cap-2 Maneuver	655	-	-
Stage 1	861	-	-
Stage 2	795	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.5	0	2.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	825	1414
HCM Lane V/C Ratio	-	-	0.026	0.026
HCM Control Delay (s/veh)	-	-	9.5	7.6
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q (veh)	-	-	0.1	0.1

Intersection

Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	20	15	20	5
Future Vol, veh/h	15	10	20	15	20	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	0	0	5	5
Mvmt Flow	16	11	21	16	21	5
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	80%
Vol Thru, %	40%	57%	0%
Vol Right, %	0%	43%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	35	25
LT Vol	15	0	20
Through Vol	10	20	0
RT Vol	0	15	5
Lane Flow Rate	26	37	26
Geometry Grp	1	1	1
Degree of Util (X)	0.031	0.038	0.03
Departure Headway (Hd)	4.195	3.707	4.134
Convergence, Y/N	Yes	Yes	Yes
Cap	855	966	866
Service Time	2.213	1.728	2.159
HCM Lane V/C Ratio	0.03	0.038	0.03
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	85	10	5	250	295	60
Future Vol, veh/h	85	10	5	250	295	60
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	7	7	4	4
Mvmt Flow	89	11	5	263	311	63
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	584	314	311	0	-	0
Stage 1	311	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	5.88	5.98	4.17	-	-	-
Critical Hdwy Stg 1	4.88	-	-	-	-	-
Critical Hdwy Stg 2	4.88	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	512	731	1222	-	-	0
Stage 1	768	-	-	-	-	0
Stage 2	795	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	510	729	1222	-	-	-
Mov Cap-2 Maneuver	588	-	-	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	12.2	0.2	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT		
Capacity (veh/h)	1222	-	600	-		
HCM Lane V/C Ratio	0.004	-	0.167	-		
HCM Control Delay (s/veh)	8	-	12.2	-		
HCM Lane LOS	A	-	B	-		
HCM 95th %tile Q (veh)	0	-	0.6	-		

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner No-Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	10	0	5	70	0	75	5	290	65	105	270	10
Future Volume (vph)	10	0	5	70	0	75	5	290	65	105	270	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		0.98	1.00		0.99	1.00	
Frt		0.96		1.00	0.85		1.00	0.97		1.00	0.99	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1417		1629	1466		1438	2819		1491	2980	
Flt Permitted		0.83		0.75	1.00		0.57	1.00		0.53	1.00	
Satd. Flow (perm)		1222		1281	1466		865	2819		832	2980	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	0	5	74	0	79	5	305	68	111	284	11
RTOR Reduction (vph)	0	13	0	0	64	0	0	21	0	0	3	0
Lane Group Flow (vph)	0	3	0	74	15	0	5	352	0	111	292	0
Confl. Peds. (#/hr)	3		24	24		3	26		12	12		26
Heavy Vehicles (%)	30%	30%	30%	0%	0%	0%	10%	10%	10%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.5		12.0	12.0		37.0	31.7		37.0	36.0	
Effective Green, g (s)		11.5		12.0	12.0		37.0	31.7		37.0	36.0	
Actuated g/C Ratio		0.18		0.19	0.19		0.59	0.50		0.59	0.57	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		223		244	279		517	1418		544	1702	
v/s Ratio Prot					0.01		0.00	c0.12		c0.02	c0.10	
v/s Ratio Perm		0.00		c0.06			0.01			0.10		
v/c Ratio		0.01		0.30	0.05		0.01	0.25		0.20	0.17	
Uniform Delay, d1		21.1		21.9	20.9		5.4	8.9		5.8	6.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		0.3	0.0		0.0	0.4		0.1	0.2	
Delay (s)		21.1		22.2	20.9		5.4	9.3		5.9	6.6	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s/veh)		21.1			21.5			9.3			6.4	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		10.2										
HCM 2000 Volume to Capacity ratio		0.26										
Actuated Cycle Length (s)		63.0										
Intersection Capacity Utilization		45.1%										
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	45	55	5	5	50	10	0	0	5	20	5	55
Future Vol, veh/h	45	55	5	5	50	10	0	0	5	20	5	55
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	6	6	3	3	3	100	100	100	7	7	7
Mvmt Flow	47	58	5	5	53	11	0	0	5	21	5	58
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	64	0	0	256	230	62	226	227	59
Stage 1	-	-	-	-	-	-	156	156	-	69	69	-
Stage 2	-	-	-	-	-	-	100	74	-	157	158	-
Critical Hdwy	4.16	-	-	4.13	-	-	8.1	7.5	7.2	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	4.4	4.9	4.2	3.563	4.063	3.363
Pot Cap-1 Maneuver	1513	-	-	1532	-	-	536	530	785	719	664	993
Stage 1	-	-	-	-	-	-	661	615	-	929	828	-
Stage 2	-	-	-	-	-	-	714	676	-	834	758	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1513	-	-	1531	-	-	488	511	784	695	640	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	488	511	-	695	640	-
Stage 1	-	-	-	-	-	-	639	595	-	899	826	-
Stage 2	-	-	-	-	-	-	666	674	-	802	733	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	3.2			0.6			9.6			9.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	784	1513	-	-	1531	-	-	870				
HCM Lane V/C Ratio	0.007	0.031	-	-	0.003	-	-	0.097				
HCM Control Delay (s/veh)	9.6	7.5	0	-	7.4	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q (veh)	0	0.1	-	-	0	-	-	0.3				

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	110	35	35	305	235	110
Future Vol, veh/h	110	35	35	305	235	110
Conflicting Peds, #/hr	0	1	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	116	37	37	321	247	116
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	702	308	365	0	-	0
Stage 1	307	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.13	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	458	756	1188	-	-	-
Stage 1	790	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	442	754	1186	-	-	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	731	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	12.6	0.8	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1186	-	542	754	-	-
HCM Lane V/C Ratio	0.031	-	0.214	0.049	-	-
HCM Control Delay (s/veh)	8.1	-	13.4	10	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.8	0.2	-	-

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	50	5	15	5	0	30	5	45	5	15	55	30
Future Vol, veh/h	50	5	15	5	0	30	5	45	5	15	55	30
Conflicting Peds, #/hr	4	0	0	0	0	4	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	7	7	7
Mvmt Flow	53	5	16	5	0	32	5	47	5	16	58	32
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	189	173	77	179	187	56	93	0	0	54	0	0
Stage 1	109	109	-	62	62	-	-	-	-	-	-	-
Stage 2	80	64	-	117	125	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.17	6.57	6.27	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.563	4.063	3.363	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	769	718	981	772	699	997	1501	-	-	1520	-	-
Stage 1	894	803	-	937	833	-	-	-	-	-	-	-
Stage 2	926	840	-	876	783	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	732	704	978	745	685	991	1496	-	-	1516	-	-
Mov Cap-2 Maneuver	732	704	-	745	685	-	-	-	-	-	-	-
Stage 1	889	792	-	931	828	-	-	-	-	-	-	-
Stage 2	890	835	-	847	772	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	10.2		9		0.7		1.1					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1496	-	-	771	946	1516	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.096	0.039	0.01	-	-				
HCM Control Delay (s/veh)	7.4	-	-	10.2	9	7.4	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0.3	0.1	0	-	-				

Intersection

Int Delay, s/veh 3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	15	95	130	20	115	150
Future Vol, veh/h	15	95	130	20	115	150
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	7	7
Mvmt Flow	16	100	137	21	121	158

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	553	153	0
Stage 1	153	-	-
Stage 2	400	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	414	876	-
Stage 1	836	-	-
Stage 2	596	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	372	870	-
Mov Cap-2 Maneuver	451	-	-
Stage 1	831	-	-
Stage 2	539	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	10.5	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	772	1377
HCM Lane V/C Ratio	-	-	0.15	0.088
HCM Control Delay (s/veh)	-	-	10.5	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.5	0.3

Intersection

Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	20	15	20	155
Future Vol, veh/h	15	10	20	15	20	155
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	0	0	5	5
Mvmt Flow	16	11	21	16	21	163
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	11%
Vol Thru, %	40%	57%	0%
Vol Right, %	0%	43%	89%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	35	175
LT Vol	15	0	20
Through Vol	10	20	0
RT Vol	0	15	155
Lane Flow Rate	26	37	184
Geometry Grp	1	1	1
Degree of Util (X)	0.033	0.041	0.183
Departure Headway (Hd)	4.476	3.986	3.585
Convergence, Y/N	Yes	Yes	Yes
Cap	797	893	997
Service Time	2.521	2.033	1.62
HCM Lane V/C Ratio	0.033	0.041	0.185
HCM Control Delay, s/veh	7.7	7.2	7.4
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.1	0.7

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↗
Traffic Vol, veh/h	85	10	5	290	310	60
Future Vol, veh/h	85	10	5	290	310	60
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	7	7	4	4
Mvmt Flow	89	11	5	305	326	63
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	641	329	326	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Critical Hdwy	5.88	5.98	4.17	-	-	-
Critical Hdwy Stg 1	4.88	-	-	-	-	-
Critical Hdwy Stg 2	4.88	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	478	718	1206	-	-	0
Stage 1	758	-	-	-	-	0
Stage 2	766	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	476	716	1206	-	-	-
Mov Cap-2 Maneuver	564	-	-	-	-	-
Stage 1	755	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	12.5	0.1	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT		
Capacity (veh/h)	1206	-	577	-		
HCM Lane V/C Ratio	0.004	-	0.173	-		
HCM Control Delay (s/veh)	8	-	12.5	-		
HCM Lane LOS	A	-	B	-		
HCM 95th %tile Q (veh)	0	-	0.6	-		

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner B Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	10	0	5	110	0	75	5	325	75	100	425	10
Future Volume (vph)	10	0	5	110	0	75	5	325	75	100	425	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Frt		0.96		1.00	0.85		1.00	0.97		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1417		1629	1466		1446	2816		1492	2989	
Flt Permitted		0.84		0.75	1.00		0.49	1.00		0.51	1.00	
Satd. Flow (perm)		1230		1281	1466		743	2816		795	2989	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	0	5	116	0	79	5	342	79	105	447	11
RTOR Reduction (vph)	0	13	0	0	63	0	0	23	0	0	2	0
Lane Group Flow (vph)	0	3	0	116	16	0	5	398	0	105	456	0
Confl. Peds. (#/hr)	3		24	24		3	26		12	12		26
Heavy Vehicles (%)	30%	30%	30%	0%	0%	0%	10%	10%	10%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		12.2		12.7	12.7		36.3	31.0		36.3	35.3	
Effective Green, g (s)		12.2		12.7	12.7		36.3	31.0		36.3	35.3	
Actuated g/C Ratio		0.19		0.20	0.20		0.58	0.49		0.58	0.56	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		238		258	295		439	1385		516	1674	
v/s Ratio Prot					0.01		0.00	0.14		c0.02	c0.15	
v/s Ratio Perm		0.00		c0.09			0.01			0.10		
v/c Ratio		0.01		0.45	0.05		0.01	0.29		0.20	0.27	
Uniform Delay, d1		20.5		22.1	20.3		5.7	9.5		6.1	7.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		0.5	0.0		0.0	0.5		0.1	0.4	
Delay (s)		20.5		22.5	20.3		5.7	10.0		6.2	7.6	
Level of Service		C		C	C		A	A		A	A	
Approach Delay (s/veh)		20.5			21.6			9.9			7.3	
Approach LOS		C			C			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		10.8										
HCM 2000 Volume to Capacity ratio		0.33										
Actuated Cycle Length (s)		63.0										
Intersection Capacity Utilization		45.1%										
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	70	55	5	5	45	10	0	0	5	20	5	70
Future Vol, veh/h	70	55	5	5	45	10	0	0	5	20	5	70
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	6	6	3	3	3	100	100	100	7	7	7
Mvmt Flow	74	58	5	5	47	11	0	0	5	21	5	74
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	64	0	0	312	278	62	274	275	53
Stage 1	-	-	-	-	-	-	210	210	-	63	63	-
Stage 2	-	-	-	-	-	-	102	68	-	211	212	-
Critical Hdwy	4.16	-	-	4.13	-	-	8.1	7.5	7.2	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	4.4	4.9	4.2	3.563	4.063	3.363
Pot Cap-1 Maneuver	1521	-	-	1532	-	-	488	494	785	668	624	1000
Stage 1	-	-	-	-	-	-	613	578	-	936	833	-
Stage 2	-	-	-	-	-	-	712	680	-	780	718	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1521	-	-	1531	-	-	430	467	784	637	590	1000
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	467	-	637	590	-
Stage 1	-	-	-	-	-	-	582	549	-	889	831	-
Stage 2	-	-	-	-	-	-	653	678	-	736	681	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	4			0.6			9.6			9.7		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	784	1521	-	-	1531	-	-	865				
HCM Lane V/C Ratio	0.007	0.048	-	-	0.003	-	-	0.116				
HCM Control Delay (s/veh)	9.6	7.5	0	-	7.4	0	-	9.7				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q (veh)	0	0.2	-	-	0	-	-	0.4				

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	115	40	50	300	230	140
Future Vol, veh/h	115	40	50	300	230	140
Conflicting Peds, #/hr	0	1	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	121	42	53	316	242	147
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	740	319	391	0	-	0
Stage 1	318	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.13	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	438	746	1162	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	416	744	1160	-	-	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	13	1.2	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1160	-	522	744	-	-
HCM Lane V/C Ratio	0.045	-	0.232	0.057	-	-
HCM Control Delay (s/veh)	8.3	-	14	10.1	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.9	0.2	-	-

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	50	5	15	10	0	45	5	55	20	70	65	25
Future Vol, veh/h	50	5	15	10	0	45	5	55	20	70	65	25
Conflicting Peds, #/hr	4	0	0	0	0	4	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	7	7	7
Mvmt Flow	53	5	16	11	0	47	5	58	21	74	68	26
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	338	323	84	321	326	75	97	0	0	81	0	0
Stage 1	232	232	-	81	81	-	-	-	-	-	-	-
Stage 2	106	91	-	240	245	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.17	6.57	6.27	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.563	4.063	3.363	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	614	593	972	622	584	973	1496	-	-	1486	-	-
Stage 1	769	711	-	915	818	-	-	-	-	-	-	-
Stage 2	897	818	-	752	694	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	556	558	969	582	550	967	1491	-	-	1482	-	-
Mov Cap-2 Maneuver	556	558	-	582	550	-	-	-	-	-	-	-
Stage 1	764	673	-	910	813	-	-	-	-	-	-	-
Stage 2	847	813	-	697	657	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	11.7		9.5		0.5		3.3					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1491	-	-	612	863	1482	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.12	0.067	0.05	-	-				
HCM Control Delay (s/veh)	7.4	-	-	11.7	9.5	7.6	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0.4	0.2	0.2	-	-				

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	5	15	130	10	35	150
Future Vol, veh/h	5	15	130	10	35	150
Conflicting Peds, #/hr	0	0	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	7	7
Mvmt Flow	5	16	137	11	37	158

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	380	148	0
Stage 1	148	-	-
Stage 2	232	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	552	882	-
Stage 1	842	-	-
Stage 2	751	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	533	876	-
Mov Cap-2 Maneuver	595	-	-
Stage 1	837	-	-
Stage 2	729	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.7	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	783	1389
HCM Lane V/C Ratio	-	-	0.027	0.027
HCM Control Delay (s/veh)	-	-	9.7	7.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q (veh)	-	-	0.1	0.1

Intersection

Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	20	15	20	5
Future Vol, veh/h	15	10	20	15	20	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	0	0	5	5
Mvmt Flow	16	11	21	16	21	5
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	80%
Vol Thru, %	40%	57%	0%
Vol Right, %	0%	43%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	35	25
LT Vol	15	0	20
Through Vol	10	20	0
RT Vol	0	15	5
Lane Flow Rate	26	37	26
Geometry Grp	1	1	1
Degree of Util (X)	0.031	0.038	0.03
Departure Headway (Hd)	4.195	3.707	4.134
Convergence, Y/N	Yes	Yes	Yes
Cap	855	966	866
Service Time	2.213	1.728	2.159
HCM Lane V/C Ratio	0.03	0.038	0.03
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	210	25	20	280	300	185
Future Vol, veh/h	210	25	20	280	300	185
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	7	7	4	4
Mvmt Flow	221	26	21	295	316	195

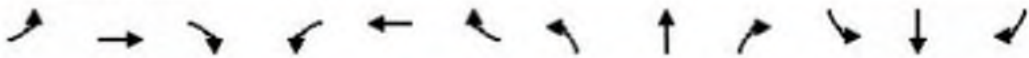
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	653	319	316
Stage 1	316	-	-
Stage 2	337	-	-
Critical Hdwy	5.88	5.98	4.17
Critical Hdwy Stg 1	4.88	-	-
Critical Hdwy Stg 2	4.88	-	-
Follow-up Hdwy	3.572	3.372	2.263
Pot Cap-1 Maneuver	471	727	1216
Stage 1	765	-	-
Stage 2	751	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	463	725	1216
Mov Cap-2 Maneuver	554	-	-
Stage 1	752	-	-
Stage 2	751	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	16.1	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1216	-	568	-
HCM Lane V/C Ratio	0.017	-	0.436	-
HCM Control Delay (s/veh)	8	-	16.1	-
HCM Lane LOS	A	-	C	-
HCM 95th %tile Q (veh)	0.1	-	2.2	-

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner D Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	45	25	10	90	60	75	10	385	90	100	515	15
Future Volume (vph)	45	25	10	90	60	75	10	385	90	100	515	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		0.99	1.00		0.99	1.00	
Frt		0.98		1.00	0.92		1.00	0.97		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1472		1633	1591		1449	2815		1494	2986	
Flt Permitted		0.77		0.79	1.00		0.44	1.00		0.46	1.00	
Satd. Flow (perm)		1167		1351	1591		669	2815		727	2986	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	26	11	95	63	79	11	405	95	105	542	16
RTOR Reduction (vph)	0	9	0	0	63	0	0	23	0	0	2	0
Lane Group Flow (vph)	0	75	0	95	79	0	11	477	0	105	556	0
Confl. Peds. (#/hr)	3		24	24		3	26		12	12		26
Heavy Vehicles (%)	30%	30%	30%	0%	0%	0%	10%	10%	10%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		11.9		12.4	12.4		36.6	31.3		36.6	35.5	
Effective Green, g (s)		11.9		12.4	12.4		36.6	31.3		36.6	35.5	
Actuated g/C Ratio		0.19		0.20	0.20		0.58	0.50		0.58	0.56	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		220		265	313		402	1398		486	1682	
v/s Ratio Prot					0.05		0.00	0.17		c0.02	c0.19	
v/s Ratio Perm		0.06		c0.07			0.02			0.11		
v/c Ratio		0.34		0.36	0.25		0.03	0.34		0.22	0.33	
Uniform Delay, d1		22.2		21.9	21.4		5.6	9.6		6.0	7.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3		0.3	0.2		0.0	0.7		0.1	0.5	
Delay (s)		22.5		22.2	21.5		5.6	10.3		6.0	7.9	
Level of Service		C		C	C		A	B		A	A	
Approach Delay (s/veh)		22.5			21.8			10.2			7.6	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			11.6			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			63.0			Sum of lost time (s)			14.5			
Intersection Capacity Utilization			58.2%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	60	70	5	5	60	10	0	0	5	20	5	60
Future Vol, veh/h	60	70	5	5	60	10	0	0	5	20	5	60
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	6	6	3	3	3	100	100	100	7	7	7
Mvmt Flow	63	74	5	5	63	11	0	0	5	21	5	63
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	80	0	0	317	288	78	284	285	69
Stage 1	-	-	-	-	-	-	204	204	-	79	79	-
Stage 2	-	-	-	-	-	-	113	84	-	205	206	-
Critical Hdwy	4.16	-	-	4.13	-	-	8.1	7.5	7.2	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	4.4	4.9	4.2	3.563	4.063	3.363
Pot Cap-1 Maneuver	1500	-	-	1512	-	-	484	487	767	658	616	980
Stage 1	-	-	-	-	-	-	618	582	-	917	820	-
Stage 2	-	-	-	-	-	-	701	668	-	786	722	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1500	-	-	1511	-	-	433	464	766	630	586	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	433	464	-	630	586	-
Stage 1	-	-	-	-	-	-	590	556	-	877	818	-
Stage 2	-	-	-	-	-	-	650	666	-	746	690	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	3.3			0.5			9.7			9.8		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	766	1500	-	-	1511	-	-	837				
HCM Lane V/C Ratio	0.007	0.042	-	-	0.003	-	-	0.107				
HCM Control Delay (s/veh)	9.7	7.5	0	-	7.4	0	-	9.8				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q (veh)	0	0.1	-	-	0	-	-	0.4				

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	125	40	50	300	230	150
Future Vol, veh/h	125	40	50	300	230	150
Conflicting Peds, #/hr	0	1	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	132	42	53	316	242	158

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	745	324	402
Stage 1	323	-	-
Stage 2	422	-	-
Critical Hdwy	5.8	5.9	4.13
Critical Hdwy Stg 1	4.8	-	-
Critical Hdwy Stg 2	4.8	-	-
Follow-up Hdwy	3.5	3.3	2.227
Pot Cap-1 Maneuver	435	741	1151
Stage 1	779	-	-
Stage 2	714	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	413	739	1149
Mov Cap-2 Maneuver	520	-	-
Stage 1	742	-	-
Stage 2	713	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.3	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1149	-	520	739	-	-
HCM Lane V/C Ratio	0.046	-	0.253	0.057	-	-
HCM Control Delay (s/veh)	8.3	-	14.3	10.2	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.1	-	1	0.2	-	-

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	50	5	15	10	0	55	5	45	20	80	55	25
Future Vol, veh/h	50	5	15	10	0	55	5	45	20	80	55	25
Conflicting Peds, #/hr	4	0	0	0	0	4	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	7	7	7
Mvmt Flow	53	5	16	11	0	58	5	47	21	84	58	26
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	343	322	74	320	325	64	87	0	0	70	0	0
Stage 1	242	242	-	70	70	-	-	-	-	-	-	-
Stage 2	101	80	-	250	255	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.17	6.57	6.27	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.563	4.063	3.363	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	609	594	985	623	585	986	1509	-	-	1499	-	-
Stage 1	759	704	-	928	827	-	-	-	-	-	-	-
Stage 2	903	826	-	743	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	543	556	982	579	548	980	1504	-	-	1495	-	-
Mov Cap-2 Maneuver	543	556	-	579	548	-	-	-	-	-	-	-
Stage 1	754	662	-	922	822	-	-	-	-	-	-	-
Stage 2	844	821	-	684	646	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	11.8		9.4		0.5		3.8					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1504	-	-	602	886	1495	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.122	0.077	0.056	-	-				
HCM Control Delay (s/veh)	7.4	-	-	11.8	9.4	7.6	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0.4	0.3	0.2	-	-				

Intersection

Int Delay, s/veh 2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	10	50	145	10	30	135
Future Vol, veh/h	10	50	145	10	30	135
Conflicting Peds, #/hr	2	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	53	153	11	32	142

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	373	165	0
Stage 1	165	-	-
Stage 2	208	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	558	861	-
Stage 1	823	-	-
Stage 2	776	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	538	854	-
Mov Cap-2 Maneuver	602	-	-
Stage 1	816	-	-
Stage 2	755	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.9	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	798	1402
HCM Lane V/C Ratio	-	-	0.079	0.023
HCM Control Delay (s/veh)	-	-	9.9	7.6
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q (veh)	-	-	0.3	0.1

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	30	30	40	75	20
Future Vol, veh/h	35	30	30	40	75	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	32	32	42	79	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	79%
Vol Thru, %	46%	43%	0%
Vol Right, %	0%	57%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	70	95
LT Vol	35	0	75
Through Vol	30	30	0
RT Vol	0	40	20
Lane Flow Rate	68	74	100
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.077	0.116
Departure Headway (Hd)	4.24	3.785	4.175
Convergence, Y/N	Yes	Yes	Yes
Cap	837	935	851
Service Time	2.305	1.856	2.236
HCM Lane V/C Ratio	0.081	0.079	0.118
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.3	0.2	0.4

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	90	5	5	540	260	100
Future Vol, veh/h	90	5	5	540	260	100
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	2	2	3	3
Mvmt Flow	92	5	5	551	265	102

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	826	266	265
Stage 1	265	-	-
Stage 2	561	-	-
Critical Hdwy	5.83	5.93	4.12
Critical Hdwy Stg 1	4.83	-	-
Critical Hdwy Stg 2	4.83	-	-
Follow-up Hdwy	3.527	3.327	2.218
Pot Cap-1 Maneuver	391	787	1299
Stage 1	812	-	-
Stage 2	625	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	389	786	1299
Mov Cap-2 Maneuver	493	-	-
Stage 1	809	-	-
Stage 2	625	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	13.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1299	-	503	-
HCM Lane V/C Ratio	0.004	-	0.193	-
HCM Control Delay (s/veh)	7.8	-	13.9	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q (veh)	0	-	0.7	-

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner No-Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	25	0	10	60	5	125	25	530	95	95	280	10
Future Volume (vph)	25	0	10	60	5	125	25	530	95	95	280	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99		0.94	1.00		0.97	1.00		0.99	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	0.99	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1803		1517	1403		1493	2975		1530	3061	
Flt Permitted		0.53		0.77	1.00		0.57	1.00		0.39	1.00	
Satd. Flow (perm)		980		1232	1403		889	2975		621	3061	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	0	11	63	5	132	26	558	100	100	295	11
RTOR Reduction (vph)	0	33	0	0	117	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	4	0	63	20	0	26	652	0	100	305	0
Confl. Peds. (#/hr)	12		32	32		12	24		16	16		24
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		16.1		16.6	16.6		119.4	110.6		119.4	116.2	
Effective Green, g (s)		16.1		16.6	16.6		119.4	110.6		119.4	116.2	
Actuated g/C Ratio		0.11		0.11	0.11		0.80	0.74		0.80	0.77	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		105		136	155		720	2193		547	2371	
v/s Ratio Prot					0.01		0.00	0.22		0.01	0.10	
v/s Ratio Perm		0.00		0.05			0.03			0.13		
v/c Ratio		0.04		0.46	0.13		0.04	0.30		0.18	0.13	
Uniform Delay, d1		60.0		62.5	60.2		3.2	6.6		3.4	4.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.9	0.1		0.0	0.3		0.1	0.1	
Delay (s)		60.1		63.4	60.3		3.2	7.0		3.5	4.3	
Level of Service		E		E	E		A	A		A	A	
Approach Delay (s/veh)		60.1			61.3			6.8			4.1	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			15.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				14.5		
Intersection Capacity Utilization			63.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	95	70	0	0	70	20	0	5	5	10	0	55
Future Vol, veh/h	95	70	0	0	70	20	0	5	5	10	0	55
Conflicting Peds, #/hr	4	0	2	2	0	4	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	1	1	1
Mvmt Flow	100	74	0	0	74	21	0	5	5	11	0	58
Major/Minor	Major1			Major2			Minor1		Minor2			
Conflicting Flow All	99	0	0	76	0	0	390	375	77	369	365	89
Stage 1	-	-	-	-	-	-	276	276	-	89	89	-
Stage 2	-	-	-	-	-	-	114	99	-	280	276	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1507	-	-	1529	-	-	573	559	990	589	565	972
Stage 1	-	-	-	-	-	-	735	685	-	921	823	-
Stage 2	-	-	-	-	-	-	896	817	-	729	684	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1502	-	-	1526	-	-	509	518	987	548	523	969
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	518	-	548	523	-
Stage 1	-	-	-	-	-	-	683	636	-	855	821	-
Stage 2	-	-	-	-	-	-	842	815	-	669	635	-
Approach	EB			WB			NB		SB			
HCM Control Delay, s/v	4.4			0			10.4		9.5			
HCM LOS							B		A			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	679	1502	-	-	1526	-	-	867				
HCM Lane V/C Ratio	0.016	0.067	-	-	-	-	-	0.079				
HCM Control Delay (s/veh)	10.4	7.6	0	-	0	-	-	9.5				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q (veh)	0	0.2	-	-	0	-	-	0.3				

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	45	40	400	375	120
Future Vol, veh/h	140	45	40	400	375	120
Conflicting Peds, #/hr	0	0	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	147	47	42	421	395	126
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	974	469	532	0	-	0
Stage 1	469	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.12	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	331	622	1036	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	615	1024	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	15.8	0.8	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1024	-	439	615	-	-
HCM Lane V/C Ratio	0.041	-	0.336	0.077	-	-
HCM Control Delay (s/veh)	8.7	-	17.3	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.1	-	1.5	0.2	-	-

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	0	10	10	5	30	25	85	10	45	50	65
Future Vol, veh/h	55	0	10	10	5	30	25	85	10	45	50	65
Conflicting Peds, #/hr	5	0	2	2	0	5	1	0	7	7	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	3	3	3	1	1	1	1	1	1
Mvmt Flow	58	0	11	11	5	32	26	89	11	47	53	68
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	352	341	90	343	370	107	122	0	0	107	0	0
Stage 1	182	182	-	154	154	-	-	-	-	-	-	-
Stage 2	170	159	-	189	216	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.13	6.53	6.23	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.527	4.027	3.327	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	599	578	962	609	558	944	1472	-	-	1490	-	-
Stage 1	815	745	-	846	768	-	-	-	-	-	-	-
Stage 2	827	762	-	810	722	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	550	544	959	574	525	932	1470	-	-	1477	-	-
Mov Cap-2 Maneuver	550	544	-	574	525	-	-	-	-	-	-	-
Stage 1	800	720	-	824	747	-	-	-	-	-	-	-
Stage 2	776	741	-	774	698	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	11.9		10		1.6		2.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1470	-	-	589	761	1477	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.116	0.062	0.032	-	-				
HCM Control Delay (s/veh)	7.5	-	-	11.9	10	7.5	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.4	0.2	0.1	-	-				

Intersection

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			4
Traffic Vol, veh/h	20	130	205	20	110	160
Future Vol, veh/h	20	130	205	20	110	160
Conflicting Peds, #/hr	2	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	21	137	216	21	116	168

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	635	233	0
Stage 1	233	-	-
Stage 2	402	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	361	780	-
Stage 1	750	-	-
Stage 2	595	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	323	774	-
Mov Cap-2 Maneuver	424	-	-
Stage 1	744	-	-
Stage 2	536	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	11.7	0	3.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	697	1319
HCM Lane V/C Ratio	-	-	0.227	0.088
HCM Control Delay (s/veh)	-	-	11.7	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.9	0.3

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	30	30	40	75	20
Future Vol, veh/h	35	30	30	40	75	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	32	32	42	79	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	79%
Vol Thru, %	46%	43%	0%
Vol Right, %	0%	57%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	70	95
LT Vol	35	0	75
Through Vol	30	30	0
RT Vol	0	40	20
Lane Flow Rate	68	74	100
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.077	0.116
Departure Headway (Hd)	4.24	3.785	4.175
Convergence, Y/N	Yes	Yes	Yes
Cap	837	935	851
Service Time	2.305	1.856	2.236
HCM Lane V/C Ratio	0.081	0.079	0.118
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.3	0.2	0.4

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	90	5	5	565	300	100
Future Vol, veh/h	90	5	5	565	300	100
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	2	2	3	3
Mvmt Flow	92	5	5	577	306	102

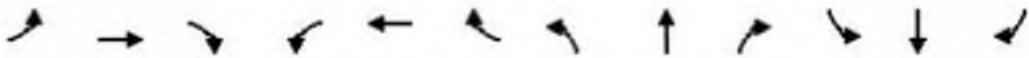
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	893	307	306
Stage 1	306	-	-
Stage 2	587	-	-
Critical Hdwy	5.83	5.93	4.12
Critical Hdwy Stg 1	4.83	-	-
Critical Hdwy Stg 2	4.83	-	-
Follow-up Hdwy	3.527	3.327	2.218
Pot Cap-1 Maneuver	361	750	1255
Stage 1	784	-	-
Stage 2	611	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	360	749	1255
Mov Cap-2 Maneuver	472	-	-
Stage 1	781	-	-
Stage 2	611	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1255	-	481	-
HCM Lane V/C Ratio	0.004	-	0.202	-
HCM Control Delay (s/veh)	7.9	-	14.4	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q (veh)	0	-	0.7	-

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner B Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	25	0	10	60	5	125	25	715	90	95	350	10
Future Volume (vph)	25	0	10	60	5	125	25	715	90	95	350	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99		0.94	1.00		0.97	1.00		1.00	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1803		1517	1403		1502	3005		1538	3067	
Flt Permitted		0.53		0.77	1.00		0.53	1.00		0.31	1.00	
Satd. Flow (perm)		980		1232	1403		833	3005		500	3067	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	0	11	63	5	132	26	753	95	100	368	11
RTOR Reduction (vph)	0	33	0	0	117	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	4	0	63	20	0	26	844	0	100	378	0
Confl. Peds. (#/hr)	12		32	32		12	24		16	16		24
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		16.1		16.6	16.6		119.4	110.6		119.4	116.2	
Effective Green, g (s)		16.1		16.6	16.6		119.4	110.6		119.4	116.2	
Actuated g/C Ratio		0.11		0.11	0.11		0.80	0.74		0.80	0.77	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		105		136	155		677	2215		458	2375	
v/s Ratio Prot					0.01		0.00	c0.28		c0.01	0.12	
v/s Ratio Perm		0.00		c0.05			0.03			0.16		
v/c Ratio		0.04		0.46	0.13		0.04	0.38		0.22	0.16	
Uniform Delay, d1		60.0		62.5	60.2		3.2	7.2		3.6	4.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.9	0.1		0.0	0.5		0.1	0.1	
Delay (s)		60.1		63.4	60.3		3.2	7.7		3.7	4.5	
Level of Service		E		E	E		A	A		A	A	
Approach Delay (s/veh)		60.1			61.3			7.6			4.3	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			14.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			14.5			
Intersection Capacity Utilization			68.9%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	110	70	0	0	70	20	0	5	5	10	0	80
Future Vol, veh/h	110	70	0	0	70	20	0	5	5	10	0	80
Conflicting Peds, #/hr	4	0	2	2	0	4	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	1	1	1
Mvmt Flow	116	74	0	0	74	21	0	5	5	11	0	84
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	76	0	0	435	407	77	401	397	89
Stage 1	-	-	-	-	-	-	308	308	-	89	89	-
Stage 2	-	-	-	-	-	-	127	99	-	312	308	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1507	-	-	1529	-	-	535	537	990	561	542	972
Stage 1	-	-	-	-	-	-	706	664	-	921	823	-
Stage 2	-	-	-	-	-	-	882	817	-	701	662	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1502	-	-	1526	-	-	457	491	987	517	495	969
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	491	-	517	495	-
Stage 1	-	-	-	-	-	-	647	609	-	844	821	-
Stage 2	-	-	-	-	-	-	805	815	-	635	607	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	4.6			0			10.6			9.6		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	656	1502	-	-	1526	-	-	883				
HCM Lane V/C Ratio	0.016	0.077	-	-	-	-	-	0.107				
HCM Control Delay (s/veh)	10.6	7.6	0	-	0	-	-	9.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q (veh)	0	0.3	-	-	0	-	-	0.4				

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	165	60	40	400	375	120
Future Vol, veh/h	165	60	40	400	375	120
Conflicting Peds, #/hr	0	0	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	174	63	42	421	395	126
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	974	469	532	0	-	0
Stage 1	469	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.12	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	331	622	1036	-	-	-
Stage 1	685	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	615	1024	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	16.6	0.8	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1024	-	439	615	-	-
HCM Lane V/C Ratio	0.041	-	0.396	0.103	-	-
HCM Control Delay (s/veh)	8.7	-	18.5	11.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.1	-	1.9	0.3	-	-

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	0	10	25	5	80	25	95	15	60	60	65
Future Vol, veh/h	55	0	10	25	5	80	25	95	15	60	60	65
Conflicting Peds, #/hr	5	0	2	2	0	5	1	0	7	7	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	3	3	3	1	1	1	1	1	1
Mvmt Flow	58	0	11	26	5	84	26	100	16	63	63	68
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	434	399	100	398	425	120	132	0	0	123	0	0
Stage 1	224	224	-	167	167	-	-	-	-	-	-	-
Stage 2	210	175	-	231	258	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.13	6.53	6.23	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.527	4.027	3.327	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	529	536	950	560	520	929	1459	-	-	1470	-	-
Stage 1	774	715	-	833	758	-	-	-	-	-	-	-
Stage 2	788	750	-	770	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	452	498	947	522	484	917	1457	-	-	1457	-	-
Mov Cap-2 Maneuver	452	498	-	522	484	-	-	-	-	-	-	-
Stage 1	759	684	-	811	738	-	-	-	-	-	-	-
Stage 2	695	730	-	727	662	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	13.5		10.6		1.4		2.5					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1457	-	-	492	756	1457	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.139	0.153	0.043	-	-				
HCM Control Delay (s/veh)	7.5	-	-	13.5	10.6	7.6	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.5	0.5	0.1	-	-				

Intersection

Int Delay, s/veh 1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	10	50	205	10	30	160
Future Vol, veh/h	10	50	205	10	30	160
Conflicting Peds, #/hr	2	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	53	216	11	32	168

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	462	228	0
Stage 1	228	-	-
Stage 2	234	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	481	786	-
Stage 1	755	-	-
Stage 2	749	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	463	780	-
Mov Cap-2 Maneuver	548	-	-
Stage 1	749	-	-
Stage 2	727	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	10.4	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	729	1330
HCM Lane V/C Ratio	-	-	0.087	0.024
HCM Control Delay (s/veh)	-	-	10.4	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.3	0.1

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	30	30	40	75	20
Future Vol, veh/h	35	30	30	40	75	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	32	32	42	79	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	79%
Vol Thru, %	46%	43%	0%
Vol Right, %	0%	57%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	70	95
LT Vol	35	0	75
Through Vol	30	30	0
RT Vol	0	40	20
Lane Flow Rate	68	74	100
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.077	0.116
Departure Headway (Hd)	4.24	3.785	4.175
Convergence, Y/N	Yes	Yes	Yes
Cap	837	935	851
Service Time	2.305	1.856	2.236
HCM Lane V/C Ratio	0.081	0.079	0.118
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.3	0.2	0.4

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	100	5	5	570	305	110
Future Vol, veh/h	100	5	5	570	305	110
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	2	2	3	3
Mvmt Flow	102	5	5	582	311	112

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	903	312	311
Stage 1	311	-	-
Stage 2	592	-	-
Critical Hdwy	5.83	5.93	4.12
Critical Hdwy Stg 1	4.83	-	-
Critical Hdwy Stg 2	4.83	-	-
Follow-up Hdwy	3.527	3.327	2.218
Pot Cap-1 Maneuver	356	745	1249
Stage 1	780	-	-
Stage 2	608	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	355	744	1249
Mov Cap-2 Maneuver	468	-	-
Stage 1	777	-	-
Stage 2	608	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	14.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1249	-	476	-
HCM Lane V/C Ratio	0.004	-	0.225	-
HCM Control Delay (s/veh)	7.9	-	14.7	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q (veh)	0	-	0.9	-

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner D Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕↕		↕	↕↕	
Traffic Volume (vph)	250	70	35	60	45	125	50	535	90	95	325	110
Future Volume (vph)	250	70	35	60	45	125	50	535	90	95	325	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.97		1.00	0.99		1.00	0.97	
Flpb, ped/bikes		0.99		0.97	1.00		0.99	1.00		1.00	1.00	
Frt		0.99		1.00	0.89		1.00	0.98		1.00	0.96	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1881		1571	1471		1525	2981		1545	2888	
Flt Permitted		0.65		0.57	1.00		0.39	1.00		0.24	1.00	
Satd. Flow (perm)		1259		942	1471		631	2981		392	2888	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	74	37	63	47	132	53	563	95	100	342	116
RTOR Reduction (vph)	0	1	0	0	43	0	0	13	0	0	37	0
Lane Group Flow (vph)	0	373	0	63	136	0	53	645	0	100	421	0
Confl. Peds. (#/hr)	12		32	32		12	24		16	16		24
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		76.9		77.4	77.4		58.6	48.2		58.6	52.1	
Effective Green, g (s)		76.9		77.4	77.4		58.6	48.2		58.6	52.1	
Actuated g/C Ratio		0.51		0.52	0.52		0.39	0.32		0.39	0.35	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		645		486	759		285	957		233	1003	
v/s Ratio Prot					0.09		0.01	c0.22		c0.03	c0.15	
v/s Ratio Perm		c0.30		0.07			0.06			0.14		
v/c Ratio		0.58		0.13	0.18		0.19	0.67		0.43	0.42	
Uniform Delay, d1		25.3		18.8	19.4		29.2	44.1		31.2	37.4	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.8		0.0	0.0		0.1	3.8		0.5	1.3	
Delay (s)		26.1		18.9	19.4		29.3	47.9		31.7	38.7	
Level of Service		C		B	B		C	D		C	D	
Approach Delay (s/veh)		26.1			19.3			46.5			37.4	
Approach LOS		C			B			D			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			36.3			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				14.5		
Intersection Capacity Utilization			76.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	100	85	0	0	85	20	0	5	5	10	0	70
Future Vol, veh/h	100	85	0	0	85	20	0	5	5	10	0	70
Conflicting Peds, #/hr	4	0	2	2	0	4	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	1	1	1
Mvmt Flow	105	89	0	0	89	21	0	5	5	11	0	74
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	114	0	0	91	0	0	438	415	92	409	405	104
Stage 1	-	-	-	-	-	-	301	301	-	104	104	-
Stage 2	-	-	-	-	-	-	137	114	-	305	301	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1488	-	-	1510	-	-	532	531	971	555	536	953
Stage 1	-	-	-	-	-	-	712	669	-	904	811	-
Stage 2	-	-	-	-	-	-	871	805	-	707	667	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1483	-	-	1507	-	-	462	489	968	514	493	950
Mov Cap-2 Maneuver	-	-	-	-	-	-	462	489	-	514	493	-
Stage 1	-	-	-	-	-	-	657	617	-	833	809	-
Stage 2	-	-	-	-	-	-	803	803	-	644	616	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	4.1			0			10.6			9.6		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	650	1483	-	-	1507	-	-	859				
HCM Lane V/C Ratio	0.016	0.071	-	-	-	-	-	0.098				
HCM Control Delay (s/veh)	10.6	7.6	0	-	0	-	-	9.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q (veh)	0	0.2	-	-	0	-	-	0.3				

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	175	60	40	400	375	135
Future Vol, veh/h	175	60	40	400	375	135
Conflicting Peds, #/hr	0	0	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	184	63	42	421	395	142
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	982	477	548	0	-	0
Stage 1	477	-	-	-	-	-
Stage 2	505	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.12	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	328	616	1021	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	307	609	1009	-	-	-
Mov Cap-2 Maneuver	437	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	17.2	0.8	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1009	-	437	609	-	-
HCM Lane V/C Ratio	0.042	-	0.422	0.104	-	-
HCM Control Delay (s/veh)	8.7	-	19.1	11.6	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.1	-	2.1	0.3	-	-

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	0	10	25	5	90	25	85	15	70	50	65
Future Vol, veh/h	55	0	10	25	5	90	25	85	15	70	50	65
Conflicting Peds, #/hr	5	0	2	2	0	5	1	0	7	7	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	3	3	3	1	1	1	1	1	1
Mvmt Flow	58	0	11	26	5	95	26	89	16	74	53	68
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	440	400	90	399	426	109	122	0	0	112	0	0
Stage 1	236	236	-	156	156	-	-	-	-	-	-	-
Stage 2	204	164	-	243	270	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.13	6.53	6.23	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.527	4.027	3.327	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	524	535	962	560	519	942	1472	-	-	1484	-	-
Stage 1	763	706	-	844	767	-	-	-	-	-	-	-
Stage 2	793	759	-	758	684	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	440	494	959	520	480	930	1470	-	-	1471	-	-
Mov Cap-2 Maneuver	440	494	-	520	480	-	-	-	-	-	-	-
Stage 1	749	670	-	822	746	-	-	-	-	-	-	-
Stage 2	692	739	-	711	649	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	13.7		10.6		1.5		2.9					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1470	-	-	480	773	1471	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.143	0.163	0.05	-	-				
HCM Control Delay (s/veh)	7.5	-	-	13.7	10.6	7.6	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.5	0.6	0.2	-	-				

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	5	15	115	10	35	95
Future Vol, veh/h	5	15	115	10	35	95
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	7	7
Mvmt Flow	5	16	121	11	37	100
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	307	133	0	0	138	0
Stage 1	133	-	-	-	-	-
Stage 2	174	-	-	-	-	-
Critical Hdwy	7.6	6.8	-	-	4.17	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	6.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.263	-
Pot Cap-1 Maneuver	622	901	-	-	1415	-
Stage 1	859	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	600	894	-	-	1404	-
Mov Cap-2 Maneuver	647	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s/v	9.5	0	2.1			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT		
Capacity (veh/h)	-	-	816	1404	-	
HCM Lane V/C Ratio	-	-	0.026	0.026	-	
HCM Control Delay (s/veh)	-	-	9.5	7.6	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q (veh)	-	-	0.1	0.1	-	

Intersection

Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	25	15	20	5
Future Vol, veh/h	15	10	25	15	20	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	0	0	5	5
Mvmt Flow	16	11	26	16	21	5
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.4	6.9	7.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	80%
Vol Thru, %	40%	63%	0%
Vol Right, %	0%	38%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	40	25
LT Vol	15	0	20
Through Vol	10	25	0
RT Vol	0	15	5
Lane Flow Rate	26	42	26
Geometry Grp	1	1	1
Degree of Util (X)	0.031	0.044	0.03
Departure Headway (Hd)	4.199	3.74	4.142
Convergence, Y/N	Yes	Yes	Yes
Cap	854	958	863
Service Time	2.219	1.76	2.171
HCM Lane V/C Ratio	0.03	0.044	0.03
HCM Control Delay, s/veh	7.4	6.9	7.3
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	90	10	5	265	310	65
Future Vol, veh/h	90	10	5	265	310	65
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	7	7	4	4
Mvmt Flow	95	11	5	279	326	68

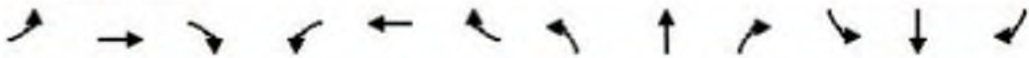
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	615	329	326
Stage 1	326	-	-
Stage 2	289	-	-
Critical Hdwy	5.88	5.98	4.17
Critical Hdwy Stg 1	4.88	-	-
Critical Hdwy Stg 2	4.88	-	-
Follow-up Hdwy	3.572	3.372	2.263
Pot Cap-1 Maneuver	493	718	1206
Stage 1	758	-	-
Stage 2	783	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	491	716	1206
Mov Cap-2 Maneuver	575	-	-
Stage 1	755	-	-
Stage 2	783	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	12.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1206	-	587	-
HCM Lane V/C Ratio	0.004	-	0.179	-
HCM Control Delay (s/veh)	8	-	12.5	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q (veh)	0	-	0.6	-

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	10	0	5	70	0	80	5	305	70	115	295	10
Future Volume (vph)	10	0	5	70	0	80	5	305	70	115	295	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.96	1.00		0.97	1.00		0.99	1.00	
Frt		0.96		1.00	0.85		1.00	0.97		1.00	0.99	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1406		1593	1462		1417	2804		1482	2978	
Flt Permitted		0.83		0.75	1.00		0.56	1.00		0.52	1.00	
Satd. Flow (perm)		1211		1253	1462		830	2804		808	2978	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	0	5	74	0	84	5	321	74	121	311	11
RTOR Reduction (vph)	0	14	0	0	72	0	0	14	0	0	2	0
Lane Group Flow (vph)	0	2	0	74	12	0	5	381	0	121	320	0
Confl. Peds. (#/hr)	3		26	26		3	28		12	12		28
Heavy Vehicles (%)	30%	30%	30%	0%	0%	0%	10%	10%	10%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		16.0		16.5	16.5		89.5	80.5		89.5	88.5	
Effective Green, g (s)		16.0		16.5	16.5		89.5	80.5		89.5	88.5	
Actuated g/C Ratio		0.13		0.14	0.14		0.75	0.67		0.75	0.74	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		161		172	201		623	1881		653	2196	
v/s Ratio Prot					0.01		0.00	c0.14		c0.01	0.11	
v/s Ratio Perm		0.00		c0.06			0.01			0.12		
v/c Ratio		0.01		0.43	0.06		0.01	0.20		0.19	0.15	
Uniform Delay, d1		45.1		47.4	45.0		3.9	7.5		4.2	4.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.80	0.69	
Incremental Delay, d2		0.0		0.6	0.0		0.0	0.2		0.0	0.1	
Delay (s)		45.2		48.1	45.0		3.9	7.8		3.4	3.3	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s/veh)		45.2			46.5			7.7			3.3	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.24									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				14.5		
Intersection Capacity Utilization			45.7%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	45	60	5	5	50	10	0	0	5	25	5	60
Future Vol, veh/h	45	60	5	5	50	10	0	0	5	25	5	60
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	6	6	3	3	3	100	100	100	7	7	7
Mvmt Flow	47	63	5	5	53	11	0	0	5	26	5	63
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	69	0	0	264	235	67	231	232	59
Stage 1	-	-	-	-	-	-	161	161	-	69	69	-
Stage 2	-	-	-	-	-	-	103	74	-	162	163	-
Critical Hdwy	4.16	-	-	4.13	-	-	8.1	7.5	7.2	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	4.4	4.9	4.2	3.563	4.063	3.363
Pot Cap-1 Maneuver	1513	-	-	1526	-	-	529	526	779	713	659	993
Stage 1	-	-	-	-	-	-	656	612	-	929	828	-
Stage 2	-	-	-	-	-	-	711	676	-	828	754	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1513	-	-	1525	-	-	479	507	778	689	635	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	479	507	-	689	635	-
Stage 1	-	-	-	-	-	-	634	592	-	899	826	-
Stage 2	-	-	-	-	-	-	660	674	-	796	729	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	3.1			0.6			9.7			9.7		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	778	1513	-	-	1525	-	-	861				
HCM Lane V/C Ratio	0.007	0.031	-	-	0.003	-	-	0.11				
HCM Control Delay (s/veh)	9.7	7.5	0	-	7.4	0	-	9.7				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q (veh)	0	0.1	-	-	0	-	-	0.4				

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	115	40	40	325	250	115
Future Vol, veh/h	115	40	40	325	250	115
Conflicting Peds, #/hr	0	1	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	121	42	42	342	263	121
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	752	327	386	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.13	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	432	739	1167	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	415	737	1165	-	-	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	13	0.9	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1165	-	522	737	-	-
HCM Lane V/C Ratio	0.036	-	0.232	0.057	-	-
HCM Control Delay (s/veh)	8.2	-	14	10.2	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.1	-	0.9	0.2	-	-

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	5	15	5	0	35	5	50	5	15	60	30
Future Vol, veh/h	55	5	15	5	0	35	5	50	5	15	60	30
Conflicting Peds, #/hr	4	0	0	0	0	4	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	7	7	7
Mvmt Flow	58	5	16	5	0	37	5	53	5	16	63	32
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	202	184	82	190	198	62	98	0	0	60	0	0
Stage 1	114	114	-	68	68	-	-	-	-	-	-	-
Stage 2	88	70	-	122	130	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.17	6.57	6.27	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.563	4.063	3.363	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	754	708	975	759	689	989	1495	-	-	1512	-	-
Stage 1	888	799	-	930	829	-	-	-	-	-	-	-
Stage 2	917	835	-	870	779	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	713	694	972	732	675	983	1490	-	-	1508	-	-
Mov Cap-2 Maneuver	713	694	-	732	675	-	-	-	-	-	-	-
Stage 1	883	788	-	924	824	-	-	-	-	-	-	-
Stage 2	877	830	-	841	768	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	10.3		9		0.6		1.1					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1490	-	-	752	943	1508	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.105	0.045	0.01	-	-				
HCM Control Delay (s/veh)	7.4	-	-	10.3	9	7.4	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0.4	0.1	0	-	-				

Intersection

Int Delay, s/veh 3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	15	95	135	20	115	155
Future Vol, veh/h	15	95	135	20	115	155
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	7	7
Mvmt Flow	16	100	142	21	121	163

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	564	159	0
Stage 1	159	-	-
Stage 2	405	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	406	868	-
Stage 1	829	-	-
Stage 2	592	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	364	861	-
Mov Cap-2 Maneuver	446	-	-
Stage 1	822	-	-
Stage 2	535	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	10.6	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	764	1368
HCM Lane V/C Ratio	-	-	0.152	0.088
HCM Control Delay (s/veh)	-	-	10.6	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.5	0.3

Intersection

Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	20	15	20	155
Future Vol, veh/h	15	10	20	15	20	155
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	0	0	5	5
Mvmt Flow	16	11	21	16	21	163
Number of Lanes	0	1	1	0	1	0

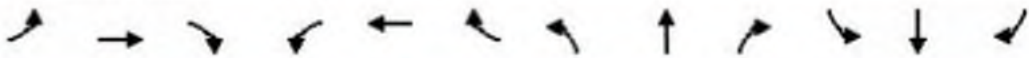
Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.4
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	11%
Vol Thru, %	40%	57%	0%
Vol Right, %	0%	43%	89%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	35	175
LT Vol	15	0	20
Through Vol	10	20	0
RT Vol	0	15	155
Lane Flow Rate	26	37	184
Geometry Grp	1	1	1
Degree of Util (X)	0.033	0.041	0.183
Departure Headway (Hd)	4.476	3.986	3.585
Convergence, Y/N	Yes	Yes	Yes
Cap	797	893	997
Service Time	2.521	2.033	1.62
HCM Lane V/C Ratio	0.033	0.041	0.185
HCM Control Delay, s/veh	7.7	7.2	7.4
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.1	0.7

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	90	10	5	305	330	60
Future Vol, veh/h	90	10	5	305	330	60
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	7	7	4	4
Mvmt Flow	95	11	5	321	347	63
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	678	350	347	0	-	0
Stage 1	347	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	5.88	5.98	4.17	-	-	-
Critical Hdwy Stg 1	4.88	-	-	-	-	-
Critical Hdwy Stg 2	4.88	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	457	700	1185	-	-	0
Stage 1	744	-	-	-	-	0
Stage 2	755	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	455	698	1185	-	-	-
Mov Cap-2 Maneuver	549	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	12.9	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT		
Capacity (veh/h)	1185	-	561	-		
HCM Lane V/C Ratio	0.004	-	0.188	-		
HCM Control Delay (s/veh)	8.1	-	12.9	-		
HCM Lane LOS	A	-	B	-		
HCM 95th %tile Q (veh)	0	-	0.7	-		

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner B Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	10	0	5	115	0	80	5	345	75	105	445	10
Future Volume (vph)	10	0	5	115	0	80	5	345	75	105	445	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.96	1.00		0.98	1.00		0.99	1.00	
Frt		0.96		1.00	0.85		1.00	0.97		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1406		1593	1462		1432	2810		1484	2986	
Flt Permitted		0.84		0.75	1.00		0.48	1.00		0.49	1.00	
Satd. Flow (perm)		1221		1253	1462		717	2810		765	2986	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	0	5	121	0	84	5	363	79	111	468	11
RTOR Reduction (vph)	0	14	0	0	71	0	0	14	0	0	1	0
Lane Group Flow (vph)	0	2	0	121	13	0	5	428	0	111	478	0
Confl. Peds. (#/hr)	3		26	26		3	28		12	12		28
Heavy Vehicles (%)	30%	30%	30%	0%	0%	0%	10%	10%	10%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		17.7		18.2	18.2		87.8	79.7		87.8	86.8	
Effective Green, g (s)		17.7		18.2	18.2		87.8	79.7		87.8	86.8	
Actuated g/C Ratio		0.15		0.15	0.15		0.73	0.66		0.73	0.72	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		180		190	221		530	1866		608	2159	
v/s Ratio Prot					0.01		0.00	c0.15		c0.01	c0.16	
v/s Ratio Perm		0.00		c0.10			0.01			0.12		
v/c Ratio		0.01		0.64	0.06		0.01	0.23		0.18	0.22	
Uniform Delay, d1		43.7		47.8	43.6		4.3	8.0		4.7	5.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.14	0.17	
Incremental Delay, d2		0.0		5.1	0.0		0.0	0.3		0.0	0.1	
Delay (s)		43.7		52.9	43.6		4.3	8.3		0.7	1.0	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s/veh)		43.7			49.1			8.2			0.9	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		11.9										
HCM 2000 Volume to Capacity ratio		0.30										
Actuated Cycle Length (s)		120.0								14.5		
Intersection Capacity Utilization		45.7%								A		
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	70	60	5	5	50	10	0	0	5	20	5	70
Future Vol, veh/h	70	60	5	5	50	10	0	0	5	20	5	70
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	6	6	3	3	3	100	100	100	7	7	7
Mvmt Flow	74	63	5	5	53	11	0	0	5	21	5	74
Major/Minor	Major1			Major2			Minor1		Minor2			
Conflicting Flow All	64	0	0	69	0	0	323	289	67	285	286	59
Stage 1	-	-	-	-	-	-	215	215	-	69	69	-
Stage 2	-	-	-	-	-	-	108	74	-	216	217	-
Critical Hdwy	4.16	-	-	4.13	-	-	8.1	7.5	7.2	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	4.4	4.9	4.2	3.563	4.063	3.363
Pot Cap-1 Maneuver	1513	-	-	1526	-	-	479	487	779	657	615	993
Stage 1	-	-	-	-	-	-	609	575	-	929	828	-
Stage 2	-	-	-	-	-	-	706	676	-	775	714	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1513	-	-	1525	-	-	422	460	778	625	581	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	422	460	-	625	581	-
Stage 1	-	-	-	-	-	-	577	545	-	882	826	-
Stage 2	-	-	-	-	-	-	647	674	-	730	677	-
Approach	EB			WB			NB		SB			
HCM Control Delay, s/v	3.9			0.6			9.7		9.8			
HCM LOS							A		A			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	778	1513	-	-	1525	-	-	855				
HCM Lane V/C Ratio	0.007	0.049	-	-	0.003	-	-	0.117				
HCM Control Delay (s/veh)	9.7	7.5	0	-	7.4	0	-	9.8				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q (veh)	0	0.2	-	-	0	-	-	0.4				

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	120	40	55	315	245	145
Future Vol, veh/h	120	40	55	315	245	145
Conflicting Peds, #/hr	0	1	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	126	42	58	332	258	153
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	785	338	413	0	-	0
Stage 1	337	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.13	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	415	729	1141	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	392	727	1139	-	-	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	13.5	1.2	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1139	-	504	727	-	-
HCM Lane V/C Ratio	0.051	-	0.251	0.058	-	-
HCM Control Delay (s/veh)	8.3	-	14.5	10.3	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.2	-	1	0.2	-	-

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	5	15	10	0	45	5	60	20	70	70	30
Future Vol, veh/h	55	5	15	10	0	45	5	60	20	70	70	30
Conflicting Peds, #/hr	4	0	0	0	0	4	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	7	7	7
Mvmt Flow	58	5	16	11	0	47	5	63	21	74	74	32
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	352	337	93	335	343	80	109	0	0	86	0	0
Stage 1	241	241	-	86	86	-	-	-	-	-	-	-
Stage 2	111	96	-	249	257	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.17	6.57	6.27	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.563	4.063	3.363	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	601	582	961	609	571	966	1481	-	-	1479	-	-
Stage 1	760	704	-	910	814	-	-	-	-	-	-	-
Stage 2	892	814	-	744	686	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	545	548	958	569	537	960	1476	-	-	1475	-	-
Mov Cap-2 Maneuver	545	548	-	569	537	-	-	-	-	-	-	-
Stage 1	755	667	-	905	809	-	-	-	-	-	-	-
Stage 2	842	809	-	690	650	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	11.9		9.5		0.4		3.1					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1476	-	-	597	853	1475	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.132	0.068	0.05	-	-				
HCM Control Delay (s/veh)	7.4	-	-	11.9	9.5	7.6	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0.5	0.2	0.2	-	-				

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	135	10	35	155
Future Vol, veh/h	5	15	135	10	35	155
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	7	7
Mvmt Flow	5	16	142	11	37	163

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	391	154	0
Stage 1	154	-	-
Stage 2	237	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	542	874	-
Stage 1	835	-	-
Stage 2	746	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	521	867	-
Mov Cap-2 Maneuver	587	-	-
Stage 1	828	-	-
Stage 2	724	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	9.8	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	775	1379
HCM Lane V/C Ratio	-	-	0.027	0.027
HCM Control Delay (s/veh)	-	-	9.8	7.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q (veh)	-	-	0.1	0.1

Intersection

Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	20	15	20	5
Future Vol, veh/h	15	10	20	15	20	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	6	6	0	0	5	5
Mvmt Flow	16	11	21	16	21	5
Number of Lanes	0	1	1	0	1	0

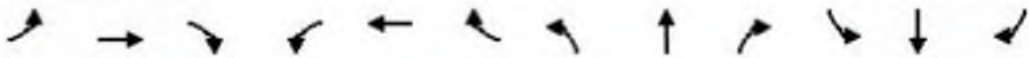
Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	80%
Vol Thru, %	40%	57%	0%
Vol Right, %	0%	43%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	35	25
LT Vol	15	0	20
Through Vol	10	20	0
RT Vol	0	15	5
Lane Flow Rate	26	37	26
Geometry Grp	1	1	1
Degree of Util (X)	0.031	0.038	0.03
Departure Headway (Hd)	4.195	3.707	4.134
Convergence, Y/N	Yes	Yes	Yes
Cap	855	966	866
Service Time	2.213	1.728	2.159
HCM Lane V/C Ratio	0.03	0.038	0.03
HCM Control Delay, s/veh	7.3	6.9	7.3
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.1	0.1

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	215	25	20	295	315	185
Future Vol, veh/h	215	25	20	295	315	185
Conflicting Peds, #/hr	0	3	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	8	8	7	7	4	4
Mvmt Flow	226	26	21	311	332	195
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	685	335	332	0	-	0
Stage 1	332	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Critical Hdwy	5.88	5.98	4.17	-	-	-
Critical Hdwy Stg 1	4.88	-	-	-	-	-
Critical Hdwy Stg 2	4.88	-	-	-	-	-
Follow-up Hdwy	3.572	3.372	2.263	-	-	-
Pot Cap-1 Maneuver	454	713	1200	-	-	0
Stage 1	754	-	-	-	-	0
Stage 2	740	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	446	711	1200	-	-	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	16.8	0.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT		
Capacity (veh/h)	1200	-	556	-		
HCM Lane V/C Ratio	0.018	-	0.454	-		
HCM Control Delay (s/veh)	8.1	-	16.8	-		
HCM Lane LOS	A	-	C	-		
HCM 95th %tile Q (veh)	0.1	-	2.4	-		

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner D Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘		↙	↕		↙	↘	
Traffic Volume (vph)	45	25	10	95	60	80	10	405	90	105	535	15
Future Volume (vph)	45	25	10	95	60	80	10	405	90	105	535	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.97	1.00		0.99	1.00		0.99	1.00	
Frt		0.98		1.00	0.91		1.00	0.97		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1466		1606	1585		1439	2807		1489	2983	
Flt Permitted		0.63		0.69	1.00		0.42	1.00		0.45	1.00	
Satd. Flow (perm)		946		1171	1585		642	2807		698	2983	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	47	26	11	100	63	84	11	426	95	111	563	16
RTOR Reduction (vph)	0	4	0	0	39	0	0	14	0	0	1	0
Lane Group Flow (vph)	0	80	0	100	108	0	11	507	0	111	578	0
Confl. Peds. (#/hr)	3		26	26		3	28		12	12		28
Heavy Vehicles (%)	30%	30%	30%	0%	0%	0%	10%	10%	10%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		18.7		19.2	19.2		86.8	79.3		86.8	85.7	
Effective Green, g (s)		18.7		19.2	19.2		86.8	79.3		86.8	85.7	
Actuated g/C Ratio		0.16		0.16	0.16		0.72	0.66		0.72	0.71	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		147		187	253		471	1854		554	2130	
v/s Ratio Prot					0.07		0.00	0.18		c0.01	c0.19	
v/s Ratio Perm		0.08		c0.09			0.02			0.13		
v/c Ratio		0.54		0.53	0.43		0.02	0.27		0.20	0.27	
Uniform Delay, d1		46.7		46.3	45.5		4.6	8.4		5.0	6.1	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.71	0.86	
Incremental Delay, d2		2.2		1.5	0.4		0.0	0.4		0.0	0.1	
Delay (s)		48.9		47.8	45.9		4.7	8.8		3.6	5.3	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s/veh)		48.9			46.6			8.7			5.0	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			15.3			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			14.5			
Intersection Capacity Utilization			59.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	60	75	5	5	65	10	0	0	5	20	5	60
Future Vol, veh/h	60	75	5	5	65	10	0	0	5	20	5	60
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	6	6	6	3	3	3	100	100	100	7	7	7
Mvmt Flow	63	79	5	5	68	11	0	0	5	21	5	63
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	79	0	0	85	0	0	327	298	83	294	295	74
Stage 1	-	-	-	-	-	-	209	209	-	84	84	-
Stage 2	-	-	-	-	-	-	118	89	-	210	211	-
Critical Hdwy	4.16	-	-	4.13	-	-	8.1	7.5	7.2	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.17	5.57	-
Follow-up Hdwy	2.254	-	-	2.227	-	-	4.4	4.9	4.2	3.563	4.063	3.363
Pot Cap-1 Maneuver	1494	-	-	1505	-	-	476	480	762	648	608	974
Stage 1	-	-	-	-	-	-	614	579	-	912	816	-
Stage 2	-	-	-	-	-	-	696	664	-	781	718	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1494	-	-	1504	-	-	426	457	761	621	579	974
Mov Cap-2 Maneuver	-	-	-	-	-	-	426	457	-	621	579	-
Stage 1	-	-	-	-	-	-	586	553	-	872	814	-
Stage 2	-	-	-	-	-	-	645	662	-	741	686	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	3.2			0.5			9.8			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	761	1494	-	-	1504	-	-	830				
HCM Lane V/C Ratio	0.007	0.042	-	-	0.003	-	-	0.108				
HCM Control Delay (s/veh)	9.8	7.5	0	-	7.4	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q (veh)	0	0.1	-	-	0	-	-	0.4				

Intersection

Int Delay, s/veh 2.9

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Vol, veh/h	130	40	55	315	245	155
Future Vol, veh/h	130	40	55	315	245	155
Conflicting Peds, #/hr	0	1	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	3	6	6
Mvmt Flow	137	42	58	332	258	163

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	790	343	423	0	-	0
Stage 1	342	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.13	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	413	725	1131	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	390	723	1129	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s/v	13.7	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt NBL NBT EBLn1 EBLn2 SBT SBR

Capacity (veh/h)	1129	-	502	723	-	-
HCM Lane V/C Ratio	0.051	-	0.273	0.058	-	-
HCM Control Delay (s/veh)	8.4	-	14.8	10.3	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q (veh)	0.2	-	1.1	0.2	-	-

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	5	15	10	0	55	5	50	20	80	60	30
Future Vol, veh/h	55	5	15	10	0	55	5	50	20	80	60	30
Conflicting Peds, #/hr	4	0	0	0	0	4	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	7	7	7	2	2	2	7	7	7
Mvmt Flow	58	5	16	11	0	58	5	53	21	84	63	32
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	357	336	82	334	342	70	98	0	0	76	0	0
Stage 1	250	250	-	76	76	-	-	-	-	-	-	-
Stage 2	107	86	-	258	266	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.17	6.57	6.27	4.12	-	-	4.17	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.563	4.063	3.363	2.218	-	-	2.263	-	-
Pot Cap-1 Maneuver	596	583	975	610	572	979	1495	-	-	1492	-	-
Stage 1	752	698	-	921	822	-	-	-	-	-	-	-
Stage 2	896	822	-	736	680	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	532	546	972	567	535	973	1490	-	-	1488	-	-
Mov Cap-2 Maneuver	532	546	-	567	535	-	-	-	-	-	-	-
Stage 1	747	657	-	915	817	-	-	-	-	-	-	-
Stage 2	837	817	-	678	640	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	12.1		9.5		0.5		3.6					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1490	-	-	586	876	1488	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.135	0.078	0.057	-	-				
HCM Control Delay (s/veh)	7.4	-	-	12.1	9.5	7.6	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q (veh)	0	-	-	0.5	0.3	0.2	-	-				

Intersection

Int Delay, s/veh 2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	10	55	155	10	35	145
Future Vol, veh/h	10	55	155	10	35	145
Conflicting Peds, #/hr	2	0	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	58	163	11	37	153

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	405	176	0
Stage 1	176	-	-
Stage 2	229	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	529	847	-
Stage 1	810	-	-
Stage 2	754	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	508	839	-
Mov Cap-2 Maneuver	580	-	-
Stage 1	803	-	-
Stage 2	731	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	10	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	785	1388
HCM Lane V/C Ratio	-	-	0.087	0.027
HCM Control Delay (s/veh)	-	-	10	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.3	0.1

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	30	30	45	80	20
Future Vol, veh/h	35	30	30	45	80	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	32	32	47	84	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	80%
Vol Thru, %	46%	40%	0%
Vol Right, %	0%	60%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	75	100
LT Vol	35	0	80
Through Vol	30	30	0
RT Vol	0	45	20
Lane Flow Rate	68	79	105
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.083	0.123
Departure Headway (Hd)	4.254	3.778	4.193
Convergence, Y/N	Yes	Yes	Yes
Cap	833	936	847
Service Time	2.324	1.853	2.256
HCM Lane V/C Ratio	0.082	0.084	0.124
HCM Control Delay, s/veh	7.7	7.2	7.9
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.3	0.3	0.4

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	5	5	575	275	105
Future Vol, veh/h	100	5	5	575	275	105
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	2	2	3	3
Mvmt Flow	102	5	5	587	281	107
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	878	282	281	0	-	0
Stage 1	281	-	-	-	-	-
Stage 2	597	-	-	-	-	-
Critical Hdwy	5.83	5.93	4.12	-	-	-
Critical Hdwy Stg 1	4.83	-	-	-	-	-
Critical Hdwy Stg 2	4.83	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.218	-	-	-
Pot Cap-1 Maneuver	367	772	1282	-	-	0
Stage 1	801	-	-	-	-	0
Stage 2	605	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	366	771	1282	-	-	-
Mov Cap-2 Maneuver	475	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	605	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s/v	14.5		0.1		0	
HCM LOS	B					
Minor Lane/Major Mvmt	NBL		NBT EBLn1		SBT	
Capacity (veh/h)	1282		- 484		-	
HCM Lane V/C Ratio	0.004		- 0.221		-	
HCM Control Delay (s/veh)	7.8		- 14.5		-	
HCM Lane LOS	A		- B		-	
HCM 95th %tile Q (veh)	0		- 0.8		-	

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner No-Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	25	0	10	60	5	135	25	560	100	100	310	10
Future Volume (vph)	25	0	10	60	5	135	25	560	100	100	310	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99		0.95	1.00		0.97	1.00		0.99	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1812		1530	1409		1504	2981		1534	3065	
Flt Permitted		0.64		0.79	1.00		0.55	1.00		0.37	1.00	
Satd. Flow (perm)		1194		1277	1409		869	2981		592	3065	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	0	11	63	5	142	26	589	105	105	326	11
RTOR Reduction (vph)	0	32	0	0	123	0	0	9	0	0	1	0
Lane Group Flow (vph)	0	5	0	63	24	0	26	685	0	105	336	0
Confl. Peds. (#/hr)	12		34	34		12	26		17	17		26
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		15.7		16.2	16.2		89.8	82.7		89.8	86.6	
Effective Green, g (s)		15.7		16.2	16.2		89.8	82.7		89.8	86.6	
Actuated g/C Ratio		0.13		0.13	0.13		0.75	0.69		0.75	0.72	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		156		172	190		667	2054		498	2211	
v/s Ratio Prot					0.02		0.00	c0.23		c0.01	c0.11	
v/s Ratio Perm		0.00		c0.05			0.03			0.15		
v/c Ratio		0.03		0.37	0.13		0.04	0.33		0.21	0.15	
Uniform Delay, d1		45.5		47.2	45.7		3.9	7.5		4.2	5.2	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.19	0.35	
Incremental Delay, d2		0.0		0.5	0.1		0.0	0.4		0.0	0.1	
Delay (s)		45.5		47.7	45.8		3.9	8.0		0.8	1.9	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s/veh)		45.5			46.4			7.8			1.6	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			12.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				14.5		
Intersection Capacity Utilization			65.0%			ICU Level of Service				C		
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	100	75	0	0	75	20	0	5	5	10	0	60
Future Vol, veh/h	100	75	0	0	75	20	0	5	5	10	0	60
Conflicting Peds, #/hr	4	0	2	2	0	4	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	1	1	1
Mvmt Flow	105	79	0	0	79	21	0	5	5	11	0	63
Major/Minor	Major1			Major2			Minor1		Minor2			
Conflicting Flow All	104	0	0	81	0	0	412	395	82	389	385	94
Stage 1	-	-	-	-	-	-	291	291	-	94	94	-
Stage 2	-	-	-	-	-	-	121	104	-	295	291	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1500	-	-	1523	-	-	554	545	983	572	550	966
Stage 1	-	-	-	-	-	-	721	675	-	915	819	-
Stage 2	-	-	-	-	-	-	888	813	-	716	673	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1495	-	-	1520	-	-	488	502	980	531	507	963
Mov Cap-2 Maneuver	-	-	-	-	-	-	488	502	-	531	507	-
Stage 1	-	-	-	-	-	-	667	624	-	845	817	-
Stage 2	-	-	-	-	-	-	830	811	-	654	623	-
Approach	EB			WB			NB		SB			
HCM Control Delay, s/v	4.3			0			10.5		9.6			
HCM LOS							B		A			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	664	1495	-	-	1520	-	-	863				
HCM Lane V/C Ratio	0.016	0.07	-	-	-	-	-	0.085				
HCM Control Delay (s/veh)	10.5	7.6	0	-	0	-	-	9.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q (veh)	0	0.2	-	-	0	-	-	0.3				

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	150	50	40	425	395	120
Future Vol, veh/h	150	50	40	425	395	120
Conflicting Peds, #/hr	0	0	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	158	53	42	447	416	126
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1021	490	553	0	-	0
Stage 1	490	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.12	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	313	607	1017	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	600	1005	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	16.6	0.8		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1005	-	426	600	-	-
HCM Lane V/C Ratio	0.042	-	0.371	0.088	-	-
HCM Control Delay (s/veh)	8.7	-	18.3	11.6	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.1	-	1.7	0.3	-	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	0	10	10	5	35	25	90	15	45	55	70
Future Vol, veh/h	55	0	10	10	5	35	25	90	15	45	55	70
Conflicting Peds, #/hr	6	0	2	2	0	6	1	0	8	8	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	3	3	3	1	1	1	1	1	1
Mvmt Flow	58	0	11	11	5	37	26	95	16	47	58	74
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	372	361	98	360	390	117	133	0	0	119	0	0
Stage 1	190	190	-	163	163	-	-	-	-	-	-	-
Stage 2	182	171	-	197	227	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.13	6.53	6.23	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.527	4.027	3.327	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	581	563	953	594	544	932	1458	-	-	1475	-	-
Stage 1	807	739	-	837	761	-	-	-	-	-	-	-
Stage 2	815	753	-	803	714	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	529	529	950	558	511	918	1456	-	-	1460	-	-
Mov Cap-2 Maneuver	529	529	-	558	511	-	-	-	-	-	-	-
Stage 1	792	715	-	814	740	-	-	-	-	-	-	-
Stage 2	759	732	-	767	690	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	12.2		10.1		1.4		2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1456	-	-	568	760	1460	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.12	0.069	0.032	-	-				
HCM Control Delay (s/veh)	7.5	-	-	12.2	10.1	7.5	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.4	0.2	0.1	-	-				

Intersection

Int Delay, s/veh 4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	20	135	215	20	110	165
Future Vol, veh/h	20	135	215	20	110	165
Conflicting Peds, #/hr	2	0	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	21	142	226	21	116	174

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	652	244	0
Stage 1	244	-	-
Stage 2	408	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	351	768	-
Stage 1	739	-	-
Stage 2	590	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	313	761	-
Mov Cap-2 Maneuver	417	-	-
Stage 1	732	-	-
Stage 2	531	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	11.9	0	3.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	688	1305
HCM Lane V/C Ratio	-	-	0.237	0.089
HCM Control Delay (s/veh)	-	-	11.9	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.9	0.3

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	30	30	40	75	20
Future Vol, veh/h	35	30	30	40	75	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	32	32	42	79	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	79%
Vol Thru, %	46%	43%	0%
Vol Right, %	0%	57%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	70	95
LT Vol	35	0	75
Through Vol	30	30	0
RT Vol	0	40	20
Lane Flow Rate	68	74	100
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.077	0.116
Departure Headway (Hd)	4.24	3.785	4.175
Convergence, Y/N	Yes	Yes	Yes
Cap	837	935	851
Service Time	2.305	1.856	2.236
HCM Lane V/C Ratio	0.081	0.079	0.118
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.3	0.2	0.4

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵		↵	↑	↑	↑
Traffic Vol, veh/h	95	5	5	585	310	100
Future Vol, veh/h	95	5	5	585	310	100
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	2	2	3	3
Mvmt Flow	97	5	5	597	316	102
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	923	317	316	0	-	0
Stage 1	316	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Critical Hdwy	5.83	5.93	4.12	-	-	-
Critical Hdwy Stg 1	4.83	-	-	-	-	-
Critical Hdwy Stg 2	4.83	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.218	-	-	-
Pot Cap-1 Maneuver	348	741	1244	-	-	0
Stage 1	777	-	-	-	-	0
Stage 2	600	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	347	740	1244	-	-	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	14.7	0.1	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT		
Capacity (veh/h)	1244	-	471	-		
HCM Lane V/C Ratio	0.004	-	0.217	-		
HCM Control Delay (s/veh)	7.9	-	14.7	-		
HCM Lane LOS	A	-	B	-		
HCM 95th %tile Q (veh)	0	-	0.8	-		

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner B Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	25	0	10	60	5	130	25	730	95	95	360	10
Future Volume (vph)	25	0	10	60	5	130	25	730	95	95	360	10
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.98		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		0.99		0.95	1.00		0.98	1.00		1.00	1.00	
Frt		0.96		1.00	0.86		1.00	0.98		1.00	1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1811		1530	1409		1509	3007		1539	3069	
Flt Permitted		0.65		0.79	1.00		0.52	1.00		0.30	1.00	
Satd. Flow (perm)		1226		1277	1409		828	3007		481	3069	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	0	11	63	5	137	26	768	100	100	379	11
RTOR Reduction (vph)	0	32	0	0	119	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	5	0	63	23	0	26	862	0	100	389	0
Confl. Peds. (#/hr)	12		34	34		12	26		17	17		26
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		15.7		16.2	16.2		89.8	83.1		89.8	86.6	
Effective Green, g (s)		15.7		16.2	16.2		89.8	83.1		89.8	86.6	
Actuated g/C Ratio		0.13		0.13	0.13		0.75	0.69		0.75	0.72	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		160		172	190		637	2082		419	2214	
v/s Ratio Prot					0.02		0.00	c0.29		c0.01	c0.13	
v/s Ratio Perm		0.00		c0.05			0.03			0.17		
v/c Ratio		0.03		0.37	0.12		0.04	0.41		0.24	0.18	
Uniform Delay, d1		45.5		47.2	45.7		3.9	8.0		4.4	5.3	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.35	0.48	
Incremental Delay, d2		0.0		0.5	0.1		0.0	0.6		0.0	0.1	
Delay (s)		45.5		47.7	45.8		3.9	8.6		1.6	2.7	
Level of Service		D		D	D		A	A		A	A	
Approach Delay (s/veh)		45.5			46.4			8.4			2.4	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		12.2										
HCM 2000 Volume to Capacity ratio		0.40										
Actuated Cycle Length (s)		120.0								14.5		
Intersection Capacity Utilization		69.5%										
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	115	75	0	0	75	20	0	5	5	10	0	85
Future Vol, veh/h	115	75	0	0	75	20	0	5	5	10	0	85
Conflicting Peds, #/hr	4	0	2	2	0	4	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	1	1	1
Mvmt Flow	121	79	0	0	79	21	0	5	5	11	0	89
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	104	0	0	81	0	0	457	427	82	421	417	94
Stage 1	-	-	-	-	-	-	323	323	-	94	94	-
Stage 2	-	-	-	-	-	-	134	104	-	327	323	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1500	-	-	1523	-	-	517	523	983	545	528	966
Stage 1	-	-	-	-	-	-	693	654	-	915	819	-
Stage 2	-	-	-	-	-	-	874	813	-	688	652	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1495	-	-	1520	-	-	438	476	980	500	480	963
Mov Cap-2 Maneuver	-	-	-	-	-	-	438	476	-	500	480	-
Stage 1	-	-	-	-	-	-	633	597	-	834	817	-
Stage 2	-	-	-	-	-	-	793	811	-	620	595	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	4.6			0			10.7			9.6		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	641	1495	-	-	1520	-	-	877				
HCM Lane V/C Ratio	0.016	0.081	-	-	-	-	-	0.114				
HCM Control Delay (s/veh)	10.7	7.6	0	-	0	-	-	9.6				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q (veh)	0.1	0.3	-	-	0	-	-	0.4				

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	165	60	40	415	390	120
Future Vol, veh/h	165	60	40	415	390	120
Conflicting Peds, #/hr	0	0	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	174	63	42	437	411	126
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1006	485	548	0	-	0
Stage 1	485	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.12	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	319	610	1021	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	299	603	1009	-	-	-
Mov Cap-2 Maneuver	430	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	17	0.8	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1009	-	430	603	-	-
HCM Lane V/C Ratio	0.042	-	0.404	0.105	-	-
HCM Control Delay (s/veh)	8.7	-	18.9	11.7	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.1	-	1.9	0.3	-	-

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	0	10	25	5	85	25	95	15	60	65	65
Future Vol, veh/h	55	0	10	25	5	85	25	95	15	60	65	65
Conflicting Peds, #/hr	6	0	2	2	0	6	1	0	8	8	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	3	3	3	1	1	1	1	1	1
Mvmt Flow	58	0	11	26	5	89	26	100	16	63	68	68
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	442	405	105	404	431	122	137	0	0	124	0	0
Stage 1	229	229	-	168	168	-	-	-	-	-	-	-
Stage 2	213	176	-	236	263	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.13	6.53	6.23	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.527	4.027	3.327	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	522	532	944	555	516	926	1453	-	-	1469	-	-
Stage 1	769	711	-	832	758	-	-	-	-	-	-	-
Stage 2	785	750	-	765	689	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	443	494	941	517	479	912	1452	-	-	1454	-	-
Mov Cap-2 Maneuver	443	494	-	517	479	-	-	-	-	-	-	-
Stage 1	754	680	-	809	737	-	-	-	-	-	-	-
Stage 2	687	729	-	722	659	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	13.7		10.7		1.4		2.4					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1452	-	-	482	757	1454	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.142	0.16	0.043	-	-				
HCM Control Delay (s/veh)	7.5	-	-	13.7	10.7	7.6	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.5	0.6	0.1	-	-				

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P			4
Traffic Vol, veh/h	10	55	210	10	30	165
Future Vol, veh/h	10	55	210	10	30	165
Conflicting Peds, #/hr	2	0	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	6	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	58	221	11	32	174

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	474	234	0
Stage 1	234	-	-
Stage 2	240	-	-
Critical Hdwy	7.6	6.8	-
Critical Hdwy Stg 1	6.6	-	-
Critical Hdwy Stg 2	6.6	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	472	779	-
Stage 1	749	-	-
Stage 2	743	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	454	772	-
Mov Cap-2 Maneuver	541	-	-
Stage 1	742	-	-
Stage 2	721	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	10.5	0	1.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	SBL	SBT
Capacity (veh/h)	-	-	724	1322
HCM Lane V/C Ratio	-	-	0.095	0.024
HCM Control Delay (s/veh)	-	-	10.5	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q (veh)	-	-	0.3	0.1

Intersection

Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	30	30	40	75	20
Future Vol, veh/h	35	30	30	40	75	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	37	32	32	42	79	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	79%
Vol Thru, %	46%	43%	0%
Vol Right, %	0%	57%	21%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	65	70	95
LT Vol	35	0	75
Through Vol	30	30	0
RT Vol	0	40	20
Lane Flow Rate	68	74	100
Geometry Grp	1	1	1
Degree of Util (X)	0.081	0.077	0.116
Departure Headway (Hd)	4.24	3.785	4.175
Convergence, Y/N	Yes	Yes	Yes
Cap	837	935	851
Service Time	2.305	1.856	2.236
HCM Lane V/C Ratio	0.081	0.079	0.118
HCM Control Delay, s/veh	7.7	7.2	7.8
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.3	0.2	0.4

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖	↗	↗	↖
Traffic Vol, veh/h	105	5	5	590	315	110
Future Vol, veh/h	105	5	5	590	315	110
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	165	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	3	2	2	3	3
Mvmt Flow	107	5	5	602	321	112

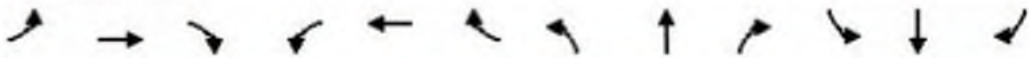
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	933	322	321
Stage 1	321	-	-
Stage 2	612	-	-
Critical Hdwy	5.83	5.93	4.12
Critical Hdwy Stg 1	4.83	-	-
Critical Hdwy Stg 2	4.83	-	-
Follow-up Hdwy	3.527	3.327	2.218
Pot Cap-1 Maneuver	344	736	1239
Stage 1	773	-	-
Stage 2	597	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	343	735	1239
Mov Cap-2 Maneuver	458	-	-
Stage 1	770	-	-
Stage 2	597	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	15.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1239	-	466	-
HCM Lane V/C Ratio	0.004	-	0.241	-
HCM Control Delay (s/veh)	7.9	-	15.2	-
HCM Lane LOS	A	-	C	-
HCM 95th %tile Q (veh)	0	-	0.9	-

HCM Signalized Intersection Capacity Analysis
309: 4th Avenue W & Driveway/Mariner PnR

Mariner D Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+		+	+		+	+		+	+	
Traffic Volume (vph)	250	70	35	60	45	130	50	550	95	95	335	110
Future Volume (vph)	250	70	35	60	45	130	50	550	95	95	335	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	16	16	16	12	12	12	11	11	11	11	11	11
Grade (%)		-3%			0%			0%			0%	
Total Lost time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99		1.00	0.98		1.00	0.99		1.00	0.98	
Flpb, ped/bikes		0.99		0.98	1.00		0.99	1.00		1.00	1.00	
Frt		0.99		1.00	0.89		1.00	0.98		1.00	0.96	
Flt Protected		0.97		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1887		1575	1474		1526	2984		1545	2902	
Flt Permitted		0.65		0.57	1.00		0.39	1.00		0.23	1.00	
Satd. Flow (perm)		1262		950	1474		632	2984		379	2902	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	263	74	37	63	47	137	53	579	100	100	353	116
RTOR Reduction (vph)	0	2	0	0	54	0	0	19	0	0	47	0
Lane Group Flow (vph)	0	372	0	63	130	0	53	660	0	100	422	0
Confl. Peds. (#/hr)	12		34	34		12	26		17	17		26
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	4%	4%	4%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		D.P+P	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		58.8		59.3	59.3		46.7	37.7		46.7	40.8	
Effective Green, g (s)		58.8		59.3	59.3		46.7	37.7		46.7	40.8	
Actuated g/C Ratio		0.49		0.49	0.49		0.39	0.31		0.39	0.34	
Clearance Time (s)		4.5		4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		618		469	728		289	937		234	986	
v/s Ratio Prot					0.09		0.01	c0.22		c0.03	c0.15	
v/s Ratio Perm		c0.29		0.07			0.06			0.13		
v/c Ratio		0.60		0.13	0.18		0.18	0.70		0.43	0.43	
Uniform Delay, d1		22.1		16.4	16.8		23.4	36.2		25.1	30.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		0.66	0.60	
Incremental Delay, d2		1.1		0.0	0.0		0.1	4.4		0.1	0.4	
Delay (s)		23.3		16.5	16.9		23.6	40.7		16.6	18.8	
Level of Service		C		B	B		C	D		B	B	
Approach Delay (s/veh)		23.3			16.8			39.4			18.4	
Approach LOS		C			B			D			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			14.5			
Intersection Capacity Utilization			77.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	105	90	0	0	90	20	0	5	5	10	0	75
Future Vol, veh/h	105	90	0	0	90	20	0	5	5	10	0	75
Conflicting Peds, #/hr	4	0	2	2	0	4	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	6	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	1	1	1
Mvmt Flow	111	95	0	0	95	21	0	5	5	11	0	79
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	120	0	0	97	0	0	464	439	98	433	429	110
Stage 1	-	-	-	-	-	-	319	319	-	110	110	-
Stage 2	-	-	-	-	-	-	145	120	-	323	319	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1480	-	-	1503	-	-	512	515	963	535	520	946
Stage 1	-	-	-	-	-	-	697	657	-	898	806	-
Stage 2	-	-	-	-	-	-	863	800	-	691	655	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1475	-	-	1500	-	-	440	472	960	494	476	943
Mov Cap-2 Maneuver	-	-	-	-	-	-	440	472	-	494	476	-
Stage 1	-	-	-	-	-	-	641	604	-	824	804	-
Stage 2	-	-	-	-	-	-	791	798	-	627	602	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	4.1			0			10.8			9.7		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	633	1475	-	-	1500	-	-	852				
HCM Lane V/C Ratio	0.017	0.075	-	-	-	-	-	0.105				
HCM Control Delay (s/veh)	10.8	7.6	0	-	0	-	-	9.7				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q (veh)	0.1	0.2	-	-	0	-	-	0.4				

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	175	60	40	415	390	135
Future Vol, veh/h	175	60	40	415	390	135
Conflicting Peds, #/hr	0	0	11	0	0	11
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	2	1	1
Mvmt Flow	184	63	42	437	411	142
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1014	493	564	0	-	0
Stage 1	493	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	5.8	5.9	4.12	-	-	-
Critical Hdwy Stg 1	4.8	-	-	-	-	-
Critical Hdwy Stg 2	4.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	316	604	1008	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	296	597	997	-	-	-
Mov Cap-2 Maneuver	428	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s/v	17.6	0.8	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	997	-	428	597	-	-
HCM Lane V/C Ratio	0.042	-	0.43	0.106	-	-
HCM Control Delay (s/veh)	8.8	-	19.6	11.7	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q (veh)	0.1	-	2.1	0.4	-	-

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Vol, veh/h	55	0	10	25	5	90	25	85	15	70	55	65
Future Vol, veh/h	55	0	10	25	5	90	25	85	15	70	55	65
Conflicting Peds, #/hr	6	0	2	2	0	6	1	0	8	8	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	3	3	3	1	1	1	1	1	1
Mvmt Flow	58	0	11	26	5	95	26	89	16	74	58	68
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	446	406	95	405	432	111	127	0	0	113	0	0
Stage 1	241	241	-	157	157	-	-	-	-	-	-	-
Stage 2	205	165	-	248	275	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.13	6.53	6.23	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.527	4.027	3.327	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	519	531	956	554	515	940	1465	-	-	1483	-	-
Stage 1	758	702	-	843	766	-	-	-	-	-	-	-
Stage 2	792	758	-	754	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	435	490	953	514	475	926	1463	-	-	1468	-	-
Mov Cap-2 Maneuver	435	490	-	514	475	-	-	-	-	-	-	-
Stage 1	744	666	-	819	745	-	-	-	-	-	-	-
Stage 2	690	737	-	707	646	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	13.9		10.6		1.5		2.8					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1463	-	-	475	767	1468	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.144	0.165	0.05	-	-				
HCM Control Delay (s/veh)	7.5	-	-	13.9	10.6	7.6	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q (veh)	0.1	-	-	0.5	0.6	0.2	-	-				

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	270	170	245	510	85	230	730	105	75	1135	100
Future Volume (veh/h)	100	270	170	245	510	85	230	730	105	75	1135	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1668	1668	1668	1682	1682	1682	1641	1641	1641	1532	1532	1532
Adj Flow Rate, veh/h	105	284	179	258	537	89	242	768	0	79	1195	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	5	5	5	8	8	8	16	16	16
Cap, veh/h	123	519	442	261	797	337	245	1534		94	1163	
Arrive On Green	0.08	0.16	0.16	0.16	0.25	0.25	0.16	0.49	0.00	0.06	0.40	0.00
Sat Flow, veh/h	1589	3169	1346	1602	3195	1351	1563	3118	1391	1459	2910	1298
Grp Volume(v), veh/h	105	284	179	258	537	89	242	768	0	79	1195	0
Grp Sat Flow(s),veh/h/ln	1589	1585	1346	1602	1598	1351	1563	1559	1391	1459	1455	1298
Q Serve(g_s), s	10.6	13.4	16.9	26.1	24.7	8.6	25.1	27.0	0.0	8.7	65.0	0.0
Cycle Q Clear(g_c), s	10.6	13.4	16.9	26.1	24.7	8.6	25.1	27.0	0.0	8.7	65.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	123	519	442	261	797	337	245	1534		94	1163	
V/C Ratio(X)	0.85	0.55	0.40	0.99	0.67	0.26	0.99	0.50		0.84	1.03	
Avail Cap(c_a), veh/h	161	565	462	261	797	337	245	1534		166	1163	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	74.1	62.5	43.3	67.9	55.1	49.0	68.4	27.8	0.0	75.3	48.8	0.0
Incr Delay (d2), s/veh	27.5	1.3	0.8	52.3	2.5	0.6	53.8	0.9	0.0	7.5	33.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	5.4	5.7	14.3	10.1	2.9	13.5	10.1	0.0	3.4	28.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	101.6	63.7	44.1	120.3	57.6	49.6	122.2	28.8	0.0	82.7	82.5	0.0
LnGrp LOS	F	E	D	F	E	D	F	C		F	F	
Approach Vol, veh/h	568			884			1010			1274		
Approach Delay, s/veh	64.6			75.1			51.2			82.5		
Approach LOS	E			E			D			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	70.0	17.1	45.6	15.0	85.0	31.0	31.6				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	25.5	65.0	16.5	39.0	18.5	72.0	26.5	29.0				
Max Q Clear Time (g_c+I1), s	27.1	67.0	12.6	26.7	10.7	29.0	28.1	18.9				
Green Ext Time (p_c), s	0.0	0.0	0.1	3.9	0.0	15.0	0.0	2.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	69.5											
HCM 6th LOS	E											
Notes												

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↕	↕	↕	↕↕	↕
Traffic Vol, veh/h	35	5	120	0	0	10	180	660	5	5	415	25
Future Vol, veh/h	35	5	120	0	0	10	180	660	5	5	415	25
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	9	9	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	300	25	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	10	10	10	0	0	0	6	6	6	16	16	16
Mvmt Flow	36	5	125	0	0	10	188	688	5	5	432	26

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1167	1525	221	1302	1546	353	463	0	0	702	0	0
Stage 1	447	447	-	1073	1073	-	-	-	-	-	-	-
Stage 2	720	1078	-	229	473	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.5	6.5	7.5	6.5	6.9	4.22	-	-	4.42	-	-
Critical Hdwy Stg 1	5.5	4.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.6	4.1	3.4	3.5	4	3.3	2.26	-	-	2.36	-	-
Pot Cap-1 Maneuver	206	180	787	120	116	649	1067	-	-	804	-	-
Stage 1	626	641	-	239	299	-	-	-	-	-	-	-
Stage 2	467	396	-	759	562	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	173	145	783	84	93	643	1061	-	-	797	-	-
Mov Cap-2 Maneuver	173	145	-	84	93	-	-	-	-	-	-	-
Stage 1	512	633	-	195	244	-	-	-	-	-	-	-
Stage 2	378	323	-	629	555	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v19.7		10.7	1.9	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1061	-	-	410	643	797	-
HCM Lane V/C Ratio	0.177	-	-	0.407	0.016	0.007	-
HCM Control Delay (s/veh)	9.1	-	-	19.7	10.7	9.5	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q (veh)	0.6	-	-	1.9	0	0	-

Intersection												
Int Delay, s/veh	9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	0	50	0	120	0	810	65	105	1315	0
Future Vol, veh/h	0	0	0	50	0	120	0	810	65	105	1315	0
Conflicting Peds, #/hr	0	0	1	1	0	0	11	0	8	8	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	130	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	4	4	4	7	7	7	5	5	5
Mvmt Flow	0	0	0	53	0	126	0	853	68	111	1384	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	2044	2546	704	1672	2512	469	1395	0
Stage 1	1617	1617	-	895	895	-	-	-
Stage 2	427	929	-	777	1617	-	-	-
Critical Hdwy	6.95	6.5	7.1	7.03	6.58	6.98	5.44	4.2
Critical Hdwy Stg 1	7.3	5.5	-	6.58	5.58	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.58	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.69	4.04	3.34	3.17	2.25
Pot Cap-1 Maneuver	45	27	329	78	27	535	240	714
Stage 1	76	164	-	290	353	-	-	-
Stage 2	562	349	-	328	158	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	30	22	325	68	22	532	237	710
Mov Cap-2 Maneuver	30	22	-	68	22	-	-	-
Stage 1	75	137	-	288	351	-	-	-
Stage 2	429	347	-	276	132	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	124	0	0.8
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	237	-	-	-	177	710	-
HCM Lane V/C Ratio	-	-	-	-	1.011	0.156	-
HCM Control Delay (s/veh)	0	-	-	0	124	11	-
HCM Lane LOS	A	-	-	A	F	B	-
HCM 95th %tile Q (veh)	0	-	-	-	8.3	0.5	-

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	175	85	45	375	120	105	515	30	40	350	15
Future Volume (veh/h)	5	175	85	45	375	120	105	515	30	40	350	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1707	1707	1707	1647	1647	1647	1654	1654	1654	1559	1559	1559
Adj Flow Rate, veh/h	5	184	89	47	395	126	111	542	32	42	368	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	11	11	4	4	4	7	7	7	14	14	14
Cap, veh/h	11	458	212	78	599	189	136	846	377	44	630	280
Arrive On Green	0.01	0.21	0.21	0.05	0.26	0.26	0.09	0.27	0.27	0.03	0.21	0.21
Sat Flow, veh/h	1625	2149	996	1568	2340	738	1576	3143	1399	1485	2962	1317
Grp Volume(v), veh/h	5	137	136	47	263	258	111	542	32	42	368	16
Grp Sat Flow(s), veh/h/ln	1625	1621	1524	1568	1564	1513	1576	1572	1399	1485	1481	1317
Q Serve(g_s), s	0.1	3.1	3.3	1.3	6.5	6.6	3.0	6.6	0.7	1.2	4.8	0.4
Cycle Q Clear(g_c), s	0.1	3.1	3.3	1.3	6.5	6.6	3.0	6.6	0.7	1.2	4.8	0.4
Prop In Lane	1.00		0.65	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	346	325	78	401	388	136	846	377	44	630	280
V/C Ratio(X)	0.46	0.40	0.42	0.60	0.66	0.67	0.82	0.64	0.08	0.95	0.58	0.06
Avail Cap(c_a), veh/h	468	598	562	271	721	698	454	1594	710	325	1502	668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	14.7	14.7	20.2	14.4	14.5	19.5	14.0	11.9	21.0	15.3	13.6
Incr Delay (d2), s/veh	10.6	0.7	0.9	2.7	1.8	2.0	4.5	0.8	0.1	51.2	0.9	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.0	1.0	0.5	2.0	2.0	1.1	1.8	0.2	1.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.1	15.4	15.6	22.9	16.2	16.4	24.0	14.8	11.9	72.3	16.2	13.7
LnGrp LOS	C	B	B	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h		278			568			685			426	
Approach Delay, s/veh		15.8			16.9			16.2			21.6	
Approach LOS		B			B			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	16.7	6.7	14.2	8.2	14.2	4.8	16.1				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	9.5	22.0	7.5	16.0	12.5	22.0	12.5	20.0				
Max Q Clear Time (g_c+I1), s	3.2	8.6	3.3	5.3	5.0	6.8	2.1	8.6				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.1	0.1	1.9	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			17.5									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↲		↰	↰↱↲	
Traffic Volume (vph)	85	160	25	360	335	105	50	680	145	60	920	160
Future Volume (vph)	85	160	25	360	335	105	50	680	145	60	920	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1515	2962		1552	2895		1516	4226		1539	4310	
Flt Permitted	0.37	1.00		0.62	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	600	2962		1025	2895		1516	4226		1539	4310	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	89	167	26	375	349	109	52	708	151	62	958	167
RTOR Reduction (vph)	0	11	0	0	24	0	0	25	0	0	18	0
Lane Group Flow (vph)	89	182	0	375	434	0	52	834	0	63	1107	0
Confl. Peds. (#/hr)	4		15	15		4	11		9	9		11
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	6%	6%	6%	6%	6%	6%
Turn Type	D,P+P	NA		D,P+P	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	36.9	21.0		36.9	29.8		8.7	42.3		7.6	41.2	
Effective Green, g (s)	36.9	21.0		36.9	29.8		8.7	42.3		7.6	41.2	
Actuated g/C Ratio	0.35	0.20		0.35	0.28		0.08	0.40		0.07	0.39	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	269	585		434	811		124	1681		110	1670	
v/s Ratio Prot	0.02	0.06		c0.13	0.15		0.03	0.20		c0.04	c0.26	
v/s Ratio Perm	0.09			c0.17								
v/c Ratio	0.33	0.31		0.86	0.53		0.41	0.49		0.57	0.66	
Uniform Delay, d1	24.3	36.4		30.3	32.3		46.3	24.0		47.7	26.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		15.6	0.3		2.6	1.0		4.4	2.0	
Delay (s)	24.5	36.5		46.0	32.7		49.0	25.0		52.1	28.9	
Level of Service	C	D		D	C		D	C		D	C	
Approach Delay (s/veh)		32.7			38.7			26.4			30.1	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		31.5			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.73										
Actuated Cycle Length (s)		106.3			Sum of lost time (s)			19.5				
Intersection Capacity Utilization		92.1%			ICU Level of Service			F				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
809: SR-99/Pacific Hwy & Gibson Road

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	80	75	250	70	30	30	1005	140	30	1620	20
Future Volume (vph)	35	80	75	250	70	30	30	1005	140	30	1620	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	11	11	11	11	11	13	11	11	11
Grade (%)		-3%			6%			0%			0%	
Total Lost time (s)		6.0			6.0		5.6	7.1	7.1	5.6	7.1	7.1
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.99			1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00			0.99		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94			0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1531			1515		1531	3061	1427	1502	3004	1438
Flt Permitted		0.89			0.62		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1384			977		1531	3061	1427	1502	3004	1438
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	83	78	260	73	31	31	1047	146	31	1688	21
RTOR Reduction (vph)	0	20	0	0	3	0	0	0	76	0	0	11
Lane Group Flow (vph)	0	177	0	0	361	0	31	1047	70	31	1688	10
Confl. Peds. (#/hr)			7	7			4		2	2		4
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		38.1			38.1		3.7	56.1	56.1	3.7	56.1	56.1
Effective Green, g (s)		38.1			38.1		3.7	56.1	56.1	3.7	56.1	56.1
Actuated g/C Ratio		0.33			0.33		0.03	0.48	0.48	0.03	0.48	0.48
Clearance Time (s)		6.0			6.0		5.6	7.1	7.1	5.6	7.1	7.1
Vehicle Extension (s)		3.0			3.0		2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)		452			319		48	1472	686	47	1445	691
v/s Ratio Prot							0.02	0.34		c0.02	c0.56	
v/s Ratio Perm		0.13			c0.37				0.05			0.01
v/c Ratio		0.39			1.13		0.64	0.71	0.10	0.65	1.16	0.01
Uniform Delay, d1		30.3			39.2		55.8	23.8	16.5	55.8	30.2	15.8
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5			91.2		20.1	2.9	0.2	22.6	83.5	0.0
Delay (s)		30.8			130.4		75.9	26.8	16.8	78.4	113.7	15.8
Level of Service		C			F		E	C	B	E	F	B
Approach Delay (s/veh)		30.8			130.4			26.8			111.9	
Approach LOS		C			F			C			F	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		79.8			HCM 2000 Level of Service				E			
HCM 2000 Volume to Capacity ratio		1.13										
Actuated Cycle Length (s)		116.6			Sum of lost time (s)				18.7			
Intersection Capacity Utilization		100.9%			ICU Level of Service				G			
Analysis Period (min)		15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	275	175	250	510	90	235	725	110	80	1120	100
Future Volume (veh/h)	100	275	175	250	510	90	235	725	110	80	1120	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1668	1668	1682	1682	1682	1641	1641	1641	1532	1532	1532
Adj Flow Rate, veh/h	105	289	184	263	537	95	247	763	0	84	1179	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	5	5	5	8	8	8	16	16	16
Cap, veh/h	122	465	363	277	776	335	185	1564		93	1302	
Arrive On Green	0.13	0.24	0.24	0.17	0.24	0.24	0.12	0.50	0.00	0.13	0.89	0.00
Sat Flow, veh/h	1589	3169	1338	1602	3195	1379	1563	3118	1391	1459	2910	1298
Grp Volume(v), veh/h	105	289	184	263	537	95	247	763	0	84	1179	0
Grp Sat Flow(s), veh/h/ln	1589	1585	1338	1602	1598	1379	1563	1559	1391	1459	1455	1298
Q Serve(g_s), s	10.7	13.4	19.2	26.8	25.2	9.2	19.5	26.6	0.0	9.4	37.2	0.0
Cycle Q Clear(g_c), s	10.7	13.4	19.2	26.8	25.2	9.2	19.5	26.6	0.0	9.4	37.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	122	465	363	277	776	335	185	1564		93	1302	
V/C Ratio(X)	0.86	0.62	0.51	0.95	0.69	0.28	1.34	0.49		0.90	0.91	
Avail Cap(c_a), veh/h	149	480	370	277	776	335	185	1564		93	1302	
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	0.00	0.93	0.93	0.00
Uniform Delay (d), s/veh	71.1	58.2	45.7	67.6	56.9	50.8	72.7	27.1	0.0	71.5	6.8	0.0
Incr Delay (d2), s/veh	32.3	2.8	1.5	40.4	2.9	0.7	183.8	1.1	0.0	59.3	10.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	5.1	5.9	13.9	10.4	3.2	17.1	10.0	0.0	4.8	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	103.4	61.0	47.2	108.0	59.8	51.5	256.5	28.2	0.0	130.8	16.8	0.0
LnGrp LOS	F	E	D	F	E	D	F	C		F	B	
Approach Vol, veh/h		578			895			1010			1263	
Approach Delay, s/veh		64.3			73.1			84.0			24.4	
Approach LOS		E			E			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.0	78.8	17.1	45.1	15.0	87.8	33.0	29.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	19.5	73.0	15.5	38.0	10.5	82.0	28.5	25.0				
Max Q Clear Time (g_c+I1), s	21.5	39.2	12.7	27.2	11.4	28.6	28.8	21.2				
Green Ext Time (p_c), s	0.0	22.3	0.1	3.6	0.0	15.9	0.0	1.1				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	58.3
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	35	10	120	5	5	15	175	655	10	10	420	25
Future Volume (veh/h)	35	10	120	5	5	15	175	655	10	10	420	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1902	1902	1902	1820	1820	1820	1668	1668	1668	1532	1532	1532
Adj Flow Rate, veh/h	36	10	125	5	5	16	182	682	10	10	438	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	0	0	0	6	6	6	16	16	16
Cap, veh/h	59	21	144	48	50	116	741	2460	1091	578	2160	957
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.09	1.00	1.00	0.01	0.74	0.74
Sat Flow, veh/h	268	169	1187	181	413	950	1589	3169	1405	1459	2910	1290
Grp Volume(v), veh/h	171	0	0	26	0	0	182	682	10	10	438	26
Grp Sat Flow(s), veh/h/ln	1624	0	0	1545	0	0	1589	1585	1405	1459	1455	1290
Q Serve(g_s), s	12.8	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.2	7.5	0.9
Cycle Q Clear(g_c), s	17.0	0.0	0.0	2.3	0.0	0.0	5.0	0.0	0.0	0.2	7.5	0.9
Prop In Lane	0.21		0.73	0.19		0.62	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	0	214	0	0	741	2460	1091	578	2160	957
V/C Ratio(X)	0.76	0.00	0.00	0.12	0.00	0.00	0.25	0.28	0.01	0.02	0.20	0.03
Avail Cap(c_a), veh/h	526	0	0	502	0	0	1083	2460	1091	650	2160	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.45	0.00	0.00	0.39	0.39	0.39	0.88	0.88	0.88
Uniform Delay (d), s/veh	71.1	0.0	0.0	64.7	0.0	0.0	4.3	0.0	0.0	3.8	6.5	5.6
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	0.0	1.0	0.0	0.0	1.2	0.0	0.0	0.1	2.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.4	0.0	0.0	64.8	0.0	0.0	4.3	0.1	0.0	3.8	6.6	5.6
LnGrp LOS	E			E			A	A	A	A	A	A
Approach Vol, veh/h	171			26			874			474		
Approach Delay, s/veh	76.4			64.8			1.0			6.5		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	133.1			25.1	12.5	127.5		25.1				
Change Period (Y+Rc), s	5.0			5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	89.0			51.0	43.0	56.0		51.0				
Max Q Clear Time (g_c+I), s	12.2			19.0	7.0	9.5		4.3				
Green Ext Time (p_c), s	0.0	4.9		1.1	0.5	3.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			12.1									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	5	5	5	50	5	115	5	805	65	105	1295	5
Future Volume (veh/h)	5	5	5	50	5	115	5	805	65	105	1295	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/in	1820	1820	1820	1628	1628	1628	1654	1654	1654	1682	1682	1682
Adj Flow Rate, veh/h	5	5	5	53	5	121	5	847	68	111	1363	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	4	4	4	7	7	7	5	5	5
Cap, veh/h	77	75	61	78	14	133	306	2166	174	530	3589	13
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.01	1.00	1.00	0.03	0.76	0.76
Sat Flow, veh/h	333	525	429	349	98	931	1576	2945	236	1602	4722	17
Grp Volume(v), veh/h	15	0	0	179	0	0	5	452	463	111	883	485
Grp Sat Flow(s), veh/h/in	1287	0	0	1378	0	0	1576	1572	1610	1602	1530	1678
Q Serve(g_s), s	0.0	0.0	0.0	17.8	0.0	0.0	0.1	0.0	0.0	2.9	16.1	16.1
Cycle Q Clear(g_c), s	1.2	0.0	0.0	21.1	0.0	0.0	0.1	0.0	0.0	2.9	16.1	16.1
Prop In Lane	0.33		0.33	0.30		0.68	1.00		0.15	1.00		0.01
Lane Grp Cap(c), veh/h	213	0	0	225	0	0	306	1156	1184	530	2326	1276
V/C Ratio(X)	0.07	0.00	0.00	0.79	0.00	0.00	0.02	0.39	0.39	0.21	0.38	0.38
Avail Cap(c_a), veh/h	273	0	0	278	0	0	392	1156	1184	665	2326	1276
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.00	0.00	1.00	0.00	0.00	0.85	0.85	0.85	0.65	0.65	0.65
Uniform Delay (d), s/veh	61.1	0.0	0.0	69.6	0.0	0.0	5.3	0.0	0.0	4.8	6.7	6.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	12.1	0.0	0.0	0.0	0.8	0.8	0.1	0.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/r0.6	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.3	0.3	0.9	4.9	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.2	0.0	0.0	81.6	0.0	0.0	5.3	0.8	0.8	5.0	7.0	7.2
LnGrp LOS	E			F			A	A	A	A	A	A
Approach Vol, veh/h	15			179			920			1479		
Approach Delay, s/veh	61.2			81.6			0.9			6.9		
Approach LOS	E			F			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	126.4			28.6	6.0	130.4		28.6				
Change Period (Y+Rc), s	5.0			5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	101.0			30.0	10.0	110.0		30.0				
Max Q Clear Time (g_c+I+g), s	2.0			3.2	2.1	18.1		23.1				
Green Ext Time (p_c), s	0.2	6.7		0.0	0.0	12.6		0.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			10.2									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	170	90	50	365	115	105	515	35	40	350	15
Future Volume (veh/h)	5	170	90	50	365	115	105	515	35	40	350	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1707	1707	1707	1647	1647	1647	1654	1654	1654	1559	1559	1559
Adj Flow Rate, veh/h	5	179	95	53	384	121	111	542	37	42	368	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	11	11	4	4	4	7	7	7	14	14	14
Cap, veh/h	11	423	215	86	590	184	136	850	378	44	634	282
Arrive On Green	0.01	0.20	0.20	0.05	0.25	0.25	0.09	0.27	0.27	0.03	0.21	0.21
Sat Flow, veh/h	1625	2081	1055	1568	2348	731	1576	3143	1399	1485	2962	1317
Grp Volume(v), veh/h	5	138	136	53	254	251	111	542	37	42	368	16
Grp Sat Flow(s),veh/h/ln	1625	1621	1515	1568	1564	1514	1576	1572	1399	1485	1481	1317
Q Serve(g_s), s	0.1	3.2	3.4	1.4	6.2	6.4	3.0	6.5	0.9	1.2	4.8	0.4
Cycle Q Clear(g_c), s	0.1	3.2	3.4	1.4	6.2	6.4	3.0	6.5	0.9	1.2	4.8	0.4
Prop In Lane	1.00		0.70	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	330	308	86	393	380	136	850	378	44	634	282
V/C Ratio(X)	0.46	0.42	0.44	0.62	0.65	0.66	0.82	0.64	0.10	0.95	0.58	0.06
Avail Cap(c_a), veh/h	472	603	564	273	727	704	458	1608	716	328	1515	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	14.9	15.0	19.9	14.4	14.4	19.3	13.8	11.8	20.8	15.2	13.4
Incr Delay (d2), s/veh	10.6	0.8	1.0	2.7	1.8	2.0	4.5	0.8	0.1	51.5	0.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.0	1.0	0.5	2.0	2.0	1.0	1.8	0.2	1.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.9	15.7	16.0	22.6	16.2	16.4	23.8	14.6	11.9	72.4	16.0	13.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h	279			558			690			426		
Approach Delay, s/veh	16.2			16.9			16.0			21.5		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	16.6	6.8	13.7	8.2	14.2	4.8	15.8				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	22.0	22.0	7.5	16.0	12.5	22.0	12.5	20.0				
Max Q Clear Time (g_c+I), s	8.5	8.5	3.4	5.4	5.0	6.8	2.1	8.4				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.1	0.1	1.9	0.0	2.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	17.5											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↱		↰	↰↱↱	
Traffic Volume (vph)	80	160	25	355	325	105	50	680	150	60	915	160
Future Volume (vph)	80	160	25	355	325	105	50	680	150	60	915	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1515	2962		1552	2892		1516	4223		1539	4309	
Flt Permitted	0.39	1.00		0.63	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	615	2962		1025	2892		1516	4223		1539	4309	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	167	26	370	339	109	52	708	156	62	953	167
RTOR Reduction (vph)	0	11	0	0	24	0	0	26	0	0	19	0
Lane Group Flow (vph)	83	182	0	370	424	0	52	838	0	63	1101	0
Confl. Peds. (#/hr)	4		15	15		4	11		9	9		11
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	6%	6%	6%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	36.6	20.8		36.6	29.8		8.7	42.3		7.6	41.2	
Effective Green, g (s)	36.6	20.8		36.6	29.8		8.7	42.3		7.6	41.2	
Actuated g/C Ratio	0.35	0.20		0.35	0.28		0.08	0.40		0.07	0.39	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	270	581		432	813		124	1685		110	1674	
v/s Ratio Prot	0.02	0.06		c0.13	0.15		0.03	0.20		c0.04	c0.26	
v/s Ratio Perm	0.09			c0.17								
v/c Ratio	0.31	0.31		0.86	0.52		0.42	0.50		0.57	0.66	
Uniform Delay, d1	24.3	36.5		30.3	32.1		46.2	23.9		47.6	26.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		14.8	0.3		2.7	1.1		4.4	2.0	
Delay (s)	24.5	36.6		45.0	32.4		48.9	24.9		52.0	28.6	
Level of Service	C	D		D	C		D	C		D	C	
Approach Delay (s/veh)		33.0			38.1			26.3			29.9	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			31.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			106.0			Sum of lost time (s)			19.5			
Intersection Capacity Utilization			91.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	L	T
Traffic Volume (vph)	240	30	990	140	30	1590
Future Volume (vph)	240	30	990	140	30	1590
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	11	11
Grade (%)	6%		0%			0%
Total Lost time (s)	6.0		7.1	7.1	5.6	7.1
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97	1.00	1.00
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1493		3061	1427	1502	3004
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1493		3061	1427	1502	3004
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	31	1031	146	31	1656
RTOR Reduction (vph)	4	0	0	62	0	0
Lane Group Flow (vph)	277	0	1031	84	31	1656
Confl. Peds. (#/hr)	7			2	2	
Heavy Vehicles (%)	3%	3%	5%	5%	7%	7%
Turn Type	Perm		NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8			2		
Actuated Green, G (s)	27.2		69.1	69.1	5.0	79.7
Effective Green, g (s)	27.2		69.1	69.1	5.0	79.7
Actuated g/C Ratio	0.23		0.58	0.58	0.04	0.66
Clearance Time (s)	6.0		7.1	7.1	5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	338		1762	821	62	1995
v/s Ratio Prot			0.34		0.02	c0.55
v/s Ratio Perm	c0.19			0.06		
v/c Ratio	0.82		0.59	0.10	0.50	0.83
Uniform Delay, d1	44.1		16.3	11.5	56.3	15.1
Progression Factor	1.00		0.86	0.40	1.12	0.91
Incremental Delay, d2	14.3		1.2	0.2	1.9	3.4
Delay (s)	58.4		15.3	4.7	65.0	17.1
Level of Service	E		B	A	E	B
Approach Delay (s/veh)	58.4		14.0			17.9
Approach LOS	E		B			B
Intersection Summary						
HCM 2000 Control Delay (s/veh)			20.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	18.7
Intersection Capacity Utilization			75.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way & OMF Driveway

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	10	5	20	995	1620	35
Future Volume (veh/h)	10	5	20	995	1620	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	11	5	22	1082	1761	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	18	8	262	2918	2921	63
Arrive On Green	0.02	0.02	1.00	1.00	0.90	0.90
Sat Flow, veh/h	1019	463	260	3333	3336	70
Grp Volume(v), veh/h	17	0	22	1082	877	922
Grp Sat Flow(s), veh/h/ln	1575	0	260	1624	1624	1696
Q Serve(g_s), s	1.3	0.0	1.5	0.0	14.3	14.5
Cycle Q Clear(g_c), s	1.3	0.0	16.0	0.0	14.3	14.5
Prop In Lane	0.65	0.29	1.00			0.04
Lane Grp Cap(c), veh/h	28	0	262	2918	1459	1525
V/C Ratio(X)	0.60	0.00	0.08	0.37	0.60	0.60
Avail Cap(c_a), veh/h	131	0	262	2918	1459	1525
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.80	0.80	1.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	1.1	0.0	1.3	1.3
Incr Delay (d2), s/veh	18.6	0.0	0.5	0.3	1.8	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.1	0.7	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	77.0	0.0	1.6	0.3	3.2	3.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	17			1104	1799	
Approach Delay, s/veh	77.0			0.3	3.2	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	112.8			7.2		112.8
Change Period (Y+Rc), s	5.0			5.0		5.0
Max Green Setting (Gmax), s	100.0			10.0		100.0
Max Q Clear Time (g_c+I1), s	18.0			3.3		16.5
Green Ext Time (p_c), s	10.4			0.0		22.8
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			2.5			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way & Gibson Road

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Volume (veh/h)	110	85	65	1145	1835	90
Future Volume (veh/h)	110	85	65	1145	1835	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	120	92	71	1245	1995	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	109	83	261	2571	2258	110
Arrive On Green	0.13	0.13	0.04	0.79	1.00	1.00
Sat Flow, veh/h	871	667	1628	3333	3237	154
Grp Volume(v), veh/h	213	0	71	1245	1020	1073
Grp Sat Flow(s), veh/h/ln	1545	0	1628	1624	1624	1681
Q Serve(g_s), s	15.0	0.0	1.3	15.5	0.0	0.0
Cycle Q Clear(g_c), s	15.0	0.0	1.3	15.5	0.0	0.0
Prop In Lane	0.56	0.43	1.00			0.09
Lane Grp Cap(c), veh/h	193	0	261	2571	1163	1205
V/C Ratio(X)	1.10	0.00	0.27	0.48	0.88	0.89
Avail Cap(c_a), veh/h	193	0	342	2571	1163	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.45	0.45
Uniform Delay (d), s/veh	52.5	0.0	3.8	4.2	0.0	0.0
Incr Delay (d2), s/veh	94.9	0.0	0.6	0.7	4.6	5.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	0.4	3.6	1.5	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	147.4	0.0	4.3	4.9	4.6	5.0
LnGrp LOS	F		A	A	A	A
Approach Vol, veh/h	213			1316	2093	
Approach Delay, s/veh	147.4			4.9	4.8	
Approach LOS	F			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	100.0			20.0	9.0	91.0
Change Period (Y+Rc), s	5.0			5.0	4.5	5.0
Max Green Setting (Gmax), s	95.0			15.0	10.5	80.0
Max Q Clear Time (g_c+I1), s	17.5			17.0	3.3	2.0
Green Ext Time (p_c), s	11.7			0.0	0.1	34.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			13.2			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	275	170	255	510	85	230	720	110	75	1125	100
Future Volume (veh/h)	110	275	170	255	510	85	230	720	110	75	1125	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1668	1668	1668	1682	1682	1682	1641	1641	1641	1532	1532	1532
Adj Flow Rate, veh/h	116	289	179	268	537	89	242	758	0	79	1184	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	5	5	5	8	8	8	16	16	16
Cap, veh/h	133	512	436	257	762	329	242	1556		93	1188	
Arrive On Green	0.14	0.27	0.27	0.16	0.24	0.24	0.15	0.50	0.00	0.13	0.82	0.00
Sat Flow, veh/h	1589	3169	1345	1602	3195	1379	1563	3118	1391	1459	2910	1298
Grp Volume(v), veh/h	116	289	179	268	537	89	242	758	0	79	1184	0
Grp Sat Flow(s),veh/h/ln	1589	1585	1345	1602	1598	1379	1563	1559	1391	1459	1455	1298
Q Serve(g_s), s	11.8	13.0	16.8	26.5	25.4	8.7	25.5	26.6	0.0	8.7	66.2	0.0
Cycle Q Clear(g_c), s	11.8	13.0	16.8	26.5	25.4	8.7	25.5	26.6	0.0	8.7	66.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	133	512	436	257	762	329	242	1556		93	1188	
V/C Ratio(X)	0.87	0.56	0.41	1.04	0.70	0.27	1.00	0.49		0.85	1.00	
Avail Cap(c_a), veh/h	159	557	455	257	762	329	242	1556		164	1188	
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	0.00	0.93	0.93	0.00
Uniform Delay (d), s/veh	70.1	55.2	38.6	69.3	57.5	51.1	69.8	27.4	0.0	71.2	15.1	0.0
Incr Delay (d2), s/veh	33.6	1.5	0.9	67.5	3.2	0.6	58.4	1.1	0.0	7.4	24.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	4.9	5.0	15.5	10.5	3.0	14.0	9.9	0.0	3.3	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	103.7	56.7	39.5	136.7	60.7	51.8	128.2	28.5	0.0	78.7	39.5	0.0
LnGrp LOS	F	E	D	F	E	D	F	C		E	D	
Approach Vol, veh/h	584			894			1000			1263		
Approach Delay, s/veh	60.8			82.6			52.6			42.0		
Approach LOS	E			F			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	72.3	18.3	44.4	15.0	87.3	31.0	31.7				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	25.5	65.0	16.5	39.0	18.5	72.0	26.5	29.0				
Max Q Clear Time (g_c+I1), s	27.5	68.2	13.8	27.4	10.7	28.6	28.5	18.8				
Green Ext Time (p_c), s	0.0	0.0	0.1	3.7	0.0	14.8	0.0	2.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	57.5											
HCM 6th LOS	E											

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	40	5	130	0	0	10	180	655	5	5	420	30
Future Volume (veh/h)	40	5	130	0	0	10	180	655	5	5	420	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1902	1902	1902	1820	1820	1820	1668	1668	1668	1532	1532	1532
Adj Flow Rate, veh/h	42	5	135	0	0	10	188	682	5	5	438	31
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	0	0	0	6	6	6	16	16	16
Cap, veh/h	66	15	155	0	0	199	738	2433	1079	495	2094	928
Arrive On Green	0.13	0.13	0.13	0.00	0.00	0.13	0.04	0.51	0.51	0.01	0.72	0.72
Sat Flow, veh/h	304	114	1200	0	0	1542	1589	3169	1405	1459	2910	1290
Grp Volume(v), veh/h	182	0	0	0	0	10	188	682	5	5	438	31
Grp Sat Flow(s), veh/h/ln	1618	0	0	0	0	1542	1589	1585	1405	1459	1455	1290
Q Serve(g_s), s	14.4	0.0	0.0	0.0	0.0	0.9	4.8	20.2	0.3	0.1	8.2	1.1
Cycle Q Clear(g_c), s	18.2	0.0	0.0	0.0	0.0	0.9	4.8	20.2	0.3	0.1	8.2	1.1
Prop In Lane	0.23		0.74	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	236	0	0	0	0	199	738	2433	1079	495	2094	928
V/C Ratio(X)	0.77	0.00	0.00	0.00	0.00	0.05	0.25	0.28	0.00	0.01	0.21	0.03
Avail Cap(c_a), veh/h	505	0	0	0	0	458	1046	2433	1079	592	2094	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.46	0.55	0.55	0.55	0.88	0.88	0.88
Uniform Delay (d), s/veh	70.4	0.0	0.0	0.0	0.0	63.0	4.9	14.2	9.4	5.2	7.6	6.7
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	0.0	0.0	0.0	0.4	1.4	8.0	0.1	0.0	2.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.8	0.0	0.0	0.0	0.0	63.0	5.0	14.4	9.4	5.3	7.8	6.7
LnGrp LOS	E					E	A	B	A	A	A	A
Approach Vol, veh/h	182			10			875			474		
Approach Delay, s/veh	75.8			63.0			12.3			7.7		
Approach LOS	E			E			B			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s/7.0	131.7			26.3	15.0	123.7		26.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	88.0			49.0	42.0	59.0		49.0				
Max Q Clear Time (g_c+I), s	22.2			20.2	6.8	10.2		2.9				
Green Ext Time (p_c), s	0.0	4.9		1.1	0.5	3.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	18.7											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	0	0	0	55	0	115	0	810	70	105	1300	0
Future Volume (veh/h)	0	0	0	55	0	115	0	810	70	105	1300	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1820	1820	1820	1628	1628	1628	1654	1654	1654	1682	1682	1682
Adj Flow Rate, veh/h	0	0	0	58	0	121	0	853	74	111	1368	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	4	4	4	7	7	7	5	5	5
Cap, veh/h	0	265	0	85	8	135	314	2056	178	553	3644	0
Arrive On Green	0.00	0.00	0.00	0.15	0.00	0.15	0.00	1.00	1.00	0.06	0.79	0.00
Sat Flow, veh/h	0	1820	0	388	57	929	1576	2924	254	1602	4743	0
Grp Volume(v), veh/h	0	0	0	179	0	0	0	458	469	111	1368	0
Grp Sat Flow(s), veh/h/ln	0	1820	0	1374	0	0	1576	1572	1606	1602	1530	0
Q Serve(g_s), s	0.0	0.0	0.0	18.2	0.0	0.0	0.0	0.0	0.0	2.9	14.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	21.1	0.0	0.0	0.0	0.0	0.0	2.9	14.5	0.0
Prop In Lane	0.00		0.00	0.32		0.68	1.00		0.16	1.00		0.00
Lane Grp Cap(c), veh/h	0	265	0	229	0	0	314	1105	1130	553	3644	0
V/C Ratio(X)	0.00	0.00	0.00	0.78	0.00	0.00	0.00	0.41	0.41	0.20	0.38	0.00
Avail Cap(c_a), veh/h	0	485	0	394	0	0	408	1105	1130	612	3644	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.83	0.83	0.65	0.65	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	69.1	0.0	0.0	0.0	0.0	0.0	5.0	5.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	5.7	0.0	0.0	0.0	1.0	0.9	0.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	7.8	0.0	0.0	0.0	0.3	0.3	0.9	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	74.9	0.0	0.0	0.0	1.0	0.9	5.1	5.2	0.0
LnGrp LOS				E				A	A	A	A	
Approach Vol, veh/h	0			179			927			1479		
Approach Delay, s/veh	0.0			74.9			0.9			5.2		
Approach LOS				E			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	121.0		29.0	0.0	136.0		29.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	90.0		44.0	10.0	96.0		44.0				
Max Q Clear Time (g_c+I), s	14.9	2.0		0.0	0.0	16.5		23.1				
Green Ext Time (p_c), s	0.2	6.8		0.0	0.0	13.8		1.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			8.5									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	170	90	50	365	115	105	515	35	40	350	15
Future Volume (veh/h)	5	170	90	50	365	115	105	515	35	40	350	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1707	1707	1707	1647	1647	1647	1654	1654	1654	1559	1559	1559
Adj Flow Rate, veh/h	5	179	95	53	384	121	111	542	37	42	368	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	11	11	4	4	4	7	7	7	14	14	14
Cap, veh/h	11	423	215	86	590	184	136	850	378	44	634	282
Arrive On Green	0.01	0.20	0.20	0.05	0.25	0.25	0.09	0.27	0.27	0.03	0.21	0.21
Sat Flow, veh/h	1625	2081	1055	1568	2348	731	1576	3143	1399	1485	2962	1317
Grp Volume(v), veh/h	5	138	136	53	254	251	111	542	37	42	368	16
Grp Sat Flow(s),veh/h/ln	1625	1621	1515	1568	1564	1514	1576	1572	1399	1485	1481	1317
Q Serve(g_s), s	0.1	3.2	3.4	1.4	6.2	6.4	3.0	6.5	0.9	1.2	4.8	0.4
Cycle Q Clear(g_c), s	0.1	3.2	3.4	1.4	6.2	6.4	3.0	6.5	0.9	1.2	4.8	0.4
Prop In Lane	1.00		0.70	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	330	308	86	393	380	136	850	378	44	634	282
V/C Ratio(X)	0.46	0.42	0.44	0.62	0.65	0.66	0.82	0.64	0.10	0.95	0.58	0.06
Avail Cap(c_a), veh/h	472	603	564	273	727	704	458	1608	716	328	1515	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	14.9	15.0	19.9	14.4	14.4	19.3	13.8	11.8	20.8	15.2	13.4
Incr Delay (d2), s/veh	10.6	0.8	1.0	2.7	1.8	2.0	4.5	0.8	0.1	51.5	0.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.0	1.0	0.5	2.0	2.0	1.0	1.8	0.2	1.0	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.9	15.7	16.0	22.6	16.2	16.4	23.8	14.6	11.9	72.4	16.0	13.5
LnGrp LOS	C	B	B	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h	279			558			690			426		
Approach Delay, s/veh	16.2			16.9			16.0			21.5		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	16.6	6.8	13.7	8.2	14.2	4.8	15.8				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	22.0	22.0	7.5	16.0	12.5	22.0	12.5	20.0				
Max Q Clear Time (g_c+I), s	8.5	8.5	3.4	5.4	5.0	6.8	2.1	8.4				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.1	0.1	1.9	0.0	2.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	17.5											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↱		↰	↰↱↱	
Traffic Volume (vph)	80	160	25	355	325	105	50	680	150	60	915	160
Future Volume (vph)	80	160	25	355	325	105	50	680	150	60	915	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1515	2962		1552	2892		1516	4223		1539	4309	
Flt Permitted	0.39	1.00		0.63	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	615	2962		1025	2892		1516	4223		1539	4309	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	167	26	370	339	109	52	708	156	62	953	167
RTOR Reduction (vph)	0	11	0	0	24	0	0	26	0	0	19	0
Lane Group Flow (vph)	83	182	0	370	424	0	52	838	0	63	1101	0
Confl. Peds. (#/hr)	4		15	15		4	11		9	9		11
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	6%	6%	6%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	36.6	20.8		36.6	29.8		8.7	42.3		7.6	41.2	
Effective Green, g (s)	36.6	20.8		36.6	29.8		8.7	42.3		7.6	41.2	
Actuated g/C Ratio	0.35	0.20		0.35	0.28		0.08	0.40		0.07	0.39	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	270	581		432	813		124	1685		110	1674	
v/s Ratio Prot	0.02	0.06		c0.13	0.15		0.03	0.20		c0.04	c0.26	
v/s Ratio Perm	0.09			c0.17								
v/c Ratio	0.31	0.31		0.86	0.52		0.42	0.50		0.57	0.66	
Uniform Delay, d1	24.3	36.5		30.3	32.1		46.2	23.9		47.6	26.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		14.8	0.3		2.7	1.1		4.4	2.0	
Delay (s)	24.5	36.6		45.0	32.4		48.9	24.9		52.0	28.6	
Level of Service	C	D		D	C		D	C		D	C	
Approach Delay (s/veh)		33.0			38.1			26.3			29.9	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			31.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			106.0			Sum of lost time (s)			19.5			
Intersection Capacity Utilization			91.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	L	T
Traffic Volume (vph)	240	30	990	140	30	1590
Future Volume (vph)	240	30	990	140	30	1590
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	11	11
Grade (%)	6%		0%			0%
Total Lost time (s)	6.0		7.1	7.1	5.6	7.1
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97	1.00	1.00
Flpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1493		3061	1427	1502	3004
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1493		3061	1427	1502	3004
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	250	31	1031	146	31	1656
RTOR Reduction (vph)	4	0	0	62	0	0
Lane Group Flow (vph)	277	0	1031	84	31	1656
Confl. Peds. (#/hr)	7			2	2	
Heavy Vehicles (%)	3%	3%	5%	5%	7%	7%
Turn Type	Perm		NA	Perm	Prot	NA
Protected Phases			2		1	6
Permitted Phases	8			2		
Actuated Green, G (s)	27.2		69.1	69.1	5.0	79.7
Effective Green, g (s)	27.2		69.1	69.1	5.0	79.7
Actuated g/C Ratio	0.23		0.58	0.58	0.04	0.66
Clearance Time (s)	6.0		7.1	7.1	5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	338		1762	821	62	1995
v/s Ratio Prot			0.34		0.02	c0.55
v/s Ratio Perm	c0.19			0.06		
v/c Ratio	0.82		0.59	0.10	0.50	0.83
Uniform Delay, d1	44.1		16.3	11.5	56.3	15.1
Progression Factor	1.00		0.86	0.40	1.12	0.91
Incremental Delay, d2	14.3		1.2	0.2	1.9	3.4
Delay (s)	58.4		15.3	4.7	65.0	17.1
Level of Service	E		B	A	E	B
Approach Delay (s/veh)	58.4		14.0			17.9
Approach LOS	E		B			B
Intersection Summary						
HCM 2000 Control Delay (s/veh)			20.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	18.7
Intersection Capacity Utilization			75.1%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way & OMF Driveway

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (veh/h)	10	5	20	995	1620	35
Future Volume (veh/h)	10	5	20	995	1620	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	11	5	22	1082	1761	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	18	8	262	2918	2921	63
Arrive On Green	0.02	0.02	1.00	1.00	0.90	0.90
Sat Flow, veh/h	1019	463	260	3333	3336	70
Grp Volume(v), veh/h	17	0	22	1082	877	922
Grp Sat Flow(s), veh/h/ln	1575	0	260	1624	1624	1696
Q Serve(g_s), s	1.3	0.0	1.5	0.0	14.3	14.5
Cycle Q Clear(g_c), s	1.3	0.0	16.0	0.0	14.3	14.5
Prop In Lane	0.65	0.29	1.00			0.04
Lane Grp Cap(c), veh/h	28	0	262	2918	1459	1525
V/C Ratio(X)	0.60	0.00	0.08	0.37	0.60	0.60
Avail Cap(c_a), veh/h	131	0	262	2918	1459	1525
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.80	0.80	1.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	1.1	0.0	1.3	1.3
Incr Delay (d2), s/veh	18.6	0.0	0.5	0.3	1.8	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.1	0.7	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	77.0	0.0	1.6	0.3	3.2	3.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	17			1104	1799	
Approach Delay, s/veh	77.0			0.3	3.2	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	112.8			7.2		112.8
Change Period (Y+Rc), s	5.0			5.0		5.0
Max Green Setting (Gmax), s	100.0			10.0		100.0
Max Q Clear Time (g_c+I1), s	18.0			3.3		16.5
Green Ext Time (p_c), s	10.4			0.0		22.8
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			2.5			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way & Gibson Road

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	110	85	65	1145	1835	90
Future Volume (veh/h)	110	85	65	1145	1835	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	120	92	71	1245	1995	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	109	83	261	2571	2258	110
Arrive On Green	0.13	0.13	0.04	0.79	1.00	1.00
Sat Flow, veh/h	871	667	1628	3333	3237	154
Grp Volume(v), veh/h	213	0	71	1245	1020	1073
Grp Sat Flow(s), veh/h/ln	1545	0	1628	1624	1624	1681
Q Serve(g_s), s	15.0	0.0	1.3	15.5	0.0	0.0
Cycle Q Clear(g_c), s	15.0	0.0	1.3	15.5	0.0	0.0
Prop In Lane	0.56	0.43	1.00			0.09
Lane Grp Cap(c), veh/h	193	0	261	2571	1163	1205
V/C Ratio(X)	1.10	0.00	0.27	0.48	0.88	0.89
Avail Cap(c_a), veh/h	193	0	342	2571	1163	1205
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.45	0.45
Uniform Delay (d), s/veh	52.5	0.0	3.8	4.2	0.0	0.0
Incr Delay (d2), s/veh	94.9	0.0	0.6	0.7	4.6	5.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.0	0.4	3.6	1.5	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	147.4	0.0	4.3	4.9	4.6	5.0
LnGrp LOS	F		A	A	A	A
Approach Vol, veh/h	213			1316	2093	
Approach Delay, s/veh	147.4			4.9	4.8	
Approach LOS	F			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	100.0			20.0	9.0	91.0
Change Period (Y+Rc), s	5.0			5.0	4.5	5.0
Max Green Setting (Gmax), s	95.0			15.0	10.5	80.0
Max Q Clear Time (g_c+I1), s	17.5			17.0	3.3	2.0
Green Ext Time (p_c), s	11.7			0.0	0.1	34.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			13.2			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	465	425	195	365	210	155	1190	160	145	925	155
Future Volume (veh/h)	310	465	425	195	365	210	155	1190	160	145	925	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.93	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1723	1723	1723	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	323	484	443	203	380	219	161	1240	0	151	964	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	305	902	546	218	730	303	175	1289		165	1277	
Arrive On Green	0.19	0.28	0.28	0.13	0.22	0.22	0.11	0.40	0.00	0.10	0.39	0.00
Sat Flow, veh/h	1628	3247	1400	1641	3273	1358	1615	3221	1437	1628	3247	1448
Grp Volume(v), veh/h	323	484	443	203	380	219	161	1240	0	151	964	0
Grp Sat Flow(s), veh/h/ln	1628	1624	1400	1641	1637	1358	1615	1611	1437	1628	1624	1448
Q Serve(g_s), s	40.5	27.3	60.0	26.5	22.1	32.3	21.3	81.1	0.0	19.9	55.4	0.0
Cycle Q Clear(g_c), s	40.5	27.3	60.0	26.5	22.1	32.3	21.3	81.1	0.0	19.9	55.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	902	546	218	730	303	175	1289		165	1277	
V/C Ratio(X)	1.06	0.54	0.81	0.93	0.52	0.72	0.92	0.96		0.91	0.75	
Avail Cap(c_a), veh/h	305	902	546	307	909	377	228	1289		230	1277	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	87.8	66.3	59.6	92.8	73.8	77.8	95.4	63.2	0.0	96.1	56.6	0.0
Incr Delay (d2), s/veh	67.9	0.8	9.5	24.0	0.8	6.2	29.6	17.5	0.0	25.5	4.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	22.7	11.4	23.0	12.7	9.3	11.8	10.4	35.8	0.0	9.6	23.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	155.7	67.1	69.0	116.8	74.7	84.0	125.0	80.7	0.0	121.6	60.7	0.0
LnGrp LOS	F	E	E	F	E	F	F	F		F	E	
Approach Vol, veh/h		1250			802			1401			1115	
Approach Delay, s/veh		90.7			87.9			85.8			69.0	
Approach LOS		F			F			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.9	90.0	45.0	53.2	26.5	91.5	33.2	65.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.5	85.0	40.5	60.0	30.5	85.0	40.5	60.0				
Max Q Clear Time (g_c+I1), s	23.3	57.4	42.5	34.3	21.9	83.1	28.5	62.0				
Green Ext Time (p_c), s	0.1	15.8	0.0	4.6	0.1	1.7	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			83.4									
HCM 6th LOS			F									
Notes												
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	37.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	↕
Traffic Vol, veh/h	55	10	230	10	5	10	185	465	10	15	960	80
Future Vol, veh/h	55	10	230	10	5	10	185	465	10	15	960	80
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	7	7	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	300	25	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	7	7	7	6	6	6	4	4	4
Mvmt Flow	58	11	242	11	5	11	195	489	11	16	1011	84
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1682	1942	508	1429	2015	252	1097	0	0	507	0	0
Stage 1	1045	1045	-	886	886	-	-	-	-	-	-	-
Stage 2	637	897	-	543	1129	-	-	-	-	-	-	-
Critical Hdwy	6.34	5.34	6.34	7.64	6.64	7.04	4.22	-	-	4.18	-	-
Critical Hdwy Stg 1	5.34	4.34	-	6.64	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.34	4.34	-	6.64	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.57	4.07	3.37	2.26	-	-	2.24	-	-
Pot Cap-1 Maneuver	108	123	555	91	55	733	609	-	-	1040	-	-
Stage 1	347	431	-	296	349	-	-	-	-	-	-	-
Stage 2	534	481	-	479	267	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	71	81	554	34	36	728	608	-	-	1032	-	-
Mov Cap-2 Maneuver	71	81	-	34	36	-	-	-	-	-	-	-
Stage 1	235	423	-	200	235	-	-	-	-	-	-	-
Stage 2	349	324	-	259	262	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/237.9				116.8			3.8			0.1		
HCM LOS	F			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	608	-	-	225	56	1032	-	-				
HCM Lane V/C Ratio	0.32	-	-	1.38	0.47	0.015	-	-				
HCM Control Delay (s/veh)	13.7	-	-	237.9	116.8	8.5	-	-				
HCM Lane LOS	B	-	-	F	F	A	-	-				
HCM 95th %tile Q (veh)	1.4	-	-	17.4	1.8	0	-	-				

Intersection												
Int Delay, s/veh	88.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	0	30	0	170	5	1545	115	175	1225	0
Future Vol, veh/h	0	0	0	30	0	170	5	1545	115	175	1225	0
Conflicting Peds, #/hr	0	0	2	2	0	0	6	0	6	6	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	130	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	8	8	8	2	2	2	2	2	2
Mvmt Flow	0	0	0	32	0	179	5	1626	121	184	1289	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2486	3426	653	2589	3366	880	1295	0	0	1753	0	0
Stage 1	1663	1663	-	1703	1703	-	-	-	-	-	-	-
Stage 2	823	1763	-	886	1663	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	7.11	6.66	7.06	5.34	-	-	4.14	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.66	5.66	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.66	5.66	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.73	4.08	3.38	3.12	-	-	2.22	-	-
Pot Cap-1 Maneuver	22	7	355	~17	7	279	281	-	-	353	-	-
Stage 1	70	156	-	88	137	-	-	-	-	-	-	-
Stage 2	329	139	-	273	144	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	5	3	352	~10	3	278	279	-	-	351	-	-
Mov Cap-2 Maneuver	5	3	-	~10	3	-	-	-	-	-	-	-
Stage 1	68	74	-	86	134	-	-	-	-	-	-	-
Stage 2	115	136	-	130	68	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	0		\$ 1426.1		0.1		3.3					
HCM LOS	A		F									
Minor Lane/Major Mvmt	NBL	NBT	NBRELn1	WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	279	-	-	-	55	351	-	-				
HCM Lane V/C Ratio	0.019	-	-	-	3.828	0.525	-	-				
HCM Control Delay (s/veh)	18.2	-	-	-	\$1426.1	26	-	-				
HCM Lane LOS	C	-	-	-	A	F	D	-	-			
HCM 95th %tile Q (veh)	0.1	-	-	-	22.9	2.9	-	-				
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	645	160	40	305	90	80	405	85	170	795	15
Future Volume (veh/h)	5	645	160	40	305	90	80	405	85	170	795	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1817	1817	1633	1633	1633	1668	1668	1668	1709	1709	1709
Adj Flow Rate, veh/h	5	652	162	40	308	91	81	409	86	172	803	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	5	5	5	6	6	6	3	3	3
Cap, veh/h	11	716	178	50	681	198	100	1301	580	201	1528	681
Arrive On Green	0.01	0.26	0.26	0.03	0.29	0.29	0.06	0.41	0.41	0.12	0.47	0.47
Sat Flow, veh/h	1731	2738	680	1555	2371	688	1589	3169	1413	1628	3247	1447
Grp Volume(v), veh/h	5	411	403	40	200	199	81	409	86	172	803	15
Grp Sat Flow(s),veh/h/ln	1731	1726	1692	1555	1551	1507	1589	1585	1413	1628	1624	1447
Q Serve(g_s), s	0.3	25.4	25.4	2.8	11.6	12.0	5.5	9.6	4.2	11.4	19.1	0.6
Cycle Q Clear(g_c), s	0.3	25.4	25.4	2.8	11.6	12.0	5.5	9.6	4.2	11.4	19.1	0.6
Prop In Lane	1.00		0.40	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	451	442	50	445	433	100	1301	580	201	1528	681
V/C Ratio(X)	0.45	0.91	0.91	0.80	0.45	0.46	0.81	0.31	0.15	0.86	0.53	0.02
Avail Cap(c_a), veh/h	165	471	461	148	445	433	224	1301	580	303	1528	681
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	39.4	39.4	52.9	32.1	32.2	50.9	21.9	20.4	47.3	20.5	15.6
Incr Delay (d2), s/veh	10.1	21.2	21.8	8.3	0.5	0.6	5.7	0.6	0.5	14.2	1.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	13.1	13.0	1.2	4.3	4.4	2.3	3.5	1.4	5.3	7.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.6	60.5	61.2	61.2	32.6	32.8	56.6	22.6	20.9	61.4	21.8	15.6
LnGrp LOS	E	E	E	E	C	C	E	C	C	E	C	B
Approach Vol, veh/h	819			439			576			990		
Approach Delay, s/veh	60.9			35.3			27.1			28.6		
Approach LOS	E			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.1	50.2	8.0	33.8	11.4	56.8	5.2	36.6				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	20.5	30.0	10.5	30.0	15.5	35.0	10.5	30.0				
Max Q Clear Time (g_c+I1), s	13.4	11.6	4.8	27.4	7.5	21.1	2.3	14.0				
Green Ext Time (p_c), s	0.2	2.5	0.0	1.3	0.0	4.3	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				38.7								
HCM 6th LOS				D								
Notes												

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	565	70	295	295	165	75	1180	340	175	845	160
Future Volume (vph)	315	565	70	295	295	165	75	1180	340	175	845	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1556	3064		1560	2817		1560	4301		1584	4433	
Flt Permitted	0.32	1.00		0.18	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	533	3064		300	2817		1560	4301		1584	4433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	595	74	311	311	174	79	1242	358	184	889	168
RTOR Reduction (vph)	0	8	0	0	64	0	0	43	0	0	21	0
Lane Group Flow (vph)	332	661	0	311	421	0	79	1557	0	184	1036	0
Confl. Peds. (#/hr)	24		4	4		24	2		19	19		2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)	47.3	31.7		47.3	31.7		10.1	40.7		15.1	45.7	
Effective Green, g (s)	47.3	31.7		47.3	31.7		10.1	40.7		15.1	45.7	
Actuated g/C Ratio	0.39	0.26		0.39	0.26		0.08	0.33		0.12	0.37	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	335	792		276	728		128	1427		195	1652	
v/s Ratio Prot	0.13	0.22		c0.14	0.15		0.05	c0.36		c0.12	0.23	
v/s Ratio Perm	0.26			c0.29								
v/c Ratio	0.99	0.83		1.12	0.57		0.61	1.09		0.94	0.62	
Uniform Delay, d1	33.2	42.9		30.8	39.6		54.3	40.9		53.3	31.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	46.5	7.2		92.7	0.6		8.9	52.6		47.7	1.8	
Delay (s)	79.7	50.2		123.5	40.3		63.3	93.5		101.1	33.2	
Level of Service	E	D		F	D		E	F		F	C	
Approach Delay (s/veh)		60.0			72.8			92.1			43.3	
Approach LOS		E			E			F			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		69.2					HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio		1.09										
Actuated Cycle Length (s)		122.6					Sum of lost time (s)		19.5			
Intersection Capacity Utilization		104.9%					ICU Level of Service		G			
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
809: SR-99/Pacific Hwy & Gibson Road

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations		↕			↕		↗	↗	↗		↗	↗
Traffic Volume (vph)	30	130	85	190	70	45	75	1410	310	15	65	1530
Future Volume (vph)	30	130	85	190	70	45	75	1410	310	15	65	1530
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	11	11	11	11	11	13	12	11	11
Grade (%)		-3%			6%			0%				0%
Total Lost time (s)		6.0			6.0		5.6	7.1	7.1		5.6	7.1
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00		1.00	0.95
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00		1.00	1.00
Frt		0.95			0.98		1.00	1.00	0.85		1.00	1.00
Flt Protected		0.99			0.96		0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)		1608			1479		1545	3091	1431		1560	3121
Flt Permitted		0.93			0.58		0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)		1508			890		1545	3091	1431		1560	3121
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	30	131	86	192	71	45	76	1424	313	15	66	1545
RTOR Reduction (vph)	0	12	0	0	4	0	0	0	174	0	0	0
Lane Group Flow (vph)	0	235	0	0	304	0	76	1424	139	0	81	1545
Confl. Peds. (#/hr)	4		4	4		4	1		4		4	
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	Prot	NA
Protected Phases		4			8		5	2		1	1	6
Permitted Phases	4			8					2			
Actuated Green, G (s)		45.0			45.0		11.0	59.9	59.9		11.4	60.3
Effective Green, g (s)		45.0			45.0		11.0	59.9	59.9		11.4	60.3
Actuated g/C Ratio		0.33			0.33		0.08	0.44	0.44		0.08	0.45
Clearance Time (s)		6.0			6.0		5.6	7.1	7.1		5.6	7.1
Vehicle Extension (s)		3.0			3.0		2.0	4.0	4.0		2.0	4.0
Lane Grp Cap (vph)		502			296		125	1371	634		131	1394
v/s Ratio Prot							0.05	0.46			c0.05	c0.50
v/s Ratio Perm		0.16			c0.34				0.10			
v/c Ratio		0.46			1.02		0.60	1.03	0.21		0.61	1.10
Uniform Delay, d1		35.5			45.0		59.9	37.5	23.1		59.6	37.3
Progression Factor		1.00			1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		0.6			59.4		5.6	34.9	0.7		5.9	59.5
Delay (s)		36.2			104.4		65.5	72.5	23.9		65.6	96.9
Level of Service		D			F		E	E	C		E	F
Approach Delay (s/veh)		36.2			104.4			63.8				92.8
Approach LOS		D			F			E				F
Intersection Summary												
HCM 2000 Control Delay (s/veh)		77.3					HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio		1.03										
Actuated Cycle Length (s)		135.0					Sum of lost time (s)		18.7			
Intersection Capacity Utilization		107.4%					ICU Level of Service		G			
Analysis Period (min)		15										

c Critical Lane Group

Movement	SBR
Lane Configurations	↗
Traffic Volume (vph)	55
Future Volume (vph)	55
Ideal Flow (vphpl)	1750
Lane Width	14
Grade (%)	
Total Lost time (s)	7.1
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1505
Flt Permitted	1.00
Satd. Flow (perm)	1505
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	56
RTOR Reduction (vph)	31
Lane Group Flow (vph)	25
Confl. Peds. (#/hr)	1
Heavy Vehicles (%)	3%
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	60.3
Effective Green, g (s)	60.3
Actuated g/C Ratio	0.45
Clearance Time (s)	7.1
Vehicle Extension (s)	4.0
Lane Grp Cap (vph)	672
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.03
Uniform Delay, d1	21.0
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	21.1
Level of Service	C
Approach Delay (s/veh)	
Approach LOS	
Intersection Summary	

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	305	470	420	195	375	220	160	1190	170	155	920	155
Future Volume (veh/h)	305	470	420	195	375	220	160	1190	170	155	920	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1709	1709	1709	1723	1723	1723	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	318	490	438	203	391	229	167	1240	0	161	958	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	291	749	457	221	610	258	152	1371		153	1383	
Arrive On Green	0.30	0.39	0.39	0.13	0.19	0.19	0.09	0.43	0.00	0.19	0.85	0.00
Sat Flow, veh/h	1628	3247	1390	1641	3273	1387	1615	3221	1437	1628	3247	1448
Grp Volume(v), veh/h	318	490	438	203	391	229	167	1240	0	161	958	0
Grp Sat Flow(s),veh/h/ln	1628	1624	1390	1641	1637	1387	1615	1611	1437	1628	1624	1448
Q Serve(g_s), s	29.5	20.5	38.0	20.2	18.2	26.5	15.5	59.3	0.0	15.5	17.6	0.0
Cycle Q Clear(g_c), s	29.5	20.5	38.0	20.2	18.2	26.5	15.5	59.3	0.0	15.5	17.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	291	749	457	221	610	258	152	1371		153	1383	
V/C Ratio(X)	1.09	0.65	0.96	0.92	0.64	0.89	1.10	0.90		1.05	0.69	
Avail Cap(c_a), veh/h	291	749	457	234	635	269	152	1371		153	1383	
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	0.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	57.9	45.3	45.3	70.5	62.0	65.4	74.8	44.2	0.0	67.0	8.3	0.0
Incr Delay (d2), s/veh	76.4	2.0	29.3	35.6	2.4	27.8	102.7	10.0	0.0	85.7	2.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.0	7.5	21.0	10.5	7.7	11.3	10.7	24.9	0.0	9.4	3.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	134.3	47.4	74.6	106.2	64.5	93.3	177.4	54.3	0.0	152.7	11.1	0.0
LnGrp LOS	F	D	E	F	E	F	F	D		F	B	
Approach Vol, veh/h	1246			823			1407			1119		
Approach Delay, s/veh	79.1			82.8			68.9			31.5		
Approach LOS	E			F			E			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	75.3	34.0	35.7	20.0	75.3	26.7	43.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	15.5	69.0	29.5	32.0	15.5	69.0	23.5	38.0				
Max Q Clear Time (g_c+I1), s	17.5	19.6	31.5	28.5	17.5	61.3	22.2	40.0				
Green Ext Time (p_c), s	0.0	21.5	0.0	1.4	0.0	6.6	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay, s/veh

65.0

HCM 6th LOS

E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	55	15	225	15	10	15	185	470	15	20	955	75
Future Volume (veh/h)	55	15	225	15	10	15	185	470	15	20	955	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/in	2017	2017	2017	1721	1721	1721	1668	1668	1668	1695	1695	1695
Adj Flow Rate, veh/h	58	16	237	16	11	16	195	495	16	21	1005	79
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	7	7	7	6	6	6	4	4	4
Cap, veh/h	76	24	238	77	53	60	396	2246	997	692	2162	959
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.11	1.00	1.00	0.02	0.67	0.67
Sat Flow, veh/h	274	134	1307	260	293	328	1589	3169	1407	1615	3221	1429
Grp Volume(v), veh/h	311	0	0	43	0	0	195	495	16	21	1005	79
Grp Sat Flow(s), veh/h/in	1715	0	0	881	0	0	1589	1585	1407	1615	1611	1429
Q Serve(g_s), s	25.8	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.6	24.6	3.2
Cycle Q Clear(g_c), s	29.9	0.0	0.0	4.1	0.0	0.0	6.9	0.0	0.0	0.6	24.6	3.2
Prop In Lane	0.19		0.76	0.37		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	338	0	0	190	0	0	396	2246	997	692	2162	959
V/C Ratio(X)	0.92	0.00	0.00	0.23	0.00	0.00	0.49	0.22	0.02	0.03	0.46	0.08
Avail Cap(c_a), veh/h	338	0	0	190	0	0	499	2246	997	760	2162	959
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.37	0.00	0.00	0.68	0.68	0.68	0.75	0.75	0.75
Uniform Delay (d), s/veh	67.4	0.0	0.0	56.8	0.0	0.0	9.4	0.0	0.0	6.2	13.0	9.4
Incr Delay (d2), s/veh	29.7	0.0	0.0	0.2	0.0	0.0	0.6	0.2	0.0	0.0	0.5	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh	15.8	0.0	0.0	1.6	0.0	0.0	1.9	0.0	0.0	0.2	8.6	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	97.1	0.0	0.0	57.0	0.0	0.0	10.0	0.2	0.0	6.2	13.5	9.6
LnGrp LOS	F			E			B	A	A	A	B	A
Approach Vol, veh/h	311			43			706			1105		
Approach Delay, s/veh	97.1			57.0			2.9			13.1		
Approach LOS	F			E			A			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	121.9			35.0	14.3	115.7		35.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	110.0			30.0	20.0	100.0		30.0				
Max Q Clear Time (g_c+I), s	2.0			31.9	8.9	26.6		6.1				
Green Ext Time (p_c), s	0.0	3.4		0.0	0.4	8.7		0.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	22.7											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	5	5	5	30	5	165	10	1540	115	170	1220	5
Future Volume (veh/h)	5	5	5	30	5	165	10	1540	115	170	1220	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1820	1820	1820	1575	1575	1575	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	5	5	5	32	5	174	11	1621	121	179	1284	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	8	8	8	2	2	2	2	2	2
Cap, veh/h	62	60	47	44	10	137	364	2329	172	318	3781	15
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.02	1.00	1.00	0.04	0.78	0.78
Sat Flow, veh/h	267	487	377	153	81	1101	1641	3088	229	1641	4836	19
Grp Volume(v), veh/h	15	0	0	211	0	0	11	853	889	179	832	457
Grp Sat Flow(s), veh/h/ln	131	0	0	1335	0	0	1641	1637	1680	1641	1568	1719
Q Serve(g_s), s	0.0	0.0	0.0	15.6	0.0	0.0	0.2	0.0	0.0	4.2	13.0	13.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	20.5	0.0	0.0	0.2	0.0	0.0	4.2	13.0	13.0
Prop In Lane	0.33		0.33	0.15		0.82	1.00		0.14	1.00		0.01
Lane Grp Cap(c), veh/h	170	0	0	191	0	0	364	1234	1268	318	2452	1344
V/C Ratio(X)	0.09	0.00	0.00	1.10	0.00	0.00	0.03	0.69	0.70	0.56	0.34	0.34
Avail Cap(c_a), veh/h	170	0	0	191	0	0	449	1234	1268	456	2452	1344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.00	0.00	1.00	0.00	0.00	0.20	0.20	0.20	0.60	0.60	0.60
Uniform Delay (d), s/veh	63.8	0.0	0.0	73.5	0.0	0.0	4.0	0.0	0.0	3.9	5.3	5.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	95.9	0.0	0.0	0.0	0.6	0.7	0.9	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	13.3	0.0	0.0	0.1	0.2	0.2	1.3	3.8	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.9	0.0	0.0	169.5	0.0	0.0	4.0	0.6	0.7	4.9	5.6	5.8
LnGrp LOS	E			F			A	A	A	A	A	A
Approach Vol, veh/h	15			211			1753			1468		
Approach Delay, s/veh	63.9			169.5			0.7			5.5		
Approach LOS	E			F			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	129.0			25.0	6.5	133.5		25.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	110.5			20.5	10.5	120.5		20.5				
Max Q Clear Time (g_c+I), s	2.0			3.3	2.2	15.0		22.5				
Green Ext Time (p_c), s	0.4	23.2		0.0	0.0	11.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			13.4									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	635	165	45	300	90	80	410	90	170	790	15
Future Volume (veh/h)	5	635	165	45	300	90	80	410	90	170	790	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1817	1817	1633	1633	1633	1668	1668	1668	1709	1709	1709
Adj Flow Rate, veh/h	5	641	167	45	303	91	81	414	91	172	798	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	5	5	5	6	6	6	3	3	3
Cap, veh/h	11	706	184	55	683	201	100	1294	577	201	1521	678
Arrive On Green	0.01	0.26	0.26	0.04	0.29	0.29	0.06	0.41	0.41	0.12	0.47	0.47
Sat Flow, veh/h	1731	2710	705	1555	2361	696	1589	3169	1413	1628	3247	1447
Grp Volume(v), veh/h	5	408	400	45	197	197	81	414	91	172	798	15
Grp Sat Flow(s),veh/h/ln	1731	1726	1688	1555	1551	1506	1589	1585	1413	1628	1624	1447
Q Serve(g_s), s	0.3	25.2	25.2	3.2	11.4	11.8	5.5	9.8	4.5	11.4	19.0	0.6
Cycle Q Clear(g_c), s	0.3	25.2	25.2	3.2	11.4	11.8	5.5	9.8	4.5	11.4	19.0	0.6
Prop In Lane	1.00		0.42	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	450	440	55	449	436	100	1294	577	201	1521	678
V/C Ratio(X)	0.45	0.91	0.91	0.82	0.44	0.45	0.81	0.32	0.16	0.86	0.52	0.02
Avail Cap(c_a), veh/h	165	471	460	148	449	436	224	1294	577	303	1521	678
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.79	0.79	0.79	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	39.4	39.4	52.7	31.8	32.0	50.9	22.1	20.6	47.3	20.6	15.7
Incr Delay (d2), s/veh	10.1	20.7	21.4	8.8	0.5	0.6	5.6	0.6	0.6	14.2	1.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	13.0	12.8	1.4	4.3	4.3	2.3	3.6	1.5	5.3	7.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.6	60.1	60.8	61.5	32.4	32.5	56.4	22.8	21.2	61.4	21.9	15.8
LnGrp LOS	E	E	E	E	C	C	E	C	C	E	C	B
Approach Vol, veh/h	813			439			586			985		
Approach Delay, s/veh	60.5			35.4			27.2			28.7		
Approach LOS	E			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	49.9	8.4	33.7	11.4	56.5	5.2	36.8					
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.0	10.5	30.0	15.5	35.0	10.5	30.0					
Max Q Clear Time (g_c+M3), s	11.8	5.2	27.2	7.5	21.0	2.3	13.8					
Green Ext Time (p_c), s	0.2	2.6	0.0	1.3	0.0	4.3	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	38.6											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↱		↰	↰↱↱	
Traffic Volume (vph)	310	555	70	295	290	160	70	1185	340	170	850	160
Future Volume (vph)	310	555	70	295	290	160	70	1185	340	170	850	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1556	3063		1560	2819		1560	4302		1584	4433	
Flt Permitted	0.33	1.00		0.19	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	547	3063		310	2819		1560	4302		1584	4433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	584	74	311	305	168	74	1247	358	179	895	168
RTOR Reduction (vph)	0	8	0	0	62	0	0	43	0	0	21	0
Lane Group Flow (vph)	326	650	0	311	411	0	74	1562	0	179	1042	0
Confl. Peds. (#/hr)	24		4	4		24	2		19	19		2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)	46.9	31.3		46.9	31.3		9.9	40.7		14.9	45.7	
Effective Green, g (s)	46.9	31.3		46.9	31.3		9.9	40.7		14.9	45.7	
Actuated g/C Ratio	0.38	0.26		0.38	0.26		0.08	0.33		0.12	0.37	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	339	785		279	723		126	1435		193	1660	
v/s Ratio Prot	0.12	0.21		c0.14	0.15		0.05	c0.36		c0.11	0.23	
v/s Ratio Perm	0.25			c0.29								
v/c Ratio	0.96	0.83		1.11	0.57		0.59	1.09		0.93	0.63	
Uniform Delay, d1	32.5	42.8		31.0	39.5		54.1	40.7		53.0	31.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.3	6.8		88.3	0.6		7.3	51.8		43.7	1.8	
Delay (s)	70.9	49.7		119.2	40.1		61.4	92.4		96.7	33.0	
Level of Service	E	D		F	D		E	F		F	C	
Approach Delay (s/veh)		56.7			71.5			91.1			42.2	
Approach LOS		E			E			F			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		67.6										
HCM 2000 Volume to Capacity ratio		1.08										
Actuated Cycle Length (s)		122.0										
Intersection Capacity Utilization		104.2%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build PM

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	185	45	1400	310	15	65	1520
Future Volume (vph)	185	45	1400	310	15	65	1520
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	12	11	11
Grade (%)	6%		0%				0%
Total Lost time (s)	6.0		7.1	7.1		5.6	7.1
Lane Util. Factor	1.00		0.95	1.00		1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00	1.00
Frt	0.97		1.00	0.85		1.00	1.00
Flt Protected	0.96		1.00	1.00		0.95	1.00
Satd. Flow (prot)	1453		3091	1433		1560	3121
Flt Permitted	0.96		1.00	1.00		0.12	1.00
Satd. Flow (perm)	1453		3091	1433		192	3121
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	187	45	1414	313	15	66	1535
RTOR Reduction (vph)	8	0	0	201	0	0	0
Lane Group Flow (vph)	224	0	1414	112	0	81	1535
Confl. Peds. (#/hr)	4	4		4		4	
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%	3%
Turn Type	Perm		NA	Perm	custom	Prot	NA
Protected Phases			2			1	6
Permitted Phases	8			2	1		
Actuated Green, G (s)	24.1		42.9	42.9		34.3	82.8
Effective Green, g (s)	24.1		42.9	42.9		34.3	82.8
Actuated g/C Ratio	0.20		0.36	0.36		0.29	0.69
Clearance Time (s)	6.0		7.1	7.1		5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0		2.0	4.0
Lane Grp Cap (vph)	291		1105	512		54	2153
v/s Ratio Prot			c0.46				0.49
v/s Ratio Perm	c0.15			0.08		c0.42	
v/c Ratio	0.77		1.28	0.22		1.50	0.71
Uniform Delay, d1	45.3		38.6	26.9		42.8	11.3
Progression Factor	1.00		0.82	0.60		1.25	0.91
Incremental Delay, d2	11.6		130.0	0.6		287.0	1.6
Delay (s)	56.9		161.5	16.7		340.7	11.9
Level of Service	E		F	B		F	B
Approach Delay (s/veh)	56.9		135.3				28.4
Approach LOS	E		F				C
Intersection Summary							
HCM 2000 Control Delay (s/veh)			81.9		HCM 2000 Level of Service		F
HCM 2000 Volume to Capacity ratio			1.22				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		18.7
Intersection Capacity Utilization			78.4%		ICU Level of Service		D
Analysis Period (min)			15				
c Critical Lane Group							

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way & OMF Driveway

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	30	15	1	1445	1585	1
Future Volume (veh/h)	30	15	1	1445	1585	1
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	33	16	1	1571	1723	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	41	20	253	2875	2819	2
Arrive On Green	0.04	0.04	0.00	1.00	0.85	0.85
Sat Flow, veh/h	1034	501	1628	3333	3416	2
Grp Volume(v), veh/h	50	0	1	1571	840	884
Grp Sat Flow(s), veh/h/ln	1567	0	1628	1624	1624	1709
Q Serve(g_s), s	3.8	0.0	0.0	0.0	19.7	19.7
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.0	19.7	19.7
Prop In Lane	0.66	0.32	1.00			0.00
Lane Grp Cap(c), veh/h	62	0	253	2875	1374	1446
V/C Ratio(X)	0.81	0.00	0.00	0.55	0.61	0.61
Avail Cap(c_a), veh/h	229	0	393	2875	1374	1446
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	3.0	0.0	2.9	2.9
Incr Delay (d2), s/veh	21.0	0.0	0.0	0.1	2.0	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	0.0	3.5	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	78.1	0.0	3.0	0.1	5.0	4.9
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	50			1572	1724	
Approach Delay, s/veh	78.1			0.1	4.9	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	110.7			9.3	4.7	106.1
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	93.5			17.5	10.5	78.5
Max Q Clear Time (g_c+I1), s	2.0			5.8	2.0	21.7
Green Ext Time (p_c), s	18.5			0.1	0.0	19.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			3.7			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way & Gibson Road

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↱
Traffic Volume (veh/h)	160	110	75	1710	1720	70
Future Volume (veh/h)	160	110	75	1710	1720	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	174	120	82	1859	1870	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	179	123	270	2368	2076	84
Arrive On Green	0.20	0.20	0.04	0.73	1.00	1.00
Sat Flow, veh/h	914	630	1628	3333	3267	128
Grp Volume(v), veh/h	295	0	82	1859	948	998
Grp Sat Flow(s), veh/h/ln	1550	0	1628	1624	1624	1686
Q Serve(g_s), s	22.7	0.0	2.0	43.5	0.0	0.0
Cycle Q Clear(g_c), s	22.7	0.0	2.0	43.5	0.0	0.0
Prop In Lane	0.59	0.41	1.00			0.08
Lane Grp Cap(c), veh/h	304	0	270	2368	1060	1100
V/C Ratio(X)	0.97	0.00	0.30	0.79	0.89	0.91
Avail Cap(c_a), veh/h	304	0	349	2368	1060	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.62	0.62
Uniform Delay (d), s/veh	47.9	0.0	6.0	10.3	0.0	0.0
Incr Delay (d2), s/veh	43.9	0.0	0.6	2.7	7.7	8.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	0.0	0.6	12.8	2.3	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	91.8	0.0	6.6	13.0	7.7	8.3
LnGrp LOS	F		A	B	A	A
Approach Vol, veh/h	295			1941	1946	
Approach Delay, s/veh	91.8			12.7	8.0	
Approach LOS	F			B	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	92.0			28.0	9.2	82.8
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	87.5			23.5	10.5	72.5
Max Q Clear Time (g_c+I1), s	45.5			24.7	4.0	2.0
Green Ext Time (p_c), s	21.2			0.0	0.1	27.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			16.1			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	470	415	200	375	215	155	1185	170	150	925	155
Future Volume (veh/h)	315	470	415	200	375	215	155	1185	170	150	925	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1709	1709	1709	1723	1723	1723	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	328	490	432	208	391	224	161	1234	0	156	964	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	281	829	512	221	713	304	174	1369		169	1368	
Arrive On Green	0.17	0.26	0.26	0.13	0.22	0.22	0.11	0.43	0.00	0.10	0.42	0.00
Sat Flow, veh/h	1628	3247	1396	1641	3273	1398	1615	3221	1437	1628	3247	1448
Grp Volume(v), veh/h	328	490	432	208	391	224	161	1234	0	156	964	0
Grp Sat Flow(s),veh/h/ln	1628	1624	1396	1641	1637	1398	1615	1611	1437	1628	1624	1448
Q Serve(g_s), s	40.5	31.1	60.0	29.5	24.9	35.1	23.2	83.9	0.0	22.3	57.4	0.0
Cycle Q Clear(g_c), s	40.5	31.1	60.0	29.5	24.9	35.1	23.2	83.9	0.0	22.3	57.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	829	512	221	713	304	174	1369		169	1368	
V/C Ratio(X)	1.17	0.59	0.84	0.94	0.55	0.74	0.93	0.90		0.92	0.70	
Avail Cap(c_a), veh/h	281	829	512	283	836	357	210	1369		211	1368	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	1.00	1.00	1.00	1.00	1.00	0.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	97.3	76.7	69.0	100.7	81.6	85.6	103.9	63.0	0.0	104.4	56.0	0.0
Incr Delay (d2), s/veh	103.3	1.1	10.7	30.6	0.9	7.5	35.8	9.8	0.0	32.1	2.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.2	13.1	25.3	14.5	10.6	13.3	11.5	35.9	0.0	11.0	24.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	200.6	77.9	79.7	131.3	82.6	93.1	139.7	72.8	0.0	136.5	58.9	0.0
LnGrp LOS	F	E	E	F	F	F	F	E		F	E	
Approach Vol, veh/h	1250				823				1395		1120	
Approach Delay, s/veh	110.7				97.8				80.5		69.7	
Approach LOS	F				F				F		E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.8	104.0	45.0	56.2	28.9	104.9	36.2	65.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.5	85.0	40.5	60.0	30.5	85.0	40.5	60.0				
Max Q Clear Time (g_c+I1), s	25.2	59.4	42.5	37.1	24.3	85.9	31.5	62.0				
Green Ext Time (p_c), s	0.1	15.0	0.0	4.6	0.1	0.0	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	89.2
HCM 6th LOS	F

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	60	10	235	10	5	10	190	470	10	15	955	80
Future Volume (veh/h)	60	10	235	10	5	10	190	470	10	15	955	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	2017	2017	2017	1721	1721	1721	1668	1668	1668	1695	1695	1695
Adj Flow Rate, veh/h	63	11	247	11	5	11	200	495	11	16	1005	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	7	7	7	6	6	6	4	4	4
Cap, veh/h	86	21	272	95	46	75	380	2126	943	630	2067	917
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.06	0.67	0.67	0.03	0.64	0.64
Sat Flow, veh/h	291	103	1318	309	222	365	1589	3169	1406	1615	3221	1429
Grp Volume(v), veh/h	321	0	0	27	0	0	200	495	11	16	1005	84
Grp Sat Flow(s), veh/h/ln	1712	0	0	896	0	0	1589	1585	1406	1615	1611	1429
Q Serve(g_s), s	25.8	0.0	0.0	0.0	0.0	0.0	7.1	10.1	0.4	0.5	26.8	3.7
Cycle Q Clear(g_c), s	30.2	0.0	0.0	2.2	0.0	0.0	7.1	10.1	0.4	0.5	26.8	3.7
Prop In Lane	0.20		0.77	0.41		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	0	0	216	0	0	380	2126	943	630	2067	917
V/C Ratio(X)	0.84	0.00	0.00	0.13	0.00	0.00	0.53	0.23	0.01	0.03	0.49	0.09
Avail Cap(c_a), veh/h	565	0	0	360	0	0	611	2126	943	677	2067	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.43	0.00	0.00	0.72	0.72	0.72	0.75	0.75	0.75
Uniform Delay (d), s/veh	63.8	0.0	0.0	52.8	0.0	0.0	12.0	10.6	9.0	7.7	15.4	11.2
Incr Delay (d2), s/veh	7.5	0.0	0.0	0.1	0.0	0.0	0.8	0.2	0.0	0.0	0.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.9	0.0	0.0	0.9	0.0	0.0	2.4	3.4	0.1	0.2	9.6	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.3	0.0	0.0	52.9	0.0	0.0	12.8	10.8	9.0	7.7	16.0	11.4
LnGrp LOS	E			D			B	B	A	A	B	B
Approach Vol, veh/h	321			27			706				1105	
Approach Delay, s/veh	71.3			52.9			11.3				15.5	
Approach LOS	E			D			B				B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	115.7			39.1	15.0	110.9		39.1				
Change Period (Y+Rc), s	5.0			5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	88.0			52.0	34.0	64.0		52.0				
Max Q Clear Time (g_c+I), s	12.1			32.2	9.1	28.8		4.2				
Green Ext Time (p_c), s	0.0	3.4		1.9	0.5	8.2		0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			22.9									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	0	0	0	35	0	165	5	1545	120	170	1225	0
Future Volume (veh/h)	0	0	0	35	0	165	5	1545	120	170	1225	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1820	1820	1820	1575	1575	1575	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	0	0	0	37	0	174	5	1626	126	179	1289	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	8	8	8	2	2	2	2	2	2
Cap, veh/h	0	298	0	55	9	180	335	2109	162	232	3447	0
Arrive On Green	0.00	0.00	0.00	0.16	0.00	0.16	0.01	0.68	0.68	0.06	0.73	0.00
Sat Flow, veh/h	0	1820	0	179	55	1099	1641	3079	237	1641	4858	0
Grp Volume(v), veh/h	0	0	0	211	0	0	5	858	894	179	1289	0
Grp Sat Flow(s), veh/h/ln	0	1820	0	1333	0	0	1641	1637	1679	1641	1568	0
Q Serve(g_s), s	0.0	0.0	0.0	19.8	0.0	0.0	0.1	57.2	59.3	5.1	16.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	25.9	0.0	0.0	0.1	57.2	59.3	5.1	16.6	0.0
Prop In Lane	0.00		0.00	0.18		0.82	1.00		0.14	1.00		0.00
Lane Grp Cap(c), veh/h	0	298	0	244	0	0	335	1121	1150	232	3447	0
V/C Ratio(X)	0.00	0.00	0.00	0.87	0.00	0.00	0.01	0.77	0.78	0.77	0.37	0.00
Avail Cap(c_a), veh/h	0	298	0	244	0	0	414	1121	1150	332	3447	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.30	0.30	0.30	0.60	0.60	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	68.5	0.0	0.0	6.2	17.2	17.5	31.3	8.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	26.2	0.0	0.0	0.0	1.5	1.6	4.2	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	10.6	0.0	0.0	0.0	20.5	21.8	5.3	5.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	94.7	0.0	0.0	6.2	18.8	19.2	35.5	8.3	0.0
LnGrp LOS				F			A	B	B	D	A	
Approach Vol, veh/h	0			211			1757			1468		
Approach Delay, s/veh	0.0			94.7			18.9			11.6		
Approach LOS				F			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	118.0			32.0	7.0	126.0		32.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	103.0			27.0	10.0	113.0		27.0				
Max Q Clear Time (g_c+I), s	61.3			0.0	2.1	18.6		27.9				
Green Ext Time (p_c), s	0.4	18.9		0.0	0.0	12.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			20.4									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	635	165	45	300	90	80	410	90	170	790	15
Future Volume (veh/h)	5	635	165	45	300	90	80	410	90	170	790	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1817	1817	1633	1633	1633	1668	1668	1668	1709	1709	1709
Adj Flow Rate, veh/h	5	641	167	45	303	91	81	414	91	172	798	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	5	5	5	6	6	6	3	3	3
Cap, veh/h	11	706	184	55	683	201	100	1294	577	201	1521	678
Arrive On Green	0.01	0.26	0.26	0.04	0.29	0.29	0.06	0.41	0.41	0.12	0.47	0.47
Sat Flow, veh/h	1731	2710	705	1555	2361	696	1589	3169	1413	1628	3247	1447
Grp Volume(v), veh/h	5	408	400	45	197	197	81	414	91	172	798	15
Grp Sat Flow(s),veh/h/ln	1731	1726	1688	1555	1551	1506	1589	1585	1413	1628	1624	1447
Q Serve(g_s), s	0.3	25.2	25.2	3.2	11.4	11.8	5.5	9.8	4.5	11.4	19.0	0.6
Cycle Q Clear(g_c), s	0.3	25.2	25.2	3.2	11.4	11.8	5.5	9.8	4.5	11.4	19.0	0.6
Prop In Lane	1.00		0.42	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	450	440	55	449	436	100	1294	577	201	1521	678
V/C Ratio(X)	0.45	0.91	0.91	0.82	0.44	0.45	0.81	0.32	0.16	0.86	0.52	0.02
Avail Cap(c_a), veh/h	165	471	460	148	449	436	224	1294	577	303	1521	678
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.79	0.79	0.79	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	39.4	39.4	52.7	31.8	32.0	50.9	22.1	20.6	47.3	20.6	15.7
Incr Delay (d2), s/veh	10.1	20.7	21.4	8.8	0.5	0.6	5.6	0.6	0.6	14.2	1.3	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	13.0	12.8	1.4	4.3	4.3	2.3	3.6	1.5	5.3	7.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.6	60.1	60.8	61.5	32.4	32.5	56.4	22.8	21.2	61.4	21.9	15.8
LnGrp LOS	E	E	E	E	C	C	E	C	C	E	C	B
Approach Vol, veh/h	813			439			586			985		
Approach Delay, s/veh	60.5			35.4			27.2			28.7		
Approach LOS	E			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	49.9	8.4	33.7	11.4	56.5	5.2	36.8					
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.0	10.5	30.0	15.5	35.0	10.5	30.0					
Max Q Clear Time (g_c+M3), s	11.8	5.2	27.2	7.5	21.0	2.3	13.8					
Green Ext Time (p_c), s	0.2	2.6	0.0	1.3	0.0	4.3	0.0	2.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	38.6											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↱		↰	↰↱↱	
Traffic Volume (vph)	310	555	70	295	290	160	70	1185	340	170	850	160
Future Volume (vph)	310	555	70	295	290	160	70	1185	340	170	850	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1556	3063		1560	2819		1560	4302		1584	4433	
Flt Permitted	0.33	1.00		0.19	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	547	3063		310	2819		1560	4302		1584	4433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	326	584	74	311	305	168	74	1247	358	179	895	168
RTOR Reduction (vph)	0	8	0	0	62	0	0	43	0	0	21	0
Lane Group Flow (vph)	326	650	0	311	411	0	74	1562	0	179	1042	0
Confl. Peds. (#/hr)	24		4	4		24	2		19	19		2
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)	46.9	31.3		46.9	31.3		9.9	40.7		14.9	45.7	
Effective Green, g (s)	46.9	31.3		46.9	31.3		9.9	40.7		14.9	45.7	
Actuated g/C Ratio	0.38	0.26		0.38	0.26		0.08	0.33		0.12	0.37	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	339	785		279	723		126	1435		193	1660	
v/s Ratio Prot	0.12	0.21		c0.14	0.15		0.05	c0.36		c0.11	0.23	
v/s Ratio Perm	0.25			c0.29								
v/c Ratio	0.96	0.83		1.11	0.57		0.59	1.09		0.93	0.63	
Uniform Delay, d1	32.5	42.8		31.0	39.5		54.1	40.7		53.0	31.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.3	6.8		88.3	0.6		7.3	51.8		43.7	1.8	
Delay (s)	70.9	49.7		119.2	40.1		61.4	92.4		96.7	33.0	
Level of Service	E	D		F	D		E	F		F	C	
Approach Delay (s/veh)		56.7			71.5			91.1			42.2	
Approach LOS		E			E			F			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		67.6										
HCM 2000 Volume to Capacity ratio		1.08										
Actuated Cycle Length (s)		122.0										
Intersection Capacity Utilization		104.2%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build PM

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	185	45	1400	310	15	65	1520
Future Volume (vph)	185	45	1400	310	15	65	1520
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	12	11	11
Grade (%)	6%		0%				0%
Total Lost time (s)	6.0		7.1	7.1		5.6	7.1
Lane Util. Factor	1.00		0.95	1.00		1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00	1.00
Frt	0.97		1.00	0.85		1.00	1.00
Flt Protected	0.96		1.00	1.00		0.95	1.00
Satd. Flow (prot)	1453		3091	1433		1560	3121
Flt Permitted	0.96		1.00	1.00		0.12	1.00
Satd. Flow (perm)	1453		3091	1433		192	3121
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	187	45	1414	313	15	66	1535
RTOR Reduction (vph)	8	0	0	201	0	0	0
Lane Group Flow (vph)	224	0	1414	112	0	81	1535
Confl. Peds. (#/hr)	4	4		4		4	
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%	3%
Turn Type	Perm		NA	Perm	custom	Prot	NA
Protected Phases			2			1	6
Permitted Phases	8			2	1		
Actuated Green, G (s)	24.1		42.9	42.9		34.3	82.8
Effective Green, g (s)	24.1		42.9	42.9		34.3	82.8
Actuated g/C Ratio	0.20		0.36	0.36		0.29	0.69
Clearance Time (s)	6.0		7.1	7.1		5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0		2.0	4.0
Lane Grp Cap (vph)	291		1105	512		54	2153
v/s Ratio Prot			c0.46				0.49
v/s Ratio Perm	c0.15			0.08		c0.42	
v/c Ratio	0.77		1.28	0.22		1.50	0.71
Uniform Delay, d1	45.3		38.6	26.9		42.8	11.3
Progression Factor	1.00		0.82	0.60		1.25	0.91
Incremental Delay, d2	11.6		130.0	0.6		287.0	1.6
Delay (s)	56.9		161.5	16.7		340.7	11.9
Level of Service	E		F	B		F	B
Approach Delay (s/veh)	56.9		135.3				28.4
Approach LOS	E		F				C
Intersection Summary							
HCM 2000 Control Delay (s/veh)			81.9		HCM 2000 Level of Service		F
HCM 2000 Volume to Capacity ratio			1.22				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		18.7
Intersection Capacity Utilization			78.4%		ICU Level of Service		D
Analysis Period (min)			15				
c Critical Lane Group							

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way & OMF Driveway

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	30	15	1	1445	1585	1
Future Volume (veh/h)	30	15	1	1445	1585	1
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	33	16	1	1571	1723	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	41	20	253	2875	2819	2
Arrive On Green	0.04	0.04	0.00	1.00	0.85	0.85
Sat Flow, veh/h	1034	501	1628	3333	3416	2
Grp Volume(v), veh/h	50	0	1	1571	840	884
Grp Sat Flow(s), veh/h/ln	1567	0	1628	1624	1624	1709
Q Serve(g_s), s	3.8	0.0	0.0	0.0	19.7	19.7
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.0	19.7	19.7
Prop In Lane	0.66	0.32	1.00			0.00
Lane Grp Cap(c), veh/h	62	0	253	2875	1374	1446
V/C Ratio(X)	0.81	0.00	0.00	0.55	0.61	0.61
Avail Cap(c_a), veh/h	229	0	393	2875	1374	1446
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	3.0	0.0	2.9	2.9
Incr Delay (d2), s/veh	21.0	0.0	0.0	0.1	2.0	1.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	0.0	3.5	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	78.1	0.0	3.0	0.1	5.0	4.9
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	50			1572	1724	
Approach Delay, s/veh	78.1			0.1	4.9	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	110.7			9.3	4.7	106.1
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	93.5			17.5	10.5	78.5
Max Q Clear Time (g_c+I1), s	2.0			5.8	2.0	21.7
Green Ext Time (p_c), s	18.5			0.1	0.0	19.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			3.7			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way & Gibson Road

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖ ↗		↖	↑ ↑	↑ ↑	
Traffic Volume (veh/h)	160	110	75	1710	1720	70
Future Volume (veh/h)	160	110	75	1710	1720	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	174	120	82	1859	1870	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	179	123	270	2368	2076	84
Arrive On Green	0.20	0.20	0.04	0.73	1.00	1.00
Sat Flow, veh/h	914	630	1628	3333	3267	128
Grp Volume(v), veh/h	295	0	82	1859	948	998
Grp Sat Flow(s), veh/h/ln	1550	0	1628	1624	1624	1686
Q Serve(g_s), s	22.7	0.0	2.0	43.5	0.0	0.0
Cycle Q Clear(g_c), s	22.7	0.0	2.0	43.5	0.0	0.0
Prop In Lane	0.59	0.41	1.00			0.08
Lane Grp Cap(c), veh/h	304	0	270	2368	1060	1100
V/C Ratio(X)	0.97	0.00	0.30	0.79	0.89	0.91
Avail Cap(c_a), veh/h	304	0	349	2368	1060	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.62	0.62
Uniform Delay (d), s/veh	47.9	0.0	6.0	10.3	0.0	0.0
Incr Delay (d2), s/veh	43.9	0.0	0.6	2.7	7.7	8.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	0.0	0.6	12.8	2.3	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	91.8	0.0	6.6	13.0	7.7	8.3
LnGrp LOS	F		A	B	A	A
Approach Vol, veh/h	295			1941	1946	
Approach Delay, s/veh	91.8			12.7	8.0	
Approach LOS	F			B	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	92.0			28.0	9.2	82.8
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	87.5			23.5	10.5	72.5
Max Q Clear Time (g_c+I1), s	45.5			24.7	4.0	2.0
Green Ext Time (p_c), s	21.2			0.0	0.1	27.1
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			16.1			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	300	190	275	565	90	255	815	120	85	1265	115
Future Volume (veh/h)	115	300	190	275	565	90	255	815	120	85	1265	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1668	1668	1668	1682	1682	1682	1641	1641	1641	1532	1532	1532
Adj Flow Rate, veh/h	121	316	200	289	595	95	268	858	0	89	1332	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	5	5	5	8	8	8	16	16	16
Cap, veh/h	138	535	438	250	759	318	234	1520		104	1192	
Arrive On Green	0.09	0.17	0.17	0.16	0.24	0.24	0.15	0.49	0.00	0.07	0.41	0.00
Sat Flow, veh/h	1589	3169	1341	1602	3195	1338	1563	3118	1391	1459	2910	1298
Grp Volume(v), veh/h	121	316	200	289	595	95	268	858	0	89	1332	0
Grp Sat Flow(s),veh/h/ln	1589	1585	1341	1602	1598	1338	1563	1559	1391	1459	1455	1298
Q Serve(g_s), s	12.3	15.1	19.5	25.5	28.5	9.5	24.5	31.8	0.0	9.9	67.0	0.0
Cycle Q Clear(g_c), s	12.3	15.1	19.5	25.5	28.5	9.5	24.5	31.8	0.0	9.9	67.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	535	438	250	759	318	234	1520		104	1192	
V/C Ratio(X)	0.87	0.59	0.46	1.16	0.78	0.30	1.15	0.56		0.85	1.12	
Avail Cap(c_a), veh/h	141	562	449	250	781	327	234	1520		174	1192	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	73.8	62.8	44.7	69.1	58.5	51.2	69.6	29.6	0.0	75.1	48.3	0.0
Incr Delay (d2), s/veh	40.8	1.9	1.1	106.3	5.5	0.7	103.6	1.2	0.0	9.0	64.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	6.1	6.6	17.7	11.9	3.2	16.4	11.9	0.0	3.9	34.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	114.6	64.7	45.7	175.3	63.9	51.9	173.2	30.9	0.0	84.0	113.0	0.0
LnGrp LOS	F	E	D	F	E	D	F	C		F	F	
Approach Vol, veh/h	637			979			1126			1421		
Approach Delay, s/veh	68.2			95.7			64.7			111.2		
Approach LOS	E			F			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.0	72.0	18.8	43.8	16.2	84.8	30.0	32.6				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	24.5	67.0	14.5	40.0	19.5	72.0	25.5	29.0				
Max Q Clear Time (g_c+I1), s	26.5	69.0	14.3	30.5	11.9	33.8	27.5	21.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	3.6	0.1	16.3	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	88.4											
HCM 6th LOS	F											
Notes												

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕	↕	↕	↕	↕
Traffic Vol, veh/h	40	5	135	0	0	10	200	735	5	5	465	30
Future Vol, veh/h	40	5	135	0	0	10	200	735	5	5	465	30
Conflicting Peds, #/hr	0	0	0	0	0	0	5	0	11	11	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	300	25	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	10	10	10	0	0	0	6	6	6	16	16	16
Mvmt Flow	42	5	141	0	0	10	208	766	5	5	484	31

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1298	1697	247	1448	1723	394	520	0	0	782	0	0
Stage 1	499	499	-	1193	1193	-	-	-	-	-	-	-
Stage 2	799	1198	-	255	530	-	-	-	-	-	-	-
Critical Hdwy	6.5	5.5	6.5	7.5	6.5	6.9	4.22	-	-	4.42	-	-
Critical Hdwy Stg 1	5.5	4.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.5	4.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.6	4.1	3.4	3.5	4	3.3	2.26	-	-	2.36	-	-
Pot Cap-1 Maneuver	171	148	760	94	90	611	1015	-	-	746	-	-
Stage 1	593	617	-	202	263	-	-	-	-	-	-	-
Stage 2	428	360	-	733	530	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	140	115	756	61	70	604	1009	-	-	738	-	-
Mov Cap-2 Maneuver	140	115	-	61	70	-	-	-	-	-	-	-
Stage 1	468	609	-	159	206	-	-	-	-	-	-	-
Stage 2	334	283	-	588	523	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 26.1		11.1	2	0.1
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBREBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1009	-	-	354	604	738	-
HCM Lane V/C Ratio	0.206	-	-	0.53	0.017	0.007	-
HCM Control Delay (s/veh)	9.5	-	-	26.1	11.1	9.9	-
HCM Lane LOS	A	-	-	D	B	A	-
HCM 95th %tile Q (veh)	0.8	-	-	3	0.1	0	-

Intersection												
Int Delay, s/veh	25.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	0	60	0	135	0	900	70	120	1465	0
Future Vol, veh/h	0	0	0	60	0	135	0	900	70	120	1465	0
Conflicting Peds, #/hr	0	0	1	1	0	0	12	0	9	9	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	130	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	4	4	4	7	7	7	5	5	5
Mvmt Flow	0	0	0	63	0	142	0	947	74	126	1542	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2280	2836	784	1863	2799	520	1554	0	0	1030	0	0
Stage 1	1806	1806	-	993	993	-	-	-	-	-	-	-
Stage 2	474	1030	-	870	1806	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	7.03	6.58	6.98	5.44	-	-	4.2	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.58	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.69	4.04	3.34	3.17	-	-	2.25	-	-
Pot Cap-1 Maneuver	31	18	292	~58	18	496	199	-	-	652	-	-
Stage 1	55	132	-	253	317	-	-	-	-	-	-	-
Stage 2	528	313	-	286	127	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	19	14	288	~49	14	493	196	-	-	648	-	-
Mov Cap-2 Maneuver	19	14	-	~49	14	-	-	-	-	-	-	-
Stage 1	54	105	-	251	315	-	-	-	-	-	-	-
Stage 2	376	311	-	230	101	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	0		\$ 354.4		0		0.9					
HCM LOS	A		F									
Minor Lane/Major Mvmt	NBL	NBT	NBRE	Ln1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	196	-	-	-	130	648	-					
HCM Lane V/C Ratio	-	-	-	-	1.579	0.195	-					
HCM Control Delay (s/veh)	0	-	-	-	\$ 354.4	11.9	-					
HCM Lane LOS	A	-	-	-	A	F	B					
HCM 95th %tile Q (veh)	0	-	-	-	14.7	0.7	-					
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	195	95	50	420	130	115	575	35	45	385	15
Future Volume (veh/h)	5	195	95	50	420	130	115	575	35	45	385	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1707	1707	1707	1647	1647	1647	1654	1654	1654	1559	1559	1559
Adj Flow Rate, veh/h	5	205	100	53	442	137	121	605	37	47	405	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	11	11	4	4	4	7	7	7	14	14	14
Cap, veh/h	11	475	223	83	632	194	149	896	398	51	665	295
Arrive On Green	0.01	0.22	0.22	0.05	0.27	0.27	0.09	0.29	0.29	0.03	0.22	0.22
Sat Flow, veh/h	1625	2140	1004	1568	2356	724	1576	3143	1398	1485	2962	1316
Grp Volume(v), veh/h	5	153	152	53	292	287	121	605	37	47	405	16
Grp Sat Flow(s),veh/h/ln	1625	1621	1523	1568	1564	1515	1576	1572	1398	1485	1481	1316
Q Serve(g_s), s	0.1	3.8	4.0	1.6	7.9	8.0	3.5	8.0	0.9	1.5	5.8	0.4
Cycle Q Clear(g_c), s	0.1	3.8	4.0	1.6	7.9	8.0	3.5	8.0	0.9	1.5	5.8	0.4
Prop In Lane	1.00		0.66	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	360	338	83	420	407	149	896	398	51	665	295
V/C Ratio(X)	0.46	0.43	0.45	0.64	0.70	0.71	0.81	0.68	0.09	0.92	0.61	0.05
Avail Cap(c_a), veh/h	434	554	520	251	668	647	420	1476	656	301	1391	618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	15.7	15.8	21.7	15.4	15.5	20.8	14.8	12.3	22.6	16.3	14.3
Incr Delay (d2), s/veh	10.7	0.8	0.9	3.0	2.1	2.2	3.9	0.9	0.1	41.8	0.9	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.3	1.3	0.6	2.5	2.5	1.2	2.3	0.2	1.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.9	16.5	16.7	24.7	17.5	17.7	24.7	15.7	12.4	64.4	17.2	14.3
LnGrp LOS	C	B	B	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h	310			632			763			468		
Approach Delay, s/veh	16.9			18.2			17.0			21.9		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	18.4	7.0	15.4	8.9	15.5	4.8	17.6				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	9.5	22.0	7.5	16.0	12.5	22.0	12.5	20.0				
Max Q Clear Time (g_c+I1), s	3.5	10.0	3.6	6.0	5.5	7.8	2.1	10.0				
Green Ext Time (p_c), s	0.0	3.0	0.0	1.2	0.1	2.1	0.0	2.5				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	18.4											
HCM 6th LOS	B											
Notes												

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport No-Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	180	30	400	370	120	55	755	165	65	1020	180
Future Volume (vph)	95	180	30	400	370	120	55	755	165	65	1020	180
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1515	2957		1552	2891		1516	4222		1539	4307	
Flt Permitted	0.33	1.00		0.59	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	533	2957		965	2891		1516	4222		1539	4307	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	99	188	31	417	385	125	57	786	172	68	1062	188
RTOR Reduction (vph)	0	12	0	0	25	0	0	26	0	0	19	0
Lane Group Flow (vph)	99	207	0	417	485	0	57	932	0	68	1232	0
Confl. Peds. (#/hr)	4		17	17		4	12		11	11		12
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	6%	6%	6%	6%	6%	6%
Turn Type	D,P+P	NA		D,P+P	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	37.9	21.8		37.9	30.4		8.9	42.1		7.9	41.1	
Effective Green, g (s)	37.9	21.8		37.9	30.4		8.9	42.1		7.9	41.1	
Actuated g/C Ratio	0.35	0.20		0.35	0.28		0.08	0.39		0.07	0.38	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	256	600		428	818		125	1654		113	1648	
v/s Ratio Prot	0.03	0.07		c0.15	0.17		0.04	0.22		c0.04	c0.29	
v/s Ratio Perm	0.11			c0.20								
v/c Ratio	0.38	0.34		0.97	0.59		0.45	0.56		0.60	0.74	
Uniform Delay, d1	24.4	36.6		32.1	33.1		46.9	25.4		48.2	28.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		36.3	0.7		3.0	1.3		6.0	3.1	
Delay (s)	24.8	36.8		68.5	33.9		50.0	26.8		54.2	31.8	
Level of Service	C	D		E	C		D	C		D	C	
Approach Delay (s/veh)		33.0			49.5			28.1			32.9	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		35.9			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		107.4			Sum of lost time (s)			19.5				
Intersection Capacity Utilization		95.5%			ICU Level of Service			F				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
809: SR-99/Pacific Hwy & Gibson Road

Airport No-Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↗	↗	↗	↗	↗
Traffic Volume (vph)	40	90	85	275	80	30	30	1115	160	35	1805	20
Future Volume (vph)	40	90	85	275	80	30	30	1115	160	35	1805	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	11	11	11	11	11	13	11	11	14
Grade (%)		-3%			6%			0%			0%	
Total Lost time (s)		6.0			6.0		5.6	7.1	7.1	5.6	7.1	7.1
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.99			1.00		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes		1.00			0.99		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94			0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.96		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1531			1517		1531	3061	1425	1502	3004	1440
Flt Permitted		0.88			0.60		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1372			956		1531	3061	1425	1502	3004	1440
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	42	94	89	286	83	31	31	1161	167	36	1880	21
RTOR Reduction (vph)	0	18	0	0	3	0	0	0	94	0	0	12
Lane Group Flow (vph)	0	207	0	0	397	0	31	1161	73	36	1880	9
Confl. Peds. (#/hr)			8	8			4		3	3		4
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	5%	5%	5%	7%	7%	7%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8					2			6
Actuated Green, G (s)		35.2			35.2		4.4	45.1	45.1	4.7	45.4	45.4
Effective Green, g (s)		35.2			35.2		4.4	45.1	45.1	4.7	45.4	45.4
Actuated g/C Ratio		0.34			0.34		0.04	0.43	0.43	0.05	0.44	0.44
Clearance Time (s)		6.0			6.0		5.6	7.1	7.1	5.6	7.1	7.1
Vehicle Extension (s)		3.0			3.0		2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)		465			324		64	1331	619	68	1315	630
v/s Ratio Prot							0.02	0.38		c0.02	c0.63	
v/s Ratio Perm		0.15			c0.42				0.05			0.01
v/c Ratio		0.44			1.22		0.48	0.87	0.11	0.52	1.42	0.01
Uniform Delay, d1		26.6			34.2		48.5	26.6	17.4	48.4	29.1	16.4
Progression Factor		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6			126.1		2.0	8.0	0.3	3.3	197.7	0.0
Delay (s)		27.3			160.4		50.6	34.7	17.8	51.8	226.9	16.5
Level of Service		C			F		D	C	B	D	F	B
Approach Delay (s/veh)		27.3			160.4			33.0			221.4	
Approach LOS		C			F			C			F	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		138.8					HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio		1.30										
Actuated Cycle Length (s)		103.7					Sum of lost time (s)			18.7		
Intersection Capacity Utilization		110.2%					ICU Level of Service			H		
Analysis Period (min)		15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	300	190	275	555	95	255	795	120	90	1225	110
Future Volume (veh/h)	110	300	190	275	555	95	255	795	120	90	1225	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1668	1668	1668	1682	1682	1682	1641	1641	1641	1532	1532	1532
Adj Flow Rate, veh/h	116	316	200	289	584	100	268	837	0	95	1289	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	5	5	5	8	8	8	16	16	16
Cap, veh/h	134	535	438	250	769	330	234	1507		111	1192	
Arrive On Green	0.08	0.17	0.17	0.16	0.24	0.24	0.15	0.48	0.00	0.08	0.41	0.00
Sat Flow, veh/h	1589	3169	1341	1602	3195	1374	1563	3118	1391	1459	2910	1298
Grp Volume(v), veh/h	116	316	200	289	584	100	268	837	0	95	1289	0
Grp Sat Flow(s),veh/h/ln	1589	1585	1341	1602	1598	1374	1563	1559	1391	1459	1455	1298
Q Serve(g_s), s	11.8	15.1	19.5	25.5	27.8	9.8	24.5	31.0	0.0	10.5	67.0	0.0
Cycle Q Clear(g_c), s	11.8	15.1	19.5	25.5	27.8	9.8	24.5	31.0	0.0	10.5	67.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	535	438	250	769	330	234	1507		111	1192	
V/C Ratio(X)	0.87	0.59	0.46	1.16	0.76	0.30	1.15	0.56		0.86	1.08	
Avail Cap(c_a), veh/h	141	562	449	250	781	336	234	1507		174	1192	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	74.0	62.8	44.7	69.1	57.7	50.9	69.6	29.8	0.0	74.7	48.3	0.0
Incr Delay (d2), s/veh	38.9	1.9	1.1	106.3	4.6	0.7	103.6	1.2	0.0	13.4	51.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.1	6.6	17.7	11.5	3.4	16.4	11.6	0.0	4.3	32.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	113.0	64.7	45.7	175.3	62.4	51.6	173.2	31.0	0.0	88.2	99.4	0.0
LnGrp LOS	F	E	D	F	E	D	F	C		F	F	
Approach Vol, veh/h	632			973			1105			1384		
Approach Delay, s/veh	67.5			94.8			65.5			98.6		
Approach LOS	E			F			E			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.0	72.0	18.2	44.4	16.9	84.1	30.0	32.6				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	24.5	67.0	14.5	40.0	19.5	72.0	25.5	29.0				
Max Q Clear Time (g_c+I1), s	26.5	69.0	13.8	29.8	12.5	33.0	27.5	21.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	3.8	0.1	16.0	0.0	2.1				

Intersection Summary

HCM 6th Ctrl Delay, s/veh

84.0

HCM 6th LOS

F

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	40	10	130	5	5	15	190	715	10	10	460	30
Future Volume (veh/h)	40	10	130	5	5	15	190	715	10	10	460	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1902	1902	1902	1820	1820	1820	1668	1668	1668	1532	1532	1532
Adj Flow Rate, veh/h	42	10	135	5	5	16	198	745	10	10	479	31
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	0	0	0	6	6	6	16	16	16
Cap, veh/h	66	21	155	50	53	123	709	2456	1088	504	2154	953
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.05	0.77	0.77	0.01	0.74	0.74
Sat Flow, veh/h	296	155	1170	182	402	934	1589	3169	1404	1459	2910	1288
Grp Volume(v), veh/h	187	0	0	26	0	0	198	745	10	10	479	31
Grp Sat Flow(s), veh/h/ln	1621	0	0	1518	0	0	1589	1585	1404	1459	1455	1288
Q Serve(g_s), s	14.7	0.0	0.0	0.0	0.0	0.0	5.0	11.4	0.3	0.2	8.4	1.1
Cycle Q Clear(g_c), s	18.6	0.0	0.0	2.3	0.0	0.0	5.0	11.4	0.3	0.2	8.4	1.1
Prop In Lane	0.22		0.72	0.19		0.62	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	0	0	227	0	0	709	2456	1088	504	2154	953
V/C Ratio(X)	0.78	0.00	0.00	0.11	0.00	0.00	0.28	0.30	0.01	0.02	0.22	0.03
Avail Cap(c_a), veh/h	530	0	0	503	0	0	1055	2456	1088	572	2154	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.46	0.00	0.00	0.36	0.36	0.36	0.86	0.86	0.86
Uniform Delay (d), s/veh	70.2	0.0	0.0	63.1	0.0	0.0	4.6	5.5	4.2	4.2	6.7	5.7
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	0.0	0.0	1.0	0.0	0.0	1.4	3.3	0.1	0.1	2.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.5	0.0	0.0	63.2	0.0	0.0	4.7	5.6	4.2	4.2	6.9	5.8
LnGrp LOS	E			E			A	A	A	A	A	A
Approach Vol, veh/h	187			26			953			520		
Approach Delay, s/veh	75.5			63.2			5.4			6.8		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	132.4			26.3	12.1	126.6		26.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	90.5			51.5	43.5	56.5		51.5				
Max Q Clear Time (g_c+I), s	13.4			20.6	7.0	10.4		4.3				
Green Ext Time (p_c), s	0.0	5.5		1.2	0.6	3.3		0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			14.5									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	5	5	5	55	5	130	5	875	70	115	1415	5
Future Volume (veh/h)	5	5	5	55	5	130	5	875	70	115	1415	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/in	1820	1820	1820	1628	1628	1628	1654	1654	1654	1682	1682	1682
Adj Flow Rate, veh/h	5	5	5	58	5	137	5	921	74	121	1489	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	4	4	4	7	7	7	5	5	5
Cap, veh/h	83	81	67	84	14	152	268	2131	171	427	3546	12
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.01	0.72	0.72	0.03	0.75	0.75
Sat Flow, veh/h	332	503	417	345	88	943	1576	2945	237	1602	4724	16
Grp Volume(v), veh/h	15	0	0	200	0	0	5	492	503	121	965	529
Grp Sat Flow(s), veh/h/in	1251	0	0	1377	0	0	1576	1572	1610	1602	1530	1679
Q Serve(g_s), s	0.0	0.0	0.0	20.1	0.0	0.0	0.1	20.7	20.7	3.3	18.9	18.9
Cycle Q Clear(g_c), s	1.2	0.0	0.0	23.5	0.0	0.0	0.1	20.7	20.7	3.3	18.9	18.9
Prop In Lane	0.33		0.33	0.29		0.68	1.00		0.15	1.00		0.01
Lane Grp Cap(c), veh/h	231	0	0	250	0	0	268	1138	1165	427	2298	1260
V/C Ratio(X)	0.06	0.00	0.00	0.80	0.00	0.00	0.02	0.43	0.43	0.28	0.42	0.42
Avail Cap(c_a), veh/h	416	0	0	415	0	0	330	1138	1165	563	2298	1260
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.00	0.00	1.00	0.00	0.00	0.78	0.78	0.78	0.55	0.55	0.55
Uniform Delay (d), s/veh	58.6	0.0	0.0	67.8	0.0	0.0	6.0	9.2	9.2	6.9	7.5	7.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	5.8	0.0	0.0	0.0	0.9	0.9	0.2	0.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	8.7	0.0	0.0	0.0	6.9	7.1	1.0	5.8	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.6	0.0	0.0	73.7	0.0	0.0	6.0	10.1	10.1	7.1	7.8	8.0
LnGrp LOS	E			E			A	B	B	A	A	A
Approach Vol, veh/h	15			200			1000			1615		
Approach Delay, s/veh	58.6			73.7			10.1			7.8		
Approach LOS	E			E			B			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	123.9			31.1	5.5	128.4		31.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	85.5			46.5	7.5	97.5		46.5				
Max Q Clear Time (g_c+I), s	22.7			3.2	2.1	20.9		25.5				
Green Ext Time (p_c), s	0.2	7.5		0.1	0.0	14.7		1.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			13.5									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	185	95	50	400	125	115	560	40	45	385	15
Future Volume (veh/h)	5	185	95	50	400	125	115	560	40	45	385	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1707	1707	1707	1647	1647	1647	1654	1654	1654	1559	1559	1559
Adj Flow Rate, veh/h	5	195	100	53	421	132	121	589	42	47	405	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	11	11	4	4	4	7	7	7	14	14	14
Cap, veh/h	11	453	223	84	615	191	149	889	395	51	659	293
Arrive On Green	0.01	0.22	0.22	0.05	0.26	0.26	0.09	0.28	0.28	0.03	0.22	0.22
Sat Flow, veh/h	1625	2105	1035	1568	2349	729	1576	3143	1398	1485	2962	1316
Grp Volume(v), veh/h	5	148	147	53	279	274	121	589	42	47	405	16
Grp Sat Flow(s),veh/h/ln	1625	1621	1519	1568	1564	1514	1576	1572	1398	1485	1481	1316
Q Serve(g_s), s	0.1	3.6	3.8	1.5	7.3	7.5	3.5	7.6	1.0	1.4	5.6	0.4
Cycle Q Clear(g_c), s	0.1	3.6	3.8	1.5	7.3	7.5	3.5	7.6	1.0	1.4	5.6	0.4
Prop In Lane	1.00		0.68	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	349	327	84	410	396	149	889	395	51	659	293
V/C Ratio(X)	0.46	0.43	0.45	0.63	0.68	0.69	0.81	0.66	0.11	0.93	0.62	0.05
Avail Cap(c_a), veh/h	443	566	530	257	682	661	430	1508	671	308	1421	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	15.5	15.6	21.3	15.2	15.3	20.4	14.5	12.2	22.1	16.1	14.0
Incr Delay (d2), s/veh	10.7	0.8	1.0	2.9	2.0	2.2	4.0	0.9	0.1	42.4	0.9	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.2	1.2	0.6	2.4	2.3	1.2	2.1	0.3	1.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.3	16.4	16.6	24.2	17.2	17.4	24.3	15.4	12.3	64.5	17.0	14.1
LnGrp LOS	C	B	B	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h	300			606			752			468		
Approach Delay, s/veh	16.8			17.9			16.6			21.7		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	18.0	7.0	14.9	8.8	15.2	4.8	17.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	22.0	22.0	7.5	16.0	12.5	22.0	12.5	20.0				
Max Q Clear Time (g_c+I), s	9.6	9.6	3.5	5.8	5.5	7.6	2.1	9.5				
Green Ext Time (p_c), s	0.0	3.0	0.0	1.2	0.1	2.1	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	18.1											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	170	30	385	355	115	55	740	160	65	995	170
Future Volume (vph)	90	170	30	385	355	115	55	740	160	65	995	170
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1515	2953		1551	2892		1516	4223		1539	4311	
Flt Permitted	0.35	1.00		0.61	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	559	2953		989	2892		1516	4223		1539	4311	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	177	31	401	370	120	57	771	167	68	1036	177
RTOR Reduction (vph)	0	13	0	0	25	0	0	25	0	0	18	0
Lane Group Flow (vph)	94	195	0	401	465	0	57	913	0	68	1195	0
Confl. Peds. (#/hr)	4		17	17		4	12		11	11		12
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	6%	6%	6%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	37.5	21.4		37.5	30.2		8.9	42.1		7.9	41.1	
Effective Green, g (s)	37.5	21.4		37.5	30.2		8.9	42.1		7.9	41.1	
Actuated g/C Ratio	0.35	0.20		0.35	0.28		0.08	0.39		0.07	0.38	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	261	590		431	816		126	1661		113	1655	
v/s Ratio Prot	0.02	0.07		c0.14	0.16		0.04	0.22		c0.04	c0.28	
v/s Ratio Perm	0.10			c0.19								
v/c Ratio	0.36	0.33		0.93	0.57		0.45	0.55		0.60	0.72	
Uniform Delay, d1	24.4	36.7		31.4	32.8		46.7	25.1		48.0	28.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		26.5	0.5		3.0	1.3		6.1	2.8	
Delay (s)	24.7	36.8		57.9	33.4		49.8	26.4		54.1	30.8	
Level of Service	C	D		E	C		D	C		D	C	
Approach Delay (s/veh)		33.0			44.4			27.8			32.1	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			34.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			107.0			Sum of lost time (s)			19.5			
Intersection Capacity Utilization			94.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WT		NT	NT	ST	ST
Traffic Volume (vph)	265	30	1080	150	35	1735
Future Volume (vph)	265	30	1080	150	35	1735
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	11	11
Grade (%)	6%		0%			0%
Total Lost time (s)	4.5		7.1	7.1	5.6	7.1
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1504		3061	1423	1502	3004
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1504		3061	1423	1502	3004
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	276	31	1125	156	36	1807
RTOR Reduction (vph)	3	0	0	56	0	0
Lane Group Flow (vph)	304	0	1125	100	36	1807
Confl. Peds. (#/hr)	8			3	3	
Heavy Vehicles (%)	3%	3%	5%	5%	7%	7%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	20.5		77.2	77.2	5.1	87.9
Effective Green, g (s)	20.5		77.2	77.2	5.1	87.9
Actuated g/C Ratio	0.17		0.64	0.64	0.04	0.73
Clearance Time (s)	4.5		7.1	7.1	5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	256		1969	915	63	2200
v/s Ratio Prot	c0.20		0.37		0.02	c0.60
v/s Ratio Perm				0.07		
v/c Ratio	1.19		0.57	0.11	0.57	0.82
Uniform Delay, d1	49.8		12.1	8.2	56.4	10.8
Progression Factor	1.00		0.77	0.34	0.96	1.00
Incremental Delay, d2	116.1		1.0	0.2	5.8	2.8
Delay (s)	165.9		10.3	3.0	59.8	13.6
Level of Service	F		B	A	E	B
Approach Delay (s/veh)	165.9		9.4			14.5
Approach LOS	F		A			B
Intersection Summary						
HCM 2000 Control Delay (s/veh)			26.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.94			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	17.2
Intersection Capacity Utilization			79.7%		ICU Level of Service	D
Analysis Period (min)			15			

c Critical Lane Group

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	LT	RT	LT	TH	TH	RT
Traffic Volume (veh/h)	10	5	20	1090	1770	35
Future Volume (veh/h)	10	5	20	1090	1770	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	11	5	22	1185	1924	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	18	8	231	2945	2954	58
Arrive On Green	0.02	0.02	1.00	1.00	0.91	0.91
Sat Flow, veh/h	1019	463	222	3333	3342	64
Grp Volume(v), veh/h	17	0	22	1185	956	1006
Grp Sat Flow(s), veh/h/ln	1575	0	222	1624	1624	1698
Q Serve(g_s), s	1.3	0.0	2.0	0.0	16.0	16.2
Cycle Q Clear(g_c), s	1.3	0.0	18.2	0.0	16.0	16.2
Prop In Lane	0.65	0.29	1.00			0.04
Lane Grp Cap(c), veh/h	28	0	231	2945	1473	1540
V/C Ratio(X)	0.60	0.00	0.10	0.40	0.65	0.65
Avail Cap(c_a), veh/h	735	0	231	2945	1473	1540
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	1.4	0.0	1.3	1.3
Incr Delay (d2), s/veh	18.6	0.0	0.7	0.3	2.2	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	0.1	0.9	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	77.0	0.0	2.0	0.3	3.5	3.4
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	17			1207	1962	
Approach Delay, s/veh	77.0			0.4	3.5	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	113.3			6.7		113.3
Change Period (Y+Rc), s	4.5			4.5		4.5
Max Green Setting (Gmax), s	55.0			56.0		55.0
Max Q Clear Time (g_c+I1), s	20.2			3.3		18.2
Green Ext Time (p_c), s	10.8			0.0		20.8
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			2.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	2	2	2	2	2	2
Traffic Volume (veh/h)	125	90	65	1250	2005	75
Future Volume (veh/h)	125	90	65	1250	2005	75
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	136	98	71	1359	2179	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	138	100	187	2503	2460	92
Arrive On Green	0.15	0.15	0.77	0.77	1.00	1.00
Sat Flow, veh/h	896	646	165	3333	3277	119
Grp Volume(v), veh/h	235	0	71	1359	1102	1159
Grp Sat Flow(s), veh/h/ln	1548	0	165	1624	1624	1688
Q Serve(g_s), s	18.2	0.0	20.7	19.8	0.0	0.0
Cycle Q Clear(g_c), s	18.2	0.0	20.7	19.8	0.0	0.0
Prop In Lane	0.58	0.42	1.00			0.07
Lane Grp Cap(c), veh/h	239	0	187	2503	1252	1301
V/C Ratio(X)	0.98	0.00	0.38	0.54	0.88	0.89
Avail Cap(c_a), veh/h	239	0	187	2503	1252	1301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.37	0.37
Uniform Delay (d), s/veh	50.6	0.0	5.5	5.4	0.0	0.0
Incr Delay (d2), s/veh	53.8	0.0	5.7	0.9	3.7	3.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	0.8	5.1	1.3	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	104.4	0.0	11.3	6.3	3.7	3.9
LnGrp LOS	F		B	A	A	A
Approach Vol, veh/h	235			1430	2261	
Approach Delay, s/veh	104.4			6.5	3.8	
Approach LOS	F			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	97.0			23.0		97.0
Change Period (Y+Rc), s	4.5			4.5		4.5
Max Green Setting (Gmax), s	92.5			18.5		92.5
Max Q Clear Time (g_c+I1), s	22.7			20.2		2.0
Green Ext Time (p_c), s	21.4			0.0		44.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			10.8			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	300	185	280	555	90	250	790	120	85	1230	110
Future Volume (veh/h)	120	300	185	280	555	90	250	790	120	85	1230	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1668	1668	1682	1682	1682	1641	1641	1641	1532	1532	1532
Adj Flow Rate, veh/h	126	316	195	295	584	95	263	832	0	89	1295	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	6	6	5	5	5	8	8	8	16	16	16
Cap, veh/h	142	528	433	257	758	326	232	1518		103	1191	
Arrive On Green	0.15	0.28	0.28	0.16	0.24	0.24	0.15	0.49	0.00	0.14	0.82	0.00
Sat Flow, veh/h	1589	3169	1340	1602	3195	1373	1563	3118	1391	1459	2910	1298
Grp Volume(v), veh/h	126	316	195	295	584	95	263	832	0	89	1295	0
Grp Sat Flow(s), veh/h/ln	1589	1585	1340	1602	1598	1373	1563	1559	1391	1459	1455	1298
Q Serve(g_s), s	12.8	14.3	18.8	26.5	28.1	9.4	24.5	30.8	0.0	9.8	67.5	0.0
Cycle Q Clear(g_c), s	12.8	14.3	18.8	26.5	28.1	9.4	24.5	30.8	0.0	9.8	67.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	142	528	433	257	758	326	232	1518		103	1191	
V/C Ratio(X)	0.88	0.60	0.45	1.15	0.77	0.29	1.13	0.55		0.86	1.09	
Avail Cap(c_a), veh/h	149	557	445	257	775	333	232	1518		171	1191	
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	0.00	0.91	0.91	0.00
Uniform Delay (d), s/veh	69.3	54.8	39.1	69.3	58.7	51.5	70.3	29.6	0.0	70.0	15.0	0.0
Incr Delay (d2), s/veh	40.3	2.0	1.0	101.6	5.0	0.7	99.7	1.4	0.0	10.1	52.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	5.3	5.6	18.0	11.7	3.3	16.1	11.6	0.0	3.7	14.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	109.6	56.8	40.1	170.9	63.7	52.2	170.0	31.1	0.0	80.2	67.1	0.0
LnGrp LOS	F	E	D	F	E	D	F	C		F	F	
Approach Vol, veh/h		637			974			1095			1384	
Approach Delay, s/veh		62.1			95.0			64.4			68.0	
Approach LOS		E			F			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.0	72.5	19.3	44.2	16.2	85.3	31.0	32.5				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	24.5	66.0	15.5	40.0	19.3	71.2	26.5	29.0				
Max Q Clear Time (g_c+I1), s	26.5	69.5	14.8	30.1	11.8	32.8	28.5	20.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	3.7	0.1	15.8	0.0	2.2				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	72.6
HCM 6th LOS	E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	45	5	140	0	0	10	195	715	5	5	460	35
Future Volume (veh/h)	45	5	140	0	0	10	195	715	5	5	460	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1902	1902	1902	1820	1820	1820	1668	1668	1668	1532	1532	1532
Adj Flow Rate, veh/h	47	5	146	0	0	10	203	745	5	5	479	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	0	0	0	6	6	6	16	16	16
Cap, veh/h	72	15	166	0	0	215	698	2400	1063	540	2063	913
Arrive On Green	0.14	0.14	0.14	0.00	0.00	0.14	0.12	1.00	1.00	0.01	0.71	0.71
Sat Flow, veh/h	319	105	1191	0	0	1542	1589	3169	1403	1459	2910	1288
Grp Volume(v), veh/h	198	0	0	0	0	10	203	745	5	5	479	36
Grp Sat Flow(s), veh/h/ln	1616	0	0	0	0	1542	1589	1585	1403	1459	1455	1288
Q Serve(g_s), s	16.1	0.0	0.0	0.0	0.0	0.9	6.1	0.0	0.0	0.1	9.5	1.4
Cycle Q Clear(g_c), s	19.8	0.0	0.0	0.0	0.0	0.9	6.1	0.0	0.0	0.1	9.5	1.4
Prop In Lane	0.24		0.74	0.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	0	0	0	0	215	698	2400	1063	540	2063	913
V/C Ratio(X)	0.78	0.00	0.00	0.00	0.00	0.05	0.29	0.31	0.00	0.01	0.23	0.04
Avail Cap(c_a), veh/h	515	0	0	0	0	467	1025	2400	1063	610	2063	913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.42	0.43	0.43	0.43	0.86	0.86	0.86
Uniform Delay (d), s/veh	69.5	0.0	0.0	0.0	0.0	61.5	5.1	0.0	0.0	4.4	8.4	7.2
Incr Delay (d2), s/veh	5.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	0.0	0.0	0.0	0.4	1.5	0.0	0.0	0.0	2.9	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.9	0.0	0.0	0.0	0.0	61.5	5.2	0.1	0.0	4.4	8.6	7.3
LnGrp LOS	E					E	A	A	A	A	A	A
Approach Vol, veh/h	198				10		953			520		
Approach Delay, s/veh	74.9				61.5		1.2			8.5		
Approach LOS	E				E		A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	129.9		28.0	15.0	122.0		28.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	90.0	90.0		50.0	44.0	56.0		50.0				
Max Q Clear Time (g_c+I), s	2.0	2.0		21.8	8.1	11.5		2.9				
Green Ext Time (p_c), s	0.0	5.5		1.2	0.6	3.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			12.5									
HCM 6th LOS			B									

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	0	0	0	60	0	130	0	880	75	115	1420	0
Future Volume (veh/h)	0	0	0	60	0	130	0	880	75	115	1420	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1820	1820	1820	1628	1628	1628	1654	1654	1654	1682	1682	1682
Adj Flow Rate, veh/h	0	0	0	63	0	137	0	926	79	121	1495	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	4	4	4	7	7	7	5	5	5
Cap, veh/h	0	294	0	90	8	152	274	2120	181	492	3600	0
Arrive On Green	0.00	0.00	0.00	0.16	0.00	0.16	0.00	1.00	1.00	0.03	0.78	0.00
Sat Flow, veh/h	0	1820	0	381	51	941	1576	2929	250	1602	4743	0
Grp Volume(v), veh/h	0	0	0	200	0	0	0	497	508	121	1495	0
Grp Sat Flow(s), veh/h/ln	0	1820	0	1373	0	0	1576	1572	1607	1602	1530	0
Q Serve(g_s), s	0.0	0.0	0.0	20.6	0.0	0.0	0.0	0.0	0.0	3.3	17.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	23.6	0.0	0.0	0.0	0.0	0.0	3.3	17.2	0.0
Prop In Lane	0.00		0.00	0.31		0.68	1.00		0.16	1.00		0.00
Lane Grp Cap(c), veh/h	0	294	0	250	0	0	274	1137	1163	492	3600	0
V/C Ratio(X)	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.44	0.44	0.25	0.42	0.00
Avail Cap(c_a), veh/h	0	502	0	406	0	0	321	1137	1163	599	3600	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.77	0.77	0.55	0.55	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	67.8	0.0	0.0	0.0	0.0	0.0	5.3	5.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.9	0.9	0.1	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	8.7	0.0	0.0	0.0	0.3	0.3	1.0	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	73.6	0.0	0.0	0.0	0.9	0.9	5.4	5.9	0.0
LnGrp LOS				E				A	A	A	A	
Approach Vol, veh/h	0			200			1005			1616		
Approach Delay, s/veh	0.0			73.6			0.9			5.9		
Approach LOS				E			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	123.9			31.1	0.0	133.9		31.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	89.5			45.5	5.0	101.0		45.5				
Max Q Clear Time (g_c+I), s	2.0			0.0	0.0	19.2		25.6				
Green Ext Time (p_c), s	0.2	7.7		0.0	0.0	16.3		1.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			8.9									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	185	95	50	400	125	115	560	40	45	385	15
Future Volume (veh/h)	5	185	95	50	400	125	115	560	40	45	385	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1707	1707	1707	1647	1647	1647	1654	1654	1654	1559	1559	1559
Adj Flow Rate, veh/h	5	195	100	53	421	132	121	589	42	47	405	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	11	11	4	4	4	7	7	7	14	14	14
Cap, veh/h	11	453	223	84	615	191	149	889	395	51	659	293
Arrive On Green	0.01	0.22	0.22	0.05	0.26	0.26	0.09	0.28	0.28	0.03	0.22	0.22
Sat Flow, veh/h	1625	2105	1035	1568	2349	729	1576	3143	1398	1485	2962	1316
Grp Volume(v), veh/h	5	148	147	53	279	274	121	589	42	47	405	16
Grp Sat Flow(s),veh/h/ln	1625	1621	1519	1568	1564	1514	1576	1572	1398	1485	1481	1316
Q Serve(g_s), s	0.1	3.6	3.8	1.5	7.3	7.5	3.5	7.6	1.0	1.4	5.6	0.4
Cycle Q Clear(g_c), s	0.1	3.6	3.8	1.5	7.3	7.5	3.5	7.6	1.0	1.4	5.6	0.4
Prop In Lane	1.00		0.68	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	349	327	84	410	396	149	889	395	51	659	293
V/C Ratio(X)	0.46	0.43	0.45	0.63	0.68	0.69	0.81	0.66	0.11	0.93	0.62	0.05
Avail Cap(c_a), veh/h	443	566	530	257	682	661	430	1508	671	308	1421	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	15.5	15.6	21.3	15.2	15.3	20.4	14.5	12.2	22.1	16.1	14.0
Incr Delay (d2), s/veh	10.7	0.8	1.0	2.9	2.0	2.2	4.0	0.9	0.1	42.4	0.9	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.2	1.2	0.6	2.4	2.3	1.2	2.1	0.3	1.0	1.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.3	16.4	16.6	24.2	17.2	17.4	24.3	15.4	12.3	64.5	17.0	14.1
LnGrp LOS	C	B	B	C	B	B	C	B	B	E	B	B
Approach Vol, veh/h	300			606			752			468		
Approach Delay, s/veh	16.8			17.9			16.6			21.7		
Approach LOS	B			B			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	18.0	7.0	14.9	8.8	15.2	4.8	17.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	22.0	22.0	7.5	16.0	12.5	22.0	12.5	20.0				
Max Q Clear Time (g_c+I), s	9.6	9.6	3.5	5.8	5.5	7.6	2.1	9.5				
Green Ext Time (p_c), s	0.0	3.0	0.0	1.2	0.1	2.1	0.0	2.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	18.1											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	170	30	385	355	115	55	740	160	65	995	170
Future Volume (vph)	90	170	30	385	355	115	55	740	160	65	995	170
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1515	2953		1551	2892		1516	4223		1539	4311	
Flt Permitted	0.35	1.00		0.61	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	559	2953		989	2892		1516	4223		1539	4311	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	177	31	401	370	120	57	771	167	68	1036	177
RTOR Reduction (vph)	0	13	0	0	25	0	0	25	0	0	18	0
Lane Group Flow (vph)	94	195	0	401	465	0	57	913	0	68	1195	0
Confl. Peds. (#/hr)	4		17	17		4	12		11	11		12
Heavy Vehicles (%)	6%	6%	6%	3%	3%	3%	6%	6%	6%	6%	6%	6%
Turn Type	D.P+P	NA		D.P+P	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	37.5	21.4		37.5	30.2		8.9	42.1		7.9	41.1	
Effective Green, g (s)	37.5	21.4		37.5	30.2		8.9	42.1		7.9	41.1	
Actuated g/C Ratio	0.35	0.20		0.35	0.28		0.08	0.39		0.07	0.38	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	261	590		431	816		126	1661		113	1655	
v/s Ratio Prot	0.02	0.07		c0.14	0.16		0.04	0.22		c0.04	c0.28	
v/s Ratio Perm	0.10			c0.19								
v/c Ratio	0.36	0.33		0.93	0.57		0.45	0.55		0.60	0.72	
Uniform Delay, d1	24.4	36.7		31.4	32.8		46.7	25.1		48.0	28.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		26.5	0.5		3.0	1.3		6.1	2.8	
Delay (s)	24.7	36.8		57.9	33.4		49.8	26.4		54.1	30.8	
Level of Service	C	D		E	C		D	C		D	C	
Approach Delay (s/veh)		33.0			44.4			27.8			32.1	
Approach LOS		C			D			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			34.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			107.0			Sum of lost time (s)			19.5			
Intersection Capacity Utilization			94.6%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WT		WT	WT	WT	WT
Traffic Volume (vph)	265	30	1080	150	35	1735
Future Volume (vph)	265	30	1080	150	35	1735
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	11	11
Grade (%)	6%		0%			0%
Total Lost time (s)	4.5		7.1	7.1	5.6	7.1
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1504		3061	1423	1502	3004
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1504		3061	1423	1502	3004
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	276	31	1125	156	36	1807
RTOR Reduction (vph)	3	0	0	56	0	0
Lane Group Flow (vph)	304	0	1125	100	36	1807
Confl. Peds. (#/hr)	8			3	3	
Heavy Vehicles (%)	3%	3%	5%	5%	7%	7%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	20.5		77.2	77.2	5.1	87.9
Effective Green, g (s)	20.5		77.2	77.2	5.1	87.9
Actuated g/C Ratio	0.17		0.64	0.64	0.04	0.73
Clearance Time (s)	4.5		7.1	7.1	5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0	2.0	4.0
Lane Grp Cap (vph)	256		1969	915	63	2200
v/s Ratio Prot	c0.20		0.37		0.02	c0.60
v/s Ratio Perm				0.07		
v/c Ratio	1.19		0.57	0.11	0.57	0.82
Uniform Delay, d1	49.8		12.1	8.2	56.4	10.8
Progression Factor	1.00		0.77	0.34	0.96	1.00
Incremental Delay, d2	116.1		1.0	0.2	5.8	2.8
Delay (s)	165.9		10.3	3.0	59.8	13.6
Level of Service	F		B	A	E	B
Approach Delay (s/veh)	165.9		9.4			14.5
Approach LOS	F		A			B
Intersection Summary						
HCM 2000 Control Delay (s/veh)			26.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.94			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	17.2
Intersection Capacity Utilization			79.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	10	5	20	1090	1770	35
Future Volume (veh/h)	10	5	20	1090	1770	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	11	5	22	1185	1924	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	18	8	231	2945	2954	58
Arrive On Green	0.02	0.02	1.00	1.00	0.91	0.91
Sat Flow, veh/h	1019	463	222	3333	3342	64
Grp Volume(v), veh/h	17	0	22	1185	956	1006
Grp Sat Flow(s), veh/h/ln	1575	0	222	1624	1624	1698
Q Serve(g_s), s	1.3	0.0	2.0	0.0	16.0	16.2
Cycle Q Clear(g_c), s	1.3	0.0	18.2	0.0	16.0	16.2
Prop In Lane	0.65	0.29	1.00			0.04
Lane Grp Cap(c), veh/h	28	0	231	2945	1473	1540
V/C Ratio(X)	0.60	0.00	0.10	0.40	0.65	0.65
Avail Cap(c_a), veh/h	735	0	231	2945	1473	1540
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	1.4	0.0	1.3	1.3
Incr Delay (d2), s/veh	18.6	0.0	0.7	0.3	2.2	2.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	0.1	0.9	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	77.0	0.0	2.0	0.3	3.5	3.4
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	17			1207	1962	
Approach Delay, s/veh	77.0			0.4	3.5	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	113.3			6.7		113.3
Change Period (Y+Rc), s	4.5			4.5		4.5
Max Green Setting (Gmax), s	55.0			56.0		55.0
Max Q Clear Time (g_c+I1), s	20.2			3.3		18.2
Green Ext Time (p_c), s	10.8			0.0		20.8
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			2.7			
HCM 6th LOS			A			

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way

Airport Build AM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	LT	RT	LT	RT	LT	RT
Traffic Volume (veh/h)	125	90	65	1250	2005	75
Future Volume (veh/h)	125	90	65	1250	2005	75
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	136	98	71	1359	2179	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	138	100	187	2503	2460	92
Arrive On Green	0.15	0.15	0.77	0.77	1.00	1.00
Sat Flow, veh/h	896	646	165	3333	3277	119
Grp Volume(v), veh/h	235	0	71	1359	1102	1159
Grp Sat Flow(s), veh/h/ln	1548	0	165	1624	1624	1688
Q Serve(g_s), s	18.2	0.0	20.7	19.8	0.0	0.0
Cycle Q Clear(g_c), s	18.2	0.0	20.7	19.8	0.0	0.0
Prop In Lane	0.58	0.42	1.00			0.07
Lane Grp Cap(c), veh/h	239	0	187	2503	1252	1301
V/C Ratio(X)	0.98	0.00	0.38	0.54	0.88	0.89
Avail Cap(c_a), veh/h	239	0	187	2503	1252	1301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.37	0.37
Uniform Delay (d), s/veh	50.6	0.0	5.5	5.4	0.0	0.0
Incr Delay (d2), s/veh	53.8	0.0	5.7	0.9	3.7	3.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	0.8	5.1	1.3	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	104.4	0.0	11.3	6.3	3.7	3.9
LnGrp LOS	F		B	A	A	A
Approach Vol, veh/h	235			1430	2261	
Approach Delay, s/veh	104.4			6.5	3.8	
Approach LOS	F			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	97.0			23.0		97.0
Change Period (Y+Rc), s	4.5			4.5		4.5
Max Green Setting (Gmax), s	92.5			18.5		92.5
Max Q Clear Time (g_c+I1), s	22.7			20.2		2.0
Green Ext Time (p_c), s	21.4			0.0		44.5
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			10.8			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	525	480	225	415	240	175	1355	185	165	1050	175
Future Volume (veh/h)	350	525	480	225	415	240	175	1355	185	165	1050	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.93	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1709	1709	1709	1723	1723	1723	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	365	547	500	234	432	250	182	1411	0	172	1094	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	293	865	546	248	777	321	195	1238		186	1226	
Arrive On Green	0.18	0.27	0.27	0.15	0.24	0.24	0.12	0.38	0.00	0.11	0.38	0.00
Sat Flow, veh/h	1628	3247	1391	1641	3273	1352	1615	3221	1437	1628	3247	1448
Grp Volume(v), veh/h	365	547	500	234	432	250	182	1411	0	172	1094	0
Grp Sat Flow(s),veh/h/ln	1628	1624	1391	1641	1637	1352	1615	1611	1437	1628	1624	1448
Q Serve(g_s), s	40.5	33.5	60.0	31.8	26.1	38.9	25.2	86.6	0.0	23.6	71.2	0.0
Cycle Q Clear(g_c), s	40.5	33.5	60.0	31.8	26.1	38.9	25.2	86.6	0.0	23.6	71.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	865	546	248	777	321	195	1238		186	1226	
V/C Ratio(X)	1.25	0.63	0.92	0.95	0.56	0.78	0.93	1.14		0.93	0.89	
Avail Cap(c_a), veh/h	293	865	546	295	872	360	219	1238		220	1226	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	92.4	72.9	65.9	94.7	75.4	80.3	98.1	69.3	0.0	98.8	65.8	0.0
Incr Delay (d2), s/veh	136.4	1.7	20.6	33.1	0.9	10.3	38.7	73.1	0.0	35.4	10.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.1	14.1	30.2	15.8	11.1	14.5	12.6	47.7	0.0	11.8	31.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	228.8	74.6	86.5	127.8	76.3	90.6	136.8	142.4	0.0	134.2	75.9	0.0
LnGrp LOS	F	E	F	F	E	F	F	F		F	E	
Approach Vol, veh/h	1412			916			1593			1266		
Approach Delay, s/veh	118.7			93.4			141.8			83.8		
Approach LOS	F			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.7	90.0	45.0	58.5	30.2	91.6	38.5	65.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.5	85.0	40.5	60.0	30.5	85.0	40.5	60.0				
Max Q Clear Time (g_c+I1), s	27.2	73.2	42.5	40.9	25.6	88.6	33.8	62.0				
Green Ext Time (p_c), s	0.1	9.1	0.0	4.9	0.1	0.0	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	112.8											
HCM 6th LOS	F											
Notes												

Intersection												
Int Delay, s/veh	107.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↗	↗	↗	↗	↗
Traffic Vol, veh/h	65	10	260	10	5	10	210	525	15	15	1095	90
Future Vol, veh/h	65	10	260	10	5	10	210	525	15	15	1095	90
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	8	8	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	300	25	-	300
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-6	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	7	7	7	6	6	6	4	4	4
Mvmt Flow	68	11	274	11	5	11	221	553	16	16	1153	95
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1909	2207	580	1617	2286	285	1251	0	0	577	0	0
Stage 1	1188	1188	-	1003	1003	-	-	-	-	-	-	-
Stage 2	721	1019	-	614	1283	-	-	-	-	-	-	-
Critical Hdwy	6.34	5.34	6.34	7.64	6.64	7.04	4.22	-	-	4.18	-	-
Critical Hdwy Stg 1	5.34	4.34	-	6.64	5.64	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.34	4.34	-	6.64	5.64	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.57	4.07	3.37	2.26	-	-	2.24	-	-
Pot Cap-1 Maneuver	78	91	504	65	36	697	531	-	-	979	-	-
Stage 1	297	386	-	250	307	-	-	-	-	-	-	-
Stage 2	489	439	-	434	225	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	~ 41	52	502	17	20	691	529	-	-	971	-	-
Mov Cap-2 Maneuver	~ 41	52	-	17	20	-	-	-	-	-	-	-
Stage 1	172	379	-	144	177	-	-	-	-	-	-	-
Stage 2	272	253	-	189	221	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/V06.2			\$ 334.4		4.6		0.1					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBRE	NBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	529	-	-	146	29	971	-	-				
HCM Lane V/C Ratio	0.418	-	-	2.415	0.907	0.016	-	-				
HCM Control Delay (s/veh)	16.6	-	-	\$ 706.2	\$ 334.4	8.8	-	-				
HCM Lane LOS	C	-	-	F	F	A	-	-				
HCM 95th %tile Q (veh)	2	-	-	30.2	3	0.1	-	-				
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Intersection												
Int Delay, s/veh	231.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	0	0	0	30	0	190	5	1760	130	195	1395	0
Future Vol, veh/h	0	0	0	30	0	190	5	1760	130	195	1395	0
Conflicting Peds, #/hr	0	0	3	3	0	0	7	0	7	7	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	130	-	-	25	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	8	8	8	2	2	2	2	2	2
Mvmt Flow	0	0	0	32	0	200	5	1853	137	205	1468	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2822	3892	744	2939	3824	1002	1475	0	0	1997	0	0
Stage 1	1885	1885	-	1939	1939	-	-	-	-	-	-	-
Stage 2	937	2007	-	1000	1885	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	7.11	6.66	7.06	5.34	-	-	4.14	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.66	5.66	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.66	5.66	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.73	4.08	3.38	3.12	-	-	2.22	-	-
Pot Cap-1 Maneuver	13	4	310	~9	3	230	229	-	-	284	-	-
Stage 1	48	121	-	62	103	-	-	-	-	-	-	-
Stage 2	281	105	-	231	110	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	1	1	307	~4	1	229	227	-	-	283	-	-
Mov Cap-2 Maneuver	1	1	-	~4	1	-	-	-	-	-	-	-
Stage 1	47	33	-	60	100	-	-	-	-	-	-	-
Stage 2	35	102	-	64	30	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0			\$ 3851.2			0.1			5.5		
HCM LOS	A			F								
Minor Lane/Major Mvmt	NBL	NBT	NBRE	Ln1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	227	-	-	-	26	283	-	-				
HCM Lane V/C Ratio	0.023	-	-	-	8.907	0.725	-	-				
HCM Control Delay (s/veh)	21.2	-	-	-	\$3851.2	45.2	-	-				
HCM Lane LOS	C	-	-	-	A	F	E	-				
HCM 95th %tile Q (veh)	0.1	-	-	-	28.7	5.2	-	-				
Notes												
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	735	180	45	345	100	90	460	100	195	905	15
Future Volume (veh/h)	5	735	180	45	345	100	90	460	100	195	905	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1817	1817	1633	1633	1633	1668	1668	1668	1709	1709	1709
Adj Flow Rate, veh/h	5	742	182	45	348	101	91	465	101	197	914	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	5	5	5	6	6	6	3	3	3
Cap, veh/h	11	749	184	55	717	205	112	1207	538	226	1458	650
Arrive On Green	0.01	0.27	0.27	0.04	0.30	0.30	0.07	0.38	0.38	0.14	0.45	0.45
Sat Flow, veh/h	1731	2745	673	1555	2379	680	1589	3169	1413	1628	3247	1447
Grp Volume(v), veh/h	5	467	457	45	225	224	91	465	101	197	914	15
Grp Sat Flow(s),veh/h/ln	1731	1726	1692	1555	1551	1508	1589	1585	1413	1628	1624	1447
Q Serve(g_s), s	0.3	29.6	29.6	3.2	13.0	13.4	6.2	11.7	5.2	13.0	23.7	0.6
Cycle Q Clear(g_c), s	0.3	29.6	29.6	3.2	13.0	13.4	6.2	11.7	5.2	13.0	23.7	0.6
Prop In Lane	1.00		0.40	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	471	461	55	468	455	112	1207	538	226	1458	650
V/C Ratio(X)	0.45	0.99	0.99	0.82	0.48	0.49	0.81	0.39	0.19	0.87	0.63	0.02
Avail Cap(c_a), veh/h	165	471	461	148	468	455	224	1207	538	303	1458	650
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	39.9	39.9	52.7	31.4	31.5	50.4	24.7	22.7	46.4	23.2	16.9
Incr Delay (d2), s/veh	10.1	39.1	39.5	8.0	0.6	0.6	5.3	0.9	0.8	18.7	2.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	17.3	17.0	1.3	4.9	4.9	2.6	4.3	1.8	6.3	8.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.6	78.9	79.4	60.8	32.0	32.1	55.7	25.6	23.5	65.1	25.3	16.9
LnGrp LOS	E	E	E	E	C	C	E	C	C	E	C	B
Approach Vol, veh/h	929			494			657			1126		
Approach Delay, s/veh	79.1			34.6			29.5			32.1		
Approach LOS	E			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.7	46.9	8.4	35.0	12.2	54.4	5.2	38.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	20.5	30.0	10.5	30.0	15.5	35.0	10.5	30.0				
Max Q Clear Time (g_c+I1), s	15.0	13.7	5.2	31.6	8.2	25.7	2.3	15.4				
Green Ext Time (p_c), s	0.2	2.8	0.0	0.0	0.0	3.9	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				45.6								
HCM 6th LOS				D								
Notes												

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↲		↰	↰↱↲	
Traffic Volume (vph)	360	645	80	335	335	185	85	1345	385	195	965	180
Future Volume (vph)	360	645	80	335	335	185	85	1345	385	195	965	180
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.94		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1556	3064		1560	2816		1560	4298		1584	4433	
Flt Permitted	0.28	1.00		0.14	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	472	3064		232	2816		1560	4298		1584	4433	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	379	679	84	353	353	195	89	1416	405	205	1016	189
RTOR Reduction (vph)	0	8	0	0	61	0	0	44	0	0	22	0
Lane Group Flow (vph)	379	755	0	353	487	0	89	1777	0	205	1183	0
Confl. Peds. (#/hr)	27		4	4		27	3		22	22		3
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)	49.7	34.2		49.7	34.2		12.8	39.6		15.5	42.3	
Effective Green, g (s)	49.7	34.2		49.7	34.2		12.8	39.6		15.5	42.3	
Actuated g/C Ratio	0.40	0.28		0.40	0.28		0.10	0.32		0.12	0.34	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	323	843		258	774		160	1369		197	1508	
v/s Ratio Prot	0.15	0.25		c0.17	0.17		0.06	c0.41		c0.13	c0.27	
v/s Ratio Perm	0.32			c0.38								
v/c Ratio	1.17	0.89		1.36	0.62		0.55	1.29		1.04	0.78	
Uniform Delay, d1	32.5	43.3		32.3	39.4		53.0	42.3		54.4	36.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	105.8	11.7		188.4	1.1		4.5	139.7		75.1	4.1	
Delay (s)	138.3	55.0		220.8	40.6		57.5	182.0		129.5	41.0	
Level of Service	F	E		F	D		E	F		F	D	
Approach Delay (s/veh)		82.7			111.2			176.2			53.9	
Approach LOS		F			F			F			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		113.3					HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio		1.29										
Actuated Cycle Length (s)		124.3					Sum of lost time (s)		19.5			
Intersection Capacity Utilization		115.0%					ICU Level of Service		H			
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
809: SR-99/Pacific Hwy & Gibson Road

Airport No-Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations		↕			↕		↗	↗	↗		↗	↗
Traffic Volume (vph)	35	150	95	215	80	50	85	1605	355	15	70	1740
Future Volume (vph)	35	150	95	215	80	50	85	1605	355	15	70	1740
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	12	12	11	11	11	11	11	13	12	11	11
Grade (%)		-3%			6%			0%				0%
Total Lost time (s)		6.0			6.0		5.6	7.1	7.1		5.6	7.1
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00		1.00	0.95
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.96		1.00	1.00
Flpb, ped/bikes		0.99			0.99		1.00	1.00	1.00		1.00	1.00
Frt		0.95			0.98		1.00	1.00	0.85		1.00	1.00
Flt Protected		0.99			0.96		0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)		1610			1480		1545	3091	1431		1560	3121
Flt Permitted		0.92			0.54		0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)		1496			835		1545	3091	1431		1560	3121
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	35	152	96	217	81	51	86	1621	359	15	71	1758
RTOR Reduction (vph)	0	12	0	0	4	0	0	0	184	0	0	0
Lane Group Flow (vph)	0	271	0	0	345	0	86	1621	175	0	86	1758
Confl. Peds. (#/hr)	4		4	4		4	1		4		4	
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA	Perm	Prot	Prot	NA
Protected Phases		4			8		5	2		1	1	6
Permitted Phases	4			8					2			
Actuated Green, G (s)		45.0			45.0		11.9	60.0	60.0		11.8	59.9
Effective Green, g (s)		45.0			45.0		11.9	60.0	60.0		11.8	59.9
Actuated g/C Ratio		0.33			0.33		0.09	0.44	0.44		0.09	0.44
Clearance Time (s)		6.0			6.0		5.6	7.1	7.1		5.6	7.1
Vehicle Extension (s)		3.0			3.0		2.0	4.0	4.0		2.0	4.0
Lane Grp Cap (vph)		496			277		135	1368	633		135	1379
v/s Ratio Prot							c0.06	0.52			0.06	c0.56
v/s Ratio Perm		0.18			c0.41				0.12			
v/c Ratio		0.54			1.24		0.63	1.18	0.27		0.63	1.27
Uniform Delay, d1		36.9			45.2		59.7	37.7	23.9		59.7	37.8
Progression Factor		1.00			1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		1.2			137.0		7.0	90.9	1.0		7.0	129.4
Delay (s)		38.1			182.2		66.7	128.6	25.0		66.8	167.2
Level of Service		D			F		E	F	C		E	F
Approach Delay (s/veh)		38.1			182.2			108.1				158.0
Approach LOS		D			F			F				F
Intersection Summary												
HCM 2000 Control Delay (s/veh)		130.1					HCM 2000 Level of Service		F			
HCM 2000 Volume to Capacity ratio		1.20										
Actuated Cycle Length (s)		135.5					Sum of lost time (s)		18.7			
Intersection Capacity Utilization		118.2%					ICU Level of Service		H			
Analysis Period (min)		15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	530	475	220	420	245	180	1340	190	170	1040	175
Future Volume (veh/h)	345	530	475	220	420	245	180	1340	190	170	1040	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1723	1723	1723	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	359	552	495	229	438	255	188	1396	0	177	1083	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	292	864	551	243	767	327	201	1239		190	1225	
Arrive On Green	0.18	0.27	0.27	0.15	0.23	0.23	0.12	0.38	0.00	0.12	0.38	0.00
Sat Flow, veh/h	1628	3247	1391	1641	3273	1395	1615	3221	1437	1628	3247	1448
Grp Volume(v), veh/h	359	552	495	229	438	255	188	1396	0	177	1083	0
Grp Sat Flow(s), veh/h/ln	1628	1624	1391	1641	1637	1395	1615	1611	1437	1628	1624	1448
Q Serve(g_s), s	40.5	33.9	60.0	31.2	26.7	38.6	26.0	86.7	0.0	24.3	70.3	0.0
Cycle Q Clear(g_c), s	40.5	33.9	60.0	31.2	26.7	38.6	26.0	86.7	0.0	24.3	70.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	292	864	551	243	767	327	201	1239		190	1225	
V/C Ratio(X)	1.23	0.64	0.90	0.94	0.57	0.78	0.94	1.13		0.93	0.88	
Avail Cap(c_a), veh/h	292	864	551	295	871	371	218	1239		220	1225	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	92.5	73.1	64.9	95.1	76.3	80.8	97.8	69.4	0.0	98.6	65.6	0.0
Incr Delay (d2), s/veh	128.8	1.8	17.9	32.2	1.0	10.0	40.3	67.9	0.0	36.8	9.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.5	14.3	29.2	15.4	11.3	14.8	13.2	46.9	0.0	12.3	30.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	221.2	74.9	82.8	127.3	77.2	90.9	138.1	137.3	0.0	135.4	75.1	0.0
LnGrp LOS	F	E	F	F	E	F	F	F		F	E	
Approach Vol, veh/h		1406			922			1584			1260	
Approach Delay, s/veh		115.1			93.5			137.4			83.6	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.6	90.0	45.0	57.8	30.9	91.7	37.8	65.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.5	85.0	40.5	60.0	30.5	85.0	40.5	60.0				
Max Q Clear Time (g_c+I1), s	28.0	72.3	42.5	40.6	26.3	88.7	33.2	62.0				
Green Ext Time (p_c), s	0.1	9.7	0.0	4.9	0.1	0.0	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay, s/veh	110.4
HCM 6th LOS	F

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	60	15	255	15	10	15	210	530	20	20	1075	85
Future Volume (veh/h)	60	15	255	15	10	15	210	530	20	20	1075	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/in	2017	2017	2017	1721	1721	1721	1668	1668	1668	1695	1695	1695
Adj Flow Rate, veh/h	63	16	268	16	11	16	221	558	21	21	1132	89
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	7	7	7	6	6	6	4	4	4
Cap, veh/h	85	27	293	92	63	74	338	2148	952	574	2035	902
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.06	0.68	0.68	0.02	0.63	0.63
Sat Flow, veh/h	268	122	1323	280	286	335	1589	3169	1405	1615	3221	1428
Grp Volume(v), veh/h	347	0	0	43	0	0	221	558	21	21	1132	89
Grp Sat Flow(s), veh/h/in	1713	0	0	900	0	0	1589	1585	1405	1615	1611	1428
Q Serve(g_s), s	27.7	0.0	0.0	0.0	0.0	0.0	8.1	11.4	0.8	0.7	32.9	4.0
Cycle Q Clear(g_c), s	32.6	0.0	0.0	3.7	0.0	0.0	8.1	11.4	0.8	0.7	32.9	4.0
Prop In Lane	0.18		0.77	0.37		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	406	0	0	230	0	0	338	2148	952	574	2035	902
V/C Ratio(X)	0.86	0.00	0.00	0.19	0.00	0.00	0.65	0.26	0.02	0.04	0.56	0.10
Avail Cap(c_a), veh/h	560	0	0	351	0	0	567	2148	952	617	2035	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.36	0.00	0.00	0.68	0.68	0.68	0.58	0.58	0.58
Uniform Delay (d), s/veh	62.6	0.0	0.0	51.3	0.0	0.0	15.4	10.4	8.7	8.1	17.3	11.9
Incr Delay (d2), s/veh	9.3	0.0	0.0	0.1	0.0	0.0	1.5	0.2	0.0	0.0	0.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.2	0.0	0.0	1.5	0.0	0.0	2.8	3.8	0.2	0.2	11.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.8	0.0	0.0	51.5	0.0	0.0	16.9	10.6	8.7	8.1	17.9	12.1
LnGrp LOS	E			D			B	B	A	A	B	B
Approach Vol, veh/h	347			43			800			1242		
Approach Delay, s/veh	71.8			51.5			12.3			17.3		
Approach LOS	E			D			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	116.3		41.1	15.2	108.7		41.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	92.5			51.5	34.5	65.5		51.5				
Max Q Clear Time (g_c+I), s	13.4			34.6	10.1	34.9		5.7				
Green Ext Time (p_c), s	0.0	3.9		2.0	0.6	9.3		0.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	24.0											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	5	5	5	30	5	190	10	1735	125	190	1375	5
Future Volume (veh/h)	5	5	5	30	5	190	10	1735	125	190	1375	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1820	1820	1820	1575	1575	1575	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	5	5	5	32	5	200	11	1826	132	200	1447	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	8	8	8	2	2	2	2	2	2
Cap, veh/h	65	63	49	44	11	160	306	2182	156	220	3695	13
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.01	0.70	0.70	0.07	0.76	0.76
Sat Flow, veh/h	251	443	347	134	74	1125	1641	3097	221	1641	4838	17
Grp Volume(v), veh/h	15	0	0	237	0	0	11	954	1004	200	938	514
Grp Sat Flow(s), veh/h/ln	1041	0	0	1333	0	0	1641	1637	1682	1641	1568	1720
Q Serve(g_s), s	0.0	0.0	0.0	17.6	0.0	0.0	0.2	68.2	72.3	9.4	16.6	16.6
Cycle Q Clear(g_c), s	1.3	0.0	0.0	23.5	0.0	0.0	0.2	68.2	72.3	9.4	16.6	16.6
Prop In Lane	0.33		0.33	0.14		0.84	1.00		0.13	1.00		0.01
Lane Grp Cap(c), veh/h	177	0	0	215	0	0	306	1153	1184	220	2395	1313
V/C Ratio(X)	0.08	0.00	0.00	1.10	0.00	0.00	0.04	0.83	0.85	0.91	0.39	0.39
Avail Cap(c_a), veh/h	177	0	0	215	0	0	361	1153	1184	307	2395	1313
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.00	0.00	1.00	0.00	0.00	0.09	0.09	0.09	0.40	0.40	0.40
Uniform Delay (d), s/veh	61.2	0.0	0.0	72.1	0.0	0.0	5.0	17.3	17.9	47.4	6.6	6.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	92.2	0.0	0.0	0.0	0.7	0.8	11.4	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	14.7	0.0	0.0	0.1	23.6	25.7	9.0	5.1	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.3	0.0	0.0	164.2	0.0	0.0	5.0	18.0	18.6	58.8	6.8	6.9
LnGrp LOS	E			F			A	B	B	E	A	A
Approach Vol, veh/h	15			237				1969			1652	
Approach Delay, s/veh	61.3			164.2				18.2			13.1	
Approach LOS	E			F				B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	120.7			28.0	6.5	130.5		28.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	107.5			23.5	7.5	120.5		23.5				
Max Q Clear Time (g_c+I), s	74.3			3.3	2.2	18.6		25.5				
Green Ext Time (p_c), s	0.3	20.4		0.0	0.0	14.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			25.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	715	180	50	340	100	90	465	100	190	895	15
Future Volume (veh/h)	5	715	180	50	340	100	90	465	100	190	895	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1817	1817	1633	1633	1633	1668	1668	1668	1709	1709	1709
Adj Flow Rate, veh/h	5	722	182	51	343	101	91	470	101	192	904	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	5	5	5	6	6	6	3	3	3
Cap, veh/h	11	744	188	62	726	211	112	1201	535	221	1442	643
Arrive On Green	0.01	0.27	0.27	0.04	0.31	0.31	0.07	0.38	0.38	0.14	0.44	0.44
Sat Flow, veh/h	1731	2729	688	1555	2370	688	1589	3169	1413	1628	3247	1447
Grp Volume(v), veh/h	5	457	447	51	223	221	91	470	101	192	904	15
Grp Sat Flow(s),veh/h/ln	1731	1726	1691	1555	1551	1507	1589	1585	1413	1628	1624	1447
Q Serve(g_s), s	0.3	28.8	28.8	3.6	12.8	13.1	6.2	11.9	5.3	12.7	23.6	0.6
Cycle Q Clear(g_c), s	0.3	28.8	28.8	3.6	12.8	13.1	6.2	11.9	5.3	12.7	23.6	0.6
Prop In Lane	1.00		0.41	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	471	461	62	475	462	112	1201	535	221	1442	643
V/C Ratio(X)	0.45	0.97	0.97	0.82	0.47	0.48	0.81	0.39	0.19	0.87	0.63	0.02
Avail Cap(c_a), veh/h	165	471	461	148	475	462	224	1201	535	303	1442	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.73	0.73	0.73	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	39.6	39.6	52.4	30.9	31.0	50.4	24.9	22.9	46.6	23.6	17.2
Incr Delay (d2), s/veh	10.1	33.7	34.2	6.9	0.5	0.6	5.2	0.9	0.8	17.8	2.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	16.3	16.0	1.5	4.8	4.8	2.6	4.4	1.8	6.1	8.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.6	73.2	73.7	59.3	31.4	31.6	55.6	25.9	23.6	64.4	25.6	17.3
LnGrp LOS	E	E	E	E	C	C	E	C	C	E	C	B
Approach Vol, veh/h	909			495			662			1111		
Approach Delay, s/veh	73.4			34.4			29.6			32.2		
Approach LOS	E			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	46.7	8.9	35.0	12.2	53.8	5.2	38.7					
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.0	10.5	30.0	15.5	35.0	10.5	30.0					
Max Q Clear Time (g_c+M), s	13.9	5.6	30.8	8.2	25.6	2.3	15.1					
Green Ext Time (p_c), s	0.2	2.8	0.0	0.0	0.0	3.9	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	43.8											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↱		↰	↰↱↱	
Traffic Volume (vph)	350	630	75	330	325	185	80	1335	385	190	955	175
Future Volume (vph)	350	630	75	330	325	185	80	1335	385	190	955	175
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1556	3066		1560	2811		1560	4297		1584	4435	
Flt Permitted	0.29	1.00		0.15	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	479	3066		244	2811		1560	4297		1584	4435	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	663	79	347	342	195	84	1405	405	200	1005	184
RTOR Reduction (vph)	0	7	0	0	65	0	0	43	0	0	21	0
Lane Group Flow (vph)	368	735	0	347	472	0	84	1767	0	200	1168	0
Confl. Peds. (#/hr)	27		4	4		27	3		22	22		3
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)	49.3	33.8		49.3	33.8		10.4	40.5		15.5	45.6	
Effective Green, g (s)	49.3	33.8		49.3	33.8		10.4	40.5		15.5	45.6	
Actuated g/C Ratio	0.40	0.27		0.40	0.27		0.08	0.32		0.12	0.37	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	322	830		259	761		130	1394		196	1620	
v/s Ratio Prot	0.14	0.24		c0.17	0.17		0.05	c0.41		c0.13	0.26	
v/s Ratio Perm	0.31			c0.36								
v/c Ratio	1.14	0.89		1.34	0.62		0.65	1.27		1.02	0.72	
Uniform Delay, d1	33.1	43.6		31.6	39.9		55.4	42.1		54.7	34.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	94.7	10.8		176.6	1.1		11.0	126.2		69.7	2.8	
Delay (s)	127.7	54.5		208.3	41.0		66.4	168.3		124.3	36.9	
Level of Service	F	D		F	D		E	F		F	D	
Approach Delay (s/veh)		78.8			106.7			163.8			49.5	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		106.3										
HCM 2000 Volume to Capacity ratio		1.26										
Actuated Cycle Length (s)		124.8										
Intersection Capacity Utilization		113.8%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build PM

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	210	55	1580	345	15	75	1715
Future Volume (vph)	210	55	1580	345	15	75	1715
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	12	11	11
Grade (%)	6%		0%				0%
Total Lost time (s)	6.0		7.1	7.1		5.6	7.1
Lane Util. Factor	1.00		0.95	1.00		1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00	1.00
Frt	0.97		1.00	0.85		1.00	1.00
Flt Protected	0.96		1.00	1.00		0.95	1.00
Satd. Flow (prot)	1451		3091	1433		1560	3121
Flt Permitted	0.96		1.00	1.00		0.95	1.00
Satd. Flow (perm)	1451		3091	1433		1560	3121
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	212	56	1596	348	15	76	1732
RTOR Reduction (vph)	9	0	0	163	0	0	0
Lane Group Flow (vph)	259	0	1596	185	0	91	1732
Confl. Peds. (#/hr)	4	4		4		4	
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%	3%
Turn Type	Perm		NA	Perm	Prot	Prot	NA
Protected Phases			2		1	1	6
Permitted Phases	8			2			
Actuated Green, G (s)	26.2		63.7	63.7		11.4	80.7
Effective Green, g (s)	26.2		63.7	63.7		11.4	80.7
Actuated g/C Ratio	0.22		0.53	0.53		0.10	0.67
Clearance Time (s)	6.0		7.1	7.1		5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0		2.0	4.0
Lane Grp Cap (vph)	316		1640	760		148	2098
v/s Ratio Prot			c0.52			0.06	c0.56
v/s Ratio Perm	c0.18			0.13			
v/c Ratio	0.82		0.97	0.24		0.61	0.83
Uniform Delay, d1	44.7		27.3	15.2		52.2	14.5
Progression Factor	1.00		0.82	1.16		0.93	0.93
Incremental Delay, d2	15.6		9.4	0.3		3.8	2.8
Delay (s)	60.2		31.8	18.0		52.2	16.3
Level of Service	E		C	B		D	B
Approach Delay (s/veh)	60.2		29.3				18.1
Approach LOS	E		C				B
Intersection Summary							
HCM 2000 Control Delay (s/veh)			26.3		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.94				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		18.7
Intersection Capacity Utilization			86.3%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way & OMF Driveway

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	30	15	1	1630	1785	1
Future Volume (veh/h)	30	15	1	1630	1785	1
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	33	16	1	1772	1940	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	41	20	224	2875	2949	2
Arrive On Green	0.04	0.04	1.00	1.00	0.89	0.89
Sat Flow, veh/h	1034	501	226	3333	3416	2
Grp Volume(v), veh/h	50	0	1	1772	946	995
Grp Sat Flow(s), veh/h/ln	1567	0	226	1624	1624	1709
Q Serve(g_s), s	3.8	0.0	0.1	0.0	19.2	19.2
Cycle Q Clear(g_c), s	3.8	0.0	19.3	0.0	19.2	19.2
Prop In Lane	0.66	0.32	1.00			0.00
Lane Grp Cap(c), veh/h	62	0	224	2875	1438	1513
V/C Ratio(X)	0.81	0.00	0.00	0.62	0.66	0.66
Avail Cap(c_a), veh/h	229	0	224	2875	1438	1513
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.15	0.15	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	1.7	0.0	1.9	1.9
Incr Delay (d2), s/veh	21.0	0.0	0.0	0.2	2.4	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	0.1	1.6	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	78.1	0.0	1.7	0.2	4.3	4.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	50			1773	1941	
Approach Delay, s/veh	78.1			0.2	4.2	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	110.7			9.3		110.7
Change Period (Y+Rc), s	4.5			4.5		4.5
Max Green Setting (Gmax), s	93.5			17.5		93.5
Max Q Clear Time (g_c+I1), s	21.3			5.8		21.2
Green Ext Time (p_c), s	23.4			0.1		26.9
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			3.3			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way & Gibson Road

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	LT	RT	LT	TH	TH	RT
Traffic Volume (veh/h)	185	125	90	1930	1940	75
Future Volume (veh/h)	185	125	90	1930	1940	75
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	201	136	98	2098	2109	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	173	117	125	2395	2103	81
Arrive On Green	0.19	0.19	0.04	0.74	1.00	1.00
Sat Flow, veh/h	922	624	1628	3333	3273	123
Grp Volume(v), veh/h	338	0	98	2098	1067	1124
Grp Sat Flow(s), veh/h/ln	1551	0	1628	1624	1624	1687
Q Serve(g_s), s	22.5	0.0	2.7	57.5	0.0	79.2
Cycle Q Clear(g_c), s	22.5	0.0	2.7	57.5	0.0	79.2
Prop In Lane	0.59	0.40	1.00			0.07
Lane Grp Cap(c), veh/h	291	0	125	2395	1071	1113
V/C Ratio(X)	1.16	0.00	0.78	0.88	1.00	1.01
Avail Cap(c_a), veh/h	291	0	202	2395	1071	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.46	0.46
Uniform Delay (d), s/veh	48.8	0.0	33.7	11.7	0.0	0.0
Incr Delay (d2), s/veh	104.2	0.0	10.1	4.9	17.8	20.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	0.0	2.2	17.0	5.3	6.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	153.0	0.0	43.8	16.6	17.8	20.6
LnGrp LOS	F		D	B	B	F
Approach Vol, veh/h	338			2196	2191	
Approach Delay, s/veh	153.0			17.8	19.2	
Approach LOS	F			B	B	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	93.0			27.0	9.3	83.7
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	88.5			22.5	10.5	73.5
Max Q Clear Time (g_c+I1), s	59.5			24.5	4.7	81.2
Green Ext Time (p_c), s	20.1			0.0	0.1	0.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			28.1			
HCM 6th LOS			C			

HCM 6th Signalized Intersection Summary
401: SR-99/Pacific Hwy/SR-99/Evergreen Way & Airport Road

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	355	530	470	225	420	240	175	1335	190	165	1045	175
Future Volume (veh/h)	355	530	470	225	420	240	175	1335	190	165	1045	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.94	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1723	1723	1723	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	370	552	490	234	438	250	182	1391	0	172	1089	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	340	791	517	251	615	259	199	1269		153	1183	
Arrive On Green	0.28	0.32	0.32	0.15	0.19	0.19	0.12	0.39	0.00	0.03	0.12	0.00
Sat Flow, veh/h	1628	3247	1386	1641	3273	1378	1615	3221	1437	1628	3247	1448
Grp Volume(v), veh/h	370	552	490	234	438	250	182	1391	0	172	1089	0
Grp Sat Flow(s), veh/h/ln	1628	1624	1386	1641	1637	1378	1615	1611	1437	1628	1624	1448
Q Serve(g_s), s	34.5	24.5	40.2	23.2	20.7	29.7	18.4	65.0	0.0	15.5	54.7	0.0
Cycle Q Clear(g_c), s	34.5	24.5	40.2	23.2	20.7	29.7	18.4	65.0	0.0	15.5	54.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	791	517	251	615	259	199	1269		153	1183	
V/C Ratio(X)	1.09	0.70	0.95	0.93	0.71	0.97	0.91	1.10		1.12	0.92	
Avail Cap(c_a), veh/h	340	791	517	263	615	259	201	1269		153	1183	
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.71	0.71	0.71	1.00	1.00	1.00	1.00	1.00	0.00	0.92	0.92	0.00
Uniform Delay (d), s/veh	59.6	50.4	46.5	69.0	62.8	66.5	71.4	50.0	0.0	79.9	70.2	0.0
Incr Delay (d2), s/veh	66.8	2.1	21.8	35.8	4.2	46.4	39.2	55.8	0.0	107.3	12.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	9.6	22.6	12.1	8.9	13.6	9.7	35.2	0.0	11.4	26.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	126.3	52.6	68.3	104.8	67.0	112.9	110.7	105.8	0.0	187.2	82.3	0.0
LnGrp LOS	F	D	E	F	E	F	F	F		F	F	
Approach Vol, veh/h		1412			922			1573			1261	
Approach Delay, s/veh		77.4			89.1			106.4			96.6	
Approach LOS		E			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.9	65.1	39.0	36.0	20.0	70.0	29.8	45.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	20.5	60.0	34.5	31.0	15.5	65.0	26.4	39.1				
Max Q Clear Time (g_c+I1), s	20.4	56.7	36.5	31.7	17.5	67.0	25.2	42.2				
Green Ext Time (p_c), s	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay, s/veh

93.0

HCM 6th LOS

F

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
402: Airport Road & Center Road/Driveway

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Volume (veh/h)	65	10	265	10	5	10	215	530	15	15	1075	90
Future Volume (veh/h)	65	10	265	10	5	10	215	530	15	15	1075	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	2017	2017	2017	1721	1721	1721	1668	1668	1668	1695	1695	1695
Adj Flow Rate, veh/h	68	11	279	11	5	11	226	558	16	16	1132	95
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	7	7	7	6	6	6	4	4	4
Cap, veh/h	91	21	304	98	47	79	335	2059	913	629	1955	866
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.15	1.00	1.00	0.03	0.61	0.61
Sat Flow, veh/h	285	93	1333	297	208	347	1589	3169	1405	1615	3221	1427
Grp Volume(v), veh/h	358	0	0	27	0	0	226	558	16	16	1132	95
Grp Sat Flow(s), veh/h/ln	1711	0	0	852	0	0	1589	1585	1405	1615	1611	1427
Q Serve(g_s), s	29.2	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.5	35.1	4.6
Cycle Q Clear(g_c), s	33.7	0.0	0.0	2.2	0.0	0.0	9.6	0.0	0.0	0.5	35.1	4.6
Prop In Lane	0.19		0.78	0.41		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	416	0	0	225	0	0	335	2059	913	629	1955	866
V/C Ratio(X)	0.86	0.00	0.00	0.12	0.00	0.00	0.68	0.27	0.02	0.03	0.58	0.11
Avail Cap(c_a), veh/h	544	0	0	323	0	0	554	2059	913	676	1955	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.33	0.00	0.00	0.62	0.62	0.62	0.58	0.58	0.58
Uniform Delay (d), s/veh	62.1	0.0	0.0	50.0	0.0	0.0	15.7	0.0	0.0	8.5	19.6	13.6
Incr Delay (d2), s/veh	10.6	0.0	0.0	0.1	0.0	0.0	1.5	0.2	0.0	0.0	0.7	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.8	0.0	0.0	0.9	0.0	0.0	2.8	0.1	0.0	0.2	12.8	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.7	0.0	0.0	50.1	0.0	0.0	17.1	0.2	0.0	8.5	20.4	13.8
LnGrp LOS	E			D			B	A	A	A	C	B
Approach Vol, veh/h	358			27			800			1243		
Approach Delay, s/veh	72.7			50.1			5.0			19.7		
Approach LOS	E			D			A			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	112.2			42.6	17.2	105.2		42.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	90.0			50.0	35.0	65.0		50.0				
Max Q Clear Time (g_c+I), s	2.0			35.7	11.6	37.1		4.2				
Green Ext Time (p_c), s	0.0	3.9		1.9	0.6	9.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	23.0											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary
403: SR-99/Evergreen Way & Driveway/Center Road

Airport Build PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+		+	+	
Traffic Volume (veh/h)	0	0	0	35	0	190	5	1740	130	190	1380	0
Future Volume (veh/h)	0	0	0	35	0	190	5	1740	130	190	1380	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1820	1820	1820	1575	1575	1575	1723	1723	1723	1723	1723	1723
Adj Flow Rate, veh/h	0	0	0	37	0	200	5	1832	137	200	1453	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	8	8	8	2	2	2	2	2	2
Cap, veh/h	0	254	0	48	6	156	302	2143	158	220	3561	0
Arrive On Green	0.00	0.00	0.00	0.14	0.00	0.14	0.01	0.69	0.69	0.08	0.76	0.00
Sat Flow, veh/h	0	1820	0	162	46	1121	1641	3089	228	1641	4858	0
Grp Volume(v), veh/h	0	0	0	237	0	0	5	959	1010	200	1453	0
Grp Sat Flow(s), veh/h/ln	0	1820	0	1329	0	0	1641	1637	1680	1641	1568	0
Q Serve(g_s), s	0.0	0.0	0.0	18.1	0.0	0.0	0.1	71.6	76.1	10.3	17.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	23.0	0.0	0.0	0.1	71.6	76.1	10.3	17.9	0.0
Prop In Lane	0.00		0.00	0.16		0.84	1.00		0.14	1.00		0.00
Lane Grp Cap(c), veh/h	0	254	0	210	0	0	302	1135	1166	220	3561	0
V/C Ratio(X)	0.00	0.00	0.00	1.13	0.00	0.00	0.02	0.84	0.87	0.91	0.41	0.00
Avail Cap(c_a), veh/h	0	254	0	210	0	0	381	1135	1166	284	3561	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.09	0.09	0.09	0.40	0.40	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	72.3	0.0	0.0	5.4	18.7	19.4	49.7	7.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	100.1	0.0	0.0	0.0	0.8	0.9	13.3	0.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	14.8	0.0	0.0	0.0	25.0	27.4	9.1	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	172.5	0.0	0.0	5.4	19.5	20.3	63.0	7.2	0.0
LnGrp LOS				F			A	B	C	E	A	
Approach Vol, veh/h	0			237				1974			1653	
Approach Delay, s/veh	0.0			172.5				19.9			13.9	
Approach LOS				F				B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	119.5		28.0	7.0	130.0		28.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	108.0	108.0		23.0	10.0	117.0		23.0				
Max Q Clear Time (g_c+M3), s	78.1	78.1		0.0	2.1	19.9		25.0				
Green Ext Time (p_c), s	0.3	19.2		0.0	0.0	15.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			26.7									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary
404: Airport Road & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	715	180	50	340	100	90	465	100	190	895	15
Future Volume (veh/h)	5	715	180	50	340	100	90	465	100	190	895	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1817	1817	1817	1633	1633	1633	1668	1668	1668	1709	1709	1709
Adj Flow Rate, veh/h	5	722	182	51	343	101	91	470	101	192	904	15
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	5	5	5	6	6	6	3	3	3
Cap, veh/h	11	744	188	62	726	211	112	1201	535	221	1442	643
Arrive On Green	0.01	0.27	0.27	0.04	0.31	0.31	0.07	0.38	0.38	0.14	0.44	0.44
Sat Flow, veh/h	1731	2729	688	1555	2370	688	1589	3169	1413	1628	3247	1447
Grp Volume(v), veh/h	5	457	447	51	223	221	91	470	101	192	904	15
Grp Sat Flow(s),veh/h/ln	1731	1726	1691	1555	1551	1507	1589	1585	1413	1628	1624	1447
Q Serve(g_s), s	0.3	28.8	28.8	3.6	12.8	13.1	6.2	11.9	5.3	12.7	23.6	0.6
Cycle Q Clear(g_c), s	0.3	28.8	28.8	3.6	12.8	13.1	6.2	11.9	5.3	12.7	23.6	0.6
Prop In Lane	1.00		0.41	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	11	471	461	62	475	462	112	1201	535	221	1442	643
V/C Ratio(X)	0.45	0.97	0.97	0.82	0.47	0.48	0.81	0.39	0.19	0.87	0.63	0.02
Avail Cap(c_a), veh/h	165	471	461	148	475	462	224	1201	535	303	1442	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.73	0.73	0.73	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	39.6	39.6	52.4	30.9	31.0	50.4	24.9	22.9	46.6	23.6	17.2
Incr Delay (d2), s/veh	10.1	33.7	34.2	6.9	0.5	0.6	5.1	0.9	0.8	17.8	2.1	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	16.3	16.0	1.5	4.8	4.8	2.6	4.4	1.8	6.1	8.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	64.6	73.2	73.7	59.3	31.4	31.6	55.5	25.8	23.6	64.4	25.6	17.3
LnGrp LOS	E	E	E	E	C	C	E	C	C	E	C	B
Approach Vol, veh/h	909			495			662			1111		
Approach Delay, s/veh	73.4			34.4			29.6			32.2		
Approach LOS	E			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	46.7	8.9	35.0	12.2	53.8	5.2	38.7					
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	30.0	10.5	30.0	15.5	35.0	10.5	30.0					
Max Q Clear Time (g_c+M), s	13.9	5.6	30.8	8.2	25.6	2.3	15.1					
Green Ext Time (p_c), s	0.2	2.8	0.0	0.0	0.0	3.9	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	43.8											
HCM 6th LOS	D											

HCM Signalized Intersection Capacity Analysis
405: SR-99/Evergreen Way & 112th Street SW

Airport Build PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱		↰	↰↱↱		↰	↰↱↱	
Traffic Volume (vph)	350	630	75	330	325	185	80	1335	385	190	955	175
Future Volume (vph)	350	630	75	330	325	185	80	1335	385	190	955	175
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	10	10	11	11	11	11	11	11
Grade (%)		0%			0%			0%			-3%	
Total Lost time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1556	3066		1560	2811		1560	4297		1584	4435	
Flt Permitted	0.29	1.00		0.15	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	479	3066		244	2811		1560	4297		1584	4435	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	368	663	79	347	342	195	84	1405	405	200	1005	184
RTOR Reduction (vph)	0	7	0	0	65	0	0	43	0	0	21	0
Lane Group Flow (vph)	368	735	0	347	472	0	84	1767	0	200	1168	0
Confl. Peds. (#/hr)	27		4	4		27	3		22	22		3
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4								
Actuated Green, G (s)	49.3	33.8		49.3	33.8		10.4	40.5		15.5	45.6	
Effective Green, g (s)	49.3	33.8		49.3	33.8		10.4	40.5		15.5	45.6	
Actuated g/C Ratio	0.40	0.27		0.40	0.27		0.08	0.32		0.12	0.37	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	5.5		4.5	5.5	
Vehicle Extension (s)	2.0	1.5		2.0	1.5		3.5	1.0		2.0	1.0	
Lane Grp Cap (vph)	322	830		259	761		130	1394		196	1620	
v/s Ratio Prot	0.14	0.24		c0.17	0.17		0.05	c0.41		c0.13	0.26	
v/s Ratio Perm	0.31			c0.36								
v/c Ratio	1.14	0.89		1.34	0.62		0.65	1.27		1.02	0.72	
Uniform Delay, d1	33.1	43.6		31.6	39.9		55.4	42.1		54.7	34.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	94.7	10.8		176.6	1.1		11.0	126.2		69.7	2.8	
Delay (s)	127.7	54.5		208.3	41.0		66.4	168.3		124.3	36.9	
Level of Service	F	D		F	D		E	F		F	D	
Approach Delay (s/veh)		78.8			106.7			163.8			49.5	
Approach LOS		E			F			F			D	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		106.3			HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio		1.26										
Actuated Cycle Length (s)		124.8			Sum of lost time (s)			19.5				
Intersection Capacity Utilization		113.8%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
809: SR-99/Evergreen Way & Gibson Road

Airport Build PM

							
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	215	50	1575	345	15	70	1720
Future Volume (vph)	215	50	1575	345	15	70	1720
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	13	12	11	11
Grade (%)	6%		0%				0%
Total Lost time (s)	6.0		7.1	7.1		5.6	7.1
Lane Util. Factor	1.00		0.95	1.00		1.00	0.95
Frpb, ped/bikes	1.00		1.00	0.97		1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00		1.00	1.00
Frt	0.97		1.00	0.85		1.00	1.00
Flt Protected	0.96		1.00	1.00		0.95	1.00
Satd. Flow (prot)	1454		3091	1433		1560	3121
Flt Permitted	0.96		1.00	1.00		0.95	1.00
Satd. Flow (perm)	1454		3091	1433		1560	3121
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	217	51	1591	348	15	71	1737
RTOR Reduction (vph)	8	0	0	159	0	0	0
Lane Group Flow (vph)	260	0	1591	189	0	86	1737
Confl. Peds. (#/hr)	4	4		4		4	
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%	3%
Turn Type	Perm		NA	Perm	Prot	Prot	NA
Protected Phases			2		1	1	6
Permitted Phases	8			2			
Actuated Green, G (s)	26.3		65.2	65.2		9.8	80.6
Effective Green, g (s)	26.3		65.2	65.2		9.8	80.6
Actuated g/C Ratio	0.22		0.54	0.54		0.08	0.67
Clearance Time (s)	6.0		7.1	7.1		5.6	7.1
Vehicle Extension (s)	3.0		4.0	4.0		2.0	4.0
Lane Grp Cap (vph)	318		1679	778		127	2096
v/s Ratio Prot			c0.51			0.06	c0.56
v/s Ratio Perm	c0.18			0.13			
v/c Ratio	0.82		0.95	0.24		0.68	0.83
Uniform Delay, d1	44.6		25.8	14.4		53.6	14.6
Progression Factor	1.00		0.83	1.18		0.93	0.93
Incremental Delay, d2	15.0		6.4	0.3		7.9	2.9
Delay (s)	59.6		27.7	17.3		57.6	16.5
Level of Service	E		C	B		E	B
Approach Delay (s/veh)	59.6		25.9				18.4
Approach LOS	E		C				B
Intersection Summary							
HCM 2000 Control Delay (s/veh)			24.7		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.93				
Actuated Cycle Length (s)			120.0		Sum of lost time (s)		18.7
Intersection Capacity Utilization			85.8%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

HCM 6th Signalized Intersection Summary
810: SR-99/Evergreen Way & OMF Driveway

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	30	15	1	1630	1785	1
Future Volume (veh/h)	30	15	1	1630	1785	1
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	33	16	1	1772	1940	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	41	20	224	2875	2949	2
Arrive On Green	0.04	0.04	1.00	1.00	0.89	0.89
Sat Flow, veh/h	1034	501	226	3333	3416	2
Grp Volume(v), veh/h	50	0	1	1772	946	995
Grp Sat Flow(s), veh/h/ln	1567	0	226	1624	1624	1709
Q Serve(g_s), s	3.8	0.0	0.1	0.0	19.2	19.2
Cycle Q Clear(g_c), s	3.8	0.0	19.3	0.0	19.2	19.2
Prop In Lane	0.66	0.32	1.00			0.00
Lane Grp Cap(c), veh/h	62	0	224	2875	1438	1513
V/C Ratio(X)	0.81	0.00	0.00	0.62	0.66	0.66
Avail Cap(c_a), veh/h	229	0	224	2875	1438	1513
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.25	0.25	1.00	1.00
Uniform Delay (d), s/veh	57.2	0.0	1.7	0.0	1.9	1.9
Incr Delay (d2), s/veh	21.0	0.0	0.0	0.3	2.4	2.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.0	0.1	1.6	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	78.1	0.0	1.8	0.3	4.3	4.1
LnGrp LOS	E		A	A	A	A
Approach Vol, veh/h	50			1773	1941	
Approach Delay, s/veh	78.1			0.3	4.2	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	110.7			9.3		110.7
Change Period (Y+Rc), s	4.5			4.5		4.5
Max Green Setting (Gmax), s	93.5			17.5		93.5
Max Q Clear Time (g_c+I1), s	21.3			5.8		21.2
Green Ext Time (p_c), s	23.4			0.1		26.9
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			3.3			
HCM 6th LOS			A			

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
811: SR-99/Evergreen Way & Gibson Road

Airport Build PM



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	LT	RT	LT	TH	TH	RT
Traffic Volume (veh/h)	185	125	90	1930	1940	75
Future Volume (veh/h)	185	125	90	1930	1940	75
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1709	1709	1709	1709	1709	1709
Adj Flow Rate, veh/h	201	136	98	2098	2109	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	173	117	125	2395	2103	81
Arrive On Green	0.19	0.19	0.04	0.74	1.00	1.00
Sat Flow, veh/h	922	624	1628	3333	3273	123
Grp Volume(v), veh/h	338	0	98	2098	1067	1124
Grp Sat Flow(s), veh/h/ln	1551	0	1628	1624	1624	1687
Q Serve(g_s), s	22.5	0.0	2.7	57.5	0.0	79.2
Cycle Q Clear(g_c), s	22.5	0.0	2.7	57.5	0.0	79.2
Prop In Lane	0.59	0.40	1.00			0.07
Lane Grp Cap(c), veh/h	291	0	125	2395	1071	1113
V/C Ratio(X)	1.16	0.00	0.78	0.88	1.00	1.01
Avail Cap(c_a), veh/h	291	0	202	2395	1071	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.45	0.45
Uniform Delay (d), s/veh	48.8	0.0	33.7	11.7	0.0	0.0
Incr Delay (d2), s/veh	104.2	0.0	10.1	4.9	17.6	20.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	0.0	2.2	17.0	5.2	6.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	153.0	0.0	43.8	16.6	17.6	20.4
LnGrp LOS	F		D	B	B	F
Approach Vol, veh/h	338			2196	2191	
Approach Delay, s/veh	153.0			17.8	19.0	
Approach LOS	F			B	B	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	93.0			27.0	9.3	83.7
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	88.5			22.5	10.5	73.5
Max Q Clear Time (g_c+I1), s	59.5			24.5	4.7	81.2
Green Ext Time (p_c), s	20.1			0.0	0.1	0.0
Intersection Summary						
HCM 6th Ctrl Delay, s/veh			28.0			
HCM 6th LOS			C			

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	25	40	0	40	135	765	60	100	895	190
Future Volume (veh/h)	40	5	25	40	0	40	135	765	60	100	895	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1695	1695	1695	1313	1313	1313	1641	1641	1641	1641	1641	1641
Adj Flow Rate, veh/h	42	5	26	42	0	42	142	805	63	105	942	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	32	32	32	8	8	8	8	8	8
Cap, veh/h	105	110	89	92	0	78	174	2095	163	129	1896	
Arrive On Green	0.06	0.06	0.06	0.07	0.00	0.07	0.11	0.53	0.53	0.08	0.50	0.00
Sat Flow, veh/h	1615	1695	1371	1251	0	1054	1563	3964	309	1563	3790	1391
Grp Volume(v), veh/h	42	5	26	42	0	42	142	545	323	105	942	0
Grp Sat Flow(s), veh/h/ln	1615	1695	1371	1251	0	1054	1563	1345	1582	1563	1263	1391
Q Serve(g_s), s	1.7	0.2	1.3	2.3	0.0	2.7	6.2	8.4	8.5	4.6	11.6	0.0
Cycle Q Clear(g_c), s	1.7	0.2	1.3	2.3	0.0	2.7	6.2	8.4	8.5	4.6	11.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	105	110	89	92	0	78	174	1422	836	129	1896	
V/C Ratio(X)	0.40	0.05	0.29	0.46	0.00	0.54	0.82	0.38	0.39	0.81	0.50	
Avail Cap(c_a), veh/h	265	279	225	259	0	218	246	1422	836	246	1896	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.87	0.87	0.00
Uniform Delay (d), s/veh	31.4	30.7	31.2	31.1	0.0	31.3	30.4	9.8	9.8	31.6	11.6	0.0
Incr Delay (d2), s/veh	0.9	0.1	0.7	1.3	0.0	2.2	12.1	0.7	1.2	4.0	0.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.7	0.1	0.4	0.7	0.0	0.7	2.7	2.1	2.6	1.8	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.3	30.8	31.9	32.4	0.0	33.4	42.5	10.5	11.0	35.5	12.4	0.0
LnGrp LOS	C	C	C	C	A	C	D	B	B	D	B	
Approach Vol, veh/h	73			84			1010			1047		
Approach Delay, s/veh	32.1			32.9			15.1			14.8		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.8	41.5		10.0	11.8	39.5		8.7				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	11.0	15.5		11.5	11.0	15.5		14.5				
Max Q Clear Time (g_c+I1), s	6.6	10.5		3.7	8.2	13.6		4.7				
Green Ext Time (p_c), s	0.0	1.7		0.0	0.1	0.9		0.1				

Intersection Summary

HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

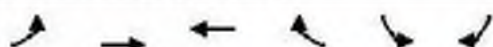
502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-A AM Peak Hour

	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Movement										
Lane Configurations	↰	↰		↰	↰		↰	↰		
Traffic Volume (vph)	210	90	115	115	575	150	210	975	0	0
Future Volume (vph)	210	90	115	115	575	150	210	975	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1448	1295		2922	2226		1539	4424		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1448	1295		2922	2226		1539	4424		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	95	121	121	605	158	221	1026	0	0
RTOR Reduction (vph)	0	13	0	0	88	0	0	0	0	0
Lane Group Flow (vph)	221	203	0	121	675	0	221	1026	0	0
Confl. Peds. (#/hr)	1					9				
Heavy Vehicles (%)	11%	11%	11%	10%	10%	10%	8%	8%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	13.7	37.8		23.2	23.2		17.1	38.0		
Effective Green, g (s)	13.7	30.8		23.2	23.2		17.1	38.0		
Actuated g/C Ratio	0.20	0.44		0.33	0.33		0.24	0.54		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	283	569		968	737		375	2401		
v/s Ratio Prot	c0.15	0.16		0.04			c0.14	0.23		
v/s Ratio Perm					c0.30					
v/c Ratio	0.78	0.36		0.12	0.92		0.59	0.43		
Uniform Delay, d1	26.7	13.0		16.3	22.5		23.4	9.5		
Progression Factor	1.00	1.00		0.87	1.14		1.00	1.00		
Incremental Delay, d2	12.1	0.4		0.3	17.2		2.4	0.6		
Delay (s)	38.8	13.4		14.5	42.8		25.7	10.1		
Level of Service	D	B		B	D		C	B		
Approach Delay (s)	26.3			38.9			12.9	0.0		
Approach LOS	C			D			B	A		
Intersection Summary										
HCM 2000 Control Delay			24.1			HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.78							
Actuated Cycle Length (s)			70.0			Sum of lost time (s)		16.0		
Intersection Capacity Utilization			48.8%			ICU Level of Service		A		
Analysis Period (min)			15							
c Critical Lane Group										

505: Casino Rd & SWI-A Transit Station Access
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↰		↰	↑
Traffic Volume (veh/h)	35	160	360	5	5	35
Future Volume (veh/h)	35	160	360	5	5	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1532	1532	1641	1641	385	385
Adj Flow Rate, veh/h	36	167	375	5	5	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	16	16	8	8	100	100
Cap, veh/h	498	602	635	8	80	71
Arrive On Green	0.39	0.39	0.39	0.39	0.22	0.22
Sat Flow, veh/h	889	1532	1615	22	367	326
Grp Volume(v), veh/h	36	167	0	380	5	36
Grp Sat Flow(s), veh/h/ln	889	1532	0	1637	367	326
Q Serve(g_s), s	0.8	1.7	0.0	4.2	0.2	2.2
Cycle Q Clear(g_c), s	5.0	1.7	0.0	4.2	0.2	2.2
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	498	602	0	643	80	71
V/C Ratio(X)	0.07	0.28	0.00	0.59	0.06	0.51
Avail Cap(c_a), veh/h	2443	3952	0	4223	398	354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.5	4.8	0.0	5.5	7.2	7.9
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.9	0.3	5.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.1	0.2	0.0	0.5	0.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	7.6	5.0	0.0	6.4	7.5	13.5
LnGrp LOS	A	A	A	A	A	B
Approach Vol, veh/h		203	380		41	
Approach Delay, s/veh		5.5	6.4		12.8	
Approach LOS		A	A		B	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				13.6	9.5	13.6
Change Period (Y+Rc), s				4.5	4.5	4.5
Max Green Setting (Gmax), s				59.5	25.0	59.5
Max Q Clear Time (g_c+I1), s				7.0	4.2	6.2
Green Ext Time (p_c), s				1.2	0.1	2.5
Intersection Summary						
HCM 6th Ctrl Delay			6.5			
HCM 6th LOS			A			

508: Airport Rd & 94th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	5	10	5	5	0	15	15	940	60	120	810	30
Future Volume (veh/h)	5	10	5	5	0	15	15	940	60	120	810	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1068	1068	1068	1573	1573	1573	1641	1641	1641	1627	1627	1627
Adj Flow Rate, veh/h	5	11	5	5	0	16	16	989	63	126	853	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	50	50	50	13	13	13	8	8	8	9	9	9
Cap, veh/h	4	28	13	6	64	192	31	1790	114	161	2089	78
Arrive On Green	0.00	0.04	0.04	0.00	0.00	0.04	0.02	0.44	0.44	0.10	0.53	0.53
Sat Flow, veh/h	1017	695	316	1498	1573	1333	1563	4029	256	1550	3958	148
Grp Volume(v), veh/h	5	0	16	5	0	16	16	660	392	126	540	345
Grp Sat Flow(s),veh/h/ln	1017	0	1011	1498	1573	1333	1563	1345	1594	1550	1253	1600
Q Serve(g_s), s	0.2	0.0	0.7	0.2	0.0	0.5	0.5	8.6	8.7	3.8	6.2	6.2
Cycle Q Clear(g_c), s	0.2	0.0	0.7	0.2	0.0	0.5	0.5	8.6	8.7	3.8	6.2	6.2
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.16	1.00		0.09
Lane Grp Cap(c), veh/h	4	0	41	6	64	192	31	1196	708	161	1323	845
V/C Ratio(X)	1.22	0.00	0.39	0.83	0.00	0.08	0.51	0.55	0.55	0.78	0.41	0.41
Avail Cap(c_a), veh/h	127	0	612	188	953	946	506	2249	1332	502	2094	1337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	22.4	23.8	0.0	17.7	23.2	9.8	9.8	20.9	6.8	6.8
Incr Delay (d2), s/veh	326.4	0.0	8.4	150.3	0.0	0.3	17.2	0.6	1.0	11.3	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.3	0.3	0.0	0.2	0.3	1.8	2.2	1.6	1.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	350.3	0.0	30.8	174.1	0.0	18.0	40.4	10.4	10.8	32.2	7.1	7.3
LnGrp LOS	F	A	C	F	A	B	D	B	B	C	A	A
Approach Vol, veh/h	21				21				1068			
Approach Delay, s/veh	106.8				55.2				11.0			
Approach LOS	F				E				B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	26.3	6.2	5.9	5.5	30.3	6.2	5.9				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	15.5	40.0	6.0	29.0	15.5	40.0	6.0	29.0				
Max Q Clear Time (g_c+I1), s	5.8	10.7	2.2	2.7	2.5	8.2	2.2	2.5				
Green Ext Time (p_c), s	0.3	10.5	0.0	0.1	0.0	8.7	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	12.0											
HCM 6th LOS	B											

Intersection

Intersection Delay, s/veh	7.2
Intersection LOS	A

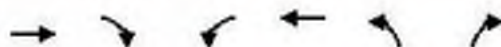
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	20	5	5	20	10
Future Vol, veh/h	15	20	5	5	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	13	13	0	0	0	0
Mvmt Flow	15	20	5	5	20	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.7	7.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	67%
Vol Thru, %	57%	50%	0%
Vol Right, %	0%	50%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	35	10	30
LT Vol	15	0	20
Through Vol	20	5	0
RT Vol	0	5	10
Lane Flow Rate	35	10	30
Geometry Grp	1	1	1
Degree of Util (X)	0.041	0.01	0.033
Departure Headway (Hd)	4.268	3.679	3.911
Convergence, Y/N	Yes	Yes	Yes
Cap	842	973	916
Service Time	2.28	1.699	1.933
HCM Lane V/C Ratio	0.042	0.01	0.033
HCM Control Delay	7.5	6.7	7.1
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB On Ramps Project HCM Signalized Intersection Capacity Analysis

2037 Build SWI-A AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↰	↰	
Traffic Volume (vph)	0	0	880	15	240	0
Future Volume (vph)	0	0	880	15	240	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1449	1455	2780	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1449	1455	2780	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	926	16	253	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	472	470	253	0
Heavy Vehicles (%)	0%	0%	9%	9%	16%	16%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5 8	
Permitted Phases						
Actuated Green, G (s)			70.0	70.0	63.1	
Effective Green, g (s)			70.0	70.0	56.4	
Actuated g/C Ratio			0.48	0.48	0.39	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			700	702	1082	
v/s Ratio Prot			c0.33	0.32	c0.09	
v/s Ratio Perm						
v/c Ratio			0.67	0.67	0.23	
Uniform Delay, d1			28.7	28.6	29.7	
Progression Factor			1.00	1.00	0.03	
Incremental Delay, d2			2.8	2.6	0.1	
Delay (s)			31.5	31.3	1.2	
Level of Service			C	C	A	
Approach Delay (s)	0.0			31.4	1.2	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			25.0	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			144.9	Sum of lost time (s)		18.5
Intersection Capacity Utilization			69.0%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Everett Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2037 Build SWI-A AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	305	0	205	880	0
Future Volume (vph)	35	305	0	205	880	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1374	1229		2866	3050	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1374	1229		2866	3050	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	321	0	216	926	0
RTOR Reduction (vph)	0	152	0	0	0	0
Lane Group Flow (vph)	37	169	0	216	926	0
Heavy Vehicles (%)	21%	21%	16%	16%	9%	9%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	24.9	24.9		31.5	107.4	
Effective Green, g (s)	24.9	24.9		31.5	107.4	
Actuated g/C Ratio	0.17	0.17		0.22	0.74	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	236	211		623	2260	
v/s Ratio Prot	0.03	c0.14		0.08	c0.30	
v/s Ratio Perm						
v/c Ratio	0.16	0.80		0.35	0.41	
Uniform Delay, d1	51.1	57.6		48.0	7.0	
Progression Factor	1.00	1.00		1.00	0.01	
Incremental Delay, d2	0.4	20.3		0.6	0.1	
Delay (s)	51.5	77.9		48.6	0.2	
Level of Service	D	E		D	A	
Approach Delay (s)	75.2			48.6	0.2	
Approach LOS	E			D	A	
Intersection Summary						
HCM 2000 Control Delay	25.0			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.51					
Actuated Cycle Length (s)	144.9			Sum of lost time (s)		18.5
Intersection Capacity Utilization	65.0%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	215	390	5	5	25
Future Vol, veh/h	25	215	390	5	5	25
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	226	411	5	5	26
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	416	0	-	0	692	415
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1138	-	-	-	408	635
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	767	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1138	-	-	-	399	634
Mov Cap-2 Maneuver	-	-	-	-	399	-
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	767	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		11.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1138	-	-	-	399	634
HCM Lane V/C Ratio	0.023	-	-	-	0.013	0.042
HCM Control Delay (s)	8.2	-	-	-	14.1	10.9
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.1

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2037 Build SWI-A AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	10	45	50	15	105	85	865	375	100	645	75
Future Volume (veh/h)	45	10	45	50	15	105	85	865	375	100	645	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1573	1573	1559	1559	1559	1668	1668	1668	1600	1600	1600
Adj Flow Rate, veh/h	47	11	47	53	16	111	89	911	395	105	679	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	13	13	14	14	14	6	6	6	11	11	11
Cap, veh/h	64	180	151	68	184	154	113	1298	562	129	1699	
Arrive On Green	0.04	0.11	0.11	0.05	0.12	0.12	0.07	0.45	0.45	0.08	0.46	0.00
Sat Flow, veh/h	1498	1573	1319	1485	1559	1308	1589	2911	1261	1524	3696	1356
Grp Volume(v), veh/h	47	11	47	53	16	111	89	856	450	105	679	0
Grp Sat Flow(s), veh/h/ln	1498	1573	1319	1485	1559	1308	1589	1368	1436	1524	1232	1356
Q Serve(g_s), s	2.2	0.4	2.3	2.5	0.6	5.7	3.8	17.6	17.6	4.7	8.5	0.0
Cycle Q Clear(g_c), s	2.2	0.4	2.3	2.5	0.6	5.7	3.8	17.6	17.6	4.7	8.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.88	1.00		1.00
Lane Grp Cap(c), veh/h	64	180	151	68	184	154	113	1220	640	129	1699	
V/C Ratio(X)	0.73	0.06	0.31	0.78	0.09	0.72	0.79	0.70	0.70	0.81	0.40	
Avail Cap(c_a), veh/h	247	733	615	245	727	610	444	2944	1545	426	3977	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.0	27.5	28.3	32.9	27.4	29.6	31.9	15.6	15.6	31.3	12.5	0.0
Incr Delay (d2), s/veh	5.9	0.1	1.2	6.8	0.1	2.4	13.6	0.7	1.4	4.6	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.9	0.2	0.7	1.0	0.2	1.8	1.8	4.6	5.0	1.8	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.8	27.6	29.5	39.7	27.5	32.0	45.4	16.3	17.0	35.9	12.6	0.0
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	B	
Approach Vol, veh/h		105			180			1395			784	
Approach Delay, s/veh		33.5			33.9			18.4			15.7	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	36.1	10.7	12.5	9.5	37.0	10.5	12.7				
Change Period (Y+Rc), s	4.5	5.0	7.5	4.5	4.5	5.0	7.5	4.5				
Max Green Setting (Gmax), s	19.5	75.0	11.5	32.5	19.5	75.0	11.5	32.5				
Max Q Clear Time (g_c+I1), s	6.7	19.6	4.5	4.3	5.8	10.5	4.2	7.7				
Green Ext Time (p_c), s	0.1	11.5	0.0	0.2	0.2	4.9	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-A AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TTT	TTT	
Traffic Volume (vph)	60	35	40	1240	610	140
Future Volume (vph)	60	35	40	1240	610	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.82	*0.77	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	2146		1531	3963	3437	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	2146		1531	3963	3437	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	37	42	1305	642	147
RTOR Reduction (vph)	34	0	0	0	17	0
Lane Group Flow (vph)	66	0	42	1305	772	0
Confl. Peds. (#/hr)		1	3			3
Heavy Vehicles (%)	44%	44%	5%	5%	10%	10%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	7.4		5.8	80.1	69.3	
Effective Green, g (s)	7.4		5.8	80.1	69.3	
Actuated g/C Ratio	0.07		0.06	0.80	0.69	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	158		88	3174	2381	
v/s Ratio Prot	c0.03		0.03	c0.33	0.22	
v/s Ratio Perm						
v/c Ratio	0.42		0.48	0.41	0.32	
Uniform Delay, d1	44.2		45.6	3.0	6.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.8		4.0	0.4	0.4	
Delay (s)	46.0		49.7	3.3	6.4	
Level of Service	D		D	A	A	
Approach Delay (s)	46.0			4.8	6.4	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			7.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			100.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			47.1%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	TH	TH		TH	TH		TH	THH		TH	THH	
Traffic Volume (veh/h)	695	165	10	55	325	35	5	555	35	15	285	345
Future Volume (veh/h)	695	165	10	55	325	35	5	555	35	15	285	345
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1709	1709	1709	1654	1654	1654	1600	1600	1600
Adj Flow Rate, veh/h	732	174	11	58	342	37	5	584	37	16	300	363
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	3	3	3	7	7	7	11	11	11
Cap, veh/h	817	741	47	72	384	42	8	1145	72	22	717	392
Arrive On Green	0.26	0.47	0.47	0.04	0.25	0.25	0.01	0.28	0.28	0.01	0.29	0.29
Sat Flow, veh/h	3132	1578	100	1628	1516	164	1576	4064	256	1524	2464	1349
Grp Volume(v), veh/h	732	0	185	58	0	379	5	389	232	16	300	363
Grp Sat Flow(s), veh/h/ln	1566	0	1677	1628	0	1680	1576	1357	1607	1524	1232	1349
Q Serve(g_s), s	22.0	0.0	6.4	3.4	0.0	21.2	0.3	11.7	11.8	1.0	9.6	25.5
Cycle Q Clear(g_c), s	22.0	0.0	6.4	3.4	0.0	21.2	0.3	11.7	11.8	1.0	9.6	25.5
Prop In Lane	1.00		0.06	1.00		0.10	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	817	0	788	72	0	426	8	764	453	22	717	392
V/C Ratio(X)	0.90	0.00	0.23	0.80	0.00	0.89	0.61	0.51	0.51	0.73	0.42	0.93
Avail Cap(c_a), veh/h	1461	0	1350	209	0	784	170	835	494	164	758	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	0.0	15.4	46.2	0.0	35.1	48.4	29.4	29.4	47.9	27.9	33.6
Incr Delay (d2), s/veh	1.5	0.0	0.1	7.5	0.0	2.6	24.3	0.4	0.7	15.6	0.3	25.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.2	0.0	2.4	1.5	0.0	8.8	0.2	3.6	4.4	0.5	2.7	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.3	0.0	15.5	53.6	0.0	37.7	72.7	29.8	30.1	63.5	28.2	59.1
LnGrp LOS	D	A	B	D	A	D	E	C	C	E	C	E
Approach Vol, veh/h		917			437			626			679	
Approach Delay, s/veh		32.1			39.8			30.2			45.5	
Approach LOS		C			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	32.5	8.8	50.3	5.0	33.4	29.9	29.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	30.0	12.5	78.5	10.5	30.0	45.5	45.5				
Max Q Clear Time (g_c+I1), s	3.0	13.8	5.4	8.4	2.3	27.5	24.0	23.2				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.7	0.0	0.9	1.4	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			36.4									
HCM 6th LOS			D									

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	430	85	45	0	130	50	10	0	0	0	0	30
Future Vol, veh/h	430	85	45	0	130	50	10	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	5	5	5	3	3	3	57	57	57
Mvmt Flow	453	89	47	0	137	53	11	0	0	0	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	136	0	0	1199	1209	113	1183	1206	164
Stage 1	-	-	-	-	-	-	1019	1019	-	164	164	-
Stage 2	-	-	-	-	-	-	180	190	-	1019	1042	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.13	6.53	6.23	7.67	7.07	6.77
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.527	4.027	3.327	4.013	4.513	3.813
Pot Cap-1 Maneuver	1384	-	-	1430	-	-	161	182	937	130	145	756
Stage 1	-	-	-	-	-	-	285	313	-	724	669	-
Stage 2	-	-	-	-	-	-	819	741	-	227	247	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1384	-	-	1430	-	-	115	122	937	97	98	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	164	-	133	145	-
Stage 1	-	-	-	-	-	-	192	211	-	487	669	-
Stage 2	-	-	-	-	-	-	785	741	-	153	166	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.8	0	29.6	10
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	1384	-	-	1430	-	-	756
HCM Lane V/C Ratio	0.067	0.327	-	-	-	-	-	0.042
HCM Control Delay (s)	29.6	8.9	-	-	0	-	-	10
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	1.4	-	-	0	-	-	0.1

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↷	↱	↰	↷	↱	↰	↷	↱	↰	↷	↱
Traffic Volume (veh/h)	215	5	155	75	5	120	25	1180	65	100	995	30
Future Volume (veh/h)	215	5	155	75	5	120	25	1180	65	100	995	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1723	1723	1532	1532	1532	1641	1641	1641	1654	1654	1654
Adj Flow Rate, veh/h	230	0	11	79	5	-36	26	1242	65	105	1047	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	16	16	16	8	8	8	7	7	7
Cap, veh/h	286	0	123	95	0	145	30	2430	127	124	3097	
Arrive On Green	0.09	0.00	0.09	0.07	0.07	0.00	0.04	1.00	1.00	0.16	1.00	0.00
Sat Flow, veh/h	3281	0	1415	1459	1532	0	1563	3831	200	1576	4467	1402
Grp Volume(v), veh/h	230	0	11	79	-31	-31	26	787	520	105	1047	0
Grp Sat Flow(s), veh/h/ln	1641	0	1415	1459	1532	1298	1563	1214	1603	1576	1489	1402
Q Serve(g_s), s	8.9	0.0	0.9	7.0	0.0	0.0	2.2	0.0	0.0	8.4	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	0.9	7.0	0.0	0.0	2.2	0.0	0.0	8.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	286	0	123	95	0	0	30	1540	1017	124	3097	
V/C Ratio(X)	0.80	0.00	0.09	0.83	0.00	0.00	0.85	0.51	0.51	0.85	0.34	
Avail Cap(c_a), veh/h	669	0	288	163	0	0	156	1540	1017	158	3097	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.88	0.88	0.88	0.93	0.93	0.00
Uniform Delay (d), s/veh	58.2	0.0	54.6	60.0	0.0	0.0	62.3	0.0	0.0	54.0	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.1	6.8	0.0	0.0	40.4	1.1	1.6	22.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.8	0.0	0.3	2.8	0.0	0.0	1.2	0.2	0.5	3.8	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.3	0.0	54.7	66.8	0.0	0.0	102.7	1.1	1.6	76.1	0.3	0.0
LnGrp LOS	E	A	D	E	A	A	F	A	A	E	A	
Approach Vol, veh/h	241			17			1333			1152		
Approach Delay, s/veh	60.0			310.5			3.3			7.2		
Approach LOS	E			F			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	87.0		16.8	6.5	94.6		12.0				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	13.0	58.5		26.5	13.0	58.5		14.5				
Max Q Clear Time (g_c+I1), s	10.4	2.0		10.9	4.2	2.0		9.0				
Green Ext Time (p_c), s	0.0	6.1		0.4	0.0	5.1		0.0				

Intersection Summary

HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved ignoring U-Turning movement.

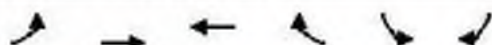
502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-A PM Peak Hour

Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations	↰	↰		↑↑	↰		↰	↑↑↑		
Traffic Volume (vph)	170	90	150	230	1005	275	190	955	0	0
Future Volume (vph)	170	90	150	230	1005	275	190	955	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	0.96		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1516	1357		3061	2313		1568	4507		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1516	1357		3061	2313		1568	4507		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	95	158	242	1058	289	200	1005	0	0
RTOR Reduction (vph)	0	37	0	0	38	0	0	0	0	0
Lane Group Flow (vph)	179	216	0	242	1309	0	200	1005	0	0
Confl. Peds. (#/hr)						8				
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	6%	6%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	19.7	47.3		73.7	73.7		18.6	91.8		
Effective Green, g (s)	19.7	38.3		73.7	73.7		18.6	91.8		
Actuated g/C Ratio	0.15	0.29		0.57	0.57		0.14	0.71		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	229	399		1735	1311		224	3182		
v/s Ratio Prot	c0.12	0.16		0.08			c0.13	0.22		
v/s Ratio Perm					c0.57					
v/c Ratio	0.78	0.54		0.14	1.00		0.89	0.32		
Uniform Delay, d1	53.1	38.5		13.2	28.1		54.7	7.2		
Progression Factor	1.00	1.00		0.86	1.19		1.00	1.00		
Incremental Delay, d2	14.7	1.5		0.1	21.8		32.8	0.3		
Delay (s)	67.8	40.0		11.5	55.1		87.5	7.5		
Level of Service	E	D		B	E		F	A		
Approach Delay (s)	51.5			48.5			20.8	0.0		
Approach LOS	D			D			C	A		
Intersection Summary										
HCM 2000 Control Delay			38.5			HCM 2000 Level of Service			D	
HCM 2000 Volume to Capacity ratio			0.94							
Actuated Cycle Length (s)			130.0			Sum of lost time (s)		18.0		
Intersection Capacity Utilization			72.3%			ICU Level of Service			C	
Analysis Period (min)			15							
c Critical Lane Group										

505: Casino Rd & SWI-A Transit Station Access
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↰		↰	
Traffic Volume (veh/h)	35	420	245	5	5	35
Future Volume (veh/h)	35	420	245	5	5	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1695	1695	1614	1614	385	385
Adj Flow Rate, veh/h	37	442	258	5	5	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	100	100
Cap, veh/h	74	834	390	8	4	31
Arrive On Green	0.05	0.49	0.25	0.25	0.11	0.11
Sat Flow, veh/h	1615	1695	1577	31	37	275
Grp Volume(v), veh/h	37	442	0	263	43	0
Grp Sat Flow(s), veh/h/ln	1615	1695	0	1608	320	0
Q Serve(g_s), s	0.5	4.1	0.0	3.3	2.5	0.0
Cycle Q Clear(g_c), s	0.5	4.1	0.0	3.3	2.5	0.0
Prop In Lane	1.00			0.02	0.12	0.86
Lane Grp Cap(c), veh/h	74	834	0	398	36	0
V/C Ratio(X)	0.50	0.53	0.00	0.66	1.21	0.00
Avail Cap(c_a), veh/h	534	4000	0	3014	388	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.6	4.0	0.0	7.7	10.1	0.0
Incr Delay (d2), s/veh	5.1	0.5	0.0	1.9	136.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.2	0.2	0.0	0.7	1.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	15.7	4.5	0.0	9.6	147.0	0.0
LnGrp LOS	B	A	A	A	F	A
Approach Vol, veh/h		479	263		43	
Approach Delay, s/veh		5.4	9.6		147.0	
Approach LOS		A	A		F	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		15.7		7.0	5.5	10.1
Change Period (Y+Rc), s		4.5		4.5	4.5	* 4.5
Max Green Setting (Gmax), s		53.5		27.5	7.5	* 43
Max Q Clear Time (g_c+I1), s		6.1		4.5	2.5	5.3
Green Ext Time (p_c), s		3.0		0.1	0.0	1.6
Intersection Summary						
HCM 6th Ctrl Delay			14.5			
HCM 6th LOS			B			

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

508: Airport Rd & 94th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↰	↰	↱		↰	↱	↰
Traffic Volume (veh/h)	20	5	25	20	5	110	15	1140	15	20	1200	5
Future Volume (veh/h)	20	5	25	20	5	110	15	1140	15	20	1200	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1559	1559	1559	1723	1723	1723	1627	1627	1627	1695	1695	1695
Adj Flow Rate, veh/h	21	5	-2	21	5	-38	15	1175	15	21	1237	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	14	14	2	2	2	9	9	9	4	4	4
Cap, veh/h	23	1	0	25	1	23	25	3315	42	24	3935	16
Arrive On Green	0.02	0.00	0.00	0.02	0.00	0.00	0.01	0.28	0.28	0.03	1.00	1.00
Sat Flow, veh/h	1485	1559	0	1641	1723	1460	1550	3975	51	1615	4725	19
Grp Volume(v), veh/h	21	3	0	21	5	-38	15	712	478	21	799	443
Grp Sat Flow(s), veh/h/ln	1485	1559	0	1641	1723	1460	1550	1204	1618	1615	1526	1692
Q Serve(g_s), s	1.8	0.1	0.0	1.7	0.1	0.0	1.3	30.9	30.9	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.1	0.0	1.7	0.1	0.0	1.3	30.9	30.9	1.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	23	1	0	25	1	23	25	2008	1349	24	2542	1409
V/C Ratio(X)	0.90	2.50	0.00	0.85	3.77	-1.64	0.60	0.35	0.35	0.86	0.31	0.31
Avail Cap(c_a), veh/h	114	348	0	126	384	348	137	2008	1349	143	2542	1409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.77	0.77	0.77	0.91	0.91	0.91
Uniform Delay (d), s/veh	63.9	65.0	0.0	63.9	65.0	0.0	64.2	19.0	19.0	62.9	0.0	0.0
Incr Delay (d2), s/veh	77.8	1134.4	0.0	65.4	1672.4	0.0	22.9	0.4	0.6	63.3	0.3	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.2	0.4	0.0	1.1	0.7	0.0	0.6	10.0	13.5	1.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	141.6	1199.4	0.0	129.3	1737.4	0.0	87.2	19.4	19.6	126.2	0.3	0.5
LnGrp LOS	F	F	A	F	F	A	F	B	B	F	A	A
Approach Vol, veh/h		24			-12			1205			1263	
Approach Delay, s/veh		273.9			0.0			20.3			2.5	
Approach LOS		F			A			C			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	113.4	8.0	2.2	6.6	113.3	8.0	2.1				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	11.5	60.0	10.0	29.0	11.5	60.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	3.7	32.9	3.7	2.1	3.3	2.0	3.8	2.1				
Green Ext Time (p_c), s	0.0	11.7	0.0	0.0	0.0	15.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			13.8									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection

Intersection Delay, s/veh	7.5
Intersection LOS	A

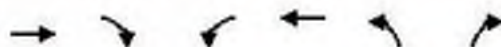
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	85	5	10	20
Future Vol, veh/h	15	5	85	5	10	20
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	39	39	0	0	0	0
Mvmt Flow	19	6	105	6	12	25
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.1	7.5	7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	75%	0%	33%
Vol Thru, %	25%	94%	0%
Vol Right, %	0%	6%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	20	90	30
LT Vol	15	0	10
Through Vol	5	85	0
RT Vol	0	5	20
Lane Flow Rate	25	111	37
Geometry Grp	1	1	1
Degree of Util (X)	0.033	0.122	0.039
Departure Headway (Hd)	4.863	3.95	3.801
Convergence, Y/N	Yes	Yes	Yes
Cap	736	908	932
Service Time	2.895	1.972	1.866
HCM Lane V/C Ratio	0.034	0.122	0.04
HCM Control Delay	8.1	7.5	7
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.4	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB On Ramps Project HCM Signalized Intersection Capacity Analysis

2037 Build SWI-A PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	820	5	330	0
Future Volume (vph)	0	0	820	5	330	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1504	1509	3131	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1504	1509	3131	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	837	5	337	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	418	424	337	0
Heavy Vehicles (%)	0%	0%	5%	5%	3%	3%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5 8	
Permitted Phases						
Actuated Green, G (s)			63.7	63.7	64.5	
Effective Green, g (s)			63.7	63.7	57.8	
Actuated g/C Ratio			0.46	0.46	0.41	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			684	686	1292	
v/s Ratio Prot			0.28	c0.28	c0.11	
v/s Ratio Perm						
v/c Ratio			0.61	0.62	0.26	
Uniform Delay, d1			28.8	28.9	27.0	
Progression Factor			1.00	1.00	0.01	
Incremental Delay, d2			1.8	1.9	0.1	
Delay (s)			30.6	30.8	0.3	
Level of Service			C	C	A	
Approach Delay (s)	0.0			30.7	0.3	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			22.0		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	18.5
Intersection Capacity Utilization			71.7%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Everett Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2037 Build SWI-A PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	325	0	320	820	0
Future Volume (vph)	10	325	0	320	820	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1231	1102		3228	3167	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1231	1102		3228	3167	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	342	0	337	863	0
RTOR Reduction (vph)	0	120	0	0	0	0
Lane Group Flow (vph)	11	222	0	337	863	0
Heavy Vehicles (%)	35%	35%	3%	3%	5%	5%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	33.4	33.4		24.4	94.0	
Effective Green, g (s)	33.4	33.4		24.4	94.0	
Actuated g/C Ratio	0.24	0.24		0.17	0.67	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	293	262		562	2126	
v/s Ratio Prot	0.01	c0.20		c0.10	c0.27	
v/s Ratio Perm						
v/c Ratio	0.04	0.85		0.60	0.41	
Uniform Delay, d1	41.0	50.8		53.3	10.4	
Progression Factor	1.00	1.00		1.00	0.03	
Incremental Delay, d2	0.1	22.1		2.4	0.1	
Delay (s)	41.0	73.0		55.7	0.4	
Level of Service	D	E		E	A	
Approach Delay (s)	72.0			55.7	0.4	
Approach LOS	E			E	A	
Intersection Summary						
HCM 2000 Control Delay	28.7			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.58					
Actuated Cycle Length (s)	140.0			Sum of lost time (s)		18.5
Intersection Capacity Utilization	67.7%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	440	285	5	5	25
Future Vol, veh/h	25	440	285	5	5	25
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	463	300	5	5	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	305	0	-	0	818	304
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	515	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1250	-	-	-	344	733
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1250	-	-	-	337	732
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	598	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		11.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1250	-	-	-	337	732
HCM Lane V/C Ratio	0.021	-	-	-	0.016	0.036
HCM Control Delay (s)	7.9	-	-	-	15.9	10.1
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.1

805: Airport Rd & 100th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	15	180	315	20	135	90	950	70	105	1055	85
Future Volume (veh/h)	85	15	180	315	20	135	90	950	70	105	1055	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1750	1750	1668	1668	1668	1641	1641	1641	1695	1695	1695
Adj Flow Rate, veh/h	89	16	3	332	21	39	95	1000	70	111	1111	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	6	6	6	8	8	8	4	4	4
Cap, veh/h	110	45	37	299	247	208	113	2044	143	130	2528	
Arrive On Green	0.07	0.03	0.03	0.19	0.15	0.15	0.14	1.00	1.00	0.03	0.18	0.00
Sat Flow, veh/h	1667	1750	1448	1589	1668	1405	1563	3759	263	1615	4578	1437
Grp Volume(v), veh/h	89	16	3	332	21	39	95	646	424	111	1111	0
Grp Sat Flow(s),veh/h/ln	1667	1750	1448	1589	1668	1405	1563	1214	1593	1615	1526	1437
Q Serve(g_s), s	6.9	1.2	0.3	24.5	1.4	3.2	7.7	0.0	0.0	8.9	28.0	0.0
Cycle Q Clear(g_c), s	6.9	1.2	0.3	24.5	1.4	3.2	7.7	0.0	0.0	8.9	28.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	110	45	37	299	247	208	113	1320	866	130	2528	
V/C Ratio(X)	0.81	0.36	0.08	1.11	0.09	0.19	0.84	0.49	0.49	0.85	0.44	
Avail Cap(c_a), veh/h	186	438	362	299	545	459	126	1320	866	130	2528	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.94	0.94	0.00
Uniform Delay (d), s/veh	59.9	62.3	61.9	52.7	47.8	48.5	54.9	0.0	0.0	62.5	35.3	0.0
Incr Delay (d2), s/veh	13.1	4.8	0.9	84.5	0.1	0.4	32.1	1.2	1.8	36.7	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.6	0.1	16.8	0.6	1.1	3.8	0.2	0.4	5.1	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.0	67.1	62.8	137.2	47.9	49.0	87.0	1.2	1.8	99.2	35.8	0.0
LnGrp LOS	E	E	E	F	D	D	F	A	A	F	D	
Approach Vol, veh/h	108			392			1165			1222		
Approach Delay, s/veh	71.8			123.7			8.4			41.6		
Approach LOS	E			F			A			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	75.2	32.0	7.8	13.9	76.3	16.1	23.7				
Change Period (Y+Rc), s	4.5	4.5	7.5	4.5	4.5	4.5	7.5	4.5				
Max Green Setting (Gmax), s	10.5	41.5	24.5	32.5	10.5	41.5	14.5	42.5				
Max Q Clear Time (g_c+I1), s	10.9	2.0	26.5	3.2	9.7	30.0	8.9	5.2				
Green Ext Time (p_c), s	0.0	7.8	0.0	0.0	0.0	5.4	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay	40.5
HCM 6th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-A PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TTT	TTT	
Traffic Volume (vph)	210	45	30	900	1465	85
Future Volume (vph)	210	45	30	900	1465	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.74	*0.90	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	2940		1488	3477	4351	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	2940		1488	3477	4351	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	47	32	947	1542	89
RTOR Reduction (vph)	16	0	0	0	4	0
Lane Group Flow (vph)	252	0	32	947	1627	0
Confl. Peds. (#/hr)	3		1			1
Heavy Vehicles (%)	8%	8%	8%	8%	4%	4%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases						
Actuated Green, G (s)	15.5		5.2	102.0	91.8	
Effective Green, g (s)	15.5		5.2	102.0	91.8	
Actuated g/C Ratio	0.12		0.04	0.78	0.71	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	350		59	2728	3072	
v/s Ratio Prot	c0.09		c0.02	0.27	c0.37	
v/s Ratio Perm						
v/c Ratio	0.72		0.54	0.35	0.53	
Uniform Delay, d1	55.2		61.2	4.1	9.0	
Progression Factor	1.00		0.73	0.98	1.45	
Incremental Delay, d2	6.1		4.3	0.3	0.5	
Delay (s)	61.2		49.0	4.3	13.5	
Level of Service	E		D	A	B	
Approach Delay (s)	61.2			5.8	13.5	
Approach LOS	E			A	B	
Intersection Summary						
HCM 2000 Control Delay			15.3	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			130.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			51.2%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2037 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							  			  	
Traffic Volume (veh/h)	515	440	25	60	210	15	5	395	85	35	870	610
Future Volume (veh/h)	515	440	25	60	210	15	5	395	85	35	870	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1682	1682	1682	1723	1723	1723	1641	1641	1641	1709	1709	1709
Adj Flow Rate, veh/h	536	458	24	62	219	14	5	411	72	36	906	545
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	2	2	2	8	8	8	3	3	3
Cap, veh/h	585	484	25	78	264	17	8	1614	277	44	1520	720
Arrive On Green	0.19	0.31	0.31	0.05	0.16	0.16	0.01	0.48	0.48	0.01	0.16	0.16
Sat Flow, veh/h	3107	1583	83	1641	1601	102	1563	3381	580	1628	3042	1441
Grp Volume(v), veh/h	536	0	482	62	0	233	5	293	190	36	906	545
Grp Sat Flow(s),veh/h/ln	1554	0	1666	1641	0	1703	1563	1214	1533	1628	1521	1441
Q Serve(g_s), s	22.0	0.0	36.7	4.9	0.0	17.2	0.4	9.3	9.6	2.9	35.9	46.9
Cycle Q Clear(g_c), s	22.0	0.0	36.7	4.9	0.0	17.2	0.4	9.3	9.6	2.9	35.9	46.9
Prop In Lane	1.00		0.05	1.00		0.06	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	585	0	509	78	0	281	8	1159	732	44	1520	720
V/C Ratio(X)	0.92	0.00	0.95	0.80	0.00	0.83	0.63	0.25	0.26	0.81	0.60	0.76
Avail Cap(c_a), veh/h	609	0	570	133	0	386	126	1159	732	131	1520	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	51.8	0.0	44.1	61.3	0.0	52.5	64.5	20.2	20.3	64.1	42.1	46.8
Incr Delay (d2), s/veh	17.9	0.0	22.8	6.9	0.0	7.7	26.6	0.5	0.9	10.4	1.5	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.0	18.1	2.2	0.0	8.0	0.2	2.6	3.5	1.3	14.9	19.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.6	0.0	66.9	68.2	0.0	60.2	91.2	20.7	21.1	74.5	43.6	52.9
LnGrp LOS	E	A	E	E	A	E	F	C	C	E	D	D
Approach Vol, veh/h	1018				295				488			
Approach Delay, s/veh	68.3				61.9				21.6			
Approach LOS	E				E				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	67.1	10.6	44.2	5.2	69.9	29.0	25.9				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	46.0	10.5	44.5	10.5	46.0	25.5	29.5				
Max Q Clear Time (g_c+I1), s	4.9	11.6	6.9	38.7	2.4	48.9	24.0	19.2				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.0	0.0	0.0	0.2	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	51.5											
HCM 6th LOS	D											

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	215	0	0	140	5	40	0	0	90	0	355
Future Vol, veh/h	20	215	0	0	140	5	40	0	0	90	0	355
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	8	8	8	3	3	3	2	2	2
Mvmt Flow	21	226	0	0	147	5	42	0	0	95	0	374

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	152	0	0	226	0	0	605	420	226	418	418	150
Stage 1	-	-	-	-	-	-	268	268	-	150	150	-
Stage 2	-	-	-	-	-	-	337	152	-	268	268	-
Critical Hdwy	4.12	-	-	4.18	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.272	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1429	-	-	1308	-	-	408	523	811	545	526	896
Stage 1	-	-	-	-	-	-	735	685	-	853	773	-
Stage 2	-	-	-	-	-	-	675	770	-	738	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1429	-	-	1308	-	-	235	515	811	539	518	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	557	-	598	562	-
Stage 1	-	-	-	-	-	-	724	675	-	840	773	-
Stage 2	-	-	-	-	-	-	393	770	-	727	677	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.3	15.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	312	1429	-	-	1308	-	-	814
HCM Lane V/C Ratio	0.135	0.015	-	-	-	-	-	0.575
HCM Control Delay (s)	18.3	7.6	-	-	0	-	-	15.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	3.7

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension
 2046 Build SWI-A AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	25	40	0	40	140	805	65	105	945	195
Future Volume (veh/h)	40	5	25	40	0	40	140	805	65	105	945	195
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1695	1695	1695	1313	1313	1313	1641	1641	1641	1641	1641	1641
Adj Flow Rate, veh/h	42	5	3	42	0	5	147	847	63	111	995	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	32	32	32	8	8	8	8	8	8
Cap, veh/h	115	121	98	127	0	109	592	2310	171	137	1078	
Arrive On Green	0.07	0.07	0.07	0.10	0.00	0.10	0.38	0.58	0.58	0.18	0.57	0.00
Sat Flow, veh/h	1615	1695	1375	1251	0	1070	1563	3981	295	1563	3790	1391
Grp Volume(v), veh/h	42	5	3	42	0	5	147	572	338	111	995	0
Grp Sat Flow(s),veh/h/ln	1615	1695	1375	1251	0	1070	1563	1345	1585	1563	1263	1391
Q Serve(g_s), s	2.7	0.3	0.2	3.4	0.0	0.5	7.1	12.5	12.5	7.5	26.2	0.0
Cycle Q Clear(g_c), s	2.7	0.3	0.2	3.4	0.0	0.5	7.1	12.5	12.5	7.5	26.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	115	121	98	127	0	109	592	1562	920	137	1078	
V/C Ratio(X)	0.37	0.04	0.03	0.33	0.00	0.05	0.25	0.37	0.37	0.81	0.92	
Avail Cap(c_a), veh/h	154	162	131	313	0	268	592	1562	920	213	1292	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	0.83	0.83	0.00
Uniform Delay (d), s/veh	48.7	47.6	47.6	45.9	0.0	44.6	23.4	12.3	12.3	44.4	22.6	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.6	0.0	0.1	0.2	0.5	0.9	5.1	12.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.1	0.1	1.1	0.0	0.1	2.5	3.5	4.2	2.8	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.4	47.6	47.6	46.5	0.0	44.7	23.6	12.8	13.2	49.6	34.8	0.0
LnGrp LOS	D	D	D	D	A	D	C	B	B	D	C	
Approach Vol, veh/h	50			47			1057			1106		
Approach Delay, s/veh	49.1			46.3			14.5			36.3		
Approach LOS	D			D			B			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.7	68.3		13.3	46.2	35.8		14.7				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.5	* 4.5		3.5				
Max Green Setting (Gmax), s	15.0	39.5		10.5	17.0	* 38		27.5				
Max Q Clear Time (g_c+I1), s	9.5	14.5		4.7	9.1	28.2		5.4				
Green Ext Time (p_c), s	0.1	3.6		0.0	0.2	3.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	26.6											
HCM 6th LOS	C											

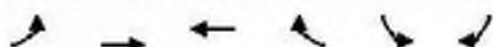
502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
HCM Signalized Intersection Capacity Analysis

Everett Link Extension
2046 Build SWI-A AM Peak Hour

										
Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	220	95	120	125	600	155	220	1025	0	0
Future Volume (vph)	220	95	120	125	600	155	220	1025	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	0.96		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1448	1295		2922	2215		1539	4424		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1448	1295		2922	2215		1539	4424		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	100	126	132	632	163	232	1079	0	0
RTOR Reduction (vph)	0	40	0	0	43	0	0	0	0	0
Lane Group Flow (vph)	232	186	0	132	752	0	232	1079	0	0
Confl. Peds. (#/hr)	1					8	8			
Heavy Vehicles (%)	11%	11%	11%	10%	10%	10%	8%	8%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	15.0	47.7		53.3	53.3		25.7	68.0		
Effective Green, g (s)	15.0	40.7		53.3	53.3		25.7	68.0		
Actuated g/C Ratio	0.14	0.37		0.48	0.48		0.23	0.62		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	197	479		1415	1073		359	2734		
v/s Ratio Prot	c0.16	0.14		0.05			c0.15	0.24		
v/s Ratio Perm					c0.34					
v/c Ratio	1.18	0.39		0.09	0.70		0.65	0.39		
Uniform Delay, d1	47.5	25.5		15.3	22.1		38.0	10.6		
Progression Factor	1.00	1.00		1.25	1.22		1.00	1.00		
Incremental Delay, d2	120.2	0.5		0.1	3.5		4.0	0.4		
Delay (s)	167.7	26.0		19.3	30.4		42.0	11.0		
Level of Service	F	C		B	C		D	B		
Approach Delay (s)	97.8			28.9			16.5	0.0		
Approach LOS	F			C			B	A		
Intersection Summary										
HCM 2000 Control Delay		34.6		HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio		0.76								
Actuated Cycle Length (s)		110.0		Sum of lost time (s)				16.0		
Intersection Capacity Utilization		58.1%		ICU Level of Service				B		
Analysis Period (min)		15								
c Critical Lane Group										

505: Casino Rd & SWI-A Transit Station Access
 HCM 6th Signalized Intersection Summary

Everett Link Extension
 2046 Build SWI-A AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	35	165	380	5	5	35	
Future Volume (veh/h)	35	165	380	5	5	35	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1532	1532	1641	1641	385	385	
Adj Flow Rate, veh/h	36	172	396	5	5	28	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %	16	16	8	8	100	100	
Cap, veh/h	125	928	587	7	29	26	
Arrive On Green	0.09	0.61	0.36	0.36	0.08	0.08	
Sat Flow, veh/h	1459	1532	1617	20	367	326	
Grp Volume(v), veh/h	36	172	0	401	5	28	
Grp Sat Flow(s),veh/h/ln	1459	1532	0	1637	367	326	
Q Serve(g_s), s	0.7	1.6	0.0	6.6	0.4	2.5	
Cycle Q Clear(g_c), s	0.7	1.6	0.0	6.6	0.4	2.5	
Prop In Lane	1.00			0.01	1.00	1.00	
Lane Grp Cap(c), veh/h	125	928	0	594	29	26	
V/C Ratio(X)	0.29	0.19	0.00	0.67	0.17	1.08	
Avail Cap(c_a), veh/h	459	2601	0	2008	300	267	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	13.6	2.8	0.0	8.5	13.7	14.6	
Incr Delay (d2), s/veh	1.3	0.1	0.0	1.3	2.7	105.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	1.6	0.0	1.2	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	14.9	2.9	0.0	9.9	16.4	119.6	
LnGrp LOS	B	A	A	A	B	F	
Approach Vol, veh/h		208	401		33		
Approach Delay, s/veh		5.0	9.9		104.0		
Approach LOS		A	A		F		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				24.3	7.5	7.7	16.5
Change Period (Y+Rc), s				5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s				54.0	26.0	10.0	39.0
Max Q Clear Time (g_c+I1), s				3.6	4.5	2.7	8.6
Green Ext Time (p_c), s				1.0	0.1	0.0	2.6
Intersection Summary							
HCM 6th Ctrl Delay			13.1				
HCM 6th LOS			B				

508: Airport Rd & 94th St
HCM 6th Signalized Intersection Summary

Everett Link Extension
2046 Build SWI-A AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	5	10	5	5	0	15	15	990	65	130	855	25
Future Volume (veh/h)	5	10	5	5	0	15	15	990	65	130	855	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1068	1068	1068	1573	1573	1573	1641	1641	1641	1627	1627	1627
Adj Flow Rate, veh/h	5	11	2	5	0	5	16	1042	63	137	900	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	50	50	50	13	13	13	8	8	8	9	9	9
Cap, veh/h	14	47	9	20	85	284	62	1696	102	247	2155	62
Arrive On Green	0.01	0.05	0.05	0.01	0.00	0.05	0.04	0.42	0.42	0.16	0.54	0.54
Sat Flow, veh/h	1017	879	160	1498	1573	1333	1563	4043	244	1550	3997	115
Grp Volume(v), veh/h	5	0	13	5	0	5	16	693	412	137	564	362
Grp Sat Flow(s),veh/h/ln	1017	0	1039	1498	1573	1333	1563	1345	1596	1550	1253	1606
Q Serve(g_s), s	0.3	0.0	0.7	0.2	0.0	0.2	0.5	11.1	11.1	4.5	7.4	7.4
Cycle Q Clear(g_c), s	0.3	0.0	0.7	0.2	0.0	0.2	0.5	11.1	11.1	4.5	7.4	7.4
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.15	1.00		0.07
Lane Grp Cap(c), veh/h	14	0	56	20	85	284	62	1129	670	247	1351	866
V/C Ratio(X)	0.37	0.00	0.23	0.25	0.00	0.02	0.26	0.61	0.62	0.56	0.42	0.42
Avail Cap(c_a), veh/h	185	0	547	272	828	914	440	1759	1044	436	1638	1050
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	25.0	26.9	0.0	17.1	25.7	12.5	12.5	21.4	7.5	7.5
Incr Delay (d2), s/veh	22.0	0.0	3.0	9.0	0.0	0.0	3.1	0.8	1.3	2.8	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.1	0.0	0.0	0.2	2.6	3.2	1.6	1.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.0	0.0	27.9	35.9	0.0	17.2	28.8	13.3	13.8	24.1	7.8	8.0
LnGrp LOS	D	A	C	D	A	B	C	B	B	C	A	A
Approach Vol, veh/h	18				10				1121			
Approach Delay, s/veh	33.8				26.5				13.7			
Approach LOS	C				C				B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	28.1	6.7	7.0	6.7	34.7	6.7	7.0				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	15.5	36.0	10.0	29.0	15.5	36.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	6.5	13.1	2.2	2.7	2.5	9.4	2.3	2.2				
Green Ext Time (p_c), s	0.3	10.0	0.0	0.0	0.0	8.6	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	12.1											
HCM 6th LOS	B											

Intersection

Intersection Delay, s/veh	7.2
Intersection LOS	A

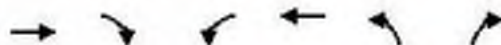
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	20	5	5	20	10
Future Vol, veh/h	15	20	5	5	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	13	13	0	0	0	0
Mvmt Flow	15	20	5	5	20	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.7	7.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	67%
Vol Thru, %	57%	50%	0%
Vol Right, %	0%	50%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	35	10	30
LT Vol	15	0	20
Through Vol	20	5	0
RT Vol	0	5	10
Lane Flow Rate	35	10	30
Geometry Grp	1	1	1
Degree of Util (X)	0.041	0.01	0.033
Departure Headway (Hd)	4.268	3.679	3.911
Convergence, Y/N	Yes	Yes	Yes
Cap	842	973	916
Service Time	2.28	1.699	1.933
HCM Lane V/C Ratio	0.042	0.01	0.033
HCM Control Delay	7.5	6.7	7.1
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp Extension HCM Signalized Intersection Capacity Analysis

2046 Build SWI-A AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	925	15	255	0
Future Volume (vph)	0	0	925	15	255	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1449	1455	2780	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1449	1455	2780	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	974	16	268	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	497	493	268	0
Heavy Vehicles (%)	0%	0%	9%	9%	16%	16%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5.8	
Permitted Phases						
Actuated Green, G (s)			69.8	69.8	69.5	
Effective Green, g (s)			69.8	69.8	62.8	
Actuated g/C Ratio			0.46	0.46	0.42	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			669	672	1155	
v/s Ratio Prot			c0.34	0.34	c0.10	
v/s Ratio Perm						
v/c Ratio			0.74	0.73	0.23	
Uniform Delay, d1			33.3	33.1	28.6	
Progression Factor			1.00	1.00	0.03	
Incremental Delay, d2			4.7	4.4	0.1	
Delay (s)			38.0	37.5	1.0	
Level of Service			D	D	A	
Approach Delay (s)	0.0			37.8	1.0	
Approach LOS	A			D	A	
Intersection Summary						
HCM 2000 Control Delay			29.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			151.1		Sum of lost time (s)	18.5
Intersection Capacity Utilization			73.5%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension
 2046 Build SWI-A AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱		↕	↕	↰
Traffic Volume (vph)	35	320	0	220	925	0
Future Volume (vph)	35	320	0	220	925	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1374	1229		2866	3050	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1374	1229		2866	3050	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	337	0	232	974	0
RTOR Reduction (vph)	0	131	0	0	0	0
Lane Group Flow (vph)	37	206	0	232	974	0
Heavy Vehicles (%)	21%	21%	16%	16%	9%	9%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	29.9	29.9		32.9	108.6	
Effective Green, g (s)	29.9	29.9		32.9	108.6	
Actuated g/C Ratio	0.20	0.20		0.22	0.72	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	271	243		624	2192	
v/s Ratio Prot	0.03	c0.17		0.08	c0.32	
v/s Ratio Perm						
v/c Ratio	0.14	0.85		0.37	0.44	
Uniform Delay, d1	50.0	58.4		50.3	8.8	
Progression Factor	1.00	1.00		1.00	0.01	
Incremental Delay, d2	0.3	23.8		0.7	0.1	
Delay (s)	50.3	82.2		51.0	0.2	
Level of Service	D	F		D	A	
Approach Delay (s)	79.1			51.0	0.2	
Approach LOS	E			D	A	
Intersection Summary						
HCM 2000 Control Delay			26.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			151.1		Sum of lost time (s)	18.5
Intersection Capacity Utilization			69.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	225	405	5	5	25
Future Vol, veh/h	25	225	405	5	5	25
Conflicting Peds, #/hr	14	0	0	14	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	237	426	5	5	26
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	445	0	-	0	732	444
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	289	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1110	-	-	-	387	612
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1095	-	-	-	368	603
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	748	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.8	0		11.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1095	-	-	-	368	603
HCM Lane V/C Ratio	0.024	-	-	-	0.014	0.044
HCM Control Delay (s)	8.4	-	-	-	14.9	11.2
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.1

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension
2046 Build SWI-A AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	10	45	50	15	110	85	915	390	105	685	75
Future Volume (veh/h)	45	10	45	50	15	110	85	915	390	105	685	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1573	1573	1559	1559	1559	1668	1668	1668	1600	1600	1600
Adj Flow Rate, veh/h	47	11	9	53	16	22	89	963	353	111	721	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	13	13	14	14	14	6	6	6	11	11	11
Cap, veh/h	124	122	103	131	130	110	176	1335	489	180	1633	
Arrive On Green	0.08	0.08	0.08	0.09	0.08	0.08	0.11	0.43	0.43	0.12	0.44	0.00
Sat Flow, veh/h	1498	1573	1323	1485	1559	1312	1589	3073	1125	1524	3696	1356
Grp Volume(v), veh/h	47	11	9	53	16	22	89	857	459	111	721	0
Grp Sat Flow(s), veh/h/ln	1498	1573	1323	1485	1559	1312	1589	1368	1462	1524	1232	1356
Q Serve(g_s), s	2.3	0.5	0.5	2.6	0.7	1.2	4.0	19.7	19.8	5.3	10.3	0.0
Cycle Q Clear(g_c), s	2.3	0.5	0.5	2.6	0.7	1.2	4.0	19.7	19.8	5.3	10.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	124	122	103	131	130	110	176	1189	635	180	1633	
V/C Ratio(X)	0.38	0.09	0.09	0.40	0.12	0.20	0.50	0.72	0.72	0.62	0.44	
Avail Cap(c_a), veh/h	225	668	562	223	662	557	405	2682	1434	388	3623	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.2	32.8	32.8	33.0	32.5	32.7	32.0	17.8	17.8	32.1	14.8	0.0
Incr Delay (d2), s/veh	0.7	0.3	0.4	0.7	0.2	0.3	2.7	0.8	1.6	1.3	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.8	0.2	0.2	0.9	0.3	0.4	1.6	5.4	5.9	1.9	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.9	33.1	33.1	33.7	32.6	33.0	34.7	18.7	19.4	33.3	15.0	0.0
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	B	
Approach Vol, veh/h		67			91			1405			832	
Approach Delay, s/veh		33.7			33.3			19.9			17.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	38.2	14.3	10.4	13.0	38.8	13.8	10.9				
Change Period (Y+Rc), s	4.5	5.0	7.5	4.5	4.5	5.0	7.5	4.5				
Max Green Setting (Gmax), s	19.5	75.0	11.5	32.5	19.5	75.0	11.5	32.5				
Max Q Clear Time (g_c+I1), s	7.3	21.8	4.6	2.5	6.0	12.3	4.3	3.2				
Green Ext Time (p_c), s	0.1	11.5	0.0	0.0	0.2	5.3	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			19.9									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension
 2046 Build SWI-A AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	  			  	  	
Traffic Volume (vph)	60	40	40	1305	640	145
Future Volume (vph)	60	40	40	1305	640	145
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.82	*0.77	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	2139		1531	3963	3439	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	2139		1531	3963	3439	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	42	42	1374	674	153
RTOR Reduction (vph)	38	0	0	0	16	0
Lane Group Flow (vph)	67	0	42	1374	811	0
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	44%	44%	5%	5%	10%	10%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	10.6		6.4	86.9	75.5	
Effective Green, g (s)	10.6		6.4	86.9	75.5	
Actuated g/C Ratio	0.10		0.06	0.79	0.69	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	206		89	3130	2360	
v/s Ratio Prot	c0.03		0.03	c0.35	0.24	
v/s Ratio Perm						
v/c Ratio	0.33		0.47	0.44	0.34	
Uniform Delay, d1	46.4		50.2	3.7	7.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.9		3.9	0.4	0.4	
Delay (s)	47.3		54.1	4.2	7.5	
Level of Service	D		D	A	A	
Approach Delay (s)	47.3			5.6	7.5	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			110.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			54.6%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension
2046 Build SWI-A AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	TH	TH		TH	TH		TH	THH		TH	THH	
Traffic Volume (veh/h)	735	175	10	55	340	35	5	585	40	15	295	360
Future Volume (veh/h)	735	175	10	55	340	35	5	585	40	15	295	360
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1695	1695	1695	1709	1709	1709	1654	1654	1654	1600	1600	1600
Adj Flow Rate, veh/h	774	184	10	58	358	37	5	616	38	16	311	232
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	3	3	3	7	7	7	11	11	11
Cap, veh/h	872	728	40	142	405	42	21	833	51	56	563	308
Arrive On Green	0.28	0.46	0.46	0.09	0.27	0.27	0.01	0.20	0.20	0.04	0.23	0.23
Sat Flow, veh/h	3132	1593	87	1628	1523	157	1576	4072	250	1524	2464	1350
Grp Volume(v), veh/h	774	0	194	58	0	395	5	409	245	16	311	232
Grp Sat Flow(s), veh/h/ln	1566	0	1680	1628	0	1681	1576	1357	1608	1524	1232	1350
Q Serve(g_s), s	20.4	0.0	6.1	2.9	0.0	19.4	0.3	12.2	12.3	0.9	9.6	13.8
Cycle Q Clear(g_c), s	20.4	0.0	6.1	2.9	0.0	19.4	0.3	12.2	12.3	0.9	9.6	13.8
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	872	0	767	142	0	446	21	555	329	56	563	308
V/C Ratio(X)	0.89	0.00	0.25	0.41	0.00	0.88	0.24	0.74	0.74	0.28	0.55	0.75
Avail Cap(c_a), veh/h	1691	0	1433	198	0	732	192	1166	691	186	1058	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	14.4	37.2	0.0	30.4	42.1	32.1	32.1	40.4	29.4	31.0
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.7	0.0	4.4	2.2	1.4	2.5	1.0	0.6	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.4	0.0	2.2	1.2	0.0	8.1	0.1	3.8	4.7	0.3	2.7	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.1	0.0	14.4	37.9	0.0	34.8	44.3	33.5	34.6	41.4	30.0	33.8
LnGrp LOS	C	A	B	D	A	C	D	C	C	D	C	C
Approach Vol, veh/h	968			453			659			559		
Approach Delay, s/veh	27.7			35.2			34.0			31.9		
Approach LOS	C			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	22.6	12.0	43.8	5.6	24.7	28.5	27.4				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	37.0	10.5	73.5	10.5	37.0	46.5	37.5				
Max Q Clear Time (g_c+I1), s	2.9	14.3	4.9	8.1	2.3	15.8	22.4	21.4				
Green Ext Time (p_c), s	0.0	3.1	0.0	0.7	0.0	2.6	1.6	1.4				
Intersection Summary												
HCM 6th Ctrl Delay	31.5											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	455	85	45	0	140	55	10	0	0	0	0	30
Future Vol, veh/h	455	85	45	0	140	55	10	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	5	5	5	3	3	3	57	57	57
Mvmt Flow	479	89	47	0	147	58	11	0	0	0	0	32
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	205	0	0	136	0	0	1263	1276	113	1247	1270	176
Stage 1	-	-	-	-	-	-	1071	1071	-	176	176	-
Stage 2	-	-	-	-	-	-	192	205	-	1071	1094	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.13	6.53	6.23	7.67	7.07	6.77
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.527	4.027	3.327	4.013	4.513	3.813
Pot Cap-1 Maneuver	1366	-	-	1430	-	-	146	166	937	117	132	743
Stage 1	-	-	-	-	-	-	266	296	-	713	661	-
Stage 2	-	-	-	-	-	-	807	730	-	211	232	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1366	-	-	1430	-	-	102	108	937	85	86	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	147	-	119	132	-
Stage 1	-	-	-	-	-	-	173	192	-	463	661	-
Stage 2	-	-	-	-	-	-	773	730	-	137	151	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	7			0			32.8			10.1		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	140	1366	-	-	1430	-	-	743				
HCM Lane V/C Ratio	0.075	0.351	-	-	-	-	-	0.043				
HCM Control Delay (s)	32.8	9.1	-	-	0	-	-	10.1				
HCM Lane LOS	D	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.2	1.6	-	-	0	-	-	0.1				

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2046 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	220	5	160	75	5	120	25	1210	65	105	1020	30
Future Volume (veh/h)	220	5	160	75	5	120	25	1210	65	105	1020	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1723	1723	1723	1532	1532	1532	1641	1641	1641	1654	1654	1654
Adj Flow Rate, veh/h	236	0	16	79	5	-36	26	1274	65	111	1074	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	16	16	16	8	8	8	7	7	7
Cap, veh/h	285	0	123	116	0	285	30	2365	121	130	3035	
Arrive On Green	0.09	0.00	0.09	0.08	0.08	0.00	0.04	1.00	1.00	0.17	1.00	0.00
Sat Flow, veh/h	3281	0	1414	1459	1532	0	1563	3837	196	1576	4467	1402
Grp Volume(v), veh/h	236	0	16	79	-31	-31	26	806	533	111	1074	0
Grp Sat Flow(s),veh/h/ln	1641	0	1414	1459	1532	1298	1563	1214	1604	1576	1489	1402
Q Serve(g_s), s	9.2	0.0	1.4	6.9	0.0	0.0	2.2	0.0	0.0	8.9	0.0	0.0
Cycle Q Clear(g_c), s	9.2	0.0	1.4	6.9	0.0	0.0	2.2	0.0	0.0	8.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	285	0	123	116	0	0	30	1497	989	130	3035	
V/C Ratio(X)	0.83	0.00	0.13	0.68	0.00	0.00	0.85	0.54	0.54	0.85	0.35	
Avail Cap(c_a), veh/h	316	0	136	320	0	0	156	1497	989	158	3035	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.87	0.87	0.87	0.94	0.94	0.00
Uniform Delay (d), s/veh	58.4	0.0	54.8	58.2	0.0	0.0	62.3	0.0	0.0	53.5	0.0	0.0
Incr Delay (d2), s/veh	14.0	0.0	0.2	2.6	0.0	0.0	40.1	1.2	1.8	25.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.5	2.6	0.0	0.0	1.2	0.3	0.5	4.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	0.0	55.0	60.8	0.0	0.0	102.3	1.2	1.8	78.6	0.3	0.0
LnGrp LOS	E	A	E	E	A	A	F	A	A	E	A	
Approach Vol, veh/h	252				17		1365				1185	
Approach Delay, s/veh	71.3				282.5		3.4				7.6	
Approach LOS	E				F		A				A	
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	14.7	84.6	16.8		6.5	92.8	13.9					
Change Period (Y+Rc), s	4.0	4.5	5.5		4.0	4.5	3.5					
Max Green Setting (Gmax), s	13.0	58.5	12.5		13.0	58.5	28.5					
Max Q Clear Time (g_c+I1), s	10.9	2.0	11.2		4.2	2.0	8.9					
Green Ext Time (p_c), s	0.0	6.3	0.1		0.0	5.3	0.1					

Intersection Summary

HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved ignoring U-Turning movement.

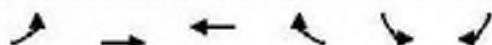
502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-A PM Peak Hour

	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Movement										
Lane Configurations	↰	↰		↱	↱		↰	↱		
Traffic Volume (vph)	175	95	150	235	1030	280	190	980	0	0
Future Volume (vph)	175	95	150	235	1030	280	190	980	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	0.96		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1516	1357		3061	2313		1568	4507		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1516	1357		3061	2313		1568	4507		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	184	100	158	247	1084	295	200	1032	0	0
RTOR Reduction (vph)	0	34	0	0	37	0	0	0	0	0
Lane Group Flow (vph)	184	224	0	247	1342	0	200	1032	0	0
Confl. Peds. (#/hr)						8				
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	6%	6%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	21.6	46.1		74.9	74.9		15.5	93.9		
Effective Green, g (s)	21.6	37.1		74.9	74.9		15.5	93.9		
Actuated g/C Ratio	0.17	0.29		0.58	0.58		0.12	0.72		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	251	387		1763	1332		186	3255		
v/s Ratio Prot	c0.12	0.16		0.08			c0.13	0.23		
v/s Ratio Perm					c0.58					
v/c Ratio	0.73	0.58		0.14	1.01		1.08	0.32		
Uniform Delay, d1	51.5	39.8		12.7	27.5		57.2	6.5		
Progression Factor	1.00	1.00		1.05	1.54		1.00	1.00		
Incremental Delay, d2	9.2	2.1		0.1	22.9		87.4	0.3		
Delay (s)	60.6	41.8		13.5	65.5		144.7	6.8		
Level of Service	E	D		B	E		F	A		
Approach Delay (s)	49.7			57.6			29.1	0.0		
Approach LOS	D			E			C	A		
Intersection Summary										
HCM 2000 Control Delay			45.9			HCM 2000 Level of Service			D	
HCM 2000 Volume to Capacity ratio			0.96							
Actuated Cycle Length (s)			130.0			Sum of lost time (s)		18.0		
Intersection Capacity Utilization			73.7%			ICU Level of Service			D	
Analysis Period (min)			15							
c Critical Lane Group										

505: Casino Rd & SWI-A Transit Station Access
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2046 Build SWI-A PM Peak Hour

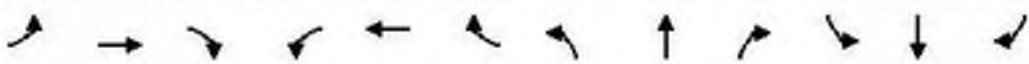


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↰		↰	
Traffic Volume (veh/h)	35	430	250	5	5	35
Future Volume (veh/h)	35	430	250	5	5	35
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1695	1695	1614	1614	385	385
Adj Flow Rate, veh/h	37	453	263	5	5	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	10	10	100	100
Cap, veh/h	289	1000	388	7	3	22
Arrive On Green	0.18	0.59	0.25	0.25	0.08	0.08
Sat Flow, veh/h	1615	1695	1578	30	38	279
Grp Volume(v), veh/h	37	453	0	268	43	0
Grp Sat Flow(s), veh/h/ln	1615	1695	0	1608	325	0
Q Serve(g_s), s	0.5	4.1	0.0	4.1	2.2	0.0
Cycle Q Clear(g_c), s	0.5	4.1	0.0	4.1	2.2	0.0
Prop In Lane	1.00			0.02	0.12	0.86
Lane Grp Cap(c), veh/h	289	1000	0	396	26	0
V/C Ratio(X)	0.13	0.45	0.00	0.68	1.64	0.00
Avail Cap(c_a), veh/h	621	3324	0	2328	327	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.4	3.1	0.0	9.3	12.5	0.0
Incr Delay (d2), s/veh	0.2	0.3	0.0	2.0	324.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.1	0.1	0.0	1.1	2.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	9.6	3.5	0.0	11.3	336.7	0.0
LnGrp LOS	A	A	A	B	F	A
Approach Vol, veh/h		490	268		43	
Approach Delay, s/veh		3.9	11.3		336.7	
Approach LOS		A	B		F	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		20.6		6.7	9.4	11.2
Change Period (Y+Rc), s		4.5		4.5	4.5	* 4.5
Max Green Setting (Gmax), s		53.5		27.5	10.5	* 40
Max Q Clear Time (g_c+I1), s		6.1		4.2	2.5	6.1
Green Ext Time (p_c), s		3.1		0.1	0.0	1.6
Intersection Summary						
HCM 6th Ctrl Delay			24.3			
HCM 6th LOS			C			
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

508: Airport Rd & 94th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↑↑↑		↰	↑↑↑	
Traffic Volume (veh/h)	20	5	25	20	5	110	15	1170	15	20	1230	5
Future Volume (veh/h)	20	5	25	20	5	110	15	1170	15	20	1230	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1559	1559	1559	1723	1723	1723	1627	1627	1627	1695	1695	1695
Adj Flow Rate, veh/h	21	5	-2	21	5	-38	15	1206	15	21	1268	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	14	14	2	2	2	9	9	9	4	4	4
Cap, veh/h	23	1	0	25	1	23	25	3316	41	24	3936	16
Arrive On Green	0.02	0.00	0.00	0.02	0.00	0.00	0.01	0.28	0.28	0.03	1.00	1.00
Sat Flow, veh/h	1485	1559	0	1641	1723	1460	1550	3977	49	1615	4725	19
Grp Volume(v), veh/h	21	3	0	21	5	-38	15	730	491	21	819	454
Grp Sat Flow(s), veh/h/ln	1485	1559	0	1641	1723	1460	1550	1204	1618	1615	1526	1692
Q Serve(g_s), s	1.8	0.1	0.0	1.7	0.1	0.0	1.3	31.7	31.8	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.1	0.0	1.7	0.1	0.0	1.3	31.7	31.8	1.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	23	1	0	25	1	23	25	2008	1349	24	2542	1409
V/C Ratio(X)	0.90	2.50	0.00	0.85	3.77	-1.64	0.60	0.36	0.36	0.86	0.32	0.32
Avail Cap(c_a), veh/h	114	348	0	126	384	348	137	2008	1349	143	2542	1409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.75	0.75	0.75	0.91	0.91	0.91
Uniform Delay (d), s/veh	63.9	65.0	0.0	63.9	65.0	0.0	64.2	19.3	19.3	62.9	0.0	0.0
Incr Delay (d2), s/veh	77.8	1134.4	0.0	65.4	1672.4	0.0	22.4	0.4	0.6	63.3	0.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.2	0.4	0.0	1.1	0.7	0.0	0.6	10.2	13.8	1.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	141.6	1199.4	0.0	129.3	1737.4	0.0	86.6	19.7	19.9	126.2	0.3	0.6
LnGrp LOS	F	F	A	F	F	A	F	B	B	F	A	A
Approach Vol, veh/h	24				-12				1236			
Approach Delay, s/veh	273.9				0.0				20.6			
Approach LOS	F				A				C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	113.4	8.0	2.2	6.6	113.3	8.0	2.1				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	11.5	60.0	10.0	29.0	11.5	60.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	3.7	33.8	3.7	2.1	3.3	2.0	3.8	2.1				
Green Ext Time (p_c), s	0.0	11.9	0.0	0.0	0.0	16.5	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection

Intersection Delay, s/veh	7.4
Intersection LOS	A

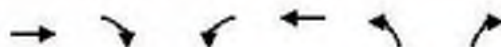
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	90	5	10	20
Future Vol, veh/h	15	5	90	5	10	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	39	39	0	0	0	0
Mvmt Flow	16	5	95	5	11	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	7.4	7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	75%	0%	33%
Vol Thru, %	25%	95%	0%
Vol Right, %	0%	5%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	20	95	30
LT Vol	15	0	10
Through Vol	5	90	0
RT Vol	0	5	20
Lane Flow Rate	21	100	32
Geometry Grp	1	1	1
Degree of Util (X)	0.028	0.109	0.033
Departure Headway (Hd)	4.844	3.94	3.776
Convergence, Y/N	Yes	Yes	Yes
Cap	739	911	940
Service Time	2.872	1.957	1.831
HCM Lane V/C Ratio	0.028	0.11	0.034
HCM Control Delay	8	7.4	7
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.4	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB On Ramps Project HCM Signalized Intersection Capacity Analysis

2046 Build SWI-A PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↰	↰	
Traffic Volume (vph)	0	0	840	5	340	0
Future Volume (vph)	0	0	840	5	340	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1504	1509	3131	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1504	1509	3131	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	857	5	347	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	428	434	347	0
Heavy Vehicles (%)	0%	0%	5%	5%	3%	3%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5 8	
Permitted Phases						
Actuated Green, G (s)			63.6	63.6	66.1	
Effective Green, g (s)			63.6	63.6	59.4	
Actuated g/C Ratio			0.45	0.45	0.42	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			676	678	1314	
v/s Ratio Prot			0.28	c0.29	c0.11	
v/s Ratio Perm						
v/c Ratio			0.63	0.64	0.26	
Uniform Delay, d1			30.0	30.1	26.8	
Progression Factor			1.00	1.00	0.01	
Incremental Delay, d2			2.2	2.3	0.1	
Delay (s)			32.1	32.4	0.3	
Level of Service			C	C	A	
Approach Delay (s)	0.0			32.3	0.3	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			23.1	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			141.5	Sum of lost time (s)		18.5
Intersection Capacity Utilization			72.9%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Everett Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-A PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	330	0	330	840	0
Future Volume (vph)	10	330	0	330	840	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1231	1102		3228	3167	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1231	1102		3228	3167	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	347	0	347	884	0
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	11	233	0	347	884	0
Heavy Vehicles (%)	35%	35%	3%	3%	5%	5%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	34.9	34.9		24.5	94.0	
Effective Green, g (s)	34.9	34.9		24.5	94.0	
Actuated g/C Ratio	0.25	0.25		0.17	0.66	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	303	271		558	2103	
v/s Ratio Prot	0.01	c0.21		c0.11	c0.28	
v/s Ratio Perm						
v/c Ratio	0.04	0.86		0.62	0.42	
Uniform Delay, d1	40.5	51.0		54.2	11.1	
Progression Factor	1.00	1.00		1.00	0.03	
Incremental Delay, d2	0.1	23.9		2.9	0.1	
Delay (s)	40.6	74.8		57.1	0.4	
Level of Service	D	E		E	A	
Approach Delay (s)	73.8			57.1	0.4	
Approach LOS	E			E	A	
Intersection Summary						
HCM 2000 Control Delay	29.3			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.60					
Actuated Cycle Length (s)	141.5			Sum of lost time (s)		18.5
Intersection Capacity Utilization	68.9%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	440	285	5	5	25
Future Vol, veh/h	25	440	285	5	5	25
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	26	463	300	5	5	26
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	305	0	-	0	818	304
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	515	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1250	-	-	-	344	733
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1250	-	-	-	337	732
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	598	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		11.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1250	-	-	-	337	732
HCM Lane V/C Ratio	0.021	-	-	-	0.016	0.036
HCM Control Delay (s)	7.9	-	-	-	15.9	10.1
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.1

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	20	185	320	20	140	90	975	70	110	1080	85
Future Volume (veh/h)	85	20	185	320	20	140	90	975	70	110	1080	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1668	1668	1668	1641	1641	1641	1695	1695	1695
Adj Flow Rate, veh/h	89	21	9	337	21	44	95	1026	70	116	1137	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	6	6	6	8	8	8	4	4	4
Cap, veh/h	110	55	46	299	257	217	113	2025	138	130	2500	
Arrive On Green	0.07	0.03	0.03	0.19	0.15	0.15	0.14	1.00	1.00	0.03	0.18	0.00
Sat Flow, veh/h	1667	1750	1448	1589	1668	1405	1563	3766	257	1615	4578	1437
Grp Volume(v), veh/h	89	21	9	337	21	44	95	661	435	116	1137	0
Grp Sat Flow(s), veh/h/ln	1667	1750	1448	1589	1668	1405	1563	1214	1594	1615	1526	1437
Q Serve(g_s), s	6.9	1.5	0.8	24.5	1.4	3.6	7.7	0.0	0.0	9.3	28.8	0.0
Cycle Q Clear(g_c), s	6.9	1.5	0.8	24.5	1.4	3.6	7.7	0.0	0.0	9.3	28.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	110	55	46	299	257	217	113	1306	857	130	2500	
V/C Ratio(X)	0.81	0.38	0.20	1.13	0.08	0.20	0.84	0.51	0.51	0.89	0.45	
Avail Cap(c_a), veh/h	186	438	362	299	545	459	126	1306	857	130	2500	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.94	0.94	0.00
Uniform Delay (d), s/veh	59.9	61.7	61.3	52.7	47.1	48.0	54.9	0.0	0.0	62.7	36.0	0.0
Incr Delay (d2), s/veh	13.1	4.3	2.1	90.2	0.1	0.5	32.1	1.3	1.9	45.2	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.3	0.7	0.3	17.2	0.6	1.3	3.8	0.2	0.5	5.6	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	66.0	63.4	143.0	47.2	48.5	87.0	1.3	1.9	107.9	36.6	0.0
LnGrp LOS	E	E	E	F	D	D	F	A	A	F	D	
Approach Vol, veh/h		119			402			1191			1253	
Approach Delay, s/veh		71.0			127.7			8.3			43.2	
Approach LOS		E			F			A			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	74.4	32.0	8.6	13.9	75.5	16.1	24.5				
Change Period (Y+Rc), s	4.5	4.5	7.5	4.5	4.5	4.5	7.5	4.5				
Max Green Setting (Gmax), s	10.5	41.5	24.5	32.5	10.5	41.5	14.5	42.5				
Max Q Clear Time (g_c+I1), s	11.3	2.0	26.5	3.5	9.7	30.8	8.9	5.6				
Green Ext Time (p_c), s	0.0	8.1	0.0	0.1	0.0	5.3	0.1	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-A PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TTT	TTT	
Traffic Volume (vph)	215	45	30	920	1500	85
Future Volume (vph)	215	45	30	920	1500	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.74	*0.90	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	2941		1488	3477	4351	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	2941		1488	3477	4351	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	47	32	968	1579	89
RTOR Reduction (vph)	15	0	0	0	3	0
Lane Group Flow (vph)	258	0	32	968	1665	0
Confl. Peds. (#/hr)	4		1			1
Heavy Vehicles (%)	8%	8%	8%	8%	4%	4%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	15.7		5.2	101.8	91.6	
Effective Green, g (s)	15.7		5.2	101.8	91.6	
Actuated g/C Ratio	0.12		0.04	0.78	0.70	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	355		59	2722	3065	
v/s Ratio Prot	c0.09		c0.02	0.28	c0.38	
v/s Ratio Perm						
v/c Ratio	0.73		0.54	0.36	0.54	
Uniform Delay, d1	55.1		61.2	4.2	9.2	
Progression Factor	1.00		0.75	1.04	1.42	
Incremental Delay, d2	6.2		4.2	0.3	0.5	
Delay (s)	61.3		50.0	4.7	13.6	
Level of Service	E		D	A	B	
Approach Delay (s)	61.3			6.2	13.6	
Approach LOS	E			A	B	
Intersection Summary						
HCM 2000 Control Delay			15.5	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.57			
Actuated Cycle Length (s)			130.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			52.1%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-A PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	525	455	25	60	215	15	5	405	85	35	890	625
Future Volume (veh/h)	525	455	25	60	215	15	5	405	85	35	890	625
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1682	1682	1682	1723	1723	1723	1641	1641	1641	1709	1709	1709
Adj Flow Rate, veh/h	547	474	24	62	224	14	5	422	72	36	927	561
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	2	2	2	8	8	8	3	3	3
Cap, veh/h	610	499	25	78	265	17	8	1593	266	44	1494	710
Arrive On Green	0.20	0.31	0.31	0.05	0.17	0.17	0.01	0.47	0.47	0.01	0.16	0.16
Sat Flow, veh/h	3107	1587	80	1641	1604	100	1563	3397	568	1628	3042	1445
Grp Volume(v), veh/h	547	0	498	62	0	238	5	299	195	36	927	561
Grp Sat Flow(s),veh/h/ln	1554	0	1667	1641	0	1704	1563	1214	1537	1628	1521	1445
Q Serve(g_s), s	22.3	0.0	38.0	4.9	0.0	17.6	0.4	9.7	10.0	2.9	36.9	48.5
Cycle Q Clear(g_c), s	22.3	0.0	38.0	4.9	0.0	17.6	0.4	9.7	10.0	2.9	36.9	48.5
Prop In Lane	1.00		0.05	1.00		0.06	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	610	0	524	78	0	282	8	1138	721	44	1494	710
V/C Ratio(X)	0.90	0.00	0.95	0.80	0.00	0.85	0.63	0.26	0.27	0.81	0.62	0.79
Avail Cap(c_a), veh/h	610	0	571	133	0	387	126	1138	721	131	1494	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	51.0	0.0	43.6	61.3	0.0	52.6	64.5	20.9	21.0	64.1	43.2	48.0
Incr Delay (d2), s/veh	15.5	0.0	24.2	6.9	0.0	9.0	26.6	0.6	0.9	10.3	1.6	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.0	18.9	2.2	0.0	8.3	0.2	2.8	3.7	1.3	15.3	20.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	0.0	67.8	68.2	0.0	61.7	91.2	21.5	21.9	74.3	44.8	55.4
LnGrp LOS	E	A	E	E	A	E	F	C	C	E	D	E
Approach Vol, veh/h	1045			300			499			1524		
Approach Delay, s/veh	67.1			63.0			22.4			49.4		
Approach LOS	E			E			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	65.9	10.6	45.4	5.2	68.8	30.0	26.0				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	46.0	10.5	44.5	10.5	46.0	25.5	29.5				
Max Q Clear Time (g_c+I1), s	4.9	12.0	6.9	40.0	2.4	50.5	24.3	19.6				
Green Ext Time (p_c), s	0.0	2.4	0.0	0.9	0.0	0.0	0.2	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	52.1											
HCM 6th LOS	D											

Intersection												
Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	220	0	0	145	5	40	0	0	90	0	365
Future Vol, veh/h	20	220	0	0	145	5	40	0	0	90	0	365
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	8	8	8	3	3	3	2	2	2
Mvmt Flow	21	232	0	0	153	5	42	0	0	95	0	384

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	232	0	0	622	433	232	431	431	157
Stage 1	-	-	-	-	-	-	274	274	-	157	157	-
Stage 2	-	-	-	-	-	-	348	159	-	274	274	-
Critical Hdwy	4.12	-	-	4.18	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.272	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1420	-	-	1301	-	-	398	514	805	535	517	889
Stage 1	-	-	-	-	-	-	730	681	-	845	768	-
Stage 2	-	-	-	-	-	-	666	764	-	732	683	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1419	-	-	1301	-	-	223	506	805	529	509	888
Mov Cap-2 Maneuver	-	-	-	-	-	-	300	551	-	590	556	-
Stage 1	-	-	-	-	-	-	719	671	-	831	767	-
Stage 2	-	-	-	-	-	-	378	763	-	721	673	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.9	15.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	300	1419	-	-	1301	-	-	807
HCM Lane V/C Ratio	0.14	0.015	-	-	-	-	-	0.593
HCM Control Delay (s)	18.9	7.6	-	-	0	-	-	15.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	4

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑↑		↰	↑↑↑	↱
Traffic Volume (veh/h)	40	5	25	45	0	55	135	760	65	105	890	190
Future Volume (veh/h)	40	5	25	45	0	55	135	760	65	105	890	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1313	1313	1313	1641	1641	1641	1641	1641	1641
Adj Flow Rate, veh/h	42	5	2	47	0	20	142	800	59	111	937	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	32	32	32	8	8	8	8	8	8
Cap, veh/h	85	89	71	89	0	74	174	2143	157	137	1952	
Arrive On Green	0.05	0.05	0.05	0.07	0.00	0.07	0.11	0.54	0.54	0.06	0.34	0.00
Sat Flow, veh/h	1615	1695	1356	1251	0	1038	1563	3983	293	1563	3790	1391
Grp Volume(v), veh/h	42	5	2	47	0	20	142	540	319	111	937	0
Grp Sat Flow(s), veh/h/ln	1615	1695	1356	1251	0	1038	1563	1345	1584	1563	1263	1391
Q Serve(g_s), s	1.8	0.2	0.1	2.5	0.0	1.3	6.2	8.1	8.2	4.9	13.6	0.0
Cycle Q Clear(g_c), s	1.8	0.2	0.1	2.5	0.0	1.3	6.2	8.1	8.2	4.9	13.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	85	89	71	89	0	74	174	1448	853	137	1952	
V/C Ratio(X)	0.49	0.06	0.03	0.53	0.00	0.27	0.82	0.37	0.37	0.81	0.48	
Avail Cap(c_a), veh/h	265	279	223	259	0	215	246	1448	853	246	1952	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.87	0.87	0.00
Uniform Delay (d), s/veh	32.2	31.5	31.5	31.4	0.0	30.8	30.4	9.3	9.4	32.4	15.6	0.0
Incr Delay (d2), s/veh	1.6	0.1	0.1	1.8	0.0	0.7	12.1	0.6	1.1	3.7	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.7	0.1	0.0	0.8	0.0	0.3	2.7	2.0	2.4	1.9	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.9	31.6	31.5	33.2	0.0	31.5	42.5	10.0	10.5	36.1	16.3	0.0
LnGrp LOS	C	C	C	C	A	C	D	A	B	D	B	
Approach Vol, veh/h		49			67			1001			1048	
Approach Delay, s/veh		33.6			32.7			14.8			18.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.2	42.2		9.2	11.8	40.5		8.5				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	11.0	15.5		11.5	11.0	15.5		14.5				
Max Q Clear Time (g_c+I1), s	6.9	10.2		3.8	8.2	15.6		4.5				
Green Ext Time (p_c), s	0.0	1.7		0.0	0.1	0.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			17.5									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp Everett Link Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis 2037 Future Improved Conditions AM Peak Hour

										
Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	195	85	85	120	600	135	190	990	0	0
Future Volume (vph)	195	85	85	120	600	135	190	990	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1448	1295		2922	2301		1539	4424		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1448	1295		2922	2301		1539	4424		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	89	89	126	632	142	200	1042	0	0
RTOR Reduction (vph)	0	13	0	0	86	0	0	0	0	0
Lane Group Flow (vph)	205	165	0	126	688	0	200	1042	0	0
Confl. Peds. (#/hr)	1									
Heavy Vehicles (%)	11%	11%	11%	10%	10%	10%	8%	8%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	13.2	36.5		24.5	24.5		16.3	38.6		
Effective Green, g (s)	13.2	29.5		24.5	24.5		16.3	38.6		
Actuated g/C Ratio	0.19	0.42		0.35	0.35		0.23	0.55		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	273	545		1022	805		358	2439		
v/s Ratio Prot	c0.14	0.13		0.04			c0.13	0.24		
v/s Ratio Perm					c0.30					
v/c Ratio	0.75	0.30		0.12	0.85		0.56	0.43		
Uniform Delay, d1	26.8	13.4		15.5	21.1		23.7	9.2		
Progression Factor	1.02	1.05		0.91	1.22		1.00	1.00		
Incremental Delay, d2	9.6	0.3		0.2	10.6		1.9	0.5		
Delay (s)	37.0	14.4		14.4	36.3		25.6	9.8		
Level of Service	D	B		B	D		C	A		
Approach Delay (s)	26.5			33.2			12.3	0.0		
Approach LOS	C			C			B	A		
Intersection Summary										
HCM 2000 Control Delay		21.9			HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio		0.74								
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			16.0		
Intersection Capacity Utilization		46.8%			ICU Level of Service			A		
Analysis Period (min)		15								
c Critical Lane Group										

506: SWI-B Transit Station Access/SWI-B PUDO & Casil Road Link Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis 2037 Future Improved Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↕			↕	
Traffic Volume (vph)	25	290	10	5	340	5	0	0	0	5	0	25
Future Volume (vph)	25	290	10	5	340	5	0	0	0	5	0	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00						1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	
Flpb, ped/bikes	1.00	1.00		0.99	1.00						1.00	
Frt	1.00	0.99		1.00	1.00						0.89	
Flt Protected	0.95	1.00		0.95	1.00						0.99	
Satd. Flow (prot)	1511	1391		1487	1573						1495	
Flt Permitted	0.52	1.00		0.57	1.00						0.95	
Satd. Flow (perm)	821	1391		890	1573						1437	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	305	11	5	358	5	0	0	0	5	0	26
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	28	0
Lane Group Flow (vph)	26	315	0	5	363	0	0	0	0	0	3	0
Confl. Peds. (#/hr)			14	14			1					
Heavy Vehicles (%)	10%	10%	10%	11%	11%	11%	100%	100%	100%	3%	3%	3%
Parking (#/hr)		4										
Turn Type	pm+pt	NA		pm+pt	NA					Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	50.5	48.1		48.1	46.9						7.2	
Effective Green, g (s)	50.5	48.1		48.1	46.9						7.2	
Actuated g/C Ratio	0.72	0.69		0.69	0.67						0.10	
Clearance Time (s)	4.5	4.5		4.5	4.5						4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0						3.0	
Lane Grp Cap (vph)	615	955		621	1053						147	
v/s Ratio Prot	c0.00	0.23		0.00	c0.23							
v/s Ratio Perm	0.03			0.01							c0.00	
v/c Ratio	0.04	0.33		0.01	0.34						0.02	
Uniform Delay, d1	2.8	4.4		3.4	5.0						28.2	
Progression Factor	0.88	0.96		1.00	1.00						1.00	
Incremental Delay, d2	0.0	0.7		0.0	0.9						0.1	
Delay (s)	2.5	5.0		3.4	5.9						28.3	
Level of Service	A	A		A	A						C	
Approach Delay (s)		4.8			5.8			0.0			28.3	
Approach LOS		A			A			A			C	
Intersection Summary												
HCM 2000 Control Delay			6.3			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.29									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			34.2%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

507: Driveway/SWI-B Transit Station Access & Kasch PIERrett Link Extension Project - SWI-B
 HCM 6th TWSC 2037 Future Improved Conditions AM Peak Hour

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↰			↕			↕	
Traffic Vol, veh/h	10	75	90	5	70	0	10	0	5	0	0	20
Future Vol, veh/h	10	75	90	5	70	0	10	0	5	0	0	20
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	25	25	25	43	43	43	67	67	67	100	100	100
Mvmt Flow	11	79	95	5	74	0	11	0	5	0	0	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	174	0	0	244	237	127	239	284	78
Stage 1	-	-	-	-	-	-	149	149	-	88	88	-
Stage 2	-	-	-	-	-	-	95	88	-	151	196	-
Critical Hdwy	4.35	-	-	4.53	-	-	7.77	7.17	6.87	8.1	7.5	7.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.17	-	7.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.17	-	7.1	6.5	-
Follow-up Hdwy	2.425	-	-	2.587	-	-	4.103	4.603	3.903	4.4	4.9	4.2
Pot Cap-1 Maneuver	1387	-	-	1189	-	0	594	565	775	551	490	767
Stage 1	-	-	-	-	-	0	721	665	-	725	665	-
Stage 2	-	-	-	-	-	0	774	711	-	665	588	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1382	-	-	1189	-	-	572	555	775	540	482	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	572	555	-	540	482	-
Stage 1	-	-	-	-	-	-	715	659	-	716	660	-
Stage 2	-	-	-	-	-	-	750	705	-	655	583	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.5			10.9			9.8		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1					
Capacity (veh/h)	627	1382	-	-	1189	-	764					
HCM Lane V/C Ratio	0.025	0.008	-	-	0.004	-	0.028					
HCM Control Delay (s)	10.9	7.6	-	-	8	0	9.8					
HCM Lane LOS	B	A	-	-	A	A	A					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	0.1					

508: Airport Rd & 94th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↰	↰	↱		↰	↱	↰
Traffic Volume (veh/h)	5	10	5	5	0	15	15	940	60	120	810	30
Future Volume (veh/h)	5	10	5	5	0	15	15	940	60	120	810	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1068	1068	1068	1573	1573	1573	1641	1641	1641	1627	1627	1627
Adj Flow Rate, veh/h	5	11	0	5	0	5	16	989	55	126	853	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	50	50	50	13	13	13	8	8	8	9	9	9
Cap, veh/h	4	52	0	6	76	202	31	1785	99	161	2071	75
Arrive On Green	0.00	0.05	0.00	0.00	0.00	0.05	0.02	0.44	0.44	0.10	0.52	0.52
Sat Flow, veh/h	1017	1068	0	1498	1573	1321	1563	4065	226	1550	3963	144
Grp Volume(v), veh/h	5	11	0	5	0	5	16	654	390	126	539	345
Grp Sat Flow(s), veh/h/ln	1017	1068	0	1498	1573	1321	1563	1345	1600	1550	1253	1601
Q Serve(g_s), s	0.2	0.5	0.0	0.2	0.0	0.2	0.5	8.7	8.7	3.8	6.3	6.3
Cycle Q Clear(g_c), s	0.2	0.5	0.0	0.2	0.0	0.2	0.5	8.7	8.7	3.8	6.3	6.3
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.14	1.00		0.09
Lane Grp Cap(c), veh/h	4	52	0	6	76	202	31	1182	702	161	1310	837
V/C Ratio(X)	1.22	0.21	0.00	0.83	0.00	0.02	0.51	0.55	0.55	0.78	0.41	0.41
Avail Cap(c_a), veh/h	127	643	0	187	947	933	503	2234	1328	499	2080	1329
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	22.0	0.0	24.0	0.0	17.4	23.4	10.0	10.0	21.1	7.0	7.0
Incr Delay (d2), s/veh	326.6	2.9	0.0	150.4	0.0	0.1	17.2	0.6	1.0	11.3	0.3	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.4	0.2	0.0	0.3	0.0	0.0	0.3	1.8	2.2	1.7	1.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	350.5	24.9	0.0	174.3	0.0	17.5	40.6	10.6	11.0	32.3	7.3	7.5
LnGrp LOS	F	C	A	F	A	B	D	B	B	C	A	A
Approach Vol, veh/h		16			10			1060			1010	
Approach Delay, s/veh		126.7			95.9			11.2			10.5	
Approach LOS		F			F			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	26.2	6.2	6.3	5.5	30.2	6.2	6.3				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	15.5	40.0	6.0	29.0	15.5	40.0	6.0	29.0				
Max Q Clear Time (g_c+I1), s	5.8	10.7	2.2	2.5	2.5	8.3	2.2	2.2				
Green Ext Time (p_c), s	0.3	10.4	0.0	0.0	0.0	8.6	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			12.1									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection

Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	20	5	5	20	10
Future Vol, veh/h	15	20	5	5	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	13	13	0	0	0	0
Mvmt Flow	15	20	5	5	20	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.7	7.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	67%
Vol Thru, %	57%	50%	0%
Vol Right, %	0%	50%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	35	10	30
LT Vol	15	0	20
Through Vol	20	5	0
RT Vol	0	5	10
Lane Flow Rate	35	10	30
Geometry Grp	1	1	1
Degree of Util (X)	0.041	0.01	0.033
Departure Headway (Hd)	4.268	3.679	3.911
Convergence, Y/N	Yes	Yes	Yes
Cap	842	973	916
Service Time	2.28	1.699	1.933
HCM Lane V/C Ratio	0.042	0.01	0.033
HCM Control Delay	7.5	6.7	7.1
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp - SWI-B
 HCM Signalized Intersection Capacity Analysis 2037 Future Improved Conditions AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	875	15	240	0
Future Volume (vph)	0	0	875	15	240	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1449	1455	2780	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1449	1455	2780	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	921	16	253	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	470	467	253	0
Heavy Vehicles (%)	0%	0%	9%	9%	16%	16%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5 8	
Permitted Phases						
Actuated Green, G (s)			70.0	70.0	63.0	
Effective Green, g (s)			70.0	70.0	56.3	
Actuated g/C Ratio			0.48	0.48	0.39	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			700	703	1080	
v/s Ratio Prot			c0.32	0.32	c0.09	
v/s Ratio Perm						
v/c Ratio			0.67	0.66	0.23	
Uniform Delay, d1			28.6	28.5	29.8	
Progression Factor			1.00	1.00	0.03	
Incremental Delay, d2			2.7	2.6	0.1	
Delay (s)			31.4	31.0	1.2	
Level of Service			C	C	A	
Approach Delay (s)	0.0			31.2	1.2	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			24.8	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			144.8	Sum of lost time (s)		18.5
Intersection Capacity Utilization			68.8%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Over Ramp Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis

2037 Future Improved Conditions AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	←	→	←	↑↑	↑↑	
Traffic Volume (vph)	35	305	0	205	875	0
Future Volume (vph)	35	305	0	205	875	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1374	1229		2866	3050	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1374	1229		2866	3050	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	321	0	216	921	0
RTOR Reduction (vph)	0	152	0	0	0	0
Lane Group Flow (vph)	37	169	0	216	921	0
Heavy Vehicles (%)	21%	21%	16%	16%	9%	9%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	24.8	24.8		31.5	107.4	
Effective Green, g (s)	24.8	24.8		31.5	107.4	
Actuated g/C Ratio	0.17	0.17		0.22	0.74	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	235	210		623	2262	
v/s Ratio Prot	0.03	0.14		0.08	0.30	
v/s Ratio Perm						
v/c Ratio	0.16	0.80		0.35	0.41	
Uniform Delay, d1	51.1	57.6		47.9	6.9	
Progression Factor	1.00	1.00		1.00	0.01	
Incremental Delay, d2	0.4	20.3		0.6	0.1	
Delay (s)	51.5	77.9		48.6	0.2	
Level of Service	D	E		D	A	
Approach Delay (s)	75.2			48.6	0.2	
Approach LOS	E			D	A	
Intersection Summary						
HCM 2000 Control Delay		25.1		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.50				
Actuated Cycle Length (s)		144.8		Sum of lost time (s)		18.5
Intersection Capacity Utilization		64.8%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
2037 Future Improved Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	10	45	50	15	105	85	865	375	100	645	75
Future Volume (veh/h)	45	10	45	50	15	105	85	865	375	100	645	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1573	1573	1573	1559	1559	1559	1668	1668	1668	1600	1600	1600
Adj Flow Rate, veh/h	47	11	6	53	16	24	89	911	342	105	679	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	13	13	14	14	14	6	6	6	11	11	11
Cap, veh/h	68	78	65	73	83	70	113	1376	515	129	1717	
Arrive On Green	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.45	0.45	0.08	0.46	0.00
Sat Flow, veh/h	1498	1573	1319	1485	1559	1307	1589	3052	1143	1524	3696	1356
Grp Volume(v), veh/h	47	11	6	53	16	24	89	816	437	105	679	0
Grp Sat Flow(s), veh/h/ln	1498	1573	1319	1485	1559	1307	1589	1368	1459	1524	1232	1356
Q Serve(g_s), s	1.8	0.4	0.3	2.1	0.6	1.0	3.2	13.7	13.8	4.0	7.1	0.0
Cycle Q Clear(g_c), s	1.8	0.4	0.3	2.1	0.6	1.0	3.2	13.7	13.8	4.0	7.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	68	78	65	73	83	70	113	1233	658	129	1717	
V/C Ratio(X)	0.69	0.14	0.09	0.72	0.19	0.35	0.79	0.66	0.66	0.81	0.40	
Avail Cap(c_a), veh/h	293	869	729	290	862	723	527	3490	1862	505	4715	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.6	26.7	26.7	27.6	26.6	26.8	26.9	12.6	12.7	26.4	10.3	0.0
Incr Delay (d2), s/veh	4.5	0.8	0.6	5.0	0.4	1.1	13.8	0.6	1.2	4.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	0.1	0.8	0.2	0.3	1.5	3.2	3.6	1.5	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	27.6	27.3	32.5	27.0	27.9	40.7	13.3	13.8	31.1	10.5	0.0
LnGrp LOS	C	C	C	C	C	C	D	B	B	C	B	
Approach Vol, veh/h	64			93			1342			784		
Approach Delay, s/veh	30.9			30.4			15.3			13.2		
Approach LOS	C			C			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	31.5	10.4	7.4	8.7	32.3	10.2	7.6				
Change Period (Y+Rc), s	4.5	5.0	7.5	4.5	4.5	5.0	7.5	4.5				
Max Green Setting (Gmax), s	19.5	75.0	11.5	32.5	19.5	75.0	11.5	32.5				
Max Q Clear Time (g_c+I1), s	6.0	15.8	4.1	2.4	5.2	9.1	3.8	3.0				
Green Ext Time (p_c), s	0.1	10.7	0.0	0.0	0.2	4.9	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	15.6											
HCM 6th LOS	B											
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	  			  	  	
Traffic Volume (vph)	60	35	40	1240	610	140
Future Volume (vph)	60	35	40	1240	610	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.82	*0.77	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	2146		1531	3963	3438	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	2146		1531	3963	3438	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	37	42	1305	642	147
RTOR Reduction (vph)	34	0	0	0	17	0
Lane Group Flow (vph)	66	0	42	1305	772	0
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	44%	44%	5%	5%	10%	10%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	7.4		5.8	80.1	69.3	
Effective Green, g (s)	7.4		5.8	80.1	69.3	
Actuated g/C Ratio	0.07		0.06	0.80	0.69	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	158		88	3174	2382	
v/s Ratio Prot	c0.03		0.03	c0.33	0.22	
v/s Ratio Perm						
v/c Ratio	0.42		0.48	0.41	0.32	
Uniform Delay, d1	44.2		45.6	3.0	6.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.8		4.0	0.4	0.4	
Delay (s)	46.0		49.7	3.3	6.4	
Level of Service	D		D	A	A	
Approach Delay (s)	46.0			4.8	6.4	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			7.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			100.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			47.1%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
2037 Future Improved Conditions AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↱		↰↱	↱		↰↱	↱↱↱		↰↱	↱↱↱	
Traffic Volume (veh/h)	695	165	10	55	325	35	5	555	35	15	285	345
Future Volume (veh/h)	695	165	10	55	325	35	5	555	35	15	285	345
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1709	1709	1709	1654	1654	1654	1600	1600	1600
Adj Flow Rate, veh/h	732	174	10	58	342	34	5	584	36	16	300	210
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	3	3	3	7	7	7	11	11	11
Cap, veh/h	845	773	44	71	399	40	8	827	51	23	524	287
Arrive On Green	0.27	0.49	0.49	0.04	0.26	0.26	0.01	0.20	0.20	0.02	0.21	0.21
Sat Flow, veh/h	3132	1588	91	1628	1530	152	1576	4072	249	1524	2464	1349
Grp Volume(v), veh/h	732	0	184	58	0	376	5	388	232	16	300	210
Grp Sat Flow(s), veh/h/ln	1566	0	1679	1628	0	1682	1576	1357	1608	1524	1232	1349
Q Serve(g_s), s	16.4	0.0	4.7	2.6	0.0	15.7	0.2	9.8	9.9	0.8	8.0	10.7
Cycle Q Clear(g_c), s	16.4	0.0	4.7	2.6	0.0	15.7	0.2	9.8	9.9	0.8	8.0	10.7
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	845	0	818	71	0	439	8	551	326	23	524	287
V/C Ratio(X)	0.87	0.00	0.23	0.82	0.00	0.86	0.60	0.70	0.71	0.69	0.57	0.73
Avail Cap(c_a), veh/h	1935	0	1789	276	0	1039	225	1105	655	217	1003	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	0.0	10.9	34.9	0.0	25.9	36.6	27.3	27.3	36.1	26.0	27.0
Incr Delay (d2), s/veh	1.1	0.0	0.1	8.2	0.0	1.9	23.1	1.2	2.1	12.9	0.7	2.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.8	0.0	1.5	1.2	0.0	6.2	0.1	3.0	3.6	0.4	2.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.7	0.0	10.9	43.1	0.0	27.8	59.7	28.5	29.5	49.0	26.7	29.7
LnGrp LOS	C	A	B	D	A	C	E	C	C	D	C	C
Approach Vol, veh/h		916			434			625			526	
Approach Delay, s/veh		23.5			29.9			29.1			28.6	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	20.0	7.7	40.4	4.9	20.7	24.4	23.7				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	30.0	12.5	78.5	10.5	30.0	45.5	45.5				
Max Q Clear Time (g_c+I1), s	2.8	11.9	4.6	6.7	2.2	12.7	18.4	17.7				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.7	0.0	2.3	1.5	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			27.1									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	430	85	45	0	130	50	10	0	0	0	0	30
Future Vol, veh/h	430	85	45	0	130	50	10	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	5	5	5	3	3	3	57	57	57
Mvmt Flow	453	89	47	0	137	53	11	0	0	0	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	136	0	0	1199	1209	113	1183	1206	164
Stage 1	-	-	-	-	-	-	1019	1019	-	164	164	-
Stage 2	-	-	-	-	-	-	180	190	-	1019	1042	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.13	6.53	6.23	7.67	7.07	6.77
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.527	4.027	3.327	4.013	4.513	3.813
Pot Cap-1 Maneuver	1384	-	-	1430	-	-	161	182	937	130	145	756
Stage 1	-	-	-	-	-	-	285	313	-	724	669	-
Stage 2	-	-	-	-	-	-	819	741	-	227	247	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1384	-	-	1430	-	-	115	122	937	97	98	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	164	-	133	145	-
Stage 1	-	-	-	-	-	-	192	211	-	487	669	-
Stage 2	-	-	-	-	-	-	785	741	-	153	166	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.8	0	29.6	10
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	1384	-	-	1430	-	-	756
HCM Lane V/C Ratio	0.067	0.327	-	-	-	-	-	0.042
HCM Control Delay (s)	29.6	8.9	-	-	0	-	-	10
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	1.4	-	-	0	-	-	0.1

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↷	↱	↰	↷	↱	↰	↷	↱	↰	↷	↱
Traffic Volume (veh/h)	215	5	155	80	5	135	25	1175	70	105	990	25
Future Volume (veh/h)	215	5	155	80	5	135	25	1175	70	105	990	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1723	1723	1532	1532	1532	1641	1641	1641	1654	1654	1654
Adj Flow Rate, veh/h	230	0	16	84	5	-16	26	1237	71	111	1042	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	16	16	16	8	8	8	7	7	7
Cap, veh/h	287	0	121	112	0	145	30	2356	135	130	3044	
Arrive On Green	0.09	0.00	0.09	0.08	0.08	0.00	0.04	1.00	1.00	0.17	1.00	0.00
Sat Flow, veh/h	3281	0	1390	1459	1532	0	1563	3809	219	1576	4467	1402
Grp Volume(v), veh/h	230	0	16	84	-11	-11	26	789	519	111	1042	0
Grp Sat Flow(s), veh/h/ln	1641	0	1390	1459	1532	1298	1563	1214	1599	1576	1489	1402
Q Serve(g_s), s	8.9	0.0	1.4	7.3	0.0	0.0	2.2	0.0	0.0	8.9	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	1.4	7.3	0.0	0.0	2.2	0.0	0.0	8.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	287	0	121	112	0	0	30	1502	989	130	3044	
V/C Ratio(X)	0.80	0.00	0.13	0.75	0.00	0.00	0.85	0.52	0.53	0.85	0.34	
Avail Cap(c_a), veh/h	669	0	283	163	0	0	156	1502	989	158	3044	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.88	0.88	0.88	0.93	0.93	0.00
Uniform Delay (d), s/veh	58.2	0.0	54.8	58.8	0.0	0.0	62.3	0.0	0.0	53.5	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.2	5.0	0.0	0.0	40.4	1.2	1.8	24.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.8	0.0	0.5	2.9	0.0	0.0	1.2	0.2	0.5	4.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.2	0.0	55.0	63.8	0.0	0.0	102.7	1.2	1.8	78.4	0.3	0.0
LnGrp LOS	E	A	D	E	A	A	F	A	A	E	A	
Approach Vol, veh/h	246			62			1334			1153		
Approach Delay, s/veh	59.9			86.4			3.4			7.8		
Approach LOS	E			F			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.7	84.9		16.9	6.5	93.1		13.5				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	13.0	58.5		26.5	13.0	58.5		14.5				
Max Q Clear Time (g_c+I1), s	10.9	2.0		10.9	4.2	2.0		9.3				
Green Ext Time (p_c), s	0.0	6.1		0.4	0.0	5.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved ignoring U-Turning movement.

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp Everett Link Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis 2037 Future Improved Conditions PM Peak Hour

Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations	↰	↱		↰	↱		↰	↱		
Traffic Volume (vph)	150	85	115	235	1025	265	170	970	0	0
Future Volume (vph)	150	85	115	235	1025	265	170	970	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1516	1357		3061	2410		1568	4507		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1516	1357		3061	2410		1568	4507		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	158	89	121	247	1079	279	179	1021	0	0
RTOR Reduction (vph)	0	37	0	0	36	0	0	0	0	0
Lane Group Flow (vph)	158	173	0	247	1322	0	179	1021	0	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	6%	6%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	18.0	44.7		76.3	76.3		17.7	93.5		
Effective Green, g (s)	18.0	35.7		76.3	76.3		17.7	93.5		
Actuated g/C Ratio	0.14	0.27		0.59	0.59		0.14	0.72		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	209	372		1796	1414		213	3241		
v/s Ratio Prot	c0.10	0.13		0.08			c0.11	0.23		
v/s Ratio Perm					c0.55					
v/c Ratio	0.76	0.47		0.14	0.93		0.84	0.32		
Uniform Delay, d1	53.9	39.2		12.1	24.6		54.8	6.6		
Progression Factor	1.00	1.00		0.63	0.98		1.00	1.00		
Incremental Delay, d2	12.9	0.9		0.1	10.6		24.6	0.3		
Delay (s)	66.8	40.1		7.8	34.7		79.4	6.9		
Level of Service	E	D		A	C		E	A		
Approach Delay (s)	51.6			30.6			17.7	0.0		
Approach LOS	D			C			B	A		
Intersection Summary										
HCM 2000 Control Delay		28.2		HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio		0.89								
Actuated Cycle Length (s)		130.0		Sum of lost time (s)					18.0	
Intersection Capacity Utilization		69.9%		ICU Level of Service					C	
Analysis Period (min)		15								

c Critical Lane Group

506: SWI-B Transit Station Access & Casino Rd
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↕			↕	
Traffic Volume (vph)	25	400	10	5	325	5	0	0	5	5	0	25
Future Volume (vph)	25	400	10	5	325	5	0	0	5	5	0	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	11	11	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.92			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.86			0.89	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1630	1410		1504	1593			699			1406	
Flt Permitted	0.53	1.00		0.50	1.00			1.00			0.97	
Satd. Flow (perm)	902	1410		795	1593			699			1368	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	421	11	5	342	5	0	0	5	5	0	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	28	0
Lane Group Flow (vph)	26	432	0	5	347	0	0	0	0	0	3	0
Confl. Peds. (#/hr)			12	12			16		15	15		15
Heavy Vehicles (%)	2%	5%	5%	6%	6%	2%	100%	100%	100%	3%	3%	3%
Parking (#/hr)		4										
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	112.6	108.9		107.6	106.4			13.3			13.3	
Effective Green, g (s)	112.6	108.9		107.6	106.4			13.3			13.3	
Actuated g/C Ratio	0.82	0.80		0.79	0.78			0.10			0.10	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	761	1121		631	1238			67			132	
v/s Ratio Prot	c0.00	c0.31		0.00	0.22			0.00				
v/s Ratio Perm	0.03			0.01							c0.00	
v/c Ratio	0.03	0.39		0.01	0.28			0.01			0.02	
Uniform Delay, d1	2.3	4.1		3.2	4.3			55.8			55.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	1.0		0.0	0.6			0.0			0.1	
Delay (s)	2.3	5.1		3.2	4.9			55.9			56.0	
Level of Service	A	A		A	A			E			E	
Approach Delay (s)		5.0			4.9			55.9			56.0	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM 2000 Control Delay		7.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.34										
Actuated Cycle Length (s)		136.9			Sum of lost time (s)			13.5				
Intersection Capacity Utilization		44.2%			ICU Level of Service			A				
Analysis Period (min)		15										

c Critical Lane Group

507: Driveway/SWI-B Transit Station Access & Kasch PIERrett Link Extension Project - SWI-B
 HCM 6th TWSC 2037 Future Improved Conditions PM Peak Hour

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖			↕			↕	
Traffic Vol, veh/h	10	160	10	0	190	0	10	0	5	0	0	20
Future Vol, veh/h	10	160	10	0	190	0	10	0	5	0	0	20
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	46	46	46	20	20	20	0	0	0	0	0	0
Mvmt Flow	10	160	10	0	190	0	10	0	5	0	0	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	195	0	0	170	0	0	385	380	165	383	385	195
Stage 1	-	-	-	-	-	-	185	185	-	195	195	-
Stage 2	-	-	-	-	-	-	200	195	-	188	190	-
Critical Hdwy	4.56	-	-	4.3	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.614	-	-	2.38	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1154	-	-	1305	-	0	577	556	885	579	552	851
Stage 1	-	-	-	-	-	0	821	751	-	811	743	-
Stage 2	-	-	-	-	-	0	806	743	-	818	747	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1149	-	-	1305	-	-	559	548	885	569	544	847
Mov Cap-2 Maneuver	-	-	-	-	-	-	559	548	-	569	544	-
Stage 1	-	-	-	-	-	-	813	743	-	799	739	-
Stage 2	-	-	-	-	-	-	787	739	-	805	740	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			10.8			9.4		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1					
Capacity (veh/h)	637	1149	-	-	1305	-	847					
HCM Lane V/C Ratio	0.024	0.009	-	-	-	-	0.024					
HCM Control Delay (s)	10.8	8.2	-	-	0	-	9.4					
HCM Lane LOS	B	A	-	-	A	-	A					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	0.1					

508: Airport Rd & 94th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	5	25	20	5	110	15	1140	15	20	1200	5
Future Volume (veh/h)	20	5	25	20	5	110	15	1140	15	20	1200	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1559	1559	1559	1723	1723	1723	1627	1627	1627	1695	1695	1695
Adj Flow Rate, veh/h	21	5	2	21	5	-33	15	1175	15	21	1237	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	14	14	2	2	2	9	9	9	4	4	4
Cap, veh/h	23	25	10	25	40	56	25	3164	40	24	3755	15
Arrive On Green	0.02	0.02	0.02	0.02	0.02	0.00	0.01	0.26	0.26	0.03	1.00	1.00
Sat Flow, veh/h	1485	1051	420	1641	1723	1460	1550	3975	51	1615	4725	19
Grp Volume(v), veh/h	21	0	7	21	5	-33	15	712	478	21	799	443
Grp Sat Flow(s),veh/h/ln	1485	0	1471	1641	1723	1460	1550	1204	1618	1615	1526	1692
Q Serve(g_s), s	1.8	0.0	0.6	1.7	0.4	0.0	1.3	31.4	31.4	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.0	0.6	1.7	0.4	0.0	1.3	31.4	31.4	1.7	0.0	0.0
Prop In Lane	1.00		0.29	1.00		1.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	23	0	35	25	40	56	25	1916	1288	24	2426	1345
V/C Ratio(X)	0.90	0.00	0.20	0.85	0.12	-0.59	0.60	0.37	0.37	0.86	0.33	0.33
Avail Cap(c_a), veh/h	114	0	328	126	384	348	137	1916	1288	143	2426	1345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	0.77	0.77	0.77	0.91	0.91	0.91
Uniform Delay (d), s/veh	63.9	0.0	62.2	63.9	62.2	0.0	64.2	21.4	21.4	62.9	0.0	0.0
Incr Delay (d2), s/veh	77.8	0.0	3.8	65.4	1.9	0.0	22.9	0.4	0.6	63.3	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.3	1.1	0.2	0.0	0.6	10.2	13.7	1.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	141.6	0.0	66.0	129.3	64.1	0.0	87.2	21.8	22.0	126.2	0.3	0.6
LnGrp LOS	F	A	E	F	E	A	F	C	C	F	A	A
Approach Vol, veh/h	28			-7			1205			1263		
Approach Delay, s/veh	122.7			0.0			22.7			2.5		
Approach LOS	F			A			C			A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	108.5	8.0	7.1	6.6	108.3	8.0	7.0				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	11.5	60.0	10.0	29.0	11.5	60.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	3.7	33.4	3.7	2.6	3.3	2.0	3.8	2.4				
Green Ext Time (p_c), s	0.0	11.6	0.0	0.0	0.0	15.8	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	85	5	10	20
Future Vol, veh/h	15	5	85	5	10	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	39	39	0	0	0	0
Mvmt Flow	16	5	89	5	11	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	7.4	7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	75%	0%	33%
Vol Thru, %	25%	94%	0%
Vol Right, %	0%	6%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	20	90	30
LT Vol	15	0	10
Through Vol	5	85	0
RT Vol	0	5	20
Lane Flow Rate	21	95	32
Geometry Grp	1	1	1
Degree of Util (X)	0.028	0.104	0.033
Departure Headway (Hd)	4.84	3.938	3.766
Convergence, Y/N	Yes	Yes	Yes
Cap	740	911	942
Service Time	2.867	1.955	1.822
HCM Lane V/C Ratio	0.028	0.104	0.034
HCM Control Delay	8	7.4	7
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.3	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp - SWI-B
 HCM Signalized Intersection Capacity Analysis 2037 Future Improved Conditions PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	815	5	330	0
Future Volume (vph)	0	0	815	5	330	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1504	1509	3131	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1504	1509	3131	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	832	5	337	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	416	421	337	0
Heavy Vehicles (%)	0%	0%	5%	5%	3%	3%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5 8	
Permitted Phases						
Actuated Green, G (s)			63.7	63.7	64.3	
Effective Green, g (s)			63.7	63.7	57.6	
Actuated g/C Ratio			0.46	0.46	0.41	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			685	687	1290	
v/s Ratio Prot			0.28	c0.28	c0.11	
v/s Ratio Perm						
v/c Ratio			0.61	0.61	0.26	
Uniform Delay, d1			28.6	28.7	27.1	
Progression Factor			1.00	1.00	0.01	
Incremental Delay, d2			1.7	1.8	0.1	
Delay (s)			30.4	30.6	0.3	
Level of Service			C	C	A	
Approach Delay (s)	0.0			30.5	0.3	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			21.8	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			139.8	Sum of lost time (s)		18.5
Intersection Capacity Utilization			71.5%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off-Ramp Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis

2037 Future Improved Conditions PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	325	0	320	815	0
Future Volume (vph)	10	325	0	320	815	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1231	1102		3228	3167	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1231	1102		3228	3167	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	342	0	337	858	0
RTOR Reduction (vph)	0	122	0	0	0	0
Lane Group Flow (vph)	11	220	0	337	858	0
Heavy Vehicles (%)	35%	35%	3%	3%	5%	5%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	33.2	33.2		24.4	94.0	
Effective Green, g (s)	33.2	33.2		24.4	94.0	
Actuated g/C Ratio	0.24	0.24		0.17	0.67	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	292	261		563	2129	
v/s Ratio Prot	0.01	c0.20		c0.10	c0.27	
v/s Ratio Perm						
v/c Ratio	0.04	0.84		0.60	0.40	
Uniform Delay, d1	41.0	50.8		53.2	10.3	
Progression Factor	1.00	1.00		1.00	0.03	
Incremental Delay, d2	0.1	21.9		2.4	0.1	
Delay (s)	41.1	72.7		55.6	0.4	
Level of Service	D	E		E	A	
Approach Delay (s)	71.7			55.6	0.4	
Approach LOS	E			E	A	
Intersection Summary						
HCM 2000 Control Delay	28.7			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.57					
Actuated Cycle Length (s)	139.8			Sum of lost time (s)		18.5
Intersection Capacity Utilization	67.5%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

805: Airport Rd & 100th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↰↱→		↰	↰↱→	↱
Traffic Volume (veh/h)	85	15	180	315	20	135	90	950	70	105	1055	85
Future Volume (veh/h)	85	15	180	315	20	135	90	950	70	105	1055	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1668	1668	1668	1641	1641	1641	1695	1695	1695
Adj Flow Rate, veh/h	89	16	3	332	21	43	95	1000	69	111	1111	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	6	6	6	8	8	8	4	4	4
Cap, veh/h	110	45	37	299	247	208	113	2046	141	130	2528	
Arrive On Green	0.07	0.03	0.03	0.19	0.15	0.15	0.14	1.00	1.00	0.03	0.18	0.00
Sat Flow, veh/h	1667	1750	1448	1589	1668	1405	1563	3763	259	1615	4578	1437
Grp Volume(v), veh/h	89	16	3	332	21	43	95	645	424	111	1111	0
Grp Sat Flow(s), veh/h/ln	1667	1750	1448	1589	1668	1405	1563	1214	1594	1615	1526	1437
Q Serve(g_s), s	6.9	1.2	0.3	24.5	1.4	3.5	7.7	0.0	0.0	8.9	28.0	0.0
Cycle Q Clear(g_c), s	6.9	1.2	0.3	24.5	1.4	3.5	7.7	0.0	0.0	8.9	28.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	110	45	37	299	247	208	113	1320	866	130	2528	
V/C Ratio(X)	0.81	0.36	0.08	1.11	0.09	0.21	0.84	0.49	0.49	0.85	0.44	
Avail Cap(c_a), veh/h	186	438	362	299	545	459	126	1320	866	130	2528	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.94	0.94	0.00
Uniform Delay (d), s/veh	59.9	62.3	61.9	52.7	47.8	48.7	54.9	0.0	0.0	62.5	35.3	0.0
Incr Delay (d2), s/veh	13.1	4.8	0.9	84.5	0.1	0.5	32.1	1.2	1.8	36.7	0.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.3	0.6	0.1	16.8	0.6	1.3	3.8	0.2	0.4	5.1	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	67.1	62.8	137.2	47.9	49.2	87.0	1.2	1.8	99.2	35.8	0.0
LnGrp LOS	E	E	E	F	D	D	F	A	A	F	D	
Approach Vol, veh/h		108			396			1164			1222	
Approach Delay, s/veh		71.8			122.9			8.4			41.6	
Approach LOS		E			F			A			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	75.2	32.0	7.8	13.9	76.3	16.1	23.7				
Change Period (Y+Rc), s	4.5	4.5	7.5	4.5	4.5	4.5	7.5	4.5				
Max Green Setting (Gmax), s	10.5	41.5	24.5	32.5	10.5	41.5	14.5	42.5				
Max Q Clear Time (g_c+I1), s	10.9	2.0	26.5	3.2	9.7	30.0	8.9	5.5				
Green Ext Time (p_c), s	0.0	7.8	0.0	0.0	0.0	5.4	0.1	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			40.5									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project - SWI-B
 2037 Future Improved Conditions PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TTT	TTT	
Traffic Volume (vph)	210	45	30	900	1465	85
Future Volume (vph)	210	45	30	900	1465	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.74	*0.90	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	2940		1488	3477	4351	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	2940		1488	3477	4351	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	47	32	947	1542	89
RTOR Reduction (vph)	16	0	0	0	4	0
Lane Group Flow (vph)	252	0	32	947	1627	0
Confl. Peds. (#/hr)	3		1			1
Heavy Vehicles (%)	8%	8%	8%	8%	4%	4%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases						
Actuated Green, G (s)	15.5		5.2	102.0	91.8	
Effective Green, g (s)	15.5		5.2	102.0	91.8	
Actuated g/C Ratio	0.12		0.04	0.78	0.71	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	350		59	2728	3072	
v/s Ratio Prot	c0.09		c0.02	0.27	c0.37	
v/s Ratio Perm						
v/c Ratio	0.72		0.54	0.35	0.53	
Uniform Delay, d1	55.2		61.2	4.1	9.0	
Progression Factor	1.00		0.73	0.98	1.45	
Incremental Delay, d2	6.1		4.3	0.3	0.5	
Delay (s)	61.2		49.0	4.3	13.5	
Level of Service	E		D	A	B	
Approach Delay (s)	61.2			5.8	13.5	
Approach LOS	E			A	B	
Intersection Summary						
HCM 2000 Control Delay			15.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	17.5
Intersection Capacity Utilization			51.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
2037 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	515	440	25	60	210	15	5	395	85	35	870	610
Future Volume (veh/h)	515	440	25	60	210	15	5	395	85	35	870	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1682	1682	1682	1723	1723	1723	1641	1641	1641	1709	1709	1709
Adj Flow Rate, veh/h	536	458	24	62	219	14	5	411	72	36	906	548
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	2	2	2	8	8	8	3	3	3
Cap, veh/h	585	484	25	78	264	17	8	1614	277	44	1520	720
Arrive On Green	0.19	0.31	0.31	0.05	0.16	0.16	0.01	0.48	0.48	0.01	0.16	0.16
Sat Flow, veh/h	3107	1583	83	1641	1601	102	1563	3381	580	1628	3042	1441
Grp Volume(v), veh/h	536	0	482	62	0	233	5	293	190	36	906	548
Grp Sat Flow(s),veh/h/ln	1554	0	1666	1641	0	1703	1563	1214	1533	1628	1521	1441
Q Serve(g_s), s	22.0	0.0	36.7	4.9	0.0	17.2	0.4	9.3	9.6	2.9	35.9	47.2
Cycle Q Clear(g_c), s	22.0	0.0	36.7	4.9	0.0	17.2	0.4	9.3	9.6	2.9	35.9	47.2
Prop In Lane	1.00		0.05	1.00		0.06	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	585	0	509	78	0	281	8	1159	732	44	1520	720
V/C Ratio(X)	0.92	0.00	0.95	0.80	0.00	0.83	0.63	0.25	0.26	0.81	0.60	0.76
Avail Cap(c_a), veh/h	609	0	570	133	0	386	126	1159	732	131	1520	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	51.8	0.0	44.1	61.3	0.0	52.5	64.5	20.2	20.3	64.1	42.1	46.9
Incr Delay (d2), s/veh	17.9	0.0	22.8	6.9	0.0	7.7	26.6	0.5	0.9	10.4	1.5	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	0.0	18.1	2.2	0.0	8.0	0.2	2.6	3.5	1.3	14.9	19.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.6	0.0	66.9	68.2	0.0	60.2	91.2	20.7	21.1	74.5	43.6	53.2
LnGrp LOS	E	A	E	E	A	E	F	C	C	E	D	D
Approach Vol, veh/h	1018			295			488			1490		
Approach Delay, s/veh	68.3			61.9			21.6			47.9		
Approach LOS	E			E			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	67.1	10.6	44.2	5.2	69.9	29.0	25.9				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	46.0	10.5	44.5	10.5	46.0	25.5	29.5				
Max Q Clear Time (g_c+I1), s	4.9	11.6	6.9	38.7	2.4	49.2	24.0	19.2				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.0	0.0	0.0	0.2	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	51.6											
HCM 6th LOS	D											
Notes												

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	215	0	0	140	5	40	0	0	90	0	355
Future Vol, veh/h	20	215	0	0	140	5	40	0	0	90	0	355
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	8	8	8	3	3	3	2	2	2
Mvmt Flow	21	226	0	0	147	5	42	0	0	95	0	374

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	226	0	0	605	421	226	419	419	151
Stage 1	-	-	-	-	-	-	268	268	-	151	151	-
Stage 2	-	-	-	-	-	-	337	153	-	268	268	-
Critical Hdwy	4.12	-	-	4.18	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.272	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1428	-	-	1308	-	-	408	522	811	544	525	895
Stage 1	-	-	-	-	-	-	735	685	-	851	772	-
Stage 2	-	-	-	-	-	-	675	769	-	738	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1427	-	-	1308	-	-	235	514	811	537	517	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	556	-	596	562	-
Stage 1	-	-	-	-	-	-	724	675	-	837	771	-
Stage 2	-	-	-	-	-	-	393	768	-	727	677	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.3	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	312	1427	-	-	1308	-	-	812
HCM Lane V/C Ratio	0.135	0.015	-	-	-	-	-	0.577
HCM Control Delay (s)	18.3	7.6	-	-	0	-	-	15.3
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	3.8

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2046 Build SWI-B AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (veh/h)	40	5	25	45	0	55	140	800	70	110	940	195
Future Volume (veh/h)	40	5	25	45	0	55	140	800	70	110	940	195
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1695	1695	1695	1313	1313	1313	1641	1641	1641	1641	1641	1641
Adj Flow Rate, veh/h	42	5	3	47	0	17	147	842	70	116	989	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	32	32	32	8	8	8	8	8	8
Cap, veh/h	115	121	96	149	0	126	567	2217	184	138	1073	
Arrive On Green	0.07	0.07	0.07	0.12	0.00	0.12	0.36	0.56	0.56	0.18	0.57	0.00
Sat Flow, veh/h	1615	1695	1351	1251	0	1062	1563	3942	327	1563	3790	1391
Grp Volume(v), veh/h	42	5	3	47	0	17	147	574	338	116	989	0
Grp Sat Flow(s),veh/h/ln	1615	1695	1351	1251	0	1062	1563	1345	1578	1563	1263	1391
Q Serve(g_s), s	2.7	0.3	0.2	3.8	0.0	1.6	7.3	13.0	13.1	7.9	26.0	0.0
Cycle Q Clear(g_c), s	2.7	0.3	0.2	3.8	0.0	1.6	7.3	13.0	13.1	7.9	26.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	115	121	96	149	0	126	567	1514	887	138	1073	
V/C Ratio(X)	0.37	0.04	0.03	0.32	0.00	0.13	0.26	0.38	0.38	0.84	0.92	
Avail Cap(c_a), veh/h	154	162	129	313	0	266	567	1514	887	213	1292	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	0.84	0.84	0.00
Uniform Delay (d), s/veh	48.7	47.6	47.6	44.4	0.0	43.4	24.6	13.4	13.4	44.5	22.7	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.4	0.0	0.2	0.2	0.6	1.0	8.4	12.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.1	0.1	1.2	0.0	0.4	2.6	3.7	4.5	3.0	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.4	47.6	47.6	44.8	0.0	43.6	24.8	14.0	14.4	52.9	35.0	0.0
LnGrp LOS	D	D	D	D	A	D	C	B	B	D	D	
Approach Vol, veh/h	50			64			1059			1105		
Approach Delay, s/veh	49.1			44.5			15.6			36.9		
Approach LOS	D			D			B			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.7	66.4		13.3	44.4	35.6		16.6				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.5	* 4.5		3.5				
Max Green Setting (Gmax), s	15.0	39.5		10.5	17.0	* 38		27.5				
Max Q Clear Time (g_c+I1), s	9.9	15.1		4.7	9.3	28.0		5.8				
Green Ext Time (p_c), s	0.1	3.6		0.0	0.2	3.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	27.5											
HCM 6th LOS	C											

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-B AM Peak Hour

										
Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	205	90	90	130	620	145	200	1040	0	0
Future Volume (vph)	205	90	90	130	620	145	200	1040	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1448	1295		2922	2301		1539	4424		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1448	1295		2922	2301		1539	4424		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	216	95	95	137	653	153	211	1095	0	0
RTOR Reduction (vph)	0	38	0	0	45	0	0	0	0	0
Lane Group Flow (vph)	216	152	0	137	761	0	211	1095	0	0
Confl. Peds. (#/hr)	1									
Heavy Vehicles (%)	11%	11%	11%	10%	10%	10%	8%	8%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	15.0	49.6		51.4	51.4		27.6	66.0		
Effective Green, g (s)	15.0	42.6		51.4	51.4		27.6	66.0		
Actuated g/C Ratio	0.14	0.39		0.47	0.47		0.25	0.60		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	197	501		1365	1075		386	2654		
v/s Ratio Prot	c0.15	0.12		0.05			c0.14	0.25		
v/s Ratio Perm					c0.33					
v/c Ratio	1.10	0.30		0.10	0.71		0.55	0.41		
Uniform Delay, d1	47.5	23.4		16.4	23.3		35.8	11.7		
Progression Factor	1.04	1.50		1.31	1.15		1.00	1.00		
Incremental Delay, d2	91.3	0.3		0.1	3.6		1.6	0.5		
Delay (s)	140.8	35.5		21.6	30.5		37.4	12.2		
Level of Service	F	D		C	C		D	B		
Approach Delay (s)	91.5			29.2				16.2	0.0	
Approach LOS	F			C				B	A	
Intersection Summary										
HCM 2000 Control Delay		32.4		HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio		0.72								
Actuated Cycle Length (s)		110.0		Sum of lost time (s)				16.0		
Intersection Capacity Utilization		48.7%		ICU Level of Service				A		
Analysis Period (min)		15								
c Critical Lane Group										

506: SWI-B Transit Station Access & Casino Rd
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-B AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱			↕			↕	
Traffic Volume (vph)	25	310	10	5	360	5	0	0	5	5	0	25
Future Volume (vph)	25	310	10	5	360	5	0	0	5	5	0	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.95			0.96	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	1.00			0.86			0.89	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1511	1391		1480	1573			717			1421	
Flt Permitted	0.50	1.00		0.56	1.00			1.00			0.96	
Satd. Flow (perm)	791	1391		869	1573			717			1380	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	326	11	5	379	5	0	0	5	5	0	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	28	0
Lane Group Flow (vph)	26	337	0	5	384	0	0	1	0	0	3	0
Confl. Peds. (#/hr)			16	16			15		15	15		15
Heavy Vehicles (%)	10%	10%	10%	11%	11%	11%	100%	100%	100%	3%	3%	3%
Parking (#/hr)		4										
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	88.0	84.2		82.8	81.6			11.1			11.1	
Effective Green, g (s)	88.0	84.2		82.8	81.6			11.1			11.1	
Actuated g/C Ratio	0.80	0.77		0.75	0.74			0.10			0.10	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	657	1064		660	1166			72			139	
v/s Ratio Prot	c0.00	c0.24		0.00	c0.24			0.00				
v/s Ratio Perm	0.03			0.01							c0.00	
v/c Ratio	0.04	0.32		0.01	0.33			0.01			0.02	
Uniform Delay, d1	2.4	4.0		3.4	4.9			44.5			44.6	
Progression Factor	0.57	0.54		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.7		0.0	0.8			0.0			0.1	
Delay (s)	1.4	2.8		3.4	5.6			44.5			44.6	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.7			5.6			44.5			44.6	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay		6.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.28										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			13.5				
Intersection Capacity Utilization		43.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱			↱	
Traffic Vol, veh/h	10	80	95	5	70	0	10	0	5	0	0	20
Future Vol, veh/h	10	80	95	5	70	0	10	0	5	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	25	25	25	43	43	43	67	67	67	0	0	0
Mvmt Flow	11	84	100	5	74	0	11	0	5	0	0	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	184	0	0	251	240	134	243	290	74
Stage 1	-	-	-	-	-	-	156	156	-	84	84	-
Stage 2	-	-	-	-	-	-	95	84	-	159	206	-
Critical Hdwy	4.35	-	-	4.53	-	-	7.77	7.17	6.87	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.17	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.17	-	6.1	5.5	-
Follow-up Hdwy	2.425	-	-	2.587	-	-	4.103	4.603	3.903	3.5	4	3.3
Pot Cap-1 Maneuver	1392	-	-	1179	-	0	587	563	767	715	624	993
Stage 1	-	-	-	-	-	0	714	660	-	929	829	-
Stage 2	-	-	-	-	-	0	774	714	-	848	735	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	1392	-	-	1179	-	-	569	556	767	703	616	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	569	556	-	703	616	-
Stage 1	-	-	-	-	-	-	708	654	-	921	826	-
Stage 2	-	-	-	-	-	-	755	711	-	835	728	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.5			10.9			8.7		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1					
Capacity (veh/h)	623	1392	-	-	1179	-	993					
HCM Lane V/C Ratio	0.025	0.008	-	-	0.004	-	0.021					
HCM Control Delay (s)	10.9	7.6	-	-	8.1	0	8.7					
HCM Lane LOS	B	A	-	-	A	A	A					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	0.1					

508: Airport Rd & 94th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-B AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↱	↰	↱↱↱		↰	↱↱↱	
Traffic Volume (veh/h)	5	10	5	5	0	15	15	990	65	130	855	25
Future Volume (veh/h)	5	10	5	5	0	15	15	990	65	130	855	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1068	1068	1068	1573	1573	1573	1641	1641	1641	1627	1627	1627
Adj Flow Rate, veh/h	5	11	1	5	0	5	16	1042	62	137	900	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	50	50	50	13	13	13	8	8	8	9	9	9
Cap, veh/h	14	71	6	20	115	305	61	1672	99	242	2118	61
Arrive On Green	0.01	0.07	0.07	0.01	0.00	0.07	0.04	0.41	0.41	0.16	0.53	0.53
Sat Flow, veh/h	1017	964	88	1498	1573	1326	1563	4047	241	1550	3997	115
Grp Volume(v), veh/h	5	0	12	5	0	5	16	692	412	137	564	362
Grp Sat Flow(s), veh/h/ln	1017	0	1051	1498	1573	1326	1563	1345	1597	1550	1253	1606
Q Serve(g_s), s	0.3	0.0	0.6	0.2	0.0	0.2	0.6	11.5	11.5	4.6	7.7	7.8
Cycle Q Clear(g_c), s	0.3	0.0	0.6	0.2	0.0	0.2	0.6	11.5	11.5	4.6	7.7	7.8
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.15	1.00		0.07
Lane Grp Cap(c), veh/h	14	0	77	20	115	305	61	1112	660	242	1328	851
V/C Ratio(X)	0.37	0.00	0.16	0.25	0.00	0.02	0.26	0.62	0.62	0.57	0.42	0.43
Avail Cap(c_a), veh/h	179	0	538	264	805	886	427	1709	1015	424	1592	1020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	0.0	24.6	27.7	0.0	16.9	26.4	13.1	13.1	22.1	8.1	8.1
Incr Delay (d2), s/veh	22.1	0.0	1.3	9.0	0.0	0.0	3.2	0.8	1.4	3.0	0.3	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.1	0.0	0.2	0.1	0.0	0.0	0.2	2.8	3.4	1.7	1.5	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.8	0.0	25.9	36.7	0.0	16.9	29.6	14.0	14.5	25.1	8.4	8.6
LnGrp LOS	D	A	C	D	A	B	C	B	B	C	A	A
Approach Vol, veh/h		17			10			1120			1063	
Approach Delay, s/veh		33.0			26.8			14.4			10.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	28.4	6.8	8.2	6.7	35.0	6.8	8.2				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	15.5	36.0	10.0	29.0	15.5	36.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	6.6	13.5	2.2	2.6	2.6	9.8	2.3	2.2				
Green Ext Time (p_c), s	0.3	9.9	0.0	0.0	0.0	8.6	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			12.8									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection

Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	20	5	5	20	10
Future Vol, veh/h	15	20	5	5	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	13	13	0	0	0	0
Mvmt Flow	15	20	5	5	20	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.7	7.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	0%	67%
Vol Thru, %	57%	50%	0%
Vol Right, %	0%	50%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	35	10	30
LT Vol	15	0	20
Through Vol	20	5	0
RT Vol	0	5	10
Lane Flow Rate	35	10	30
Geometry Grp	1	1	1
Degree of Util (X)	0.041	0.01	0.033
Departure Headway (Hd)	4.268	3.679	3.911
Convergence, Y/N	Yes	Yes	Yes
Cap	842	973	916
Service Time	2.28	1.699	1.933
HCM Lane V/C Ratio	0.042	0.01	0.033
HCM Control Delay	7.5	6.7	7.1
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB On Ramps Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-B AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	920	15	255	0
Future Volume (vph)	0	0	920	15	255	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1449	1455	2780	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1449	1455	2780	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	968	16	268	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	494	490	268	0
Heavy Vehicles (%)	0%	0%	9%	9%	16%	16%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5.8	
Permitted Phases						
Actuated Green, G (s)			69.8	69.8	69.0	
Effective Green, g (s)			69.8	69.8	62.3	
Actuated g/C Ratio			0.46	0.46	0.41	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			671	674	1150	
v/s Ratio Prot			c0.34	0.34	c0.10	
v/s Ratio Perm						
v/c Ratio			0.74	0.73	0.23	
Uniform Delay, d1			32.9	32.7	28.6	
Progression Factor			1.00	1.00	0.03	
Incremental Delay, d2			4.5	4.2	0.1	
Delay (s)			37.4	36.8	1.1	
Level of Service			D	D	A	
Approach Delay (s)	0.0			37.1	1.1	
Approach LOS	A			D	A	
Intersection Summary						
HCM 2000 Control Delay			29.4	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			150.6	Sum of lost time (s)		18.5
Intersection Capacity Utilization			73.4%	ICU Level of Service		D
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Everett Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-B AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	320	0	220	920	0
Future Volume (vph)	35	320	0	220	920	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1374	1229		2866	3050	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1374	1229		2866	3050	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	337	0	232	968	0
RTOR Reduction (vph)	0	133	0	0	0	0
Lane Group Flow (vph)	37	204	0	232	968	0
Heavy Vehicles (%)	21%	21%	16%	16%	9%	9%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	29.6	29.6		32.7	108.4	
Effective Green, g (s)	29.6	29.6		32.7	108.4	
Actuated g/C Ratio	0.20	0.20		0.22	0.72	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	270	241		622	2195	
v/s Ratio Prot	0.03	c0.17		0.08	c0.32	
v/s Ratio Perm						
v/c Ratio	0.14	0.85		0.37	0.44	
Uniform Delay, d1	50.0	58.3		50.2	8.7	
Progression Factor	1.00	1.00		1.00	0.00	
Incremental Delay, d2	0.3	23.9		0.7	0.1	
Delay (s)	50.3	82.3		50.9	0.2	
Level of Service	D	F		D	A	
Approach Delay (s)	79.1			50.9	0.2	
Approach LOS	E			D	A	
Intersection Summary						
HCM 2000 Control Delay	26.4			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.55					
Actuated Cycle Length (s)	150.6			Sum of lost time (s)		18.5
Intersection Capacity Utilization	69.4%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-B AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	10	45	50	15	110	85	915	390	105	685	75
Future Volume (veh/h)	45	10	45	50	15	110	85	915	390	105	685	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1573	1573	1559	1559	1559	1668	1668	1668	1600	1600	1600
Adj Flow Rate, veh/h	47	11	9	53	16	31	89	963	362	111	721	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	13	13	14	14	14	6	6	6	11	11	11
Cap, veh/h	122	137	115	130	144	121	174	1326	498	177	1633	
Arrive On Green	0.08	0.09	0.09	0.09	0.09	0.09	0.11	0.43	0.43	0.12	0.44	0.00
Sat Flow, veh/h	1498	1573	1323	1485	1559	1312	1589	3049	1145	1524	3696	1356
Grp Volume(v), veh/h	47	11	9	53	16	31	89	864	461	111	721	0
Grp Sat Flow(s), veh/h/ln	1498	1573	1323	1485	1559	1312	1589	1368	1459	1524	1232	1356
Q Serve(g_s), s	2.3	0.5	0.5	2.6	0.7	1.7	4.1	20.4	20.5	5.4	10.6	0.0
Cycle Q Clear(g_c), s	2.3	0.5	0.5	2.6	0.7	1.7	4.1	20.4	20.5	5.4	10.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	122	137	115	130	144	121	174	1189	634	177	1633	
V/C Ratio(X)	0.38	0.08	0.08	0.41	0.11	0.26	0.51	0.73	0.73	0.63	0.44	
Avail Cap(c_a), veh/h	220	653	549	218	647	545	396	2621	1398	380	3541	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.1	32.9	32.9	33.8	32.6	33.0	32.9	18.3	18.3	33.0	15.2	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.3	0.8	0.1	0.4	2.8	0.9	1.6	1.4	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.9	0.2	0.2	1.0	0.3	0.5	1.6	5.7	6.2	1.9	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.8	33.1	33.1	34.6	32.7	33.4	35.7	19.1	19.9	34.3	15.3	0.0
LnGrp LOS	C	C	C	C	C	C	D	B	B	C	B	
Approach Vol, veh/h		67			100			1414			832	
Approach Delay, s/veh		34.3			33.9			20.4			17.9	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	39.0	14.3	11.3	13.1	39.6	13.9	11.7				
Change Period (Y+Rc), s	4.5	5.0	7.5	4.5	4.5	5.0	7.5	4.5				
Max Green Setting (Gmax), s	19.5	75.0	11.5	32.5	19.5	75.0	11.5	32.5				
Max Q Clear Time (g_c+I1), s	7.4	22.5	4.6	2.5	6.1	12.6	4.3	3.7				
Green Ext Time (p_c), s	0.1	11.6	0.0	0.0	0.2	5.3	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

806: Airport Rd & Minuteman Dr
HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
2046 Build SWI-B AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	  			  	  	
Traffic Volume (vph)	60	40	40	1305	640	145
Future Volume (vph)	60	40	40	1305	640	145
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.82	*0.77	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	2139		1531	3963	3439	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	2139		1531	3963	3439	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	42	42	1374	674	153
RTOR Reduction (vph)	38	0	0	0	16	0
Lane Group Flow (vph)	67	0	42	1374	811	0
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	44%	44%	5%	5%	10%	10%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	10.6		6.4	86.9	75.5	
Effective Green, g (s)	10.6		6.4	86.9	75.5	
Actuated g/C Ratio	0.10		0.06	0.79	0.69	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	206		89	3130	2360	
v/s Ratio Prot	c0.03		0.03	c0.35	0.24	
v/s Ratio Perm						
v/c Ratio	0.33		0.47	0.44	0.34	
Uniform Delay, d1	46.4		50.2	3.7	7.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.9		3.9	0.4	0.4	
Delay (s)	47.3		54.1	4.2	7.5	
Level of Service	D		D	A	A	
Approach Delay (s)	47.3			5.6	7.5	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			110.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			54.6%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-B AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	TT	T		T	T		T	TTT		T	TTT	
Traffic Volume (veh/h)	735	175	10	55	340	35	5	585	40	15	295	360
Future Volume (veh/h)	735	175	10	55	340	35	5	585	40	15	295	360
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1709	1709	1709	1654	1654	1654	1600	1600	1600
Adj Flow Rate, veh/h	774	184	10	58	358	35	5	616	39	16	311	232
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	3	3	3	7	7	7	11	11	11
Cap, veh/h	872	726	39	142	405	40	21	833	52	56	564	309
Arrive On Green	0.28	0.46	0.46	0.09	0.26	0.26	0.01	0.20	0.20	0.04	0.23	0.23
Sat Flow, veh/h	3132	1593	87	1628	1532	150	1576	4064	256	1524	2464	1350
Grp Volume(v), veh/h	774	0	194	58	0	393	5	410	245	16	311	232
Grp Sat Flow(s), veh/h/ln	1566	0	1680	1628	0	1682	1576	1357	1607	1524	1232	1350
Q Serve(g_s), s	20.3	0.0	6.1	2.9	0.0	19.3	0.3	12.2	12.3	0.9	9.6	13.7
Cycle Q Clear(g_c), s	20.3	0.0	6.1	2.9	0.0	19.3	0.3	12.2	12.3	0.9	9.6	13.7
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	872	0	765	142	0	445	21	556	329	56	564	309
V/C Ratio(X)	0.89	0.00	0.25	0.41	0.00	0.88	0.24	0.74	0.74	0.28	0.55	0.75
Avail Cap(c_a), veh/h	1696	0	1438	199	0	735	193	1169	692	186	1062	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	14.4	37.1	0.0	30.3	42.0	32.0	32.0	40.2	29.2	30.8
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.7	0.0	4.1	2.2	1.4	2.5	1.0	0.6	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.4	0.0	2.2	1.2	0.0	8.0	0.1	3.8	4.7	0.3	2.7	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.0	0.0	14.5	37.8	0.0	34.5	44.2	33.4	34.5	41.3	29.8	33.6
LnGrp LOS	C	A	B	D	A	C	D	C	C	D	C	C
Approach Vol, veh/h		968			451			660			559	
Approach Delay, s/veh		27.7			34.9			33.9			31.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	22.6	12.0	43.6	5.6	24.6	28.4	27.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	37.0	10.5	73.5	10.5	37.0	46.5	37.5				
Max Q Clear Time (g_c+I1), s	2.9	14.3	4.9	8.1	2.3	15.7	22.3	21.3				
Green Ext Time (p_c), s	0.0	3.1	0.0	0.7	0.0	2.6	1.6	1.4				
Intersection Summary												
HCM 6th Ctrl Delay			31.3									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	455	85	45	0	140	55	10	0	0	0	0	30
Future Vol, veh/h	455	85	45	0	140	55	10	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	5	5	5	3	3	3	57	57	57
Mvmt Flow	479	89	47	0	147	58	11	0	0	0	0	32
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	205	0	0	136	0	0	1263	1276	113	1247	1270	176
Stage 1	-	-	-	-	-	-	1071	1071	-	176	176	-
Stage 2	-	-	-	-	-	-	192	205	-	1071	1094	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.13	6.53	6.23	7.67	7.07	6.77
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.527	4.027	3.327	4.013	4.513	3.813
Pot Cap-1 Maneuver	1366	-	-	1430	-	-	146	166	937	117	132	743
Stage 1	-	-	-	-	-	-	266	296	-	713	661	-
Stage 2	-	-	-	-	-	-	807	730	-	211	232	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1366	-	-	1430	-	-	102	108	937	85	86	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	147	-	119	132	-
Stage 1	-	-	-	-	-	-	173	192	-	463	661	-
Stage 2	-	-	-	-	-	-	773	730	-	137	151	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	7			0			32.8			10.1		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	140	1366	-	-	1430	-	-	743				
HCM Lane V/C Ratio	0.075	0.351	-	-	-	-	-	0.043				
HCM Control Delay (s)	32.8	9.1	-	-	0	-	-	10.1				
HCM Lane LOS	D	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.2	1.6	-	-	0	-	-	0.1				

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2046 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↑↑↑	→	↰	↑↑↑	↱
Traffic Volume (veh/h)	220	5	160	80	5	135	25	1205	70	110	1015	25
Future Volume (veh/h)	220	5	160	80	5	135	25	1205	70	110	1015	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1723	1723	1532	1532	1532	1641	1641	1641	1654	1654	1654
Adj Flow Rate, veh/h	236	0	16	84	5	-20	26	1268	71	116	1068	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	16	16	16	8	8	8	7	7	7
Cap, veh/h	285	0	120	143	0	285	30	2271	127	135	2955	
Arrive On Green	0.09	0.00	0.09	0.10	0.10	0.00	0.04	1.00	1.00	0.17	1.00	0.00
Sat Flow, veh/h	3281	0	1389	1459	1532	0	1563	3815	214	1576	4467	1402
Grp Volume(v), veh/h	236	0	16	84	-15	-15	26	807	532	116	1068	0
Grp Sat Flow(s), veh/h/ln	1641	0	1389	1459	1532	1298	1563	1214	1600	1576	1489	1402
Q Serve(g_s), s	9.2	0.0	1.4	7.2	0.0	0.0	2.2	0.0	0.0	9.3	0.0	0.0
Cycle Q Clear(g_c), s	9.2	0.0	1.4	7.2	0.0	0.0	2.2	0.0	0.0	9.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	285	0	120	143	0	0	30	1445	952	135	2955	
V/C Ratio(X)	0.83	0.00	0.13	0.59	0.00	0.00	0.85	0.56	0.56	0.86	0.36	
Avail Cap(c_a), veh/h	316	0	134	320	0	0	156	1445	952	158	2955	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.87	0.87	0.87	0.94	0.94	0.00
Uniform Delay (d), s/veh	58.4	0.0	54.8	56.2	0.0	0.0	62.3	0.0	0.0	53.1	0.0	0.0
Incr Delay (d2), s/veh	14.0	0.0	0.2	1.4	0.0	0.0	40.1	1.4	2.1	27.4	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.4	0.0	0.5	2.7	0.0	0.0	1.2	0.3	0.5	4.3	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.4	0.0	55.0	57.6	0.0	0.0	102.3	1.4	2.1	80.5	0.3	0.0
LnGrp LOS	E	A	E	E	A	A	F	A	A	F	A	
Approach Vol, veh/h	252			54			1365			1184		
Approach Delay, s/veh	71.3			89.6			3.6			8.2		
Approach LOS	E			F			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.1	81.9		16.8	6.5	90.5		16.2				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	13.0	58.5		12.5	13.0	58.5		28.5				
Max Q Clear Time (g_c+I1), s	11.3	2.0		11.2	4.2	2.0		9.2				
Green Ext Time (p_c), s	0.0	6.3		0.1	0.0	5.2		0.1				

Intersection Summary

HCM 6th Ctrl Delay 13.1

HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp Everett Link Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis 2046 Future Improved Conditions PM Peak Hour

Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations	↰	↱		↰	↱		↰	↱		
Traffic Volume (vph)	155	90	115	240	1050	270	170	995	0	0
Future Volume (vph)	155	90	115	240	1050	270	170	995	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1516	1357		3061	2410		1568	4507		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1516	1357		3061	2410		1568	4507		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	163	95	121	253	1105	284	179	1047	0	0
RTOR Reduction (vph)	0	35	0	0	35	0	0	0	0	0
Lane Group Flow (vph)	163	181	0	253	1354	0	179	1047	0	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	6%	6%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	18.5	42.8		78.2	78.2		15.3	97.0		
Effective Green, g (s)	18.5	33.8		78.2	78.2		15.3	97.0		
Actuated g/C Ratio	0.14	0.26		0.60	0.60		0.12	0.75		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	215	352		1841	1449		184	3362		
v/s Ratio Prot	c0.11	0.13		0.08			c0.11	0.23		
v/s Ratio Perm					c0.56					
v/c Ratio	0.76	0.51		0.14	0.93		0.97	0.31		
Uniform Delay, d1	53.6	41.1		11.3	23.6		57.1	5.5		
Progression Factor	1.17	1.42		0.84	1.37		1.00	1.00		
Incremental Delay, d2	12.4	1.2		0.1	9.5		58.0	0.2		
Delay (s)	75.1	59.6		9.6	41.8		115.2	5.7		
Level of Service	E	E		A	D		F	A		
Approach Delay (s)	66.3			36.8			21.7	0.0		
Approach LOS	E			D			C	A		
Intersection Summary										
HCM 2000 Control Delay		34.5			HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio		0.91								
Actuated Cycle Length (s)		130.0			Sum of lost time (s)			18.0		
Intersection Capacity Utilization		71.4%			ICU Level of Service			C		
Analysis Period (min)		15								

c Critical Lane Group

506: SWI-B Transit Station Access & Casino Rd
HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project - SWI-B
2046 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LT	TH	RT	LT	TH	RT		TH		TH	TH	RT
Traffic Volume (vph)	25	405	10	5	335	5	0	0	5	5	0	25
Future Volume (vph)	25	405	10	5	335	5	0	0	5	5	0	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	12	11	11	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.95	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.86			0.89	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1583	1411		1504	1593			757			1422	
Flt Permitted	0.52	1.00		0.50	1.00			1.00			0.96	
Satd. Flow (perm)	864	1411		794	1593			757			1381	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	426	11	5	353	5	0	0	5	5	0	26
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	28	0
Lane Group Flow (vph)	26	437	0	5	358	0	0	0	0	0	3	0
Confl. Peds. (#/hr)			12	12			15					15
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	100%	100%	100%	3%	3%	3%
Parking (#/hr)		4										
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	106.9	103.1		101.7	100.5			12.2			12.2	
Effective Green, g (s)	106.9	103.1		101.7	100.5			12.2			12.2	
Actuated g/C Ratio	0.82	0.79		0.78	0.77			0.09			0.09	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	731	1119		627	1231			71			129	
v/s Ratio Prot	c0.00	c0.31		0.00	0.22			0.00				
v/s Ratio Perm	0.03			0.01							c0.00	
v/c Ratio	0.04	0.39		0.01	0.29			0.01			0.02	
Uniform Delay, d1	2.2	4.0		3.1	4.3			53.4			53.5	
Progression Factor	0.84	0.69		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.0	0.4		0.0	0.6			0.0			0.1	
Delay (s)	1.9	3.2		3.1	4.9			53.4			53.6	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		3.1			4.9			53.4			53.6	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay		6.0			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.35										
Actuated Cycle Length (s)		130.0			Sum of lost time (s)			13.5				
Intersection Capacity Utilization		44.5%			ICU Level of Service			A				
Analysis Period (min)		15										

c Critical Lane Group

507: Driveway/SWI-B Transit Station Access & Kasch PIERrett Link Extension Project - SWI-B
 HCM 6th TWSC 2046 Future Improved Conditions PM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖			↕			↕	
Traffic Vol, veh/h	10	165	10	0	190	0	10	0	5	0	0	20
Future Vol, veh/h	10	165	10	0	190	0	10	0	5	0	0	20
Conflicting Peds, #/hr	5	0	0	0	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	46	46	46	20	20	20	0	0	0	0	0	0
Mvmt Flow	10	165	10	0	190	0	10	0	5	0	0	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	195	0	0	175	0	0	390	385	170	388	390	195
Stage 1	-	-	-	-	-	-	190	190	-	195	195	-
Stage 2	-	-	-	-	-	-	200	195	-	193	195	-
Critical Hdwy	4.56	-	-	4.3	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.614	-	-	2.38	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1154	-	-	1300	-	0	573	552	879	574	548	851
Stage 1	-	-	-	-	-	0	816	747	-	811	743	-
Stage 2	-	-	-	-	-	0	806	743	-	813	743	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1149	-	-	1300	-	-	555	544	879	564	540	847
Mov Cap-2 Maneuver	-	-	-	-	-	-	555	544	-	564	540	-
Stage 1	-	-	-	-	-	-	808	740	-	799	739	-
Stage 2	-	-	-	-	-	-	787	739	-	800	736	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			10.8			9.4		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1					
Capacity (veh/h)	633	1149	-	-	1300	-	847					
HCM Lane V/C Ratio	0.024	0.009	-	-	-	-	0.024					
HCM Control Delay (s)	10.8	8.2	-	-	0	-	9.4					
HCM Lane LOS	B	A	-	-	A	-	A					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	0.1					

508: Airport Rd & 94th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
 2046 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↰	↰	↱		↰	↱	↰
Traffic Volume (veh/h)	20	5	25	20	5	110	15	1170	15	20	1230	5
Future Volume (veh/h)	20	5	25	20	5	110	15	1170	15	20	1230	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1559	1559	1559	1723	1723	1723	1627	1627	1627	1695	1695	1695
Adj Flow Rate, veh/h	21	5	-2	21	5	-38	15	1206	15	21	1268	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	14	14	2	2	2	9	9	9	4	4	4
Cap, veh/h	23	17	0	25	17	37	25	3217	40	24	3818	15
Arrive On Green	0.02	0.01	0.00	0.02	0.01	0.00	0.01	0.27	0.27	0.03	1.00	1.00
Sat Flow, veh/h	1485	1559	0	1641	1723	1460	1550	3977	49	1615	4725	19
Grp Volume(v), veh/h	21	3	0	21	5	-38	15	730	491	21	819	454
Grp Sat Flow(s), veh/h/ln	1485	1559	0	1641	1723	1460	1550	1204	1618	1615	1526	1692
Q Serve(g_s), s	1.8	0.2	0.0	1.7	0.4	0.0	1.3	32.1	32.1	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.2	0.0	1.7	0.4	0.0	1.3	32.1	32.1	1.7	0.0	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	23	17	0	25	17	37	25	1948	1309	24	2466	1367
V/C Ratio(X)	0.90	0.18	0.00	0.85	0.29	-1.03	0.60	0.37	0.37	0.86	0.33	0.33
Avail Cap(c_a), veh/h	114	348	0	126	384	348	137	1948	1309	143	2466	1367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.75	0.75	0.75	0.90	0.90	0.90
Uniform Delay (d), s/veh	63.9	63.7	0.0	63.9	63.9	0.0	64.2	20.9	20.9	62.9	0.0	0.0
Incr Delay (d2), s/veh	77.8	7.0	0.0	65.4	12.3	0.0	22.4	0.4	0.6	62.8	0.3	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.2	0.1	0.0	1.1	0.2	0.0	0.6	10.4	14.1	1.1	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	141.6	70.7	0.0	129.3	76.2	0.0	86.6	21.3	21.5	125.7	0.3	0.6
LnGrp LOS	F	E	A	F	E	A	F	C	C	F	A	A
Approach Vol, veh/h		24			-12			1236			1294	
Approach Delay, s/veh		132.8			0.0			22.2			2.5	
Approach LOS		F			A			C			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	110.2	8.0	5.4	6.6	110.0	8.0	5.3				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	11.5	60.0	10.0	29.0	11.5	60.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	3.7	34.1	3.7	2.2	3.3	2.0	3.8	2.4				
Green Ext Time (p_c), s	0.0	11.8	0.0	0.0	0.0	16.5	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			13.3									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	5	90	5	10	20
Future Vol, veh/h	15	5	90	5	10	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	39	39	0	0	0	0
Mvmt Flow	16	5	95	5	11	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	7.4	7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	75%	0%	33%
Vol Thru, %	25%	95%	0%
Vol Right, %	0%	5%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	20	95	30
LT Vol	15	0	10
Through Vol	5	90	0
RT Vol	0	5	20
Lane Flow Rate	21	100	32
Geometry Grp	1	1	1
Degree of Util (X)	0.028	0.109	0.033
Departure Headway (Hd)	4.844	3.94	3.776
Convergence, Y/N	Yes	Yes	Yes
Cap	739	911	940
Service Time	2.872	1.957	1.831
HCM Lane V/C Ratio	0.028	0.11	0.034
HCM Control Delay	8	7.4	7
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.4	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp - SWI-B
 HCM Signalized Intersection Capacity Analysis 2046 Future Improved Conditions PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			LT	LT	LT	LT
Traffic Volume (vph)	0	0	835	5	340	0
Future Volume (vph)	0	0	835	5	340	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1504	1509	3131	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1504	1509	3131	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	852	5	347	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	426	431	347	0
Heavy Vehicles (%)	0%	0%	5%	5%	3%	3%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5.8	
Permitted Phases						
Actuated Green, G (s)			63.7	63.7	65.9	
Effective Green, g (s)			63.7	63.7	59.2	
Actuated g/C Ratio			0.45	0.45	0.42	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			677	679	1310	
v/s Ratio Prot			0.28	c0.29	c0.11	
v/s Ratio Perm						
v/c Ratio			0.63	0.63	0.26	
Uniform Delay, d1			29.8	29.9	26.9	
Progression Factor			1.00	1.00	0.01	
Incremental Delay, d2			2.1	2.2	0.1	
Delay (s)			31.8	32.1	0.3	
Level of Service			C	C	A	
Approach Delay (s)	0.0			32.0	0.3	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			22.8	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			141.4	Sum of lost time (s)	18.5	
Intersection Capacity Utilization			72.8%	ICU Level of Service	C	
Analysis Period (min)			15			
c Critical Lane Group						

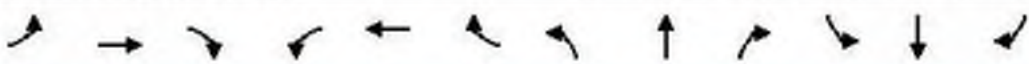
512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off-Ramp Extension Project - SWI-B
 HCM Signalized Intersection Capacity Analysis

2046 Future Improved Conditions PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	330	0	330	835	0
Future Volume (vph)	10	330	0	330	835	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1231	1102		3228	3167	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1231	1102		3228	3167	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	347	0	347	879	0
RTOR Reduction (vph)	0	115	0	0	0	0
Lane Group Flow (vph)	11	232	0	347	879	0
Heavy Vehicles (%)	35%	35%	3%	3%	5%	5%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	34.7	34.7		24.5	94.1	
Effective Green, g (s)	34.7	34.7		24.5	94.1	
Actuated g/C Ratio	0.25	0.25		0.17	0.67	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	302	270		559	2107	
v/s Ratio Prot	0.01	c0.21		c0.11	c0.28	
v/s Ratio Perm						
v/c Ratio	0.04	0.86		0.62	0.42	
Uniform Delay, d1	40.6	51.0		54.1	11.0	
Progression Factor	1.00	1.00		1.00	0.03	
Incremental Delay, d2	0.1	23.2		2.8	0.1	
Delay (s)	40.7	74.2		57.0	0.4	
Level of Service	D	E		E	A	
Approach Delay (s)	73.2			57.0	0.4	
Approach LOS	E			E	A	
Intersection Summary						
HCM 2000 Control Delay	29.3			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.59					
Actuated Cycle Length (s)	141.4			Sum of lost time (s)		18.5
Intersection Capacity Utilization	68.8%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
2046 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑↑		↰	↑↑↑	↱
Traffic Volume (veh/h)	85	20	185	320	20	140	90	975	70	110	1080	85
Future Volume (veh/h)	85	20	185	320	20	140	90	975	70	110	1080	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1668	1668	1668	1641	1641	1641	1695	1695	1695
Adj Flow Rate, veh/h	89	21	9	337	21	44	95	1026	70	116	1137	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	6	6	6	8	8	8	4	4	4
Cap, veh/h	110	55	46	299	257	217	113	2025	138	130	2500	
Arrive On Green	0.07	0.03	0.03	0.19	0.15	0.15	0.14	1.00	1.00	0.03	0.18	0.00
Sat Flow, veh/h	1667	1750	1448	1589	1668	1405	1563	3766	257	1615	4578	1437
Grp Volume(v), veh/h	89	21	9	337	21	44	95	661	435	116	1137	0
Grp Sat Flow(s), veh/h/ln	1667	1750	1448	1589	1668	1405	1563	1214	1594	1615	1526	1437
Q Serve(g_s), s	6.9	1.5	0.8	24.5	1.4	3.6	7.7	0.0	0.0	9.3	28.8	0.0
Cycle Q Clear(g_c), s	6.9	1.5	0.8	24.5	1.4	3.6	7.7	0.0	0.0	9.3	28.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	110	55	46	299	257	217	113	1306	857	130	2500	
V/C Ratio(X)	0.81	0.38	0.20	1.13	0.08	0.20	0.84	0.51	0.51	0.89	0.45	
Avail Cap(c_a), veh/h	186	438	362	299	545	459	126	1306	857	130	2500	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	0.94	0.94	0.00
Uniform Delay (d), s/veh	59.9	61.7	61.3	52.7	47.1	48.0	54.9	0.0	0.0	62.7	36.0	0.0
Incr Delay (d2), s/veh	13.1	4.3	2.1	90.2	0.1	0.5	32.1	1.3	1.9	45.2	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.3	0.7	0.3	17.2	0.6	1.3	3.8	0.2	0.5	5.6	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	66.0	63.4	143.0	47.2	48.5	87.0	1.3	1.9	107.9	36.6	0.0
LnGrp LOS	E	E	E	F	D	D	F	A	A	F	D	
Approach Vol, veh/h		119			402			1191			1253	
Approach Delay, s/veh		71.0			127.7			8.3			43.2	
Approach LOS		E			F			A			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	74.4	32.0	8.6	13.9	75.5	16.1	24.5				
Change Period (Y+Rc), s	4.5	4.5	7.5	4.5	4.5	4.5	7.5	4.5				
Max Green Setting (Gmax), s	10.5	41.5	24.5	32.5	10.5	41.5	14.5	42.5				
Max Q Clear Time (g_c+I1), s	11.3	2.0	26.5	3.5	9.7	30.8	8.9	5.6				
Green Ext Time (p_c), s	0.0	8.1	0.0	0.1	0.0	5.3	0.1	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project - SWI-B
 2046 Future Improved Conditions PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	  			  	  	
Traffic Volume (vph)	215	45	30	920	1500	85
Future Volume (vph)	215	45	30	920	1500	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.74	*0.90	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	2941		1488	3477	4351	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	2941		1488	3477	4351	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	47	32	968	1579	89
RTOR Reduction (vph)	15	0	0	0	3	0
Lane Group Flow (vph)	258	0	32	968	1665	0
Confl. Peds. (#/hr)	4		1			1
Heavy Vehicles (%)	8%	8%	8%	8%	4%	4%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases						
Actuated Green, G (s)	15.7		5.2	101.8	91.6	
Effective Green, g (s)	15.7		5.2	101.8	91.6	
Actuated g/C Ratio	0.12		0.04	0.78	0.70	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	355		59	2722	3065	
v/s Ratio Prot	c0.09		c0.02	0.28	c0.38	
v/s Ratio Perm						
v/c Ratio	0.73		0.54	0.36	0.54	
Uniform Delay, d1	55.1		61.2	4.2	9.2	
Progression Factor	1.00		0.75	1.04	1.43	
Incremental Delay, d2	6.2		4.2	0.3	0.5	
Delay (s)	61.3		50.0	4.7	13.7	
Level of Service	E		D	A	B	
Approach Delay (s)	61.3			6.2	13.7	
Approach LOS	E			A	B	
Intersection Summary						
HCM 2000 Control Delay			15.5	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.57			
Actuated Cycle Length (s)			130.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			52.1%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project - SWI-B
2046 Future Improved Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							  			  	
Traffic Volume (veh/h)	525	455	25	60	215	15	5	405	85	35	890	625
Future Volume (veh/h)	525	455	25	60	215	15	5	405	85	35	890	625
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1682	1682	1682	1723	1723	1723	1641	1641	1641	1709	1709	1709
Adj Flow Rate, veh/h	547	474	24	62	224	14	5	422	72	36	927	561
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	2	2	2	8	8	8	3	3	3
Cap, veh/h	604	499	25	78	268	17	8	1592	266	44	1494	707
Arrive On Green	0.19	0.31	0.31	0.05	0.17	0.17	0.01	0.47	0.47	0.01	0.16	0.16
Sat Flow, veh/h	3107	1587	80	1641	1603	100	1563	3396	568	1628	3042	1441
Grp Volume(v), veh/h	547	0	498	62	0	238	5	299	195	36	927	561
Grp Sat Flow(s),veh/h/ln	1554	0	1667	1641	0	1704	1563	1214	1535	1628	1521	1441
Q Serve(g_s), s	22.4	0.0	38.0	4.9	0.0	17.6	0.4	9.7	10.0	2.9	36.9	48.7
Cycle Q Clear(g_c), s	22.4	0.0	38.0	4.9	0.0	17.6	0.4	9.7	10.0	2.9	36.9	48.7
Prop In Lane	1.00		0.05	1.00		0.06	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	604	0	524	78	0	285	8	1138	720	44	1494	707
V/C Ratio(X)	0.91	0.00	0.95	0.80	0.00	0.84	0.63	0.26	0.27	0.81	0.62	0.79
Avail Cap(c_a), veh/h	609	0	571	133	0	387	126	1138	720	131	1494	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	51.2	0.0	43.6	61.3	0.0	52.4	64.5	20.9	21.0	64.1	43.2	48.1
Incr Delay (d2), s/veh	16.7	0.0	24.2	6.9	0.0	8.4	26.6	0.6	0.9	10.3	1.6	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	0.0	18.9	2.2	0.0	8.2	0.2	2.8	3.7	1.3	15.3	20.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.9	0.0	67.8	68.2	0.0	60.8	91.2	21.5	21.9	74.3	44.8	55.6
LnGrp LOS	E	A	E	E	A	E	F	C	C	E	D	E
Approach Vol, veh/h	1045			300			499			1524		
Approach Delay, s/veh	67.8			62.3			22.4			49.5		
Approach LOS	E			E			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	65.9	10.6	45.4	5.2	68.8	29.8	26.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	46.0	10.5	44.5	10.5	46.0	25.5	29.5				
Max Q Clear Time (g_c+I1), s	4.9	12.0	6.9	40.0	2.4	50.7	24.4	19.6				
Green Ext Time (p_c), s	0.0	2.4	0.0	0.9	0.0	0.0	0.2	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	52.3											
HCM 6th LOS	D											

Intersection												
Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	220	0	0	145	5	40	0	0	90	0	365
Future Vol, veh/h	20	220	0	0	145	5	40	0	0	90	0	365
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	8	8	8	3	3	3	2	2	2
Mvmt Flow	21	232	0	0	153	5	42	0	0	95	0	384

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	232	0	0	622	433	232	431	431	157
Stage 1	-	-	-	-	-	-	274	274	-	157	157	-
Stage 2	-	-	-	-	-	-	348	159	-	274	274	-
Critical Hdwy	4.12	-	-	4.18	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.272	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1420	-	-	1301	-	-	398	514	805	535	517	889
Stage 1	-	-	-	-	-	-	730	681	-	845	768	-
Stage 2	-	-	-	-	-	-	666	764	-	732	683	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1419	-	-	1301	-	-	223	506	805	529	509	888
Mov Cap-2 Maneuver	-	-	-	-	-	-	300	551	-	590	556	-
Stage 1	-	-	-	-	-	-	719	671	-	831	767	-
Stage 2	-	-	-	-	-	-	378	763	-	721	673	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.9	15.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	300	1419	-	-	1301	-	-	807
HCM Lane V/C Ratio	0.14	0.015	-	-	-	-	-	0.593
HCM Control Delay (s)	18.9	7.6	-	-	0	-	-	15.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	4

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-C AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	25	40	0	40	135	800	60	100	930	185
Future Volume (veh/h)	40	5	25	40	0	40	135	800	60	100	930	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1695	1695	1695	1313	1313	1313	1641	1641	1641	1641	1641	1641
Adj Flow Rate, veh/h	42	5	3	42	0	5	142	842	57	105	979	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	32	32	32	8	8	8	8	8	8
Cap, veh/h	86	90	74	66	0	56	174	2252	152	128	2018	
Arrive On Green	0.05	0.05	0.05	0.05	0.00	0.05	0.11	0.56	0.56	0.16	1.00	0.00
Sat Flow, veh/h	1615	1695	1386	1251	0	1054	1563	4010	271	1563	3790	1391
Grp Volume(v), veh/h	42	5	3	42	0	5	142	564	335	105	979	0
Grp Sat Flow(s), veh/h/ln	1615	1695	1386	1251	0	1054	1563	1345	1590	1563	1263	1391
Q Serve(g_s), s	1.8	0.2	0.1	2.3	0.0	0.3	6.2	8.1	8.2	4.5	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.2	0.1	2.3	0.0	0.3	6.2	8.1	8.2	4.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	86	90	74	66	0	56	174	1511	893	128	2018	
V/C Ratio(X)	0.49	0.06	0.04	0.63	0.00	0.09	0.82	0.37	0.37	0.82	0.49	
Avail Cap(c_a), veh/h	265	279	228	259	0	218	246	1511	893	246	2018	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	0.86	0.86	0.00
Uniform Delay (d), s/veh	32.2	31.5	31.4	32.5	0.0	31.5	30.4	8.5	8.5	28.8	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.1	0.1	3.6	0.0	0.3	11.1	0.6	1.0	4.2	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.7	0.1	0.0	0.8	0.0	0.1	2.7	1.9	2.3	1.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.8	31.6	31.5	36.1	0.0	31.8	41.5	9.1	9.5	33.0	0.7	0.0
LnGrp LOS	C	C	C	D	A	C	D	A	A	C	A	
Approach Vol, veh/h	50			47			1041			1084		
Approach Delay, s/veh	33.4			35.7			13.6			3.8		
Approach LOS	C			D			B			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	43.8		9.2	11.8	41.8		7.2				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	11.0	15.5		11.5	11.0	15.5		14.5				
Max Q Clear Time (g_c+I1), s	6.5	10.2		3.8	8.2	2.0		4.3				
Green Ext Time (p_c), s	0.0	1.8		0.0	0.1	3.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

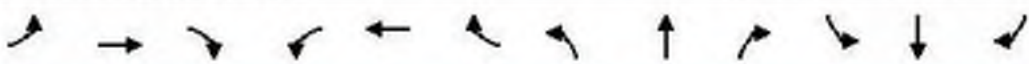
502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-C AM Peak Hour

										
Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	200	75	85	130	605	145	165	1015	0	0
Future Volume (vph)	200	75	85	130	605	145	165	1015	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1448	1295		2922	2301		1539	4424		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1448	1295		2922	2301		1539	4424		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	79	89	137	637	153	174	1068	0	0
RTOR Reduction (vph)	0	14	0	0	84	0	0	0	0	0
Lane Group Flow (vph)	211	154	0	137	706	0	174	1068	0	0
Confl. Peds. (#/hr)	1									
Heavy Vehicles (%)	11%	11%	11%	10%	10%	10%	8%	8%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	13.4	35.8		25.2	25.2		15.4	38.5		
Effective Green, g (s)	13.4	28.8		25.2	25.2		15.4	38.5		
Actuated g/C Ratio	0.19	0.41		0.36	0.36		0.22	0.55		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	277	532		1051	828		338	2433		
v/s Ratio Prot	c0.15	0.12		0.05			c0.11	c0.24		
v/s Ratio Perm					c0.31					
v/c Ratio	0.76	0.29		0.13	0.85		0.51	0.44		
Uniform Delay, d1	26.8	13.8		15.0	20.7		24.0	9.3		
Progression Factor	1.00	1.00		0.33	0.44		1.00	1.00		
Incremental Delay, d2	10.6	0.3		0.2	10.2		1.3	0.6		
Delay (s)	37.4	14.1		5.1	19.2		25.3	9.9		
Level of Service	D	B		A	B		C	A		
Approach Delay (s)	27.0			17.2				12.1	0.0	
Approach LOS	C			B				B	A	
Intersection Summary										
HCM 2000 Control Delay			16.2			HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.74							
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			16.0	
Intersection Capacity Utilization			46.7%			ICU Level of Service			A	
Analysis Period (min)			15							
c Critical Lane Group										

508: Airport Rd & 94th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2037 Build SWI-C AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱	↰	↰	↱↱↱		↰	↱↱↱	
Traffic Volume (veh/h)	5	10	5	25	0	65	15	925	70	170	795	30
Future Volume (veh/h)	5	10	5	25	0	65	15	925	70	170	795	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1068	1068	1068	1573	1573	1573	1641	1641	1641	1627	1627	1627
Adj Flow Rate, veh/h	5	11	1	26	0	37	16	974	38	179	837	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	50	50	50	13	13	13	8	8	8	9	9	9
Cap, veh/h	4	96	9	27	178	341	31	1638	64	224	2062	76
Arrive On Green	0.00	0.10	0.10	0.02	0.00	0.11	0.02	0.40	0.40	0.14	0.52	0.52
Sat Flow, veh/h	1017	962	87	1498	1573	1308	1563	4140	161	1550	3959	146
Grp Volume(v), veh/h	5	0	12	26	0	37	16	633	379	179	529	339
Grp Sat Flow(s), veh/h/ln	1017	0	1050	1498	1573	1308	1563	1345	1610	1550	1253	1599
Q Serve(g_s), s	0.2	0.0	0.6	1.0	0.0	1.2	0.6	10.6	10.6	6.4	7.3	7.3
Cycle Q Clear(g_c), s	0.2	0.0	0.6	1.0	0.0	1.2	0.6	10.6	10.6	6.4	7.3	7.3
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.10	1.00		0.09
Lane Grp Cap(c), veh/h	4	0	104	27	178	341	31	1065	637	224	1305	833
V/C Ratio(X)	1.23	0.00	0.11	0.98	0.00	0.11	0.52	0.59	0.60	0.80	0.41	0.41
Avail Cap(c_a), veh/h	107	0	534	158	801	859	425	1889	1131	422	1759	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	0.0	23.4	28.0	0.0	16.1	27.7	13.6	13.6	23.6	8.3	8.3
Incr Delay (d2), s/veh	330.1	0.0	0.7	90.8	0.0	0.2	18.2	0.8	1.3	8.9	0.3	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.4	0.0	0.2	1.0	0.0	0.4	0.3	2.6	3.2	2.6	1.4	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	358.5	0.0	24.1	118.7	0.0	16.3	45.8	14.4	14.9	32.4	8.6	8.8
LnGrp LOS	F	A	C	F	A	B	D	B	B	C	A	A
Approach Vol, veh/h	17			63			1028			1047		
Approach Delay, s/veh	122.4			58.6			15.0			12.7		
Approach LOS	F			E			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.7	27.5	7.0	9.7	5.6	34.7	6.2	10.4				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	15.5	40.0	6.0	29.0	15.5	40.0	6.0	29.0				
Max Q Clear Time (g_c+I1), s	8.4	12.6	3.0	2.6	2.6	9.3	2.2	3.2				
Green Ext Time (p_c), s	0.4	9.7	0.0	0.0	0.0	8.4	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	16.0											
HCM 6th LOS	B											

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔			↔↔			↔			↔		
Traffic Vol, veh/h	15	210	30	0	55	0	35	0	0	0	0	5
Future Vol, veh/h	15	210	30	0	55	0	35	0	0	0	0	5
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	6	6	6	0	0	0	100	100	100	0	0	0
Mvmt Flow	15	210	30	0	55	0	35	0	0	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	55	0	0	244	0	0	287	314	124	190	329	28
Stage 1	-	-	-	-	-	-	259	259	-	55	55	-
Stage 2	-	-	-	-	-	-	28	55	-	135	274	-
Critical Hdwy	4.22	-	-	4.1	-	-	9.5	8.5	8.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	8.5	7.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	8.5	7.5	-	6.5	5.5	-
Follow-up Hdwy	2.26	-	-	2.2	-	-	4.5	5	4.3	3.5	4	3.3
Pot Cap-1 Maneuver	1519	-	-	1334	-	-	446	423	663	758	593	1047
Stage 1	-	-	-	-	-	-	508	500	-	956	853	-
Stage 2	-	-	-	-	-	-	762	667	-	860	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1519	-	-	1329	-	-	438	417	660	752	584	1047
Mov Cap-2 Maneuver	-	-	-	-	-	-	438	417	-	752	584	-
Stage 1	-	-	-	-	-	-	500	493	-	945	853	-
Stage 2	-	-	-	-	-	-	758	667	-	851	677	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	13.9	8.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	438	1519	-	-	1329	-	-	1047
HCM Lane V/C Ratio	0.08	0.01	-	-	-	-	-	0.005
HCM Control Delay (s)	13.9	7.4	0	-	0	-	-	8.5
HCM Lane LOS	B	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0

Intersection

Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	25	10	5	20	10
Future Vol, veh/h	15	25	10	5	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	13	13	0	0	0	0
Mvmt Flow	15	25	10	5	20	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.9	7.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	67%
Vol Thru, %	62%	67%	0%
Vol Right, %	0%	33%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	40	15	30
LT Vol	15	0	20
Through Vol	25	10	0
RT Vol	0	5	10
Lane Flow Rate	40	15	30
Geometry Grp	1	1	1
Degree of Util (X)	0.047	0.016	0.033
Departure Headway (Hd)	4.26	3.783	3.929
Convergence, Y/N	Yes	Yes	Yes
Cap	843	946	910
Service Time	2.275	1.805	1.956
HCM Lane V/C Ratio	0.047	0.016	0.033
HCM Control Delay	7.5	6.9	7.1
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB On Ramp Project
 HCM Signalized Intersection Capacity Analysis

2037 Build SWI-C AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	875	15	240	0
Future Volume (vph)	0	0	875	15	240	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1449	1455	2780	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1449	1455	2780	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	921	16	253	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	470	467	253	0
Heavy Vehicles (%)	0%	0%	9%	9%	16%	16%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5 8	
Permitted Phases						
Actuated Green, G (s)			70.0	70.0	63.0	
Effective Green, g (s)			70.0	70.0	56.3	
Actuated g/C Ratio			0.48	0.48	0.39	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			700	703	1080	
v/s Ratio Prot			c0.32	0.32	c0.09	
v/s Ratio Perm						
v/c Ratio			0.67	0.66	0.23	
Uniform Delay, d1			28.6	28.5	29.8	
Progression Factor			1.00	1.00	0.03	
Incremental Delay, d2			2.7	2.6	0.1	
Delay (s)			31.4	31.0	1.2	
Level of Service			C	C	A	
Approach Delay (s)	0.0			31.2	1.2	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			24.8	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			144.8	Sum of lost time (s)		18.5
Intersection Capacity Utilization			68.8%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Everett Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2037 Build SWI-C AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	305	0	205	875	0
Future Volume (vph)	35	305	0	205	875	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1374	1229		2866	3050	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1374	1229		2866	3050	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	321	0	216	921	0
RTOR Reduction (vph)	0	152	0	0	0	0
Lane Group Flow (vph)	37	169	0	216	921	0
Heavy Vehicles (%)	21%	21%	16%	16%	9%	9%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	24.8	24.8		31.5	107.4	
Effective Green, g (s)	24.8	24.8		31.5	107.4	
Actuated g/C Ratio	0.17	0.17		0.22	0.74	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	235	210		623	2262	
v/s Ratio Prot	0.03	c0.14		0.08	c0.30	
v/s Ratio Perm						
v/c Ratio	0.16	0.80		0.35	0.41	
Uniform Delay, d1	51.1	57.6		47.9	6.9	
Progression Factor	1.00	1.00		1.00	0.01	
Incremental Delay, d2	0.4	20.3		0.6	0.1	
Delay (s)	51.5	77.9		48.6	0.2	
Level of Service	D	E		D	A	
Approach Delay (s)	75.2			48.6	0.2	
Approach LOS	E			D	A	
Intersection Summary						
HCM 2000 Control Delay	25.1			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.50					
Actuated Cycle Length (s)	144.8			Sum of lost time (s)		18.5
Intersection Capacity Utilization	64.8%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	165	30	0	15	0	30	0	0	0	0	0
Future Vol, veh/h	0	165	30	0	15	0	30	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	174	32	0	16	0	32	0	0	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	16	0	0	210	0	0	210	210	194	206	226	16
Stage 1	-	-	-	-	-	-	194	194	-	16	16	-
Stage 2	-	-	-	-	-	-	16	16	-	190	210	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1595	-	-	1355	-	-	745	685	845	750	671	1060
Stage 1	-	-	-	-	-	-	805	738	-	1001	880	-
Stage 2	-	-	-	-	-	-	1001	880	-	809	727	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1595	-	-	1350	-	-	742	682	842	750	668	1060
Mov Cap-2 Maneuver	-	-	-	-	-	-	742	682	-	750	668	-
Stage 1	-	-	-	-	-	-	802	735	-	1001	880	-
Stage 2	-	-	-	-	-	-	1001	880	-	809	724	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			10.1			0		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	742	1595	-	-	1350	-	-	-				
HCM Lane V/C Ratio	0.043	-	-	-	-	-	-	-				
HCM Control Delay (s)	10.1	0	-	-	0	-	-	0				
HCM Lane LOS	B	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	0	1010	5	0	825
Future Vol, veh/h	0	0	1010	5	0	825
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	100	100	3	3	3	3
Mvmt Flow	0	0	1063	5	0	868
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	542	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	9.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.9	-	-	-	-
Pot Cap-1 Maneuver	0	264	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	262	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	-	-			
HCM Lane V/C Ratio	-	-	-			
HCM Control Delay (s)	-	-	0			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	-			

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2037 Build SWI-C AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	10	45	50	15	105	85	865	375	105	645	75
Future Volume (veh/h)	45	10	45	50	15	105	85	865	375	105	645	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1573	1573	1559	1559	1559	1668	1668	1668	1600	1600	1600
Adj Flow Rate, veh/h	47	11	7	53	16	20	89	911	333	111	679	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	13	13	14	14	14	6	6	6	11	11	11
Cap, veh/h	67	104	86	72	109	90	113	1360	496	137	1703	
Arrive On Green	0.05	0.07	0.07	0.05	0.07	0.07	0.07	0.44	0.44	0.09	0.46	0.00
Sat Flow, veh/h	1498	1573	1294	1485	1559	1282	1589	3077	1122	1524	3696	1356
Grp Volume(v), veh/h	47	11	7	53	16	20	89	810	434	111	679	0
Grp Sat Flow(s), veh/h/ln	1498	1573	1294	1485	1559	1282	1589	1368	1463	1524	1232	1356
Q Serve(g_s), s	1.9	0.4	0.3	2.1	0.6	0.9	3.4	14.3	14.3	4.4	7.4	0.0
Cycle Q Clear(g_c), s	1.9	0.4	0.3	2.1	0.6	0.9	3.4	14.3	14.3	4.4	7.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.77	1.00		1.00
Lane Grp Cap(c), veh/h	67	104	86	72	109	90	113	1209	647	137	1703	
V/C Ratio(X)	0.70	0.11	0.08	0.73	0.15	0.22	0.79	0.67	0.67	0.81	0.40	
Avail Cap(c_a), veh/h	283	840	691	280	832	685	509	3370	1803	488	4553	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.7	26.7	26.7	28.6	26.6	26.7	27.8	13.5	13.5	27.2	10.8	0.0
Incr Delay (d2), s/veh	4.8	0.4	0.4	5.3	0.2	0.5	13.7	0.6	1.2	4.3	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.7	0.2	0.1	0.8	0.2	0.3	1.6	3.5	3.8	1.6	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.4	27.2	27.1	33.9	26.8	27.2	41.5	14.1	14.7	31.5	11.0	0.0
LnGrp LOS	C	C	C	C	C	C	D	B	B	C	B	
Approach Vol, veh/h		65			89			1333			790	
Approach Delay, s/veh		31.7			31.1			16.1			13.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	31.9	10.5	8.5	8.8	33.1	10.2	8.8				
Change Period (Y+Rc), s	4.5	5.0	7.5	4.5	4.5	5.0	7.5	4.5				
Max Green Setting (Gmax), s	19.5	75.0	11.5	32.5	19.5	75.0	11.5	32.5				
Max Q Clear Time (g_c+I1), s	6.4	16.3	4.1	2.4	5.4	9.4	3.9	2.9				
Green Ext Time (p_c), s	0.1	10.6	0.0	0.0	0.2	4.9	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			16.4									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-C AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TTT		T	TTT	TTT	
Traffic Volume (vph)	60	35	40	1240	610	140
Future Volume (vph)	60	35	40	1240	610	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.82	*0.77	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.94		1.00	1.00	0.97	
Flt Protected	0.97		0.95	1.00	1.00	
Satd. Flow (prot)	2146		1531	3963	3438	
Flt Permitted	0.97		0.95	1.00	1.00	
Satd. Flow (perm)	2146		1531	3963	3438	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	37	42	1305	642	147
RTOR Reduction (vph)	34	0	0	0	17	0
Lane Group Flow (vph)	66	0	42	1305	772	0
Confl. Peds. (#/hr)		1	2			2
Heavy Vehicles (%)	44%	44%	5%	5%	10%	10%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases						
Actuated Green, G (s)	7.4		5.8	80.1	69.3	
Effective Green, g (s)	7.4		5.8	80.1	69.3	
Actuated g/C Ratio	0.07		0.06	0.80	0.69	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	158		88	3174	2382	
v/s Ratio Prot	c0.03		0.03	c0.33	0.22	
v/s Ratio Perm						
v/c Ratio	0.42		0.48	0.41	0.32	
Uniform Delay, d1	44.2		45.6	3.0	6.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.8		4.0	0.4	0.4	
Delay (s)	46.0		49.7	3.3	6.4	
Level of Service	D		D	A	A	
Approach Delay (s)	46.0			4.8	6.4	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			7.2	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			100.0	Sum of lost time (s)		17.5
Intersection Capacity Utilization			47.1%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2037 Build SWI-C AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	  		 	  	
Traffic Volume (veh/h)	695	165	10	55	325	35	5	555	35	15	285	345
Future Volume (veh/h)	695	165	10	55	325	35	5	555	35	15	285	345
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1709	1709	1709	1654	1654	1654	1600	1600	1600
Adj Flow Rate, veh/h	732	174	10	58	342	35	5	584	34	16	300	214
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	3	3	3	7	7	7	11	11	11
Cap, veh/h	845	774	45	71	399	41	8	828	48	23	523	287
Arrive On Green	0.27	0.49	0.49	0.04	0.26	0.26	0.01	0.20	0.20	0.02	0.21	0.21
Sat Flow, veh/h	3132	1588	91	1628	1525	156	1576	4087	237	1524	2464	1349
Grp Volume(v), veh/h	732	0	184	58	0	377	5	387	231	16	300	214
Grp Sat Flow(s), veh/h/ln	1566	0	1679	1628	0	1681	1576	1357	1610	1524	1232	1349
Q Serve(g_s), s	16.4	0.0	4.6	2.6	0.0	15.7	0.2	9.8	9.9	0.8	8.1	10.9
Cycle Q Clear(g_c), s	16.4	0.0	4.6	2.6	0.0	15.7	0.2	9.8	9.9	0.8	8.1	10.9
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	845	0	819	71	0	440	8	550	326	23	523	287
V/C Ratio(X)	0.87	0.00	0.22	0.82	0.00	0.86	0.60	0.70	0.71	0.69	0.57	0.75
Avail Cap(c_a), veh/h	1933	0	1788	276	0	1037	224	1104	655	217	1003	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	10.9	35.0	0.0	25.9	36.6	27.3	27.4	36.1	26.0	27.2
Incr Delay (d2), s/veh	1.1	0.0	0.1	8.2	0.0	1.9	23.1	1.2	2.1	12.9	0.7	2.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.8	0.0	1.5	1.2	0.0	6.2	0.1	3.0	3.6	0.4	2.2	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.7	0.0	10.9	43.1	0.0	27.8	59.7	28.6	29.5	49.0	26.8	30.1
LnGrp LOS	C	A	B	D	A	C	E	C	C	D	C	C
Approach Vol, veh/h		916			435			623			530	
Approach Delay, s/veh		23.6			29.9			29.2			28.8	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	19.9	7.7	40.5	4.9	20.7	24.4	23.8				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	30.0	12.5	78.5	10.5	30.0	45.5	45.5				
Max Q Clear Time (g_c+I1), s	2.8	11.9	4.6	6.6	2.2	12.9	18.4	17.7				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.7	0.0	2.3	1.5	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			27.2									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	430	85	45	0	130	50	10	0	0	0	0	30
Future Vol, veh/h	430	85	45	0	130	50	10	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	5	5	5	3	3	3	57	57	57
Mvmt Flow	453	89	47	0	137	53	11	0	0	0	0	32

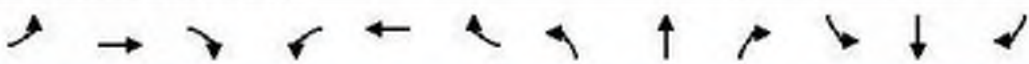
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	136	0	0	1199	1209	113	1183	1206	164
Stage 1	-	-	-	-	-	-	1019	1019	-	164	164	-
Stage 2	-	-	-	-	-	-	180	190	-	1019	1042	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.13	6.53	6.23	7.67	7.07	6.77
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.527	4.027	3.327	4.013	4.513	3.813
Pot Cap-1 Maneuver	1384	-	-	1430	-	-	161	182	937	130	145	756
Stage 1	-	-	-	-	-	-	285	313	-	724	669	-
Stage 2	-	-	-	-	-	-	819	741	-	227	247	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1384	-	-	1430	-	-	115	122	937	97	98	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	164	-	133	145	-
Stage 1	-	-	-	-	-	-	192	211	-	487	669	-
Stage 2	-	-	-	-	-	-	785	741	-	153	166	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.8	0	29.6	10
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	1384	-	-	1430	-	-	756
HCM Lane V/C Ratio	0.067	0.327	-	-	-	-	-	0.042
HCM Control Delay (s)	29.6	8.9	-	-	0	-	-	10
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	1.4	-	-	0	-	-	0.1

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-C PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↑↑↑	→	↰	↑↑↑	↱
Traffic Volume (veh/h)	215	5	155	75	5	120	25	1215	65	100	1030	30
Future Volume (veh/h)	215	5	155	75	5	120	25	1215	65	100	1030	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1723	1723	1532	1532	1532	1641	1641	1641	1654	1654	1654
Adj Flow Rate, veh/h	230	0	19	79	5	11	26	1279	66	105	1084	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	16	16	16	8	8	8	7	7	7
Cap, veh/h	287	0	125	113	33	72	73	2384	123	124	2919	
Arrive On Green	0.09	0.00	0.09	0.08	0.08	0.08	0.09	1.00	1.00	0.16	1.00	0.00
Sat Flow, veh/h	3281	0	1435	1459	420	924	1563	3834	198	1576	4467	1402
Grp Volume(v), veh/h	230	0	19	79	0	16	26	810	535	105	1084	0
Grp Sat Flow(s), veh/h/ln	1641	0	1435	1459	0	1344	1563	1214	1604	1576	1489	1402
Q Serve(g_s), s	8.9	0.0	1.6	6.9	0.0	1.4	2.0	0.0	0.0	8.4	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	1.6	6.9	0.0	1.4	2.0	0.0	0.0	8.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.69	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	287	0	125	113	0	104	73	1510	997	124	2919	
V/C Ratio(X)	0.80	0.00	0.15	0.70	0.00	0.15	0.36	0.54	0.54	0.85	0.37	
Avail Cap(c_a), veh/h	669	0	292	163	0	150	156	1510	997	158	2919	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.86	0.86	0.86	0.93	0.93	0.00
Uniform Delay (d), s/veh	58.2	0.0	54.9	58.5	0.0	56.0	57.1	0.0	0.0	54.0	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.2	2.9	0.0	0.3	2.5	1.2	1.8	22.1	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.8	0.0	0.6	2.6	0.0	0.5	0.8	0.2	0.5	3.8	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.2	0.0	55.1	61.3	0.0	56.2	59.6	1.2	1.8	76.1	0.3	0.0
LnGrp LOS	E	A	E	E	A	E	E	A	A	E	A	
Approach Vol, veh/h	249			95			1371			1189		
Approach Delay, s/veh	59.8			60.5			2.5			7.0		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.2	85.3		16.9	10.1	89.5		13.6				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	13.0	58.5		26.5	13.0	58.5		14.5				
Max Q Clear Time (g_c+I1), s	10.4	2.0		10.9	4.0	2.0		8.9				
Green Ext Time (p_c), s	0.0	6.4		0.4	0.0	5.3		0.1				

Intersection Summary

HCM 6th Ctrl Delay 11.2

HCM 6th LOS B

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.
- User approved ignoring U-Turning movement.

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-C PM Peak Hour

Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	160	75	125	245	1030	275	145	1000	0	0
Future Volume (vph)	160	75	125	245	1030	275	145	1000	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1516	1357		3061	2410		1568	4507		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1516	1357		3061	2410		1568	4507		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	79	132	258	1084	289	153	1053	0	0
RTOR Reduction (vph)	0	36	0	0	36	0	0	0	0	0
Lane Group Flow (vph)	168	175	0	258	1337	0	153	1053	0	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	6%	6%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	18.8	44.3		76.7	76.7		16.5	92.7		
Effective Green, g (s)	18.8	35.3		76.7	76.7		16.5	92.7		
Actuated g/C Ratio	0.14	0.27		0.59	0.59		0.13	0.71		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	219	368		1805	1421		199	3213		
v/s Ratio Prot	c0.11	0.13		0.08			c0.10	0.23		
v/s Ratio Perm					c0.55					
v/c Ratio	0.77	0.47		0.14	0.94		0.77	0.33		
Uniform Delay, d1	53.5	39.6		11.9	24.6		54.9	7.0		
Progression Factor	1.00	1.00		0.54	0.92		1.00	1.00		
Incremental Delay, d2	13.4	1.0		0.1	11.0		16.2	0.3		
Delay (s)	66.9	40.6		6.6	33.7		71.1	7.3		
Level of Service	E	D		A	C		E	A		
Approach Delay (s)	52.3			29.4			15.4	0.0		
Approach LOS	D			C			B	A		
Intersection Summary										
HCM 2000 Control Delay		26.8		HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio		0.89								
Actuated Cycle Length (s)		130.0		Sum of lost time (s)				18.0		
Intersection Capacity Utilization		70.5%		ICU Level of Service				C		
Analysis Period (min)		15								

c Critical Lane Group

508: Airport Rd & 94th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2037 Build SWI-C PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↷		↰	↷	↷	↰	↷		↰	↷	↷
Traffic Volume (veh/h)	20	5	25	30	5	160	15	1125	20	70	1185	5
Future Volume (veh/h)	20	5	25	30	5	160	15	1125	20	70	1185	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1559	1559	1559	1723	1723	1723	1627	1627	1627	1695	1695	1695
Adj Flow Rate, veh/h	21	5	3	31	5	50	15	1160	21	72	1222	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	14	14	2	2	2	9	9	9	4	4	4
Cap, veh/h	61	97	58	85	204	273	50	2448	44	115	3112	13
Arrive On Green	0.04	0.11	0.11	0.05	0.12	0.12	0.01	0.20	0.20	0.14	1.00	1.00
Sat Flow, veh/h	1485	905	543	1641	1723	1434	1550	3951	72	1615	4724	19
Grp Volume(v), veh/h	21	0	8	31	5	50	15	707	474	72	789	438
Grp Sat Flow(s), veh/h/ln	1485	0	1448	1641	1723	1434	1550	1204	1614	1615	1526	1692
Q Serve(g_s), s	1.8	0.0	0.6	2.4	0.3	3.8	1.2	33.6	33.6	5.5	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.0	0.6	2.4	0.3	3.8	1.2	33.6	33.6	5.5	0.0	0.0
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.04	1.00		0.01
Lane Grp Cap(c), veh/h	61	0	155	85	204	273	50	1492	1000	115	2010	1114
V/C Ratio(X)	0.35	0.00	0.05	0.36	0.02	0.18	0.30	0.47	0.47	0.63	0.39	0.39
Avail Cap(c_a), veh/h	114	0	323	126	384	424	137	1492	1000	143	2010	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	60.7	0.0	52.1	59.6	50.7	44.3	62.9	33.0	33.0	54.1	0.0	0.0
Incr Delay (d2), s/veh	4.8	0.0	0.2	3.7	0.1	0.5	4.7	1.1	1.6	7.1	0.5	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.8	0.0	0.2	1.1	0.1	1.4	0.6	11.0	14.9	2.3	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.4	0.0	52.3	63.3	50.8	44.7	67.6	34.1	34.7	61.2	0.5	0.9
LnGrp LOS	E	A	D	E	D	D	E	C	C	E	A	A
Approach Vol, veh/h		29			86			1196			1299	
Approach Delay, s/veh		61.8			51.7			34.7			4.0	
Approach LOS		E			D			C			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.8	85.6	12.7	17.9	8.7	90.6	11.3	19.4				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	11.5	60.0	10.0	29.0	11.5	60.0	10.0	29.0				
Max Q Clear Time (g_c+I1), s	7.5	35.6	4.4	2.6	3.2	2.0	3.8	5.8				
Green Ext Time (p_c), s	0.1	11.1	0.0	0.0	0.0	15.5	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			20.3									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕			↕↕			↕			↕		
Traffic Vol, veh/h	5	45	30	0	90	0	35	0	0	5	0	10
Future Vol, veh/h	5	45	30	0	90	0	35	0	0	5	0	10
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	25	25	25	40	40	40	100	100	100	17	17	17
Mvmt Flow	5	45	30	0	90	0	35	0	0	5	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	79	0	0	119	164	42	123	179	45
Stage 1	-	-	-	-	-	-	74	74	-	90	90	-
Stage 2	-	-	-	-	-	-	45	90	-	33	89	-
Critical Hdwy	4.6	-	-	4.9	-	-	9.5	8.5	8.9	7.84	6.84	7.24
Critical Hdwy Stg 1	-	-	-	-	-	-	8.5	7.5	-	6.84	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	-	8.5	7.5	-	6.84	5.84	-
Follow-up Hdwy	2.45	-	-	2.6	-	-	4.5	5	4.3	3.67	4.17	3.47
Pot Cap-1 Maneuver	1350	-	-	1279	-	-	629	547	774	798	680	968
Stage 1	-	-	-	-	-	-	703	649	-	865	786	-
Stage 2	-	-	-	-	-	-	740	635	-	937	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1350	-	-	1274	-	-	618	543	771	796	675	968
Mov Cap-2 Maneuver	-	-	-	-	-	-	618	543	-	796	675	-
Stage 1	-	-	-	-	-	-	697	644	-	862	786	-
Stage 2	-	-	-	-	-	-	732	635	-	933	780	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			11.2			9.1		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	618	1350	-	-	1274	-	-	903				
HCM Lane V/C Ratio	0.057	0.004	-	-	-	-	-	0.017				
HCM Control Delay (s)	11.2	7.7	0	-	0	-	-	9.1				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	90	5	10	20
Future Vol, veh/h	15	10	90	5	10	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	39	39	0	0	0	0
Mvmt Flow	16	11	95	5	11	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	7.5	7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	33%
Vol Thru, %	40%	95%	0%
Vol Right, %	0%	5%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	95	30
LT Vol	15	0	10
Through Vol	10	90	0
RT Vol	0	5	20
Lane Flow Rate	26	100	32
Geometry Grp	1	1	1
Degree of Util (X)	0.035	0.11	0.033
Departure Headway (Hd)	4.814	3.943	3.783
Convergence, Y/N	Yes	Yes	Yes
Cap	744	910	937
Service Time	2.842	1.963	1.846
HCM Lane V/C Ratio	0.035	0.11	0.034
HCM Control Delay	8	7.5	7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.4	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp Project HCM Signalized Intersection Capacity Analysis

2037 Build SWI-C PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↷	↰	↷
Traffic Volume (vph)	0	0	820	5	330	0
Future Volume (vph)	0	0	820	5	330	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1504	1509	3131	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1504	1509	3131	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	837	5	337	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	418	424	337	0
Heavy Vehicles (%)	0%	0%	5%	5%	3%	3%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5.8	
Permitted Phases						
Actuated Green, G (s)			63.7	63.7	64.5	
Effective Green, g (s)			63.7	63.7	57.8	
Actuated g/C Ratio			0.46	0.46	0.41	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			684	686	1292	
v/s Ratio Prot			0.28	c0.28	c0.11	
v/s Ratio Perm						
v/c Ratio			0.61	0.62	0.26	
Uniform Delay, d1			28.8	28.9	27.0	
Progression Factor			1.00	1.00	0.01	
Incremental Delay, d2			1.8	1.9	0.1	
Delay (s)			30.6	30.8	0.3	
Level of Service			C	C	A	
Approach Delay (s)	0.0			30.7	0.3	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			22.0	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)		18.5
Intersection Capacity Utilization			71.7%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Interchange Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2037 Build SWI-C PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	325	0	320	820	0
Future Volume (vph)	10	325	0	320	820	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1231	1102		3228	3167	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1231	1102		3228	3167	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	342	0	337	863	0
RTOR Reduction (vph)	0	120	0	0	0	0
Lane Group Flow (vph)	11	222	0	337	863	0
Heavy Vehicles (%)	35%	35%	3%	3%	5%	5%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	33.4	33.4		24.4	94.0	
Effective Green, g (s)	33.4	33.4		24.4	94.0	
Actuated g/C Ratio	0.24	0.24		0.17	0.67	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	293	262		562	2126	
v/s Ratio Prot	0.01	c0.20		c0.10	c0.27	
v/s Ratio Perm						
v/c Ratio	0.04	0.85		0.60	0.41	
Uniform Delay, d1	41.0	50.8		53.3	10.4	
Progression Factor	1.00	1.00		1.00	0.03	
Incremental Delay, d2	0.1	22.1		2.4	0.1	
Delay (s)	41.0	73.0		55.7	0.4	
Level of Service	D	E		E	A	
Approach Delay (s)	72.0			55.7	0.4	
Approach LOS	E			E	A	
Intersection Summary						
HCM 2000 Control Delay	28.7			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.58					
Actuated Cycle Length (s)	140.0			Sum of lost time (s)		18.5
Intersection Capacity Utilization	67.7%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	15	25	0	55	0	25	0	0	0	0	0
Future Vol, veh/h	0	15	25	0	55	0	25	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	16	26	0	58	0	26	0	0	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	46	0	0	91	91	33	87	104	58
Stage 1	-	-	-	-	-	-	33	33	-	58	58	-
Stage 2	-	-	-	-	-	-	58	58	-	29	46	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1540	-	-	1555	-	-	891	797	1038	896	784	1005
Stage 1	-	-	-	-	-	-	981	866	-	951	845	-
Stage 2	-	-	-	-	-	-	951	845	-	985	855	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1540	-	-	1549	-	-	887	794	1034	896	781	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	887	794	-	896	781	-
Stage 1	-	-	-	-	-	-	977	863	-	951	845	-
Stage 2	-	-	-	-	-	-	951	845	-	985	852	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			9.2			0		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	887	1540	-	-	1549	-	-	-				
HCM Lane V/C Ratio	0.03	-	-	-	-	-	-	-				
HCM Control Delay (s)	9.2	0	-	-	0	-	-	0				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	0	1160	5	0	1240
Future Vol, veh/h	0	0	1160	5	0	1240
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	100	100	3	3	3	3
Mvmt Flow	0	0	1221	5	0	1305
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	621	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	9.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.9	-	-	-	-
Pot Cap-1 Maneuver	0	226	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	224	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	-	0	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	-	-		

805: Airport Rd & 100th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-C PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑↑		↰	↑↑↑	↱
Traffic Volume (veh/h)	85	15	180	315	20	135	90	950	70	105	1055	85
Future Volume (veh/h)	85	15	180	315	20	135	90	950	70	105	1055	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1668	1668	1668	1641	1641	1641	1695	1695	1695
Adj Flow Rate, veh/h	89	16	17	332	21	26	95	1000	71	111	1111	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	6	6	6	8	8	8	4	4	4
Cap, veh/h	123	114	94	299	300	251	116	1892	134	130	2336	
Arrive On Green	0.07	0.07	0.07	0.19	0.18	0.18	0.15	1.00	1.00	0.03	0.17	0.00
Sat Flow, veh/h	1667	1750	1437	1589	1668	1395	1563	3754	266	1615	4578	1437
Grp Volume(v), veh/h	89	16	17	332	21	26	95	646	425	111	1111	0
Grp Sat Flow(s), veh/h/ln	1667	1750	1437	1589	1668	1395	1563	1214	1592	1615	1526	1437
Q Serve(g_s), s	6.8	1.1	1.5	24.5	1.4	2.0	7.7	0.0	0.0	8.9	28.5	0.0
Cycle Q Clear(g_c), s	6.8	1.1	1.5	24.5	1.4	2.0	7.7	0.0	0.0	8.9	28.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	123	114	94	299	300	251	116	1224	803	130	2336	
V/C Ratio(X)	0.72	0.14	0.18	1.11	0.07	0.10	0.82	0.53	0.53	0.85	0.48	
Avail Cap(c_a), veh/h	186	438	359	299	545	456	126	1224	803	130	2336	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.9	57.3	57.5	52.7	44.3	44.6	54.5	0.0	0.0	62.5	38.3	0.0
Incr Delay (d2), s/veh	7.8	0.6	0.9	84.5	0.1	0.2	28.3	1.5	2.2	38.4	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.1	0.5	0.6	16.8	0.6	0.7	3.7	0.3	0.5	5.1	11.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.7	57.9	58.4	137.2	44.4	44.7	82.8	1.5	2.2	100.9	39.0	0.0
LnGrp LOS	E	E	E	F	D	D	F	A	A	F	D	
Approach Vol, veh/h		122			379			1166			1222	
Approach Delay, s/veh		64.4			125.8			8.4			44.6	
Approach LOS		E			F			A			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	70.0	32.0	13.0	14.2	70.8	17.1	27.9				
Change Period (Y+Rc), s	4.5	4.5	7.5	4.5	4.5	4.5	7.5	4.5				
Max Green Setting (Gmax), s	10.5	41.5	24.5	32.5	10.5	41.5	14.5	42.5				
Max Q Clear Time (g_c+I1), s	10.9	2.0	26.5	3.5	9.7	30.5	8.8	4.0				
Green Ext Time (p_c), s	0.0	7.8	0.0	0.1	0.0	5.2	0.1	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			41.5									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2037 Build SWI-C PM Peak Hour

	EBL	EBR	NBL	NBT	SBT	SBR
Movement						
Lane Configurations	W		W	W	W	
Traffic Volume (vph)	210	45	30	900	1465	85
Future Volume (vph)	210	45	30	900	1465	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width	12	12	11	11	11	11
Total Lost time (s)	7.5		5.0	5.0	5.0	
Lane Util. Factor	0.97		1.00	*0.74	*0.90	
Frpb, ped/bikes	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.99	
Flt Protected	0.96		0.95	1.00	1.00	
Satd. Flow (prot)	2940		1488	3477	4351	
Flt Permitted	0.96		0.95	1.00	1.00	
Satd. Flow (perm)	2940		1488	3477	4351	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	47	32	947	1542	89
RTOR Reduction (vph)	16	0	0	0	4	0
Lane Group Flow (vph)	252	0	32	947	1627	0
Confl. Peds. (#/hr)	3		1			1
Heavy Vehicles (%)	8%	8%	8%	8%	4%	4%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	7		5	2	6	
Permitted Phases						
Actuated Green, G (s)	15.5		6.1	102.0	90.9	
Effective Green, g (s)	15.5		6.1	102.0	90.9	
Actuated g/C Ratio	0.12		0.05	0.78	0.70	
Clearance Time (s)	7.5		5.0	5.0	5.0	
Vehicle Extension (s)	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	350		69	2728	3042	
v/s Ratio Prot	c0.09		0.02	c0.27	c0.37	
v/s Ratio Perm						
v/c Ratio	0.72		0.46	0.35	0.53	
Uniform Delay, d1	55.2		60.4	4.1	9.4	
Progression Factor	1.00		0.76	1.03	1.49	
Incremental Delay, d2	6.1		1.4	0.3	0.5	
Delay (s)	61.2		47.2	4.5	14.5	
Level of Service	E		D	A	B	
Approach Delay (s)	61.2			5.9	14.5	
Approach LOS	E			A	B	
Intersection Summary						
HCM 2000 Control Delay			15.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	17.5
Intersection Capacity Utilization			51.5%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

807: Airport Rd & Beverly Park Rd/Holly Dr
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2037 Build SWI-C PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↱		↰↱	↱		↰↱↱↱	↱↱↱↱		↰↱↱↱	↱↱↱↱	
Traffic Volume (veh/h)	515	440	25	60	210	15	5	395	85	35	870	610
Future Volume (veh/h)	515	440	25	60	210	15	5	395	85	35	870	610
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1682	1682	1682	1723	1723	1723	1641	1641	1641	1709	1709	1709
Adj Flow Rate, veh/h	536	458	25	62	219	14	5	411	73	36	906	554
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	2	2	2	8	8	8	3	3	3
Cap, veh/h	653	484	26	113	264	17	20	1439	250	91	1429	677
Arrive On Green	0.21	0.31	0.31	0.07	0.16	0.16	0.01	0.43	0.43	0.02	0.16	0.16
Sat Flow, veh/h	3107	1580	86	1641	1601	102	1563	3373	586	1628	3042	1441
Grp Volume(v), veh/h	536	0	483	62	0	233	5	293	191	36	906	554
Grp Sat Flow(s), veh/h/ln	1554	0	1666	1641	0	1703	1563	1214	1531	1628	1521	1441
Q Serve(g_s), s	21.4	0.0	36.8	4.8	0.0	17.2	0.4	10.2	10.6	2.8	36.3	48.4
Cycle Q Clear(g_c), s	21.4	0.0	36.8	4.8	0.0	17.2	0.4	10.2	10.6	2.8	36.3	48.4
Prop In Lane	1.00		0.05	1.00		0.06	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	653	0	510	113	0	281	20	1036	653	91	1429	677
V/C Ratio(X)	0.82	0.00	0.95	0.55	0.00	0.83	0.25	0.28	0.29	0.40	0.63	0.82
Avail Cap(c_a), veh/h	653	0	570	133	0	386	126	1036	653	131	1429	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	49.0	0.0	44.0	58.6	0.0	52.5	63.6	24.3	24.4	61.6	44.4	49.6
Incr Delay (d2), s/veh	7.7	0.0	22.9	1.6	0.0	7.7	2.4	0.7	1.1	0.9	1.8	9.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.9	0.0	18.2	2.0	0.0	8.0	0.2	3.0	3.9	1.2	15.1	20.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.7	0.0	67.0	60.1	0.0	60.2	66.0	25.0	25.5	62.5	46.3	58.6
LnGrp LOS	E	A	E	E	A	E	E	C	C	E	D	E
Approach Vol, veh/h	1019			295			489			1496		
Approach Delay, s/veh	61.6			60.2			25.6			51.2		
Approach LOS	E			E			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	1.8	60.5	13.4	44.3	6.2	66.1	31.8	25.9				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	46.0	10.5	44.5	10.5	46.0	25.5	29.5				
Max Q Clear Time (g_c+I), s	14.8	12.6	6.8	38.8	2.4	50.4	23.4	19.2				
Green Ext Time (p_c), s	0.0	2.4	0.0	1.0	0.0	0.0	0.3	0.6				

Intersection Summary

HCM 6th Ctrl Delay	51.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	215	0	0	140	5	40	0	0	90	0	355
Future Vol, veh/h	20	215	0	0	140	5	40	0	0	90	0	355
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	8	8	8	3	3	3	2	2	2
Mvmt Flow	21	226	0	0	147	5	42	0	0	95	0	374

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	226	0	0	605	421	226	419	419	151
Stage 1	-	-	-	-	-	-	268	268	-	151	151	-
Stage 2	-	-	-	-	-	-	337	153	-	268	268	-
Critical Hdwy	4.12	-	-	4.18	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.272	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1428	-	-	1308	-	-	408	522	811	544	525	895
Stage 1	-	-	-	-	-	-	735	685	-	851	772	-
Stage 2	-	-	-	-	-	-	675	769	-	738	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1427	-	-	1308	-	-	235	514	811	537	517	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	556	-	596	562	-
Stage 1	-	-	-	-	-	-	724	675	-	837	771	-
Stage 2	-	-	-	-	-	-	393	768	-	727	677	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.3	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	312	1427	-	-	1308	-	-	812
HCM Lane V/C Ratio	0.135	0.015	-	-	-	-	-	0.577
HCM Control Delay (s)	18.3	7.6	-	-	0	-	-	15.3
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	3.8

501: Airport Rd & 29th Ave W/Kasch Pk Rd
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-C AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	25	40	0	40	140	840	65	105	980	195
Future Volume (veh/h)	40	5	25	40	0	40	140	840	65	105	980	195
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1313	1313	1313	1641	1641	1641	1641	1641	1641
Adj Flow Rate, veh/h	42	5	3	42	0	5	147	884	64	111	1032	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	32	32	32	8	8	8	8	8	8
Cap, veh/h	115	121	99	115	0	100	594	2352	170	137	1111	
Arrive On Green	0.07	0.07	0.07	0.09	0.00	0.09	0.38	0.59	0.59	0.18	0.59	0.00
Sat Flow, veh/h	1615	1695	1394	1251	0	1080	1563	3989	288	1563	3790	1391
Grp Volume(v), veh/h	42	5	3	42	0	5	147	596	352	111	1032	0
Grp Sat Flow(s), veh/h/ln	1615	1695	1394	1251	0	1080	1563	1345	1586	1563	1263	1391
Q Serve(g_s), s	2.7	0.3	0.2	3.5	0.0	0.5	7.1	12.8	12.9	7.5	27.2	0.0
Cycle Q Clear(g_c), s	2.7	0.3	0.2	3.5	0.0	0.5	7.1	12.8	12.9	7.5	27.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	115	121	99	115	0	100	594	1586	935	137	1111	
V/C Ratio(X)	0.37	0.04	0.03	0.36	0.00	0.05	0.25	0.38	0.38	0.81	0.93	
Avail Cap(c_a), veh/h	154	162	133	313	0	270	594	1586	935	213	1292	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.75	0.75	0.75	0.83	0.83	0.00
Uniform Delay (d), s/veh	48.7	47.6	47.6	46.9	0.0	45.5	23.4	11.9	11.9	44.4	21.7	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.7	0.0	0.1	0.2	0.5	0.9	5.1	12.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.1	0.1	0.1	1.1	0.0	0.1	2.5	3.6	4.3	2.8	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.4	47.6	47.6	47.6	0.0	45.6	23.5	12.4	12.8	49.6	34.4	0.0
LnGrp LOS	D	D	D	D	A	D	C	B	B	D	C	
Approach Vol, veh/h		50			47			1095			1143	
Approach Delay, s/veh		49.1			47.4			14.0			35.9	
Approach LOS		D			D			B			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.7	69.3		13.3	46.3	36.7		13.7				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.5	* 4.5		3.5				
Max Green Setting (Gmax), s	15.0	39.5		10.5	17.0	* 38		27.5				
Max Q Clear Time (g_c+l1), s	9.5	14.9		4.7	9.1	29.2		5.5				
Green Ext Time (p_c), s	0.1	3.8		0.0	0.2	3.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			26.1									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-C AM Peak Hour

										
Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations										
Traffic Volume (vph)	210	80	95	140	625	150	175	1070	0	0
Future Volume (vph)	210	80	95	140	625	150	175	1070	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1448	1295		2922	2301		1539	4424		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1448	1295		2922	2301		1539	4424		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	221	84	100	147	658	158	184	1126	0	0
RTOR Reduction (vph)	0	37	0	0	44	0	0	0	0	0
Lane Group Flow (vph)	221	147	0	147	772	0	184	1126	0	0
Confl. Peds. (#/hr)	1									
Heavy Vehicles (%)	11%	11%	11%	10%	10%	10%	8%	8%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	15.0	48.7		52.3	52.3		26.7	66.9		
Effective Green, g (s)	15.0	41.7		52.3	52.3		26.7	66.9		
Actuated g/C Ratio	0.14	0.38		0.48	0.48		0.24	0.61		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	197	490		1389	1094		373	2690		
v/s Ratio Prot	c0.15	0.11		0.05			c0.12	c0.25		
v/s Ratio Perm					c0.34					
v/c Ratio	1.12	0.30		0.11	0.71		0.49	0.42		
Uniform Delay, d1	47.5	23.9		15.9	22.8		35.8	11.3		
Progression Factor	1.00	1.00		1.12	0.87		1.00	1.00		
Incremental Delay, d2	100.7	0.3		0.1	3.5		1.0	0.5		
Delay (s)	148.2	24.3		18.0	23.4		36.9	11.8		
Level of Service	F	C		B	C		D	B		
Approach Delay (s)	91.9			22.6				15.3	0.0	
Approach LOS	F			C				B	A	
Intersection Summary										
HCM 2000 Control Delay		29.5			HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio		0.71								
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			16.0		
Intersection Capacity Utilization		48.7%			ICU Level of Service			A		
Analysis Period (min)		15								
c Critical Lane Group										

508: Airport Rd & 94th St
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2046 Build SWI-C AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→	↱	↰	→	↱	↰	↑↑↑		↰	↑↑↑	
Traffic Volume (veh/h)	5	10	5	20	0	65	15	975	65	180	840	25
Future Volume (veh/h)	5	10	5	20	0	65	15	975	65	180	840	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1068	1068	1068	1573	1573	1573	1641	1641	1641	1627	1627	1627
Adj Flow Rate, veh/h	5	11	1	21	0	26	16	1026	63	189	884	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	50	50	50	13	13	13	8	8	8	9	9	9
Cap, veh/h	13	122	11	73	254	411	60	1536	94	231	1961	58
Arrive On Green	0.01	0.13	0.13	0.05	0.00	0.16	0.04	0.38	0.38	0.15	0.49	0.49
Sat Flow, veh/h	1017	963	88	1498	1573	1315	1563	4037	248	1550	3993	117
Grp Volume(v), veh/h	5	0	12	21	0	26	16	683	406	189	554	356
Grp Sat Flow(s), veh/h/ln	1017	0	1050	1498	1573	1315	1563	1345	1594	1550	1253	1605
Q Serve(g_s), s	0.3	0.0	0.7	0.9	0.0	0.9	0.7	13.9	13.9	7.8	9.5	9.6
Cycle Q Clear(g_c), s	0.3	0.0	0.7	0.9	0.0	0.9	0.7	13.9	13.9	7.8	9.5	9.6
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.16	1.00		0.07
Lane Grp Cap(c), veh/h	13	0	133	73	254	411	60	1024	606	231	1231	788
V/C Ratio(X)	0.37	0.00	0.09	0.29	0.00	0.06	0.27	0.67	0.67	0.82	0.45	0.45
Avail Cap(c_a), veh/h	154	0	462	227	691	777	367	1468	870	364	1367	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	0.0	25.5	30.3	0.0	16.0	30.8	17.0	17.0	27.2	11.0	11.0
Incr Delay (d2), s/veh	22.4	0.0	0.4	3.1	0.0	0.1	3.3	1.1	1.8	10.4	0.4	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.2	0.0	0.2	0.4	0.0	0.3	0.3	3.7	4.5	3.3	2.1	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.7	0.0	25.9	33.4	0.0	16.1	34.1	18.1	18.8	37.6	11.3	11.6
LnGrp LOS	D	A	C	C	A	B	C	B	B	D	B	B
Approach Vol, veh/h		17			47			1105			1099	
Approach Delay, s/veh		34.4			23.8			18.6			15.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	30.1	9.2	12.3	7.0	37.4	6.9	14.7				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	15.5	36.0	10.0	29.0	15.5	36.0	10.0	29.0				
Max Q Clear Time (g_c+l1), s	9.8	15.9	2.9	2.7	2.7	11.6	2.3	2.9				
Green Ext Time (p_c), s	0.4	9.1	0.0	0.0	0.0	8.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			17.5									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	210	30	5	50	0	35	0	0	0	0	5
Future Vol, veh/h	15	210	30	5	50	0	35	0	0	0	0	5
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	6	6	6	0	0	0	100	100	100	0	0	0
Mvmt Flow	15	210	30	5	50	0	35	0	0	0	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	50	0	0	244	0	0	294	319	124	195	334	25
Stage 1	-	-	-	-	-	-	259	259	-	60	60	-
Stage 2	-	-	-	-	-	-	35	60	-	135	274	-
Critical Hdwy	4.22	-	-	4.1	-	-	9.5	8.5	8.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	8.5	7.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	8.5	7.5	-	6.5	5.5	-
Follow-up Hdwy	2.26	-	-	2.2	-	-	4.5	5	4.3	3.5	4	3.3
Pot Cap-1 Maneuver	1526	-	-	1334	-	-	440	420	663	752	589	1052
Stage 1	-	-	-	-	-	-	508	500	-	950	849	-
Stage 2	-	-	-	-	-	-	753	662	-	860	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1526	-	-	1329	-	-	431	412	660	744	578	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	431	412	-	744	578	-
Stage 1	-	-	-	-	-	-	500	493	-	940	846	-
Stage 2	-	-	-	-	-	-	746	659	-	851	677	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.7			14.1			8.4		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	431	1526	-	-	1329	-	-	1052				
HCM Lane V/C Ratio	0.081	0.01	-	-	0.004	-	-	0.005				
HCM Control Delay (s)	14.1	7.4	0	-	7.7	0	-	8.4				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0				

Intersection

Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	25	10	5	20	10
Future Vol, veh/h	15	25	10	5	20	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	13	13	0	0	0	0
Mvmt Flow	15	25	10	5	20	10
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.9	7.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	67%
Vol Thru, %	62%	67%	0%
Vol Right, %	0%	33%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	40	15	30
LT Vol	15	0	20
Through Vol	25	10	0
RT Vol	0	5	10
Lane Flow Rate	40	15	30
Geometry Grp	1	1	1
Degree of Util (X)	0.047	0.016	0.033
Departure Headway (Hd)	4.26	3.783	3.929
Convergence, Y/N	Yes	Yes	Yes
Cap	843	946	910
Service Time	2.275	1.805	1.956
HCM Lane V/C Ratio	0.047	0.016	0.033
HCM Control Delay	7.5	6.9	7.1
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-C AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↩	↰	↩
Traffic Volume (vph)	0	0	925	15	255	0
Future Volume (vph)	0	0	925	15	255	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1449	1455	2780	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1449	1455	2780	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	974	16	268	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	497	493	268	0
Heavy Vehicles (%)	0%	0%	9%	9%	16%	16%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5.8	
Permitted Phases						
Actuated Green, G (s)			69.8	69.8	69.5	
Effective Green, g (s)			69.8	69.8	62.8	
Actuated g/C Ratio			0.46	0.46	0.42	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			669	672	1155	
v/s Ratio Prot			c0.34	0.34	c0.10	
v/s Ratio Perm						
v/c Ratio			0.74	0.73	0.23	
Uniform Delay, d1			33.3	33.1	28.6	
Progression Factor			1.00	1.00	0.03	
Incremental Delay, d2			4.7	4.4	0.1	
Delay (s)			38.0	37.5	1.0	
Level of Service			D	D	A	
Approach Delay (s)	0.0			37.8	1.0	
Approach LOS	A			D	A	
Intersection Summary						
HCM 2000 Control Delay			29.9	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.50			
Actuated Cycle Length (s)			151.1	Sum of lost time (s)		18.5
Intersection Capacity Utilization			73.5%	ICU Level of Service		D
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Interchange Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-C AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	35	320	0	220	925	0
Future Volume (vph)	35	320	0	220	925	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1374	1229		2866	3050	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1374	1229		2866	3050	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	337	0	232	974	0
RTOR Reduction (vph)	0	131	0	0	0	0
Lane Group Flow (vph)	37	206	0	232	974	0
Heavy Vehicles (%)	21%	21%	16%	16%	9%	9%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	29.9	29.9		32.9	108.6	
Effective Green, g (s)	29.9	29.9		32.9	108.6	
Actuated g/C Ratio	0.20	0.20		0.22	0.72	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	271	243		624	2192	
v/s Ratio Prot	0.03	c0.17		0.08	c0.32	
v/s Ratio Perm						
v/c Ratio	0.14	0.85		0.37	0.44	
Uniform Delay, d1	50.0	58.4		50.3	8.8	
Progression Factor	1.00	1.00		1.00	0.01	
Incremental Delay, d2	0.3	23.8		0.7	0.1	
Delay (s)	50.3	82.2		51.0	0.2	
Level of Service	D	F		D	A	
Approach Delay (s)	79.1			51.0	0.2	
Approach LOS	E			D	A	
Intersection Summary						
HCM 2000 Control Delay	26.3			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.56					
Actuated Cycle Length (s)	151.1			Sum of lost time (s)		18.5
Intersection Capacity Utilization	69.5%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	170	25	0	15	0	30	0	0	0	0	0
Future Vol, veh/h	0	170	25	0	15	0	30	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	179	26	0	16	0	32	0	0	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	16	0	0	209	0	0	212	212	196	208	225	16
Stage 1	-	-	-	-	-	-	196	196	-	16	16	-
Stage 2	-	-	-	-	-	-	16	16	-	192	209	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1595	-	-	1356	-	-	743	684	843	747	672	1060
Stage 1	-	-	-	-	-	-	803	737	-	1001	880	-
Stage 2	-	-	-	-	-	-	1001	880	-	807	727	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1595	-	-	1351	-	-	740	681	840	747	669	1060
Mov Cap-2 Maneuver	-	-	-	-	-	-	740	681	-	747	669	-
Stage 1	-	-	-	-	-	-	800	734	-	1001	880	-
Stage 2	-	-	-	-	-	-	1001	880	-	807	724	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			10.1			0		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	740	1595	-	-	1351	-	-	-				
HCM Lane V/C Ratio	0.043	-	-	-	-	-	-	-				
HCM Control Delay (s)	10.1	0	-	-	0	-	-	0				
HCM Lane LOS	B	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	0	1060	5	0	865
Future Vol, veh/h	0	0	1060	5	0	865
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	100	100	8	8	9	9
Mvmt Flow	0	0	1116	5	0	911
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	569	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	9.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.9	-	-	-	-
Pot Cap-1 Maneuver	0	251	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	249	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	-	0	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	-	-		

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-C AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	10	45	50	15	105	85	915	390	105	685	75
Future Volume (veh/h)	45	10	45	50	15	105	85	915	390	105	685	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1573	1573	1573	1559	1559	1559	1668	1668	1668	1600	1600	1600
Adj Flow Rate, veh/h	47	11	6	53	16	16	89	963	358	111	721	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	13	13	13	14	14	14	6	6	6	11	11	11
Cap, veh/h	123	138	115	130	146	121	174	1326	493	177	1628	
Arrive On Green	0.08	0.09	0.09	0.09	0.09	0.09	0.11	0.43	0.43	0.12	0.44	0.00
Sat Flow, veh/h	1498	1573	1308	1485	1559	1296	1589	3060	1136	1524	3696	1356
Grp Volume(v), veh/h	47	11	6	53	16	16	89	861	460	111	721	0
Grp Sat Flow(s), veh/h/ln	1498	1573	1308	1485	1559	1296	1589	1368	1460	1524	1232	1356
Q Serve(g_s), s	2.3	0.5	0.3	2.6	0.7	0.9	4.1	20.3	20.4	5.4	10.6	0.0
Cycle Q Clear(g_c), s	2.3	0.5	0.3	2.6	0.7	0.9	4.1	20.3	20.4	5.4	10.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	123	138	115	130	146	121	174	1186	633	177	1628	
V/C Ratio(X)	0.38	0.08	0.05	0.41	0.11	0.13	0.51	0.73	0.73	0.63	0.44	
Avail Cap(c_a), veh/h	220	654	543	218	648	539	396	2624	1401	380	3545	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.0	32.8	32.7	33.8	32.5	32.5	32.9	18.3	18.3	32.9	15.2	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.2	0.8	0.1	0.2	2.8	0.9	1.6	1.4	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.9	0.2	0.1	1.0	0.3	0.3	1.6	5.6	6.1	1.9	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.8	33.0	32.9	34.5	32.6	32.7	35.7	19.2	19.9	34.3	15.4	0.0
LnGrp LOS	C	C	C	C	C	C	D	B	B	C	B	
Approach Vol, veh/h		64			85			1410			832	
Approach Delay, s/veh		34.3			33.8			20.5			17.9	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	38.9	14.3	11.4	13.1	39.4	13.9	11.8				
Change Period (Y+Rc), s	4.5	5.0	7.5	4.5	4.5	5.0	7.5	4.5				
Max Green Setting (Gmax), s	19.5	75.0	11.5	32.5	19.5	75.0	11.5	32.5				
Max Q Clear Time (g_c+I1), s	7.4	22.4	4.6	2.5	6.1	12.6	4.3	2.9				
Green Ext Time (p_c), s	0.1	11.5	0.0	0.0	0.2	5.3	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

806: Airport Rd & Minuteman Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-C AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	YY		Y	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	60	40	40	1305	640	145
Future Volume (veh/h)	60	40	40	1305	640	145
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1149	1149	1682	1682	1614	1614
Adj Flow Rate, veh/h	67	0	42	1374	674	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	44	44	5	5	10	10
Cap, veh/h	173	77	105	3339	2305	463
Arrive On Green	0.08	0.00	0.07	0.81	0.70	0.70
Sat Flow, veh/h	2189	974	1602	4440	3683	666
Grp Volume(v), veh/h	67	0	42	1374	504	307
Grp Sat Flow(s), veh/h/ln	1095	974	1602	1379	1242	1493
Q Serve(g_s), s	3.2	0.0	2.8	10.5	8.5	8.7
Cycle Q Clear(g_c), s	3.2	0.0	2.8	10.5	8.5	8.7
Prop In Lane	1.00	1.00	1.00			0.45
Lane Grp Cap(c), veh/h	173	77	105	3339	1729	1039
V/C Ratio(X)	0.39	0.00	0.40	0.41	0.29	0.30
Avail Cap(c_a), veh/h	368	164	233	3339	1729	1039
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.49	0.49	0.93	0.93
Uniform Delay (d), s/veh	48.1	0.0	49.3	3.1	6.4	6.4
Incr Delay (d2), s/veh	1.4	0.0	1.2	0.2	0.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.9	0.0	1.1	1.7	1.9	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	49.5	0.0	50.5	3.2	6.8	7.1
LnGrp LOS	D	A	D	A	A	A
Approach Vol, veh/h	67			1416	811	
Approach Delay, s/veh	49.5			4.6	6.9	
Approach LOS	D			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	93.8			16.2	12.2	81.6
Change Period (Y+Rc), s	5.0			7.5	5.0	5.0
Max Green Setting (Gmax), s	79.0			18.5	16.0	58.0
Max Q Clear Time (g_c+l1), s	12.5			5.2	4.8	10.7
Green Ext Time (p_c), s	13.1			0.1	0.0	5.6
Intersection Summary						
HCM 6th Ctrl Delay			6.7			
HCM 6th LOS			A			
Notes						
User approved volume balancing among the lanes for turning movement.						

807: Airport Rd & Beverly Park Rd/Holly Dr
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-C AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↱		↰↱	↱		↰↱↱↱			↰↱↱↱		
Traffic Volume (veh/h)	735	175	10	55	340	35	5	585	40	15	295	360
Future Volume (veh/h)	735	175	10	55	340	35	5	585	40	15	295	360
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1695	1695	1695	1709	1709	1709	1654	1654	1654	1600	1600	1600
Adj Flow Rate, veh/h	774	184	10	58	358	35	5	616	38	16	311	225
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	3	3	3	7	7	7	11	11	11
Cap, veh/h	872	726	39	142	405	40	21	834	51	56	563	309
Arrive On Green	0.28	0.46	0.46	0.09	0.26	0.26	0.01	0.20	0.20	0.04	0.23	0.23
Sat Flow, veh/h	3132	1593	87	1628	1532	150	1576	4072	250	1524	2464	1350
Grp Volume(v), veh/h	774	0	194	58	0	393	5	409	245	16	311	225
Grp Sat Flow(s), veh/h/ln	1566	0	1680	1628	0	1682	1576	1357	1608	1524	1232	1350
Q Serve(g_s), s	20.3	0.0	6.1	2.9	0.0	19.2	0.3	12.1	12.2	0.9	9.6	13.2
Cycle Q Clear(g_c), s	20.3	0.0	6.1	2.9	0.0	19.2	0.3	12.1	12.2	0.9	9.6	13.2
Prop In Lane	1.00		0.05	1.00		0.09	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	872	0	765	142	0	445	21	555	329	56	563	309
V/C Ratio(X)	0.89	0.00	0.25	0.41	0.00	0.88	0.24	0.74	0.74	0.28	0.55	0.73
Avail Cap(c_a), veh/h	1698	0	1439	199	0	735	193	1170	694	186	1063	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	14.4	37.1	0.0	30.3	41.9	32.0	32.0	40.2	29.2	30.6
Incr Delay (d2), s/veh	1.3	0.0	0.1	0.7	0.0	4.1	2.2	1.4	2.5	1.0	0.6	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.4	0.0	2.2	1.2	0.0	8.0	0.1	3.8	4.7	0.3	2.7	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.9	0.0	14.4	37.8	0.0	34.4	44.1	33.4	34.5	41.2	29.8	33.1
LnGrp LOS	C	A	B	D	A	C	D	C	C	D	C	C
Approach Vol, veh/h	968			451			659			552		
Approach Delay, s/veh	27.6			34.8			33.9			31.5		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	22.6	12.0	43.6	5.6	24.6	28.4	27.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	37.0	10.5	73.5	10.5	37.0	46.5	37.5				
Max Q Clear Time (g_c+I), s	12.9	14.2	4.9	8.1	2.3	15.2	22.3	21.2				
Green Ext Time (p_c), s	0.0	3.1	0.0	0.7	0.0	2.6	1.6	1.4				
Intersection Summary												
HCM 6th Ctrl Delay	31.2											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	455	85	45	0	140	55	10	0	0	0	0	30
Future Vol, veh/h	455	85	45	0	140	55	10	0	0	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	5	5	5	3	3	3	57	57	57
Mvmt Flow	479	89	47	0	147	58	11	0	0	0	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	205	0	0	136	0	0	1263	1276	113	1247	1270	176
Stage 1	-	-	-	-	-	-	1071	1071	-	176	176	-
Stage 2	-	-	-	-	-	-	192	205	-	1071	1094	-
Critical Hdwy	4.12	-	-	4.15	-	-	7.13	6.53	6.23	7.67	7.07	6.77
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.67	6.07	-
Follow-up Hdwy	2.218	-	-	2.245	-	-	3.527	4.027	3.327	4.013	4.513	3.813
Pot Cap-1 Maneuver	1366	-	-	1430	-	-	146	166	937	117	132	743
Stage 1	-	-	-	-	-	-	266	296	-	713	661	-
Stage 2	-	-	-	-	-	-	807	730	-	211	232	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1366	-	-	1430	-	-	102	108	937	85	86	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	147	-	119	132	-
Stage 1	-	-	-	-	-	-	173	192	-	463	661	-
Stage 2	-	-	-	-	-	-	773	730	-	137	151	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	7			0			32.8			10.1		
HCM LOS							D			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	140	1366	-	-	1430	-	-	743
HCM Lane V/C Ratio	0.075	0.351	-	-	-	-	-	0.043
HCM Control Delay (s)	32.8	9.1	-	-	0	-	-	10.1
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	1.6	-	-	0	-	-	0.1

501: Airport Rd & 29th Ave W/Kasch Pk Rd
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2046 Build SWI-C PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰		↰	↑↑↑		↰	↑↑↑	↰
Traffic Volume (veh/h)	220	5	160	75	5	120	25	1245	65	105	1055	30
Future Volume (veh/h)	220	5	160	75	5	120	25	1245	65	105	1055	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1723	1723	1723	1532	1532	1532	1641	1641	1641	1654	1654	1654
Adj Flow Rate, veh/h	236	0	19	79	5	10	26	1311	66	111	1111	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	16	16	16	8	8	8	7	7	7
Cap, veh/h	293	0	127	106	32	65	30	2384	120	130	3055	
Arrive On Green	0.09	0.00	0.09	0.07	0.07	0.07	0.04	1.00	1.00	0.17	1.00	0.00
Sat Flow, veh/h	3281	0	1421	1459	445	890	1563	3840	193	1576	4467	1402
Grp Volume(v), veh/h	236	0	19	79	0	15	26	829	548	111	1111	0
Grp Sat Flow(s), veh/h/ln	1641	0	1421	1459	0	1336	1563	1214	1605	1576	1489	1402
Q Serve(g_s), s	9.2	0.0	1.6	6.9	0.0	1.4	2.2	0.0	0.0	8.9	0.0	0.0
Cycle Q Clear(g_c), s	9.2	0.0	1.6	6.9	0.0	1.4	2.2	0.0	0.0	8.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	293	0	127	106	0	97	30	1508	996	130	3055	
V/C Ratio(X)	0.81	0.00	0.15	0.74	0.00	0.15	0.85	0.55	0.55	0.85	0.36	
Avail Cap(c_a), veh/h	694	0	301	163	0	149	156	1508	996	158	3055	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.86	0.86	0.86	0.93	0.93	0.00
Uniform Delay (d), s/veh	58.1	0.0	54.6	59.1	0.0	56.5	62.3	0.0	0.0	53.5	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.2	3.8	0.0	0.3	39.7	1.2	1.9	24.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.9	0.0	0.6	2.7	0.0	0.5	1.2	0.3	0.5	4.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.1	0.0	54.8	62.9	0.0	56.8	102.0	1.2	1.9	78.4	0.3	0.0
LnGrp LOS	E	A	D	E	A	E	F	A	A	E	A	
Approach Vol, veh/h	255			94			1403			1222		
Approach Delay, s/veh	59.7			61.9			3.4			7.4		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.7	85.2		17.1	6.5	93.4		13.0				
Change Period (Y+Rc), s	4.0	4.5		5.5	4.0	4.5		3.5				
Max Green Setting (Gmax), s	13.0	57.5		27.5	13.0	57.5		14.5				
Max Q Clear Time (g_c+I1), s	10.9	2.0		11.2	4.2	2.0		8.9				
Green Ext Time (p_c), s	0.0	6.6		0.4	0.0	5.5		0.1				

Intersection Summary

HCM 6th Ctrl Delay 11.7

HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

502: Airport Rd & Casino Rd & Boeing Fwy EB On Ramp
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-C PM Peak Hour

Movement	WBL	WBR	WBR2	NBT	NBR	NBR2	SBL	SBT	SWL	SWR
Lane Configurations	↰	↱		↰	↱		↰	↱		
Traffic Volume (vph)	165	80	120	250	1060	275	145	1025	0	0
Future Volume (vph)	165	80	120	250	1060	275	145	1025	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width	11	11	11	11	11	11	12	12	12	12
Total Lost time (s)	4.0	4.5		4.5	4.5		4.5	4.5		
Lane Util. Factor	1.00	1.00		0.95	0.88		1.00	0.91		
Frt	1.00	0.85		1.00	0.85		1.00	1.00		
Flt Protected	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (prot)	1516	1357		3061	2410		1568	4507		
Flt Permitted	0.95	1.00		1.00	1.00		0.95	1.00		
Satd. Flow (perm)	1516	1357		3061	2410		1568	4507		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	84	126	263	1116	289	153	1079	0	0
RTOR Reduction (vph)	0	34	0	0	35	0	0	0	0	0
Lane Group Flow (vph)	174	176	0	263	1370	0	153	1079	0	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	6%	6%	0%	0%
Turn Type	Prot	custom		NA	Perm		Prot	NA		
Protected Phases	4	1 3 4		2			1 3	6		
Permitted Phases					2					
Actuated Green, G (s)	19.3	43.2		77.8	77.8		14.9	96.2		
Effective Green, g (s)	19.3	34.2		77.8	77.8		14.9	96.2		
Actuated g/C Ratio	0.15	0.26		0.60	0.60		0.11	0.74		
Clearance Time (s)	4.0			4.5	4.5			4.5		
Vehicle Extension (s)	2.0			2.0	2.0			6.0		
Lane Grp Cap (vph)	225	356		1831	1442		179	3335		
v/s Ratio Prot	c0.11	0.13		0.09			c0.10	0.24		
v/s Ratio Perm					c0.57					
v/c Ratio	0.77	0.49		0.14	0.95		0.85	0.32		
Uniform Delay, d1	53.2	40.6		11.5	24.3		56.5	5.8		
Progression Factor	1.00	1.00		0.90	1.43		1.00	1.00		
Incremental Delay, d2	13.9	1.1		0.1	11.9		30.6	0.3		
Delay (s)	67.2	41.7		10.4	46.6		87.1	6.0		
Level of Service	E	D		B	D		F	A		
Approach Delay (s)	53.2			40.9			16.1	0.0		
Approach LOS	D			D			B	A		
Intersection Summary										
HCM 2000 Control Delay		33.0		HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio		0.91								
Actuated Cycle Length (s)		130.0		Sum of lost time (s)					18.0	
Intersection Capacity Utilization		71.7%		ICU Level of Service					C	
Analysis Period (min)		15								

c Critical Lane Group

508: Airport Rd & 94th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-C PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	5	25	30	5	160	15	1155	25	70	1215	5
Future Volume (veh/h)	20	5	25	30	5	160	15	1155	25	70	1215	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1559	1559	1559	1723	1723	1723	1627	1627	1627	1695	1695	1695
Adj Flow Rate, veh/h	21	5	3	31	5	52	15	1191	26	72	1253	5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	14	14	14	2	2	2	9	9	9	4	4	4
Cap, veh/h	23	73	44	38	151	205	25	2720	59	89	3451	14
Arrive On Green	0.02	0.08	0.08	0.02	0.09	0.09	0.01	0.23	0.23	0.11	1.00	1.00
Sat Flow, veh/h	1485	903	542	1641	1723	1425	1550	3934	86	1615	4725	19
Grp Volume(v), veh/h	21	0	8	31	5	52	15	729	488	72	809	449
Grp Sat Flow(s), veh/h/ln	1485	0	1444	1641	1723	1425	1550	1204	1611	1615	1526	1692
Q Serve(g_s), s	1.8	0.0	0.7	2.4	0.3	4.2	1.3	33.7	33.8	5.7	0.0	0.0
Cycle Q Clear(g_c), s	1.8	0.0	0.7	2.4	0.3	4.2	1.3	33.7	33.8	5.7	0.0	0.0
Prop In Lane	1.00		0.38	1.00		1.00	1.00		0.05	1.00		0.01
Lane Grp Cap(c), veh/h	23	0	116	38	151	205	25	1665	1114	89	2229	1236
V/C Ratio(X)	0.90	0.00	0.07	0.82	0.03	0.25	0.60	0.44	0.44	0.81	0.36	0.36
Avail Cap(c_a), veh/h	114	0	322	126	384	398	137	1665	1114	143	2229	1236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	63.9	0.0	55.3	63.2	54.3	49.6	64.2	28.5	28.5	57.2	0.0	0.0
Incr Delay (d2), s/veh	77.8	0.0	0.4	42.7	0.1	0.9	28.9	0.8	1.3	19.9	0.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.2	0.0	0.3	1.5	0.2	1.6	0.7	11.0	14.9	2.7	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	141.6	0.0	55.6	105.9	54.4	50.5	93.2	29.3	29.8	77.0	0.4	0.7
LnGrp LOS	F	A	E	F	D	D	F	C	C	E	A	A
Approach Vol, veh/h		29			88			1232			1330	
Approach Delay, s/veh		117.9			70.2			30.3			4.7	
Approach LOS		F			E			C			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7	94.9	9.0	14.4	6.6	100.0	8.0	15.4				
Change Period (Y+Rc), s	4.5	5.0	6.0	4.0	4.5	5.0	6.0	4.0				
Max Green Setting (Gmax), s	11.5	60.0	10.0	29.0	11.5	60.0	10.0	29.0				
Max Q Clear Time (g_c+l1), s	7.7	35.8	4.4	2.7	3.3	2.0	3.8	6.2				
Green Ext Time (p_c), s	0.1	11.4	0.0	0.0	0.0	16.2	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			19.8									
HCM 6th LOS			B									

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕↕			↕↕			↕			↕		
Traffic Vol, veh/h	5	55	30	0	95	0	40	0	0	5	0	10
Future Vol, veh/h	5	55	30	0	95	0	40	0	0	5	0	10
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	25	25	25	40	40	40	100	100	100	17	17	17
Mvmt Flow	5	55	30	0	95	0	40	0	0	5	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	89	0	0	132	179	47	133	194	48
Stage 1	-	-	-	-	-	-	84	84	-	95	95	-
Stage 2	-	-	-	-	-	-	48	95	-	38	99	-
Critical Hdwy	4.6	-	-	4.9	-	-	9.5	8.5	8.9	7.84	6.84	7.24
Critical Hdwy Stg 1	-	-	-	-	-	-	8.5	7.5	-	6.84	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	-	8.5	7.5	-	6.84	5.84	-
Follow-up Hdwy	2.45	-	-	2.6	-	-	4.5	5	4.3	3.67	4.17	3.47
Pot Cap-1 Maneuver	1344	-	-	1266	-	-	613	533	766	785	667	964
Stage 1	-	-	-	-	-	-	691	640	-	859	781	-
Stage 2	-	-	-	-	-	-	736	631	-	930	778	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1344	-	-	1261	-	-	603	529	763	783	662	964
Mov Cap-2 Maneuver	-	-	-	-	-	-	603	529	-	783	662	-
Stage 1	-	-	-	-	-	-	685	635	-	856	781	-
Stage 2	-	-	-	-	-	-	728	631	-	926	772	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			11.4			9.1		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	603	1344	-	-	1261	-	-	895				
HCM Lane V/C Ratio	0.066	0.004	-	-	-	-	-	0.017				
HCM Control Delay (s)	11.4	7.7	0	-	0	-	-	9.1				
HCM Lane LOS	B	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	95	5	10	20
Future Vol, veh/h	15	10	95	5	10	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	39	39	0	0	0	0
Mvmt Flow	16	11	100	5	11	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	7.5	7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	0%	33%
Vol Thru, %	40%	95%	0%
Vol Right, %	0%	5%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	25	100	30
LT Vol	15	0	10
Through Vol	10	95	0
RT Vol	0	5	20
Lane Flow Rate	26	105	32
Geometry Grp	1	1	1
Degree of Util (X)	0.035	0.115	0.033
Departure Headway (Hd)	4.819	3.945	3.793
Convergence, Y/N	Yes	Yes	Yes
Cap	743	909	934
Service Time	2.847	1.965	1.856
HCM Lane V/C Ratio	0.035	0.116	0.034
HCM Control Delay	8	7.5	7
HCM Lane LOS	A	A	A
HCM 95th-ile Q	0.1	0.4	0.1

511: Boeing Fwy WB Ramps & Boeing Fwy WB On Ramp/Boeing Fwy WB Off Ramp Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-C PM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↰	↱	↰	↱
Traffic Volume (vph)	0	0	840	5	340	0
Future Volume (vph)	0	0	840	5	340	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)			5.9	5.9	5.9	
Lane Util. Factor			0.95	0.95	0.97	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	0.95	0.95	
Satd. Flow (prot)			1504	1509	3131	
Flt Permitted			0.95	0.95	0.95	
Satd. Flow (perm)			1504	1509	3131	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	857	5	347	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	428	434	347	0
Heavy Vehicles (%)	0%	0%	5%	5%	3%	3%
Turn Type			Split	NA	Prot	
Protected Phases			6	6	5.8	
Permitted Phases						
Actuated Green, G (s)			63.6	63.6	66.1	
Effective Green, g (s)			63.6	63.6	59.4	
Actuated g/C Ratio			0.45	0.45	0.42	
Clearance Time (s)			5.9	5.9		
Vehicle Extension (s)			3.9	3.9		
Lane Grp Cap (vph)			676	678	1314	
v/s Ratio Prot			0.28	c0.29	c0.11	
v/s Ratio Perm						
v/c Ratio			0.63	0.64	0.26	
Uniform Delay, d1			30.0	30.1	26.8	
Progression Factor			1.00	1.00	0.01	
Incremental Delay, d2			2.2	2.3	0.1	
Delay (s)			32.1	32.4	0.3	
Level of Service			C	C	A	
Approach Delay (s)	0.0			32.3	0.3	
Approach LOS	A			C	A	
Intersection Summary						
HCM 2000 Control Delay			23.1	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			141.5	Sum of lost time (s)	18.5	
Intersection Capacity Utilization			72.9%	ICU Level of Service	C	
Analysis Period (min)			15			
c Critical Lane Group						

512: Airport Rd/Boeing Fwy WB Ramps & Boeing Fwy EB Off Ramp Interchange Link Extension Project
 HCM Signalized Intersection Capacity Analysis

2046 Build SWI-C PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	330	0	330	840	0
Future Volume (vph)	10	330	0	330	840	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		6.7	5.9	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1231	1102		3228	3167	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1231	1102		3228	3167	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	347	0	347	884	0
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	11	233	0	347	884	0
Heavy Vehicles (%)	35%	35%	3%	3%	5%	5%
Turn Type	Prot	Prot		NA	NA	
Protected Phases	5	5		8	6.8	
Permitted Phases						
Actuated Green, G (s)	34.9	34.9		24.5	94.0	
Effective Green, g (s)	34.9	34.9		24.5	94.0	
Actuated g/C Ratio	0.25	0.25		0.17	0.66	
Clearance Time (s)	5.9	5.9		6.7		
Vehicle Extension (s)	3.9	3.9		4.7		
Lane Grp Cap (vph)	303	271		558	2103	
v/s Ratio Prot	0.01	c0.21		c0.11	c0.28	
v/s Ratio Perm						
v/c Ratio	0.04	0.86		0.62	0.42	
Uniform Delay, d1	40.5	51.0		54.2	11.1	
Progression Factor	1.00	1.00		1.00	0.03	
Incremental Delay, d2	0.1	23.9		2.9	0.1	
Delay (s)	40.6	74.8		57.1	0.4	
Level of Service	D	E		E	A	
Approach Delay (s)	73.8			57.1	0.4	
Approach LOS	E			E	A	
Intersection Summary						
HCM 2000 Control Delay	29.3			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.60					
Actuated Cycle Length (s)	141.5			Sum of lost time (s)		18.5
Intersection Capacity Utilization	68.9%			ICU Level of Service		C
Analysis Period (min)	15					
c Critical Lane Group						

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	20	30	0	60	0	30	0	0	0	0	0
Future Vol, veh/h	0	20	30	0	60	0	30	0	0	0	0	0
Conflicting Peds, #/hr	0	0	4	4	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	21	32	0	63	0	32	0	0	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	63	0	0	57	0	0	104	104	41	100	120	63
Stage 1	-	-	-	-	-	-	41	41	-	63	63	-
Stage 2	-	-	-	-	-	-	63	63	-	37	57	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1533	-	-	1541	-	-	874	784	1027	879	768	999
Stage 1	-	-	-	-	-	-	971	859	-	945	840	-
Stage 2	-	-	-	-	-	-	945	840	-	976	845	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1533	-	-	1535	-	-	871	781	1023	879	765	999
Mov Cap-2 Maneuver	-	-	-	-	-	-	871	781	-	879	765	-
Stage 1	-	-	-	-	-	-	967	856	-	945	840	-
Stage 2	-	-	-	-	-	-	945	840	-	976	842	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			9.3			0		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	871	1533	-	-	1535	-	-	-				
HCM Lane V/C Ratio	0.036	-	-	-	-	-	-	-				
HCM Control Delay (s)	9.3	0	-	-	0	-	-	0				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	0	1195	5	0	1270
Future Vol, veh/h	0	0	1195	5	0	1270
Conflicting Peds, #/hr	0	0	0	8	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	100	100	9	9	4	4
Mvmt Flow	0	0	1258	5	0	1337
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	640	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	9.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.9	-	-	-	-
Pot Cap-1 Maneuver	0	218	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	216	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	-	0	-		
HCM Lane LOS	-	-	A	-		
HCM 95th %tile Q(veh)	-	-	-	-		

805: Airport Rd & 100th St
HCM 6th Signalized Intersection Summary

Everett Link Extension Project
2046 Build SWI-C PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	20	185	320	20	140	90	975	70	110	1080	85
Future Volume (veh/h)	85	20	185	320	20	140	90	975	70	110	1080	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1668	1668	1668	1641	1641	1641	1695	1695	1695
Adj Flow Rate, veh/h	89	21	14	337	21	25	95	1026	71	116	1137	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	6	6	6	8	8	8	4	4	4
Cap, veh/h	110	75	60	299	276	230	113	1980	137	130	2449	
Arrive On Green	0.07	0.04	0.04	0.19	0.17	0.17	0.14	1.00	1.00	0.03	0.18	0.00
Sat Flow, veh/h	1667	1750	1400	1589	1668	1393	1563	3762	260	1615	4578	1437
Grp Volume(v), veh/h	89	21	14	337	21	25	95	662	435	116	1137	0
Grp Sat Flow(s), veh/h/ln	1667	1750	1400	1589	1668	1393	1563	1214	1593	1615	1526	1437
Q Serve(g_s), s	6.9	1.5	1.3	24.5	1.4	2.0	7.7	0.0	0.0	9.3	29.0	0.0
Cycle Q Clear(g_c), s	6.9	1.5	1.3	24.5	1.4	2.0	7.7	0.0	0.0	9.3	29.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	110	75	60	299	276	230	113	1278	839	130	2449	
V/C Ratio(X)	0.81	0.28	0.23	1.13	0.08	0.11	0.84	0.52	0.52	0.89	0.46	
Avail Cap(c_a), veh/h	186	438	350	299	545	455	126	1278	839	130	2449	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.9	60.3	60.2	52.7	45.9	46.1	54.9	0.0	0.0	62.7	36.8	0.0
Incr Delay (d2), s/veh	13.1	2.0	2.0	90.2	0.1	0.2	32.1	1.4	2.1	47.1	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.3	0.7	0.5	17.2	0.6	0.7	3.8	0.2	0.5	5.6	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	62.3	62.1	143.0	46.0	46.3	87.0	1.4	2.1	109.8	37.5	0.0
LnGrp LOS	E	E	E	F	D	D	F	A	A	F	D	
Approach Vol, veh/h		124			383			1192			1253	
Approach Delay, s/veh		70.0			131.4			8.4			44.2	
Approach LOS		E			F			A			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	72.9	32.0	10.1	13.9	74.0	16.1	26.0				
Change Period (Y+Rc), s	4.5	4.5	7.5	4.5	4.5	4.5	7.5	4.5				
Max Green Setting (Gmax), s	10.5	41.5	24.5	32.5	10.5	41.5	14.5	42.5				
Max Q Clear Time (g_c+I1), s	11.3	2.0	26.5	3.5	9.7	31.0	8.9	4.0				
Green Ext Time (p_c), s	0.0	8.1	0.0	0.1	0.0	5.2	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

806: Airport Rd & Minuteman Dr
 HCM Signalized Intersection Capacity Analysis

Everett Link Extension Project
 2046 Build SWI-C PM Peak Hour

												
Movement	EBL	EBR	NBL	NBT	SBT	SBR						
Lane Configurations	WT		WT	TTT	TTT							
Traffic Volume (vph)	215	45	30	920	1500	85						
Future Volume (vph)	215	45	30	920	1500	85						
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750						
Lane Width	12	12	11	11	11	11						
Total Lost time (s)	7.5		5.0	5.0	5.0							
Lane Util. Factor	0.97		1.00	*0.74	*0.90							
Frpb, ped/bikes	1.00		1.00	1.00	1.00							
Flpb, ped/bikes	1.00		1.00	1.00	1.00							
Frt	0.97		1.00	1.00	0.99							
Flt Protected	0.96		0.95	1.00	1.00							
Satd. Flow (prot)	2941		1488	3477	4351							
Flt Permitted	0.96		0.95	1.00	1.00							
Satd. Flow (perm)	2941		1488	3477	4351							
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95						
Adj. Flow (vph)	226	47	32	968	1579	89						
RTOR Reduction (vph)	15	0	0	0	3	0						
Lane Group Flow (vph)	258	0	32	968	1665	0						
Confl. Peds. (#/hr)	4		1			2						
Heavy Vehicles (%)	8%	8%	8%	8%	4%	4%						
Turn Type	Prot		Prot	NA	NA							
Protected Phases	7		5	2	6							
Permitted Phases												
Actuated Green, G (s)	15.7		5.2	101.8	91.6							
Effective Green, g (s)	15.7		5.2	101.8	91.6							
Actuated g/C Ratio	0.12		0.04	0.78	0.70							
Clearance Time (s)	7.5		5.0	5.0	5.0							
Vehicle Extension (s)	2.0		2.0	2.0	2.0							
Lane Grp Cap (vph)	355		59	2722	3065							
v/s Ratio Prot	c0.09		c0.02	0.28	c0.38							
v/s Ratio Perm												
v/c Ratio	0.73		0.54	0.36	0.54							
Uniform Delay, d1	55.1		61.2	4.2	9.2							
Progression Factor	1.00		0.75	1.04	1.42							
Incremental Delay, d2	6.2		4.2	0.3	0.5							
Delay (s)	61.3		50.0	4.7	13.6							
Level of Service	E		D	A	B							
Approach Delay (s)	61.3			6.2	13.6							
Approach LOS	E			A	B							
Intersection Summary												
HCM 2000 Control Delay			15.5		HCM 2000 Level of Service	B						
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	17.5						
Intersection Capacity Utilization			52.1%		ICU Level of Service	A						
Analysis Period (min)			15									
c Critical Lane Group												

807: Airport Rd & Beverly Park Rd/Holly Dr
 HCM 6th Signalized Intersection Summary

Everett Link Extension Project
 2046 Build SWI-C PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↱		↰	↱		↰↱↱	↱↱↱		↰↱↱	↱↱↱	
Traffic Volume (veh/h)	525	455	25	60	215	15	5	405	85	35	890	625
Future Volume (veh/h)	525	455	25	60	215	15	5	405	85	35	890	625
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1682	1682	1682	1723	1723	1723	1641	1641	1641	1709	1709	1709
Adj Flow Rate, veh/h	547	474	25	62	224	14	5	422	73	36	927	571
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	2	2	2	8	8	8	3	3	3
Cap, veh/h	606	499	26	78	268	17	8	1586	269	44	1492	707
Arrive On Green	0.19	0.31	0.31	0.05	0.17	0.17	0.01	0.47	0.47	0.01	0.16	0.16
Sat Flow, veh/h	3107	1583	83	1641	1603	100	1563	3388	574	1628	3042	1441
Grp Volume(v), veh/h	547	0	499	62	0	238	5	300	195	36	927	571
Grp Sat Flow(s), veh/h/ln	1554	0	1666	1641	0	1704	1563	1214	1534	1628	1521	1441
Q Serve(g_s), s	22.4	0.0	38.1	4.9	0.0	17.6	0.4	9.7	10.1	2.9	36.9	49.7
Cycle Q Clear(g_c), s	22.4	0.0	38.1	4.9	0.0	17.6	0.4	9.7	10.1	2.9	36.9	49.7
Prop In Lane	1.00		0.05	1.00		0.06	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	606	0	525	78	0	285	8	1137	718	44	1492	707
V/C Ratio(X)	0.90	0.00	0.95	0.80	0.00	0.84	0.63	0.26	0.27	0.81	0.62	0.81
Avail Cap(c_a), veh/h	609	0	570	133	0	387	126	1137	718	131	1492	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	51.1	0.0	43.5	61.3	0.0	52.4	64.5	21.0	21.1	64.1	43.2	48.6
Incr Delay (d2), s/veh	16.3	0.0	24.3	6.9	0.0	8.4	26.6	0.6	0.9	10.3	1.6	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ft	0.0	0.0	19.0	2.2	0.0	8.2	0.2	2.8	3.7	1.3	15.3	20.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.4	0.0	67.8	68.2	0.0	60.8	91.2	21.5	22.0	74.3	44.9	56.7
LnGrp LOS	E	A	E	E	A	E	F	C	C	E	D	E
Approach Vol, veh/h		1046			300			500			1534	
Approach Delay, s/veh		67.6			62.3			22.4			50.0	
Approach LOS		E			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	65.9	10.6	45.4	5.2	68.7	29.8	26.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5				
Max Green Setting (Gmax), s	10.5	46.0	10.5	44.5	10.5	46.0	25.5	29.5				
Max Q Clear Time (g_c+I), s	14.9	12.1	6.9	40.1	2.4	51.7	24.4	19.6				
Green Ext Time (p_c), s	0.0	2.4	0.0	0.9	0.0	0.0	0.2	0.6				

Intersection Summary

HCM 6th Ctrl Delay 52.5
 HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

Intersection												
Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	220	0	0	145	5	40	0	0	90	0	365
Future Vol, veh/h	20	220	0	0	145	5	40	0	0	90	0	365
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	8	8	8	3	3	3	2	2	2
Mvmt Flow	21	232	0	0	153	5	42	0	0	95	0	384

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	232	0	0	622	433	232	431	431	157
Stage 1	-	-	-	-	-	-	274	274	-	157	157	-
Stage 2	-	-	-	-	-	-	348	159	-	274	274	-
Critical Hdwy	4.12	-	-	4.18	-	-	7.13	6.53	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.272	-	-	3.527	4.027	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1420	-	-	1301	-	-	398	514	805	535	517	889
Stage 1	-	-	-	-	-	-	730	681	-	845	768	-
Stage 2	-	-	-	-	-	-	666	764	-	732	683	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1419	-	-	1301	-	-	223	506	805	529	509	888
Mov Cap-2 Maneuver	-	-	-	-	-	-	300	551	-	590	556	-
Stage 1	-	-	-	-	-	-	719	671	-	831	767	-
Stage 2	-	-	-	-	-	-	378	763	-	721	673	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	18.9	15.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	300	1419	-	-	1301	-	-	807
HCM Lane V/C Ratio	0.14	0.015	-	-	-	-	-	0.593
HCM Control Delay (s)	18.9	7.6	-	-	0	-	-	15.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	4