







# **Attachment B**

## **Ramp Intersection LOS Worksheets**

HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps







Existing Conditions  
 Timing Plan: AM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑	↑		
Traffic Volume (veh/h)	0	999	866	0	485	779		
Future Volume (veh/h)	0	999	866	0	485	779		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1030	893	0	641	652		
Adj No. of Lanes	0	3	3	0	1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	1666	1666	0	822	733		
Arrive On Green	0.00	0.33	0.33	0.00	0.46	0.46		
Sat Flow, veh/h	0	5421	5421	0	1774	1583		
Grp Volume(v), veh/h	0	1030	893	0	641	652		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	7.3	6.2	0.0	13.1	16.2		
Cycle Q Clear(g_c), s	0.0	7.3	6.2	0.0	13.1	16.2		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	1666	1666	0	822	733		
V/C Ratio(X)	0.00	0.62	0.54	0.00	0.78	0.89		
Avail Cap(c_a), veh/h	0	2307	2307	0	887	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	12.2	11.8	0.0	9.7	10.5		
Incr Delay (d2), s/veh	0.0	0.4	0.3	0.0	4.2	11.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	3.5	2.9	0.0	7.2	9.2		
LnGrp Delay(d),s/veh	0.0	12.6	12.1	0.0	13.9	22.1		
LnGrp LOS		B	B		B	C		
Approach Vol, veh/h		1030	893		1293			
Approach Delay, s/veh		12.6	12.1		18.0			
Approach LOS		B	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		18.6				18.6		24.4
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		19.5				19.5		21.5
Max Q Clear Time (g_c+I1), s		8.2				9.3		18.2
Green Ext Time (p_c), s		4.4				4.7		1.7
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			14.6					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.







HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd

Existing Conditions  
 Timing Plan: AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↘	↗		
Traffic Volume (veh/h)	1128	0	0	708	361	410		
Future Volume (veh/h)	1128	0	0	708	361	410		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1213	0	0	761	388	441		
Adj No. of Lanes	3	0	0	3	1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2012	0	0	2012	641	572		
Arrive On Green	0.40	0.00	0.00	0.40	0.36	0.36		
Sat Flow, veh/h	5421	0	0	5421	1774	1583		
Grp Volume(v), veh/h	1213	0	0	761	388	441		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	7.0	0.0	0.0	3.9	6.6	9.1		
Cycle Q Clear(g_c), s	7.0	0.0	0.0	3.9	6.6	9.1		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2012	0	0	2012	641	572		
V/C Ratio(X)	0.60	0.00	0.00	0.38	0.60	0.77		
Avail Cap(c_a), veh/h	2676	0	0	2676	1029	919		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.9	0.0	0.0	8.0	9.7	10.5		
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.1	0.9	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	3.3	0.0	0.0	1.9	3.4	4.3		
LnGrp Delay(d),s/veh	9.2	0.0	0.0	8.1	10.6	12.7		
LnGrp LOS	A			A	B	B		
Approach Vol, veh/h	1213			761	829			
Approach Delay, s/veh	9.2			8.1	11.7			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		19.2		17.9		19.2		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		19.5		21.5		19.5		
Max Q Clear Time (g_c+I1), s		9.0		11.1		5.9		
Green Ext Time (p_c), s		5.6		2.3		4.1		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			9.6					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps







Existing Conditions  
 Timing Plan: AM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	1105	1038	0	163	416		
Future Volume (veh/h)	0	1105	1038	0	163	416		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1151	1081	0	170	433		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	1151	1081	0	170	433		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	7.5	7.0	0.0	4.9	7.3		
Cycle Q Clear(g_c), s	0.0	7.5	7.0	0.0	4.9	7.3		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.40	0.37	0.00	0.40	0.58		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	7.2	7.0	0.0	19.3	20.2		
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	2.9	3.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	3.6	3.3	0.0	2.7	3.5		
LnGrp Delay(d),s/veh	0.0	7.6	7.4	0.0	22.2	23.5		
LnGrp LOS		A	A		C	C		
Approach Vol, veh/h		1151	1081		603			
Approach Delay, s/veh		7.6	7.4		23.1			
Approach LOS		A	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		9.0		9.3		9.5		
Green Ext Time (p_c), s		10.9		0.5		11.5		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			10.8					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 25: SR-57 NB Ramps & Katella Ave

Existing Conditions  
 Timing Plan: AM Peak Hour













								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	876	0	0	921	380	600		
Future Volume (veh/h)	876	0	0	921	380	600		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	922	0	0	969	344	692		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	444	792		
Arrive On Green	0.58	0.00	0.00	0.58	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	922	0	0	969	344	692		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	5.5	0.0	0.0	5.9	10.8	12.6		
Cycle Q Clear(g_c), s	5.5	0.0	0.0	5.9	10.8	12.6		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	444	792		
V/C Ratio(X)	0.31	0.00	0.00	0.33	0.78	0.87		
Avail Cap(c_a), veh/h	2966	0	0	2966	444	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.4	0.0	0.0	6.4	20.9	21.6		
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	12.5	12.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	2.8	6.8	6.9		
LnGrp Delay(d),s/veh	6.6	0.0	0.0	6.7	33.4	34.5		
LnGrp LOS	A			A	C	C		
Approach Vol, veh/h	922			969	1036			
Approach Delay, s/veh	6.6			6.7	34.1			
Approach LOS	A			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		35.0		15.0		35.0		
Max Q Clear Time (g_c+I1), s		7.5		14.6		7.9		
Green Ext Time (p_c), s		9.4		0.2		9.9		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			16.4					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.



HCM 2010 Signalized Intersection Summary  
 38: SR-55 SB Ramps & Katella Ave



















Existing Conditions  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	782	632	560	1722	0	0	0	0	285	0	618
Future Volume (veh/h)	0	782	632	560	1722	0	0	0	0	285	0	618
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	798	645	571	1757	0				291	0	631
Adj No. of Lanes	0	2	2	1	3	0				2	0	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	745	633	926	3955	0				382	0	176
Arrive On Green	0.00	0.20	0.20	0.52	0.78	0.00				0.11	0.00	0.11
Sat Flow, veh/h	0	3725	3167	1774	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	798	645	571	1757	0				291	0	631
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	18.0	18.0	20.4	10.6	0.0				7.4	0.0	10.0
Cycle Q Clear(g_c), s	0.0	18.0	18.0	20.4	10.6	0.0				7.4	0.0	10.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	745	633	926	3955	0				382	0	176
V/C Ratio(X)	0.00	1.07	1.02	0.62	0.44	0.00				0.76	0.00	3.59
Avail Cap(c_a), veh/h	0	745	633	926	3955	0				382	0	176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	36.0	36.0	15.1	3.4	0.0				38.8	0.0	40.0
Incr Delay (d2), s/veh	0.0	53.7	40.5	0.3	0.0	0.0				13.3	0.0	1178.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.8	11.4	9.9	4.9	0.0				4.2	0.0	61.9
LnGrp Delay(d),s/veh	0.0	89.7	76.5	15.4	3.4	0.0				52.2	0.0	1218.0
LnGrp LOS		F	F	B	A					D		F
Approach Vol, veh/h		1443			2328						922	
Approach Delay, s/veh		83.8			6.4						850.1	
Approach LOS		F			A						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	52.0	23.0		15.0		75.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	47.0	18.0		10.0		47.0						
Max Q Clear Time (g_c+I1), s	22.4	20.0		12.0		12.6						
Green Ext Time (p_c), s	0.8	0.0		0.0		22.5						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			195.9									
HCM 2010 LOS			F									
<b>Notes</b>												

User approved volume balancing among the lanes for turning movement.







HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

Existing Conditions  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1031	291	0	1249	0	802	0	513	0	0	28
Future Volume (veh/h)	0	1031	291	0	1249	0	802	0	513	0	0	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1109	0	0	1343	0	862	0	552	0	0	30
Adj No. of Lanes	0	2	1	0	3	0	2	0	1	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	1848	827	0	2656	0	688	0	0	0	0	176
Arrive On Green	0.00	0.17	0.00	0.00	0.52	0.00	0.20	0.00	0.00	0.00	0.00	0.11
Sat Flow, veh/h	0	3632	1583	0	5421	0	3442	862		0	0	1583
Grp Volume(v), veh/h	0	1109	0	0	1343	0	862	161.3		0	0	30
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1695	0	1721	F		0	0	1583
Q Serve(g_s), s	0.0	26.0	0.0	0.0	15.4	0.0	18.0			0.0	0.0	1.5
Cycle Q Clear(g_c), s	0.0	26.0	0.0	0.0	15.4	0.0	18.0			0.0	0.0	1.5
Prop In Lane	0.00		1.00	0.00		0.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	1848	827	0	2656	0	688			0	0	176
V/C Ratio(X)	0.00	0.60	0.00	0.00	0.51	0.00	1.25			0.00	0.00	0.17
Avail Cap(c_a), veh/h	0	1848	827	0	2656	0	688			0	0	176
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.00	1.00	0.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	28.6	0.0	0.0	14.0	0.0	36.0			0.0	0.0	36.2
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.2	0.0	125.3			0.0	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	12.8	0.0	0.0	7.3	0.0	20.5			0.0	0.0	0.8
LnGrp Delay(d),s/veh	0.0	28.7	0.0	0.0	14.2	0.0	161.3			0.0	0.0	38.3
LnGrp LOS		C			B		F					D
Approach Vol, veh/h		1109			1343							30
Approach Delay, s/veh		28.7			14.2							38.3
Approach LOS		C			B							D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		52.0	23.0	15.0		52.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		23.0	18.0	10.0		19.0						
Max Q Clear Time (g_c+I1), s		28.0	20.0	3.5		17.4						
Green Ext Time (p_c), s		0.0	0.0	0.0		1.3						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			57.1									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps

Existing Conditions  
 Timing Plan: PM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↘	↗		
Traffic Volume (veh/h)	0	1338	1603	0	369	807		
Future Volume (veh/h)	0	1338	1603	0	369	807		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1394	1670	0	597	612		
Adj No. of Lanes	0	3	3	0	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2042	2042	0	736	657		
Arrive On Green	0.00	0.40	0.40	0.00	0.41	0.41		
Sat Flow, veh/h	0	5421	5421	0	1774	1583		
Grp Volume(v), veh/h	0	1394	1670	0	597	612		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	11.1	14.3	0.0	14.5	18.1		
Cycle Q Clear(g_c), s	0.0	11.1	14.3	0.0	14.5	18.1		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2042	2042	0	736	657		
V/C Ratio(X)	0.00	0.68	0.82	0.00	0.81	0.93		
Avail Cap(c_a), veh/h	0	2128	2128	0	742	663		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	12.1	13.1	0.0	12.6	13.7		
Incr Delay (d2), s/veh	0.0	0.9	2.5	0.0	6.8	20.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	5.3	7.1	0.0	8.3	11.5		
LnGrp Delay(d),s/veh	0.0	12.9	15.6	0.0	19.4	33.7		
LnGrp LOS		B	B		B	C		
Approach Vol, veh/h		1394	1670		1209			
Approach Delay, s/veh		12.9	15.6		26.6			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		24.2				24.2		24.8
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		20.5				20.5		20.5
Max Q Clear Time (g_c+I1), s		16.3				13.1		20.1
Green Ext Time (p_c), s		3.3				4.9		0.3
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			17.9					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.







HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd

Existing Conditions  
 Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↘	↗		
Traffic Volume (veh/h)	1118	0	0	1298	814	301		
Future Volume (veh/h)	1118	0	0	1298	814	301		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1141	0	0	1324	831	307		
Adj No. of Lanes	3	0	0	3	1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	1763	0	0	1763	828	739		
Arrive On Green	0.35	0.00	0.00	0.35	0.47	0.47		
Sat Flow, veh/h	5421	0	0	5421	1774	1583		
Grp Volume(v), veh/h	1141	0	0	1324	831	307		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	9.1	0.0	0.0	11.1	22.5	6.2		
Cycle Q Clear(g_c), s	9.1	0.0	0.0	11.1	22.5	6.2		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1763	0	0	1763	828	739		
V/C Ratio(X)	0.65	0.00	0.00	0.75	1.00	0.42		
Avail Cap(c_a), veh/h	1951	0	0	1951	828	739		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	13.3	0.0	0.0	13.9	12.9	8.5		
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.5	32.2	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	5.4	18.2	2.7		
LnGrp Delay(d),s/veh	13.9	0.0	0.0	15.4	45.0	8.9		
LnGrp LOS	B			B	F	A		
Approach Vol, veh/h	1141			1324	1138			
Approach Delay, s/veh	13.9			15.4	35.3			
Approach LOS	B			B	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.2		27.0		21.2		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		18.5		22.5		18.5		
Max Q Clear Time (g_c+I1), s		11.1		24.5		13.1		
Green Ext Time (p_c), s		4.1		0.0		3.6		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			21.2					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps

Existing Conditions  
 Timing Plan: PM Peak Hour







								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	1116	1176	0	178	531		
Future Volume (veh/h)	0	1116	1176	0	178	531		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1213	1278	0	193	577		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	1213	1278	0	193	577		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	8.1	8.7	0.0	5.6	10.2		
Cycle Q Clear(g_c), s	0.0	8.1	8.7	0.0	5.6	10.2		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.42	0.44	0.00	0.46	0.77		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	7.3	7.4	0.0	19.6	21.4		
Incr Delay (d2), s/veh	0.0	0.4	0.5	0.0	3.6	7.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	3.8	4.2	0.0	3.2	5.2		
LnGrp Delay(d),s/veh	0.0	7.7	7.9	0.0	23.2	28.9		
LnGrp LOS		A	A		C	C		
Approach Vol, veh/h		1213	1278		770			
Approach Delay, s/veh		7.7	7.9		27.5			
Approach LOS		A	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		10.7		12.2		10.1		
Green Ext Time (p_c), s		12.6		0.4		12.1		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			12.5					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.



HCM 2010 Signalized Intersection Summary  
 25: SR-57 NB Ramps & Katella Ave













Existing Conditions  
 Timing Plan: PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	790	0	0	1738	213	223		
Future Volume (veh/h)	790	0	0	1738	213	223		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	849	0	0	1869	307	156		
Adj No. of Lanes	3	0	0	3	2	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	1183	528		
Arrive On Green	0.58	0.00	0.00	0.58	0.33	0.33		
Sat Flow, veh/h	5421	0	0	5421	3548	1583		
Grp Volume(v), veh/h	849	0	0	1869	307	156		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	10.0	0.0	0.0	29.1	7.6	8.7		
Cycle Q Clear(g_c), s	10.0	0.0	0.0	29.1	7.6	8.7		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	1183	528		
V/C Ratio(X)	0.29	0.00	0.00	0.63	0.26	0.30		
Avail Cap(c_a), veh/h	2966	0	0	2966	1183	528		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.5	0.0	0.0	16.5	29.2	29.6		
Incr Delay (d2), s/veh	0.2	0.0	0.0	1.0	0.5	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	4.7	0.0	0.0	13.8	3.8	4.0		
LnGrp Delay(d),s/veh	12.7	0.0	0.0	17.5	29.7	31.0		
LnGrp LOS	B			B	C	C		
Approach Vol, veh/h	849			1869	463			
Approach Delay, s/veh	12.7			17.5	30.2			
Approach LOS	B			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		75.0		45.0		75.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		70.0		40.0		70.0		
Max Q Clear Time (g_c+I1), s		12.0		10.7		31.1		
Green Ext Time (p_c), s		10.1		0.8		26.2		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			18.1					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 38: SR-55 SB Ramps & Katella Ave













Existing Conditions  
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑					↖↗		↗
Traffic Volume (veh/h)	0	1334	1121	500	1776	0	0	0	0	435	0	480
Future Volume (veh/h)	0	1334	1121	500	1776	0	0	0	0	435	0	480
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	1347	1132	505	1794	0				439	0	485
Adj No. of Lanes	0	2	2	1	3	0				2	0	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99				0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	1407	1196	434	3447	0				727	0	334
Arrive On Green	0.00	0.38	0.38	0.24	0.68	0.00				0.21	0.00	0.21
Sat Flow, veh/h	0	3725	3167	1774	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	1347	1132	505	1794	0				439	0	485
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	31.7	31.2	22.0	15.8	0.0				10.4	0.0	19.0
Cycle Q Clear(g_c), s	0.0	31.7	31.2	22.0	15.8	0.0				10.4	0.0	19.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1407	1196	434	3447	0				727	0	334
V/C Ratio(X)	0.00	0.96	0.95	1.16	0.52	0.00				0.60	0.00	1.45
Avail Cap(c_a), veh/h	0	1407	1196	434	3447	0				727	0	334
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.3	27.1	34.0	7.2	0.0				32.1	0.0	35.5
Incr Delay (d2), s/veh	0.0	15.7	16.0	76.6	0.1	0.0				3.7	0.0	219.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	19.3	16.2	19.9	7.3	0.0				5.3	0.0	28.6
LnGrp Delay(d),s/veh	0.0	43.0	43.1	110.6	7.3	0.0				35.8	0.0	254.5
LnGrp LOS		D	D	F	A					D		F
Approach Vol, veh/h		2479			2299						924	
Approach Delay, s/veh		43.0			30.0						150.6	
Approach LOS		D			C						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.0	39.0		24.0		66.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	22.0	34.0		19.0		61.0						
Max Q Clear Time (g_c+I1), s	24.0	33.7		21.0		17.8						
Green Ext Time (p_c), s	0.0	0.3		0.0		26.7						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			55.2									
HCM 2010 LOS			E									
<b>Notes</b>												

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

Existing Conditions  
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑↑		↑↑		↑		↑	
Traffic Volume (veh/h)	0	1184	331	0	1040	0	1051	0	833	0	0	16
Future Volume (veh/h)	0	1184	331	0	1040	0	1051	0	833	0	0	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1221	0	0	1072	0	1084	0	859	0	0	16
Adj No. of Lanes	0	2	1	0	3	0	2	0	1	0	1	0
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, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	1770	792	0	2543	0	765	0	0	0	0	176
Arrive On Green	0.00	0.34	0.00	0.00	0.50	0.00	0.22	0.00	0.00	0.00	0.00	0.11
Sat Flow, veh/h	0	3632	1583	0	5421	0	3442	1084		0	0	1583
Grp Volume(v), veh/h	0	1221	0	0	1072	0	1084	230.5		0	0	16
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1695	0	1721	F		0	0	1583
Q Serve(g_s), s	0.0	26.9	0.0	0.0	12.0	0.0	20.0			0.0	0.0	0.8
Cycle Q Clear(g_c), s	0.0	26.9	0.0	0.0	12.0	0.0	20.0			0.0	0.0	0.8
Prop In Lane	0.00		1.00	0.00		0.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	1770	792	0	2543	0	765			0	0	176
V/C Ratio(X)	0.00	0.69	0.00	0.00	0.42	0.00	1.42			0.00	0.00	0.09
Avail Cap(c_a), veh/h	0	1770	792	0	2543	0	765			0	0	176
HCM Platoon Ratio	1.00	0.67	0.67	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.00	1.00	0.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.9	0.0	0.0	14.3	0.0	35.0			0.0	0.0	35.9
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	195.5			0.0	0.0	1.0
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
%ile BackOfQ(50%),veh/ln	0.0	13.2	0.0	0.0	5.6	0.0	30.2			0.0	0.0	0.4
LnGrp Delay(d),s/veh	0.0	24.1	0.0	0.0	14.4	0.0	230.5			0.0	0.0	36.9
LnGrp LOS		C			B		F					D
Approach Vol, veh/h		1221			1072							16
Approach Delay, s/veh		24.1			14.4							36.9
Approach LOS		C			B							D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		50.0	25.0	15.0		50.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		24.0	20.0	10.0		16.0						
Max Q Clear Time (g_c+I1), s		28.9	22.0	2.8		14.0						
Green Ext Time (p_c), s		0.0	0.0	0.0		1.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			87.0									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps

Existing plus Project  
 Timing Plan: AM Peak Hour









Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↘↘	↗		
Traffic Volume (veh/h)	0	1069	866	0	502	779		
Future Volume (veh/h)	0	1069	866	0	502	779		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1102	893	0	651	660		
Adj No. of Lanes	0	3	3	0	1	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	1710	1710	0	817	729		
Arrive On Green	0.00	0.34	0.34	0.00	0.46	0.46		
Sat Flow, veh/h	0	5421	5421	0	1774	1583		
Grp Volume(v), veh/h	0	1102	893	0	651	660		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	8.1	6.3	0.0	13.9	17.1		
Cycle Q Clear(g_c), s	0.0	8.1	6.3	0.0	13.9	17.1		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	1710	1710	0	817	729		
V/C Ratio(X)	0.00	0.64	0.52	0.00	0.80	0.90		
Avail Cap(c_a), veh/h	0	2236	2236	0	860	768		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	12.5	11.8	0.0	10.2	11.1		
Incr Delay (d2), s/veh	0.0	0.4	0.2	0.0	5.1	13.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	3.8	2.9	0.0	7.8	10.1		
LnGrp Delay(d),s/veh	0.0	12.9	12.1	0.0	15.2	24.9		
LnGrp LOS		B	B		B	C		
Approach Vol, veh/h		1102	893		1311			
Approach Delay, s/veh		12.9	12.1		20.1			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		19.4				19.4		24.9
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		19.5				19.5		21.5
Max Q Clear Time (g_c+I1), s		8.3				10.1		19.1
Green Ext Time (p_c), s		4.4				4.8		1.3
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.5					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd







Existing plus Project  
 Timing Plan: AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↘	↗		
Traffic Volume (veh/h)	1214	0	0	744	361	454		
Future Volume (veh/h)	1214	0	0	744	361	454		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1305	0	0	800	388	488		
Adj No. of Lanes	3	0	0	3	1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2008	0	0	2008	675	603		
Arrive On Green	0.39	0.00	0.00	0.39	0.38	0.38		
Sat Flow, veh/h	5421	0	0	5421	1774	1583		
Grp Volume(v), veh/h	1305	0	0	800	388	488		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	8.4	0.0	0.0	4.5	6.9	11.1		
Cycle Q Clear(g_c), s	8.4	0.0	0.0	4.5	6.9	11.1		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2008	0	0	2008	675	603		
V/C Ratio(X)	0.65	0.00	0.00	0.40	0.57	0.81		
Avail Cap(c_a), veh/h	2475	0	0	2475	952	850		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	9.9	0.0	0.0	8.7	9.8	11.1		
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.1	0.8	4.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	2.1	3.5	5.4		
LnGrp Delay(d),s/veh	10.3	0.0	0.0	8.8	10.6	15.1		
LnGrp LOS	B			A	B	B		
Approach Vol, veh/h	1305			800	876			
Approach Delay, s/veh	10.3			8.8	13.1			
Approach LOS	B			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		20.3		19.7		20.3		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		19.5		21.5		19.5		
Max Q Clear Time (g_c+I1), s		10.4		13.1		6.5		
Green Ext Time (p_c), s		5.4		2.2		4.2		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			10.7					
HCM 2010 LOS			B					



HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps







Existing plus Project  
 Timing Plan: AM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	1124	1038	0	169	416		
Future Volume (veh/h)	0	1124	1038	0	169	416		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1171	1081	0	176	433		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	1171	1081	0	176	433		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	7.7	7.0	0.0	5.0	7.3		
Cycle Q Clear(g_c), s	0.0	7.7	7.0	0.0	5.0	7.3		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.40	0.37	0.00	0.42	0.58		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	7.2	7.0	0.0	19.4	20.2		
Incr Delay (d2), s/veh	0.0	0.4	0.4	0.0	3.1	3.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	3.7	3.3	0.0	2.8	3.5		
LnGrp Delay(d),s/veh	0.0	7.6	7.4	0.0	22.5	23.5		
LnGrp LOS		A	A		C	C		
Approach Vol, veh/h		1171	1081		609			
Approach Delay, s/veh		7.6	7.4		23.2			
Approach LOS		A	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		9.0		9.3		9.7		
Green Ext Time (p_c), s		10.9		0.5		11.7		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			10.9					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
25: SR-57 NB Ramps & Katella Ave













Existing plus Project  
Timing Plan: AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	896	0	0	926	380	601		
Future Volume (veh/h)	896	0	0	926	380	601		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	943	0	0	975	344	693		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	444	792		
Arrive On Green	0.58	0.00	0.00	0.58	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	943	0	0	975	344	693		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	5.7	0.0	0.0	5.9	10.8	12.6		
Cycle Q Clear(g_c), s	5.7	0.0	0.0	5.9	10.8	12.6		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	444	792		
V/C Ratio(X)	0.32	0.00	0.00	0.33	0.78	0.88		
Avail Cap(c_a), veh/h	2966	0	0	2966	444	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.4	0.0	0.0	6.4	20.9	21.6		
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	12.5	13.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	2.8	6.8	6.9		
LnGrp Delay(d),s/veh	6.7	0.0	0.0	6.7	33.4	34.6		
LnGrp LOS	A			A	C	C		
Approach Vol, veh/h	943			975	1037			
Approach Delay, s/veh	6.7			6.7	34.2			
Approach LOS	A			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		35.0		15.0		35.0		
Max Q Clear Time (g_c+I1), s		7.7		14.6		7.9		
Green Ext Time (p_c), s		9.6		0.1		10.0		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			16.4					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 38: SR-55 SB Ramps & Katella Ave



















Existing plus Project  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	789	632	568	1722	0	0	0	0	285	0	618
Future Volume (veh/h)	0	789	632	568	1722	0	0	0	0	285	0	618
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	805	645	580	1757	0				291	0	631
Adj No. of Lanes	0	2	2	1	3	0				2	0	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	745	633	926	3955	0				382	0	176
Arrive On Green	0.00	0.20	0.20	0.52	0.78	0.00				0.11	0.00	0.11
Sat Flow, veh/h	0	3725	3167	1774	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	805	645	580	1757	0				291	0	631
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	18.0	18.0	20.9	10.6	0.0				7.4	0.0	10.0
Cycle Q Clear(g_c), s	0.0	18.0	18.0	20.9	10.6	0.0				7.4	0.0	10.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	745	633	926	3955	0				382	0	176
V/C Ratio(X)	0.00	1.08	1.02	0.63	0.44	0.00				0.76	0.00	3.59
Avail Cap(c_a), veh/h	0	745	633	926	3955	0				382	0	176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	36.0	36.0	15.3	3.4	0.0				38.8	0.0	40.0
Incr Delay (d2), s/veh	0.0	56.8	40.5	0.3	0.0	0.0				13.3	0.0	1178.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.1	11.4	10.2	4.9	0.0				4.2	0.0	61.9
LnGrp Delay(d),s/veh	0.0	92.8	76.5	15.6	3.4	0.0				52.2	0.0	1218.0
LnGrp LOS		F	F	B	A					D		F
Approach Vol, veh/h		1450			2337						922	
Approach Delay, s/veh		85.6			6.4						850.1	
Approach LOS		F			A						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	52.0	23.0		15.0		75.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	47.0	18.0		10.0		47.0						
Max Q Clear Time (g_c+I1), s	22.9	20.0		12.0		12.6						
Green Ext Time (p_c), s	0.9	0.0		0.0		22.5						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				196.0								
HCM 2010 LOS				F								
<b>Notes</b>												

User approved volume balancing among the lanes for turning movement.







HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

Existing plus Project  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1031	291	0	1249	0	802	0	513	0	0	28
Future Volume (veh/h)	0	1031	291	0	1249	0	802	0	513	0	0	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1109	0	0	1343	0	862	0	552	0	0	30
Adj No. of Lanes	0	2	1	0	3	0	2	0	1	0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	1848	827	0	2656	0	688	0	0	0	0	176
Arrive On Green	0.00	0.17	0.00	0.00	0.52	0.00	0.20	0.00	0.00	0.00	0.00	0.11
Sat Flow, veh/h	0	3632	1583	0	5421	0	3442	862		0	0	1583
Grp Volume(v), veh/h	0	1109	0	0	1343	0	862	161.3		0	0	30
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1695	0	1721	F		0	0	1583
Q Serve(g_s), s	0.0	26.0	0.0	0.0	15.4	0.0	18.0			0.0	0.0	1.5
Cycle Q Clear(g_c), s	0.0	26.0	0.0	0.0	15.4	0.0	18.0			0.0	0.0	1.5
Prop In Lane	0.00		1.00	0.00		0.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	1848	827	0	2656	0	688			0	0	176
V/C Ratio(X)	0.00	0.60	0.00	0.00	0.51	0.00	1.25			0.00	0.00	0.17
Avail Cap(c_a), veh/h	0	1848	827	0	2656	0	688			0	0	176
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.00	1.00	0.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	28.6	0.0	0.0	14.0	0.0	36.0			0.0	0.0	36.2
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.2	0.0	125.3			0.0	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	12.8	0.0	0.0	7.3	0.0	20.5			0.0	0.0	0.8
LnGrp Delay(d),s/veh	0.0	28.7	0.0	0.0	14.2	0.0	161.3			0.0	0.0	38.3
LnGrp LOS		C			B		F					D
Approach Vol, veh/h		1109			1343							30
Approach Delay, s/veh		28.7			14.2							38.3
Approach LOS		C			B							D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		52.0	23.0	15.0		52.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		23.0	18.0	10.0		19.0						
Max Q Clear Time (g_c+I1), s		28.0	20.0	3.5		17.4						
Green Ext Time (p_c), s		0.0	0.0	0.0		1.3						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			57.1									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
8: Ball Rd & SR-57 SB Ramps

Existing plus Project  
Timing Plan: PM Peak Hour







								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↘	↗		
Traffic Volume (veh/h)	0	1357	1665	0	383	807		
Future Volume (veh/h)	0	1357	1665	0	383	807		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1414	1734	0	605	620		
Adj No. of Lanes	0	3	3	0	1	1		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2052	2052	0	735	656		
Arrive On Green	0.00	0.40	0.40	0.00	0.41	0.41		
Sat Flow, veh/h	0	5421	5421	0	1774	1583		
Grp Volume(v), veh/h	0	1414	1734	0	605	620		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	11.4	15.3	0.0	15.0	18.6		
Cycle Q Clear(g_c), s	0.0	11.4	15.3	0.0	15.0	18.6		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2052	2052	0	735	656		
V/C Ratio(X)	0.00	0.69	0.85	0.00	0.82	0.94		
Avail Cap(c_a), veh/h	0	2108	2108	0	735	656		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	12.2	13.4	0.0	12.9	13.9		
Incr Delay (d2), s/veh	0.0	0.9	3.3	0.0	7.5	22.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	5.4	7.7	0.0	8.8	12.2		
LnGrp Delay(d),s/veh	0.0	13.1	16.7	0.0	20.4	36.4		
LnGrp LOS		B	B		C	D		
Approach Vol, veh/h		1414	1734		1225			
Approach Delay, s/veh		13.1	16.7		28.5			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		24.5				24.5		25.0
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		20.5				20.5		20.5
Max Q Clear Time (g_c+I1), s		17.3				13.4		20.6
Green Ext Time (p_c), s		2.7				4.8		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			18.8					
HCM 2010 LOS			B					
<b>Notes</b>								



User approved volume balancing among the lanes for turning movement.







HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd

Existing plus Project  
 Timing Plan: PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↘	↗		
Traffic Volume (veh/h)	1160	0	0	1405	814	351		
Future Volume (veh/h)	1160	0	0	1405	814	351		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1184	0	0	1434	831	358		
Adj No. of Lanes	3	0	0	3	1	1		
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	1809	0	0	1809	816	729		
Arrive On Green	0.36	0.00	0.00	0.36	0.46	0.46		
Sat Flow, veh/h	5421	0	0	5421	1774	1583		
Grp Volume(v), veh/h	1184	0	0	1434	831	358		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	9.6	0.0	0.0	12.4	22.5	7.7		
Cycle Q Clear(g_c), s	9.6	0.0	0.0	12.4	22.5	7.7		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1809	0	0	1809	816	729		
V/C Ratio(X)	0.65	0.00	0.00	0.79	1.02	0.49		
Avail Cap(c_a), veh/h	1924	0	0	1924	816	729		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	13.2	0.0	0.0	14.1	13.2	9.2		
Incr Delay (d2), s/veh	0.7	0.0	0.0	2.2	36.1	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	6.1	18.8	3.4		
LnGrp Delay(d),s/veh	14.0	0.0	0.0	16.4	49.3	9.7		
LnGrp LOS	B			B	F	A		
Approach Vol, veh/h	1184			1434	1189			
Approach Delay, s/veh	14.0			16.4	37.4			
Approach LOS	B			B	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.9		27.0		21.9		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		18.5		22.5		18.5		
Max Q Clear Time (g_c+I1), s		11.6		24.5		14.4		
Green Ext Time (p_c), s		4.1		0.0		3.0		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			22.2					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps







Existing plus Project  
 Timing Plan: PM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	1116	1194	0	195	531		
Future Volume (veh/h)	0	1116	1194	0	195	531		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1213	1298	0	212	577		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	1213	1298	0	212	577		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	8.1	8.8	0.0	6.2	10.2		
Cycle Q Clear(g_c), s	0.0	8.1	8.8	0.0	6.2	10.2		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.42	0.45	0.00	0.50	0.77		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	7.3	7.4	0.0	19.9	21.4		
Incr Delay (d2), s/veh	0.0	0.4	0.5	0.0	4.3	7.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	3.8	4.2	0.0	3.5	5.2		
LnGrp Delay(d),s/veh	0.0	7.7	8.0	0.0	24.1	28.9		
LnGrp LOS		A	A		C	C		
Approach Vol, veh/h		1213	1298		789			
Approach Delay, s/veh		7.7	8.0		27.6			
Approach LOS		A	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		10.8		12.2		10.1		
Green Ext Time (p_c), s		12.7		0.4		12.1		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			12.6					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
25: SR-57 NB Ramps & Katella Ave













Existing plus Project  
Timing Plan: PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	801	0	0	1749	213	223		
Future Volume (veh/h)	801	0	0	1749	213	223		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	861	0	0	1881	307	156		
Adj No. of Lanes	3	0	0	3	2	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	1183	528		
Arrive On Green	0.58	0.00	0.00	0.58	0.33	0.33		
Sat Flow, veh/h	5421	0	0	5421	3548	1583		
Grp Volume(v), veh/h	861	0	0	1881	307	156		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	10.2	0.0	0.0	29.4	7.6	8.7		
Cycle Q Clear(g_c), s	10.2	0.0	0.0	29.4	7.6	8.7		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	1183	528		
V/C Ratio(X)	0.29	0.00	0.00	0.63	0.26	0.30		
Avail Cap(c_a), veh/h	2966	0	0	2966	1183	528		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.5	0.0	0.0	16.5	29.2	29.6		
Incr Delay (d2), s/veh	0.2	0.0	0.0	1.0	0.5	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	4.8	0.0	0.0	13.9	3.8	4.0		
LnGrp Delay(d),s/veh	12.8	0.0	0.0	17.6	29.7	31.0		
LnGrp LOS	B			B	C	C		
Approach Vol, veh/h	861			1881	463			
Approach Delay, s/veh	12.8			17.6	30.2			
Approach LOS	B			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		75.0		45.0		75.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		70.0		40.0		70.0		
Max Q Clear Time (g_c+I1), s		12.2		10.7		31.4		
Green Ext Time (p_c), s		10.2		0.8		26.3		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			18.1					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
38: SR-55 SB Ramps & Katella Ave

Existing plus Project  
Timing Plan: PM Peak Hour



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	1345	1121	512	1776	0	0	0	0	442	0	480
Future Volume (veh/h)	0	1345	1121	512	1776	0	0	0	0	442	0	480
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	1359	1132	517	1794	0				446	0	485
Adj No. of Lanes	0	2	2	1	3	0				2	0	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99				0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	1407	1196	434	3447	0				727	0	334
Arrive On Green	0.00	0.38	0.38	0.24	0.68	0.00				0.21	0.00	0.21
Sat Flow, veh/h	0	3725	3167	1774	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	1359	1132	517	1794	0				446	0	485
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	32.2	31.2	22.0	15.8	0.0				10.6	0.0	19.0
Cycle Q Clear(g_c), s	0.0	32.2	31.2	22.0	15.8	0.0				10.6	0.0	19.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1407	1196	434	3447	0				727	0	334
V/C Ratio(X)	0.00	0.97	0.95	1.19	0.52	0.00				0.61	0.00	1.45
Avail Cap(c_a), veh/h	0	1407	1196	434	3447	0				727	0	334
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.4	27.1	34.0	7.2	0.0				32.2	0.0	35.5
Incr Delay (d2), s/veh	0.0	17.1	16.0	88.7	0.1	0.0				3.9	0.0	219.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	19.8	16.2	21.4	7.3	0.0				5.4	0.0	28.6
LnGrp Delay(d),s/veh	0.0	44.5	43.1	122.7	7.3	0.0				36.0	0.0	254.5
LnGrp LOS		D	D	F	A					D		F
Approach Vol, veh/h		2491			2311						931	
Approach Delay, s/veh		43.9			33.1						149.8	
Approach LOS		D			C						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	27.0	39.0		24.0		66.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	22.0	34.0		19.0		61.0						
Max Q Clear Time (g_c+I1), s	24.0	34.2		21.0		17.8						
Green Ext Time (p_c), s	0.0	0.0		0.0		26.7						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			56.7									
HCM 2010 LOS			E									
<b>Notes</b>												

User approved volume balancing among the lanes for turning movement.



HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

Existing plus Project  
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1193	331	0	1048	0	1054	0	833	0	0	16
Future Volume (veh/h)	0	1193	331	0	1048	0	1054	0	833	0	0	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1900	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1230	0	0	1080	0	1087	0	859	0	0	16
Adj No. of Lanes	0	2	1	0	3	0	2	0	1	0	1	0
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, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	1770	792	0	2543	0	765	0	0	0	0	176
Arrive On Green	0.00	0.34	0.00	0.00	0.50	0.00	0.22	0.00	0.00	0.00	0.00	0.11
Sat Flow, veh/h	0	3632	1583	0	5421	0	3442	1087		0	0	1583
Grp Volume(v), veh/h	0	1230	0	0	1080	0	1087	232.2		0	0	16
Grp Sat Flow(s),veh/h/ln	0	1770	1583	0	1695	0	1721	F		0	0	1583
Q Serve(g_s), s	0.0	27.1	0.0	0.0	12.1	0.0	20.0			0.0	0.0	0.8
Cycle Q Clear(g_c), s	0.0	27.1	0.0	0.0	12.1	0.0	20.0			0.0	0.0	0.8
Prop In Lane	0.00		1.00	0.00		0.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	1770	792	0	2543	0	765			0	0	176
V/C Ratio(X)	0.00	0.70	0.00	0.00	0.42	0.00	1.42			0.00	0.00	0.09
Avail Cap(c_a), veh/h	0	1770	792	0	2543	0	765			0	0	176
HCM Platoon Ratio	1.00	0.67	0.67	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.00	0.00	1.00	0.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	24.0	0.0	0.0	14.3	0.0	35.0			0.0	0.0	35.9
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	197.2			0.0	0.0	1.0
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
%ile BackOfQ(50%),veh/ln	0.0	13.3	0.0	0.0	5.6	0.0	30.4			0.0	0.0	0.4
LnGrp Delay(d),s/veh	0.0	24.2	0.0	0.0	14.4	0.0	232.2			0.0	0.0	36.9
LnGrp LOS		C			B		F					D
Approach Vol, veh/h		1230			1080							16
Approach Delay, s/veh		24.2			14.4							36.9
Approach LOS		C			B							D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		50.0	25.0	15.0		50.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		24.0	20.0	10.0		16.0						
Max Q Clear Time (g_c+I1), s		29.1	22.0	2.8		14.1						
Green Ext Time (p_c), s		0.0	0.0	0.0		1.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			87.4									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps

2035  
 Timing Plan: AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↘	↘↘		
Traffic Volume (veh/h)	0	1622	650	0	573	698		
Future Volume (veh/h)	0	1622	650	0	573	698		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1763	707	0	623	759		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2101	2101	0	710	1115		
Arrive On Green	0.00	0.41	0.41	0.00	0.40	0.40		
Sat Flow, veh/h	0	5421	5421	0	1774	2787		
Grp Volume(v), veh/h	0	1763	707	0	623	759		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1393		
Q Serve(g_s), s	0.0	15.0	4.6	0.0	15.7	10.8		
Cycle Q Clear(g_c), s	0.0	15.0	4.6	0.0	15.7	10.8		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2101	2101	0	710	1115		
V/C Ratio(X)	0.00	0.84	0.34	0.00	0.88	0.68		
Avail Cap(c_a), veh/h	0	2162	2162	0	754	1185		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	12.7	9.6	0.0	13.4	11.9		
Incr Delay (d2), s/veh	0.0	3.0	0.1	0.0	11.0	1.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	7.4	2.1	0.0	9.8	4.3		
LnGrp Delay(d),s/veh	0.0	15.8	9.7	0.0	24.4	13.4		
LnGrp LOS		B	A		C	B		
Approach Vol, veh/h		1763	707		1382			
Approach Delay, s/veh		15.8	9.7		18.3			
Approach LOS		B	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		24.4				24.4		23.8
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		20.5				20.5		20.5
Max Q Clear Time (g_c+I1), s		6.6				17.0		17.7
Green Ext Time (p_c), s		3.9				2.9		1.6
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.6					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd

2035  
 Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↘↘↘	↗		
Traffic Volume (veh/h)	1782	0	0	598	271	444		
Future Volume (veh/h)	1782	0	0	598	271	444		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1937	0	0	650	259	521		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2813	0	0	2813	432	771		
Arrive On Green	0.55	0.00	0.00	0.55	0.24	0.24		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	1937	0	0	650	259	521		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	12.2	0.0	0.0	2.9	5.7	6.6		
Cycle Q Clear(g_c), s	12.2	0.0	0.0	2.9	5.7	6.6		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2813	0	0	2813	432	771		
V/C Ratio(X)	0.69	0.00	0.00	0.23	0.60	0.68		
Avail Cap(c_a), veh/h	3215	0	0	3215	721	1287		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	7.1	0.0	0.0	5.1	14.8	15.2		
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	1.3	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	5.7	0.0	0.0	1.3	3.0	3.0		
LnGrp Delay(d),s/veh	7.7	0.0	0.0	5.1	16.2	16.2		
LnGrp LOS	A			A	B	B		
Approach Vol, veh/h	1937			650	780			
Approach Delay, s/veh	7.7			5.1	16.2			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		29.0		15.3		29.0		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		28.0		18.0		28.0		
Max Q Clear Time (g_c+I1), s		14.2		8.6		4.9		
Green Ext Time (p_c), s		10.3		2.2		4.3		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			9.2					
HCM 2010 LOS			A					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps

2035  
 Timing Plan: AM Peak Hour









Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	2315	1305	0	128	552		
Future Volume (veh/h)	0	2315	1305	0	128	552		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	2516	1418	0	139	600		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	2516	1418	0	139	600		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	25.3	10.0	0.0	3.9	10.7		
Cycle Q Clear(g_c), s	0.0	25.3	10.0	0.0	3.9	10.7		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.87	0.49	0.00	0.33	0.80		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	11.0	7.7	0.0	19.0	21.6		
Incr Delay (d2), s/veh	0.0	3.8	0.6	0.0	2.1	8.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	12.7	4.8	0.0	2.1	5.6		
LnGrp Delay(d),s/veh	0.0	14.8	8.3	0.0	21.1	30.3		
LnGrp LOS		B	A		C	C		
Approach Vol, veh/h		2516	1418		739			
Approach Delay, s/veh		14.8	8.3		28.6			
Approach LOS		B	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		12.0		12.7		27.3		
Green Ext Time (p_c), s		13.5		0.3		6.7		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.0					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 25: SR-57 NB Ramps & Katella Ave

2035  
 Timing Plan: AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	1722	0	0	1437	285	663		
Future Volume (veh/h)	1722	0	0	1437	285	663		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1872	0	0	1562	310	721		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	444	792		
Arrive On Green	0.58	0.00	0.00	0.58	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	1872	0	0	1562	310	721		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	14.6	0.0	0.0	11.1	9.5	13.3		
Cycle Q Clear(g_c), s	14.6	0.0	0.0	11.1	9.5	13.3		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	444	792		
V/C Ratio(X)	0.63	0.00	0.00	0.53	0.70	0.91		
Avail Cap(c_a), veh/h	2966	0	0	2966	444	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.2	0.0	0.0	7.5	20.4	21.8		
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.7	8.8	16.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.9	0.0	0.0	5.2	5.7	7.5		
LnGrp Delay(d),s/veh	9.3	0.0	0.0	8.2	29.3	38.3		
LnGrp LOS	A			A	C	D		
Approach Vol, veh/h	1872			1562	1031			
Approach Delay, s/veh	9.3			8.2	35.6			
Approach LOS	A			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		35.0		15.0		35.0		
Max Q Clear Time (g_c+I1), s		16.6		15.3		13.1		
Green Ext Time (p_c), s		14.8		0.0		14.7		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.0					
HCM 2010 LOS			B					
<b>Notes</b>								













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User approved volume balancing among the lanes for turning movement.















HCM 2010 Signalized Intersection Summary  
 38: SR-55 SB Ramps & Katella Ave

2035  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	912	569	514	2188	0	0	0	0	289	0	653
Future Volume (veh/h)	0	912	569	514	2188	0	0	0	0	289	0	653
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	991	618	559	2378	0				314	0	710
Adj No. of Lanes	0	3	2	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	1441	790	574	2500	0				1463	0	673
Arrive On Green	0.00	0.28	0.28	0.17	0.49	0.00				0.43	0.00	0.43
Sat Flow, veh/h	0	5253	2787	3442	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	991	618	559	2378	0				314	0	710
Grp Sat Flow(s),veh/h/ln	0	1695	1393	1721	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	20.8	24.5	19.4	53.6	0.0				6.9	0.0	51.0
Cycle Q Clear(g_c), s	0.0	20.8	24.5	19.4	53.6	0.0				6.9	0.0	51.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1441	790	574	2500	0				1463	0	673
V/C Ratio(X)	0.00	0.69	0.78	0.97	0.95	0.00				0.21	0.00	1.06
Avail Cap(c_a), veh/h	0	1441	790	574	2500	0				1463	0	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	38.3	39.6	49.7	29.1	0.0				21.8	0.0	34.5
Incr Delay (d2), s/veh	0.0	2.7	7.6	6.8	1.2	0.0				0.3	0.0	50.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.1	10.3	9.8	25.2	0.0				3.3	0.0	31.6
LnGrp Delay(d),s/veh	0.0	41.0	47.2	56.5	30.3	0.0				22.2	0.0	84.6
LnGrp LOS		D	D	E	C					C		F
Approach Vol, veh/h		1609			2937						1024	
Approach Delay, s/veh		43.4			35.3						65.5	
Approach LOS		D			D						E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.0	39.0		56.0		64.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	20.0	34.0		51.0		59.0						
Max Q Clear Time (g_c+I1), s	21.4	26.5		53.0		55.6						
Green Ext Time (p_c), s	0.0	5.8		0.0		3.3						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			43.2									
HCM 2010 LOS			D									







HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

2035  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑↑		↑		↑	
Traffic Volume (veh/h)	0	1147	291	0	1765	448	706	0	487	0	0	28
Future Volume (veh/h)	0	1147	291	0	1765	448	706	0	487	0	0	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1247	0	0	1918	487	767	0	529	0	0	30
Adj No. of Lanes	0	3	1	0	3	1	2	0	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	3051	950	0	3051	950	660	0	0	0	0	132
Arrive On Green	0.00	0.20	0.00	0.00	0.60	0.60	0.19	0.00	0.00	0.00	0.00	0.08
Sat Flow, veh/h	0	5253	1583	0	5253	1583	3442	767		0	0	1583
Grp Volume(v), veh/h	0	1247	0	0	1918	487	767	137.7		0	0	30
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1721	F		0	0	1583
Q Serve(g_s), s	0.0	25.7	0.0	0.0	29.1	21.3	23.0			0.0	0.0	2.1
Cycle Q Clear(g_c), s	0.0	25.7	0.0	0.0	29.1	21.3	23.0			0.0	0.0	2.1
Prop In Lane	0.00		1.00	0.00		1.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	3051	950	0	3051	950	660			0	0	132
V/C Ratio(X)	0.00	0.41	0.00	0.00	0.63	0.51	1.16			0.00	0.00	0.23
Avail Cap(c_a), veh/h	0	3051	950	0	3051	950	660			0	0	132
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.79	0.00	0.00	1.00	1.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	29.5	0.0	0.0	15.4	13.9	48.5			0.0	0.0	51.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.5	0.6	89.2			0.0	0.0	4.0
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
%ile BackOfQ(50%),veh/ln	0.0	12.2	0.0	0.0	13.6	9.4	19.1			0.0	0.0	1.1
LnGrp Delay(d),s/veh	0.0	29.9	0.0	0.0	15.9	14.5	137.7			0.0	0.0	55.4
LnGrp LOS		C			B	B	F					E
Approach Vol, veh/h		1247			2405							30
Approach Delay, s/veh		29.9			15.6							55.4
Approach LOS		C			B							E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		77.0	28.0	15.0		77.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		28.0	23.0	10.0		39.0						
Max Q Clear Time (g_c+I1), s		27.7	25.0	4.1		31.1						
Green Ext Time (p_c), s		0.3	0.0	0.0		7.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			40.9									
HCM 2010 LOS			D									







HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps

2035  
 Timing Plan: PM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑	↑↑		
Traffic Volume (veh/h)	0	1554	1655	0	367	786		
Future Volume (veh/h)	0	1554	1655	0	367	786		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1689	1799	0	399	854		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2348	2348	0	642	1008		
Arrive On Green	0.00	0.46	0.46	0.00	0.36	0.36		
Sat Flow, veh/h	0	5421	5421	0	1774	2787		
Grp Volume(v), veh/h	0	1689	1799	0	399	854		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1393		
Q Serve(g_s), s	0.0	13.7	15.0	0.0	9.4	14.4		
Cycle Q Clear(g_c), s	0.0	13.7	15.0	0.0	9.4	14.4		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2348	2348	0	642	1008		
V/C Ratio(X)	0.00	0.72	0.77	0.00	0.62	0.85		
Avail Cap(c_a), veh/h	0	2541	2541	0	713	1119		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	11.1	11.4	0.0	13.4	15.0		
Incr Delay (d2), s/veh	0.0	0.9	1.3	0.0	1.4	5.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	6.5	7.3	0.0	4.8	6.3		
LnGrp Delay(d),s/veh	0.0	12.0	12.8	0.0	14.8	20.7		
LnGrp LOS		B	B		B	C		
Approach Vol, veh/h		1689	1799		1253			
Approach Delay, s/veh		12.0	12.8		18.8			
Approach LOS		B	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.1				28.1		23.0
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		25.5				25.5		20.5
Max Q Clear Time (g_c+I1), s		17.0				15.7		16.4
Green Ext Time (p_c), s		6.5				7.1		2.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			14.1					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd







2035  
 Timing Plan: PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	1296	0	0	1543	736	383		
Future Volume (veh/h)	1296	0	0	1543	736	383		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1409	0	0	1677	810	405		
Adj No. of Lanes	3	0	0	3	2	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2333	0	0	2333	1193	532		
Arrive On Green	0.46	0.00	0.00	0.46	0.34	0.34		
Sat Flow, veh/h	5421	0	0	5421	3548	1583		
Grp Volume(v), veh/h	1409	0	0	1677	810	405		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	9.1	0.0	0.0	11.7	8.6	10.0		
Cycle Q Clear(g_c), s	9.1	0.0	0.0	11.7	8.6	10.0		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2333	0	0	2333	1193	532		
V/C Ratio(X)	0.60	0.00	0.00	0.72	0.68	0.76		
Avail Cap(c_a), veh/h	2607	0	0	2607	1496	667		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.9	0.0	0.0	9.6	12.5	13.0		
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.9	0.9	4.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	5.6	4.3	4.9		
LnGrp Delay(d),s/veh	9.2	0.0	0.0	10.5	13.4	17.0		
LnGrp LOS	A			B	B	B		
Approach Vol, veh/h	1409			1677	1215			
Approach Delay, s/veh	9.2			10.5	14.6			
Approach LOS	A			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		24.6		19.3		24.6		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		22.5		18.5		22.5		
Max Q Clear Time (g_c+I1), s		11.1		12.0		13.7		
Green Ext Time (p_c), s		6.8		2.7		6.4		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			11.2					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps







2035  
 Timing Plan: PM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	1921	1729	0	181	557		
Future Volume (veh/h)	0	1921	1729	0	181	557		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	2088	1879	0	197	605		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	2088	1879	0	197	605		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	18.0	15.1	0.0	5.7	10.8		
Cycle Q Clear(g_c), s	0.0	18.0	15.1	0.0	5.7	10.8		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.72	0.65	0.00	0.47	0.81		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	9.4	8.8	0.0	19.7	21.6		
Incr Delay (d2), s/veh	0.0	1.6	1.1	0.0	3.7	9.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	8.7	7.3	0.0	3.2	5.7		
LnGrp Delay(d),s/veh	0.0	11.0	9.9	0.0	23.4	30.7		
LnGrp LOS		B	A		C	C		
Approach Vol, veh/h		2088	1879		802			
Approach Delay, s/veh		11.0	9.9		28.9			
Approach LOS		B	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		17.1		12.8		20.0		
Green Ext Time (p_c), s		13.9		0.3		12.5		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			13.6					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 25: SR-57 NB Ramps & Katella Ave

2035  
 Timing Plan: PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	1276	0	0	2372	171	221		
Future Volume (veh/h)	1276	0	0	2372	171	221		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1387	0	0	2578	142	287		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	444	792		
Arrive On Green	0.58	0.00	0.00	0.58	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	1387	0	0	2578	142	287		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	9.4	0.0	0.0	25.7	3.9	4.5		
Cycle Q Clear(g_c), s	9.4	0.0	0.0	25.7	3.9	4.5		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	444	792		
V/C Ratio(X)	0.47	0.00	0.00	0.87	0.32	0.36		
Avail Cap(c_a), veh/h	2966	0	0	2966	444	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	7.2	0.0	0.0	10.6	18.3	18.6		
Incr Delay (d2), s/veh	0.5	0.0	0.0	3.8	1.9	1.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.5	0.0	0.0	12.7	2.1	2.1		
LnGrp Delay(d),s/veh	7.7	0.0	0.0	14.3	20.2	19.8		
LnGrp LOS	A			B	C	B		
Approach Vol, veh/h	1387			2578	429			
Approach Delay, s/veh	7.7			14.3	20.0			
Approach LOS	A			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		35.0		15.0		35.0		
Max Q Clear Time (g_c+I1), s		11.4		6.5		27.7		
Green Ext Time (p_c), s		13.7		0.6		7.1		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			12.8					
HCM 2010 LOS			B					
<b>Notes</b>								















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User approved volume balancing among the lanes for turning movement.













HCM 2010 Signalized Intersection Summary  
 38: SR-55 SB Ramps & Katella Ave

2035  
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	1929	1022	539	1916	0	0	0	0	397	0	471
Future Volume (veh/h)	0	1929	1022	539	1916	0	0	0	0	397	0	471
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	2097	1111	586	2083	0				432	0	512
Adj No. of Lanes	0	3	2	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	2161	1184	574	3221	0				975	0	449
Arrive On Green	0.00	0.43	0.43	0.17	0.63	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	5253	2787	3442	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	2097	1111	586	2083	0				432	0	512
Grp Sat Flow(s),veh/h/ln	0	1695	1393	1721	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	48.4	45.7	20.0	30.5	0.0				12.3	0.0	34.0
Cycle Q Clear(g_c), s	0.0	48.4	45.7	20.0	30.5	0.0				12.3	0.0	34.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2161	1184	574	3221	0				975	0	449
V/C Ratio(X)	0.00	0.97	0.94	1.02	0.65	0.00				0.44	0.00	1.14
Avail Cap(c_a), veh/h	0	2161	1184	574	3221	0				975	0	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	33.8	33.0	50.0	13.7	0.0				35.2	0.0	43.0
Incr Delay (d2), s/veh	0.0	13.5	15.0	17.2	0.1	0.0				1.5	0.0	87.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	25.2	20.1	10.9	14.1	0.0				6.1	0.0	25.7
LnGrp Delay(d),s/veh	0.0	47.3	48.0	67.2	13.8	0.0				36.7	0.0	130.2
LnGrp LOS		D	D	F	B					D		F
Approach Vol, veh/h		3208			2669						944	
Approach Delay, s/veh		47.5			25.5						87.4	
Approach LOS		D			C						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.0	56.0		39.0		81.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	20.0	51.0		34.0		76.0						
Max Q Clear Time (g_c+I1), s	22.0	50.4		36.0		32.5						
Green Ext Time (p_c), s	0.0	0.6		0.0		31.9						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			44.4									
HCM 2010 LOS			D									







HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

2035  
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗		↑↑↑	↗	↘↘		↗		↕	
Traffic Volume (veh/h)	0	1634	921	0	1251	360	1019	0	770	0	0	16
Future Volume (veh/h)	0	1634	921	0	1251	360	1019	0	770	0	0	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1776	0	0	1360	391	1108	0	837	0	0	17
Adj No. of Lanes	0	3	1	0	3	1	2	0	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	2755	858	0	2755	858	860	0	0	0	0	132
Arrive On Green	0.00	0.18	0.00	0.00	0.54	0.54	0.25	0.00	0.00	0.00	0.00	0.08
Sat Flow, veh/h	0	5253	1583	0	5253	1583	3442	1108		0	0	1583
Grp Volume(v), veh/h	0	1776	0	0	1360	391	1108	183.3		0	0	17
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1721	F		0	0	1583
Q Serve(g_s), s	0.0	38.9	0.0	0.0	20.1	18.0	30.0			0.0	0.0	1.2
Cycle Q Clear(g_c), s	0.0	38.9	0.0	0.0	20.1	18.0	30.0			0.0	0.0	1.2
Prop In Lane	0.00		1.00	0.00		1.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	2755	858	0	2755	858	860			0	0	132
V/C Ratio(X)	0.00	0.64	0.00	0.00	0.49	0.46	1.29			0.00	0.00	0.13
Avail Cap(c_a), veh/h	0	2755	858	0	2755	858	860			0	0	132
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.35	0.00	0.00	1.00	1.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	38.6	0.0	0.0	17.2	16.7	45.0			0.0	0.0	51.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.2	0.5	138.3			0.0	0.0	2.0
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
%ile BackOfQ(50%),veh/ln	0.0	18.4	0.0	0.0	9.4	7.9	30.7			0.0	0.0	0.6
LnGrp Delay(d),s/veh	0.0	39.0	0.0	0.0	17.4	17.3	183.3			0.0	0.0	53.0
LnGrp LOS		D			B	B	F					D
Approach Vol, veh/h		1776			1751							17
Approach Delay, s/veh		39.0			17.4							53.0
Approach LOS		D			B							D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		70.0	35.0	15.0		70.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		34.0	30.0	10.0		26.0						
Max Q Clear Time (g_c+I1), s		40.9	32.0	3.2		22.1						
Green Ext Time (p_c), s		0.0	0.0	0.0		3.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			65.3									
HCM 2010 LOS			E									







HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps

2035 plus Project  
 Timing Plan: AM Peak Hour

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑	↑↑		
Traffic Volume (veh/h)	0	1692	650	0	590	686		
Future Volume (veh/h)	0	1692	650	0	590	686		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1839	707	0	641	746		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2100	2100	0	715	1123		
Arrive On Green	0.00	0.41	0.41	0.00	0.40	0.40		
Sat Flow, veh/h	0	5421	5421	0	1774	2787		
Grp Volume(v), veh/h	0	1839	707	0	641	746		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1393		
Q Serve(g_s), s	0.0	16.3	4.6	0.0	16.5	10.7		
Cycle Q Clear(g_c), s	0.0	16.3	4.6	0.0	16.5	10.7		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2100	2100	0	715	1123		
V/C Ratio(X)	0.00	0.88	0.34	0.00	0.90	0.66		
Avail Cap(c_a), veh/h	0	2131	2131	0	743	1168		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	13.2	9.8	0.0	13.7	11.9		
Incr Delay (d2), s/veh	0.0	4.4	0.1	0.0	13.3	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	0.0	8.3	2.2	0.0	10.7	4.3		
LnGrp Delay(d),s/veh	0.0	17.6	9.9	0.0	27.0	13.3		
LnGrp LOS		B	A		C	B		
Approach Vol, veh/h		1839	707		1387			
Approach Delay, s/veh		17.6	9.9		19.6			
Approach LOS		B	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		24.7				24.7		24.2
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		20.5				20.5		20.5
Max Q Clear Time (g_c+I1), s		6.6				18.3		18.5
Green Ext Time (p_c), s		3.9				1.9		1.2
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			16.9					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd







2035 plus Project  
 Timing Plan: AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	1868	0	0	634	271	488		
Future Volume (veh/h)	1868	0	0	634	271	488		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	2030	0	0	689	275	551		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2813	0	0	2813	444	793		
Arrive On Green	0.55	0.00	0.00	0.55	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	2030	0	0	689	275	551		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	13.6	0.0	0.0	3.2	6.3	7.2		
Cycle Q Clear(g_c), s	13.6	0.0	0.0	3.2	6.3	7.2		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2813	0	0	2813	444	793		
V/C Ratio(X)	0.72	0.00	0.00	0.24	0.62	0.69		
Avail Cap(c_a), veh/h	3104	0	0	3104	696	1243		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	7.6	0.0	0.0	5.3	15.2	15.6		
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.0	1.4	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	6.4	0.0	0.0	1.5	3.2	3.3		
LnGrp Delay(d),s/veh	8.4	0.0	0.0	5.3	16.7	16.7		
LnGrp LOS	A			A	B	B		
Approach Vol, veh/h	2030			689	826			
Approach Delay, s/veh	8.4			5.3	16.7			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		29.9		16.0		29.9		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		28.0		18.0		28.0		
Max Q Clear Time (g_c+I1), s		15.6		9.2		5.2		
Green Ext Time (p_c), s		9.8		2.3		4.6		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			9.7					
HCM 2010 LOS			A					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps

2035 plus Project  
 Timing Plan: AM Peak Hour







								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	2334	1299	0	134	552		
Future Volume (veh/h)	0	2334	1299	0	134	552		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	2537	1412	0	146	600		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	2537	1412	0	146	600		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	25.7	9.9	0.0	4.1	10.7		
Cycle Q Clear(g_c), s	0.0	25.7	9.9	0.0	4.1	10.7		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.88	0.49	0.00	0.35	0.80		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	11.1	7.7	0.0	19.0	21.6		
Incr Delay (d2), s/veh	0.0	4.1	0.6	0.0	2.3	8.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	12.8	4.7	0.0	2.3	5.6		
LnGrp Delay(d),s/veh	0.0	15.1	8.3	0.0	21.3	30.3		
LnGrp LOS		B	A		C	C		
Approach Vol, veh/h		2537	1412		746			
Approach Delay, s/veh		15.1	8.3		28.6			
Approach LOS		B	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		11.9		12.7		27.7		
Green Ext Time (p_c), s		13.5		0.3		6.3		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.2					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.



HCM 2010 Signalized Intersection Summary  
25: SR-57 NB Ramps & Katella Ave













2035 plus Project  
Timing Plan: AM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	1742	0	0	1442	285	664		
Future Volume (veh/h)	1742	0	0	1442	285	664		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1893	0	0	1567	310	722		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	444	792		
Arrive On Green	0.58	0.00	0.00	0.58	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	1893	0	0	1567	310	722		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	14.8	0.0	0.0	11.1	9.5	13.3		
Cycle Q Clear(g_c), s	14.8	0.0	0.0	11.1	9.5	13.3		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	444	792		
V/C Ratio(X)	0.64	0.00	0.00	0.53	0.70	0.91		
Avail Cap(c_a), veh/h	2966	0	0	2966	444	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.3	0.0	0.0	7.5	20.4	21.9		
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.7	8.8	16.6		
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	0.0	5.3	5.7	7.5		
LnGrp Delay(d),s/veh	9.4	0.0	0.0	8.2	29.3	38.5		
LnGrp LOS	A			A	C	D		
Approach Vol, veh/h	1893			1567	1032			
Approach Delay, s/veh	9.4			8.2	35.7			
Approach LOS	A			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		35.0		15.0		35.0		
Max Q Clear Time (g_c+I1), s		16.8		15.3		13.1		
Green Ext Time (p_c), s		14.7		0.0		14.7		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.0					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.













HCM 2010 Signalized Intersection Summary  
 38: SR-55 SB Ramps & Katella Ave

2035 plus Project  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	919	568	522	2171	0	0	0	0	288	0	646
Future Volume (veh/h)	0	919	568	522	2171	0	0	0	0	288	0	646
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	999	617	567	2360	0				313	0	702
Adj No. of Lanes	0	3	2	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	1441	790	574	2500	0				1463	0	673
Arrive On Green	0.00	0.28	0.28	0.17	0.49	0.00				0.43	0.00	0.43
Sat Flow, veh/h	0	5253	2787	3442	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	999	617	567	2360	0				313	0	702
Grp Sat Flow(s),veh/h/ln	0	1695	1393	1721	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	21.0	24.5	19.7	52.8	0.0				6.9	0.0	51.0
Cycle Q Clear(g_c), s	0.0	21.0	24.5	19.7	52.8	0.0				6.9	0.0	51.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1441	790	574	2500	0				1463	0	673
V/C Ratio(X)	0.00	0.69	0.78	0.99	0.94	0.00				0.21	0.00	1.04
Avail Cap(c_a), veh/h	0	1441	790	574	2500	0				1463	0	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	38.4	39.6	49.9	28.9	0.0				21.8	0.0	34.5
Incr Delay (d2), s/veh	0.0	2.8	7.6	8.9	1.0	0.0				0.3	0.0	46.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.2	10.3	10.1	24.7	0.0				3.3	0.0	30.9
LnGrp Delay(d),s/veh	0.0	41.1	47.1	58.8	30.0	0.0				22.2	0.0	81.0
LnGrp LOS		D	D	E	C					C		F
Approach Vol, veh/h		1616			2927						1015	
Approach Delay, s/veh		43.4			35.6						62.8	
Approach LOS		D			D						E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.0	39.0		56.0		64.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	20.0	34.0		51.0		59.0						
Max Q Clear Time (g_c+I1), s	21.7	26.5		53.0		54.8						
Green Ext Time (p_c), s	0.0	5.8		0.0		4.0						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				42.8								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

2035 plus Project  
 Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑↑		↑		↔	
Traffic Volume (veh/h)	0	1140	291	0	1752	456	709	0	481	0	0	28
Future Volume (veh/h)	0	1140	291	0	1752	456	709	0	481	0	0	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1239	0	0	1904	496	771	0	523	0	0	30
Adj No. of Lanes	0	3	1	0	3	1	2	0	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	3051	950	0	3051	950	660	0	0	0	0	132
Arrive On Green	0.00	0.20	0.00	0.00	0.60	0.60	0.19	0.00	0.00	0.00	0.00	0.08
Sat Flow, veh/h	0	5253	1583	0	5253	1583	3442	771		0	0	1583
Grp Volume(v), veh/h	0	1239	0	0	1904	496	771	140.1		0	0	30
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1721	F		0	0	1583
Q Serve(g_s), s	0.0	25.5	0.0	0.0	28.7	21.9	23.0			0.0	0.0	2.1
Cycle Q Clear(g_c), s	0.0	25.5	0.0	0.0	28.7	21.9	23.0			0.0	0.0	2.1
Prop In Lane	0.00		1.00	0.00		1.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	3051	950	0	3051	950	660			0	0	132
V/C Ratio(X)	0.00	0.41	0.00	0.00	0.62	0.52	1.17			0.00	0.00	0.23
Avail Cap(c_a), veh/h	0	3051	950	0	3051	950	660			0	0	132
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.79	0.00	0.00	1.00	1.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	29.5	0.0	0.0	15.3	14.0	48.5			0.0	0.0	51.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.5	0.7	91.6			0.0	0.0	4.0
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
%ile BackOfQ(50%),veh/ln	0.0	12.1	0.0	0.0	13.5	9.7	19.3			0.0	0.0	1.1
LnGrp Delay(d),s/veh	0.0	29.8	0.0	0.0	15.8	14.7	140.1			0.0	0.0	55.4
LnGrp LOS		C			B	B	F					E
Approach Vol, veh/h		1239			2400							30
Approach Delay, s/veh		29.8			15.6							55.4
Approach LOS		C			B							E
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		77.0	28.0	15.0		77.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		28.0	23.0	10.0		39.0						
Max Q Clear Time (g_c+I1), s		27.5	25.0	4.1		30.7						
Green Ext Time (p_c), s		0.4	0.0	0.0		7.7						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			41.4									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary  
 8: Ball Rd & SR-57 SB Ramps

2035 plus Project  
 Timing Plan: PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↘	↘↘		
Traffic Volume (veh/h)	0	1573	1717	0	381	778		
Future Volume (veh/h)	0	1573	1717	0	381	778		
Number	1	6	2	12	3	18		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	1710	1866	0	414	846		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2371	2371	0	637	1000		
Arrive On Green	0.00	0.47	0.47	0.00	0.36	0.36		
Sat Flow, veh/h	0	5421	5421	0	1774	2787		
Grp Volume(v), veh/h	0	1710	1866	0	414	846		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1393		
Q Serve(g_s), s	0.0	13.9	15.9	0.0	10.0	14.4		
Cycle Q Clear(g_c), s	0.0	13.9	15.9	0.0	10.0	14.4		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2371	2371	0	637	1000		
V/C Ratio(X)	0.00	0.72	0.79	0.00	0.65	0.85		
Avail Cap(c_a), veh/h	0	2520	2520	0	707	1110		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	11.0	11.6	0.0	13.8	15.2		
Incr Delay (d2), s/veh	0.0	1.0	1.6	0.0	1.8	5.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	6.5	7.6	0.0	5.2	6.2		
LnGrp Delay(d),s/veh	0.0	12.0	13.2	0.0	15.6	20.9		
LnGrp LOS		B	B		B	C		
Approach Vol, veh/h		1710	1866		1260			
Approach Delay, s/veh		12.0	13.2		19.2			
Approach LOS		B	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.5				28.5		23.0
Change Period (Y+Rc), s		4.5				4.5		4.5
Max Green Setting (Gmax), s		25.5				25.5		20.5
Max Q Clear Time (g_c+I1), s		17.9				15.9		16.4
Green Ext Time (p_c), s		6.1				7.0		2.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			14.3					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary  
 9: SR-57 NB Ramps & Ball Rd







2035 plus Project  
 Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↘↘↘	↗		
Traffic Volume (veh/h)	1338	0	0	1650	719	433		
Future Volume (veh/h)	1338	0	0	1650	719	433		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1454	0	0	1793	832	418		
Adj No. of Lanes	3	0	0	3	2	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2352	0	0	2352	1202	536		
Arrive On Green	0.46	0.00	0.00	0.46	0.34	0.34		
Sat Flow, veh/h	5421	0	0	5421	3548	1583		
Grp Volume(v), veh/h	1454	0	0	1793	832	418		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	9.7	0.0	0.0	13.3	9.2	10.7		
Cycle Q Clear(g_c), s	9.7	0.0	0.0	13.3	9.2	10.7		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2352	0	0	2352	1202	536		
V/C Ratio(X)	0.62	0.00	0.00	0.76	0.69	0.78		
Avail Cap(c_a), veh/h	2526	0	0	2526	1449	647		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	9.2	0.0	0.0	10.1	12.9	13.5		
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.3	1.1	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	4.5	0.0	0.0	6.4	4.6	5.4		
LnGrp Delay(d),s/veh	9.6	0.0	0.0	11.4	14.0	18.5		
LnGrp LOS	A			B	B	B		
Approach Vol, veh/h	1454			1793	1250			
Approach Delay, s/veh	9.6			11.4	15.5			
Approach LOS	A			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		25.5		19.8		25.5		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		22.5		18.5		22.5		
Max Q Clear Time (g_c+I1), s		11.7		12.7		15.3		
Green Ext Time (p_c), s		6.7		2.6		5.7		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			12.0					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
 24: Katella Ave & SR-57 SB Ramps

2035 plus Project  
 Timing Plan: PM Peak Hour







								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑		
Traffic Volume (veh/h)	0	1916	1747	0	198	539		
Future Volume (veh/h)	0	1916	1747	0	198	539		
Number	1	6	2	12	7	14		
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		
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863		
Adj Flow Rate, veh/h	0	2083	1899	0	215	586		
Adj No. of Lanes	0	3	3	0	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	2	2	0	2	2		
Cap, veh/h	0	2899	2899	0	420	749		
Arrive On Green	0.00	0.57	0.57	0.00	0.24	0.24		
Sat Flow, veh/h	0	5421	5421	0	1774	3167		
Grp Volume(v), veh/h	0	2083	1899	0	215	586		
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583		
Q Serve(g_s), s	0.0	17.9	15.4	0.0	6.3	10.4		
Cycle Q Clear(g_c), s	0.0	17.9	15.4	0.0	6.3	10.4		
Prop In Lane	0.00			0.00	1.00	1.00		
Lane Grp Cap(c), veh/h	0	2899	2899	0	420	749		
V/C Ratio(X)	0.00	0.72	0.66	0.00	0.51	0.78		
Avail Cap(c_a), veh/h	0	2899	2899	0	420	749		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(l)	0.00	1.00	1.00	0.00	1.00	1.00		
Uniform Delay (d), s/veh	0.0	9.4	8.9	0.0	19.9	21.4		
Incr Delay (d2), s/veh	0.0	1.6	1.2	0.0	4.4	8.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	8.7	7.3	0.0	3.6	5.3		
LnGrp Delay(d),s/veh	0.0	11.0	10.0	0.0	24.3	29.4		
LnGrp LOS		B	B		C	C		
Approach Vol, veh/h		2083	1899		801			
Approach Delay, s/veh		11.0	10.0		28.0			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.8		5.8		5.8		
Max Green Setting (Gmax), s		34.2		14.2		34.2		
Max Q Clear Time (g_c+I1), s		17.4		12.4		19.9		
Green Ext Time (p_c), s		13.8		0.3		12.6		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			13.4					
HCM 2010 LOS			B					
<b>Notes</b>								



User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary  
25: SR-57 NB Ramps & Katella Ave













2035 plus Project  
Timing Plan: PM Peak Hour

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑↑			↑↑↑	↑↑↑	↑		
Traffic Volume (veh/h)	1287	0	0	2383	169	220		
Future Volume (veh/h)	1287	0	0	2383	169	220		
Number	2	12	1	6	7	14		
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		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1399	0	0	2590	141	285		
Adj No. of Lanes	3	0	0	3	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Cap, veh/h	2966	0	0	2966	444	792		
Arrive On Green	0.58	0.00	0.00	0.58	0.25	0.25		
Sat Flow, veh/h	5421	0	0	5421	1774	3167		
Grp Volume(v), veh/h	1399	0	0	2590	141	285		
Grp Sat Flow(s),veh/h/ln	1695	0	0	1695	1774	1583		
Q Serve(g_s), s	9.5	0.0	0.0	25.9	3.9	4.5		
Cycle Q Clear(g_c), s	9.5	0.0	0.0	25.9	3.9	4.5		
Prop In Lane		0.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2966	0	0	2966	444	792		
V/C Ratio(X)	0.47	0.00	0.00	0.87	0.32	0.36		
Avail Cap(c_a), veh/h	2966	0	0	2966	444	792		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	7.2	0.0	0.0	10.6	18.3	18.5		
Incr Delay (d2), s/veh	0.5	0.0	0.0	3.9	1.9	1.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	12.8	2.1	2.1		
LnGrp Delay(d),s/veh	7.7	0.0	0.0	14.5	20.2	19.8		
LnGrp LOS	A			B	C	B		
Approach Vol, veh/h	1399			2590	426			
Approach Delay, s/veh	7.7			14.5	19.9			
Approach LOS	A			B	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		35.0		15.0		35.0		
Max Q Clear Time (g_c+I1), s		11.5		6.5		27.9		
Green Ext Time (p_c), s		13.8		0.6		6.8		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			12.9					
HCM 2010 LOS			B					
<b>Notes</b>								

User approved volume balancing among the lanes for turning movement.













HCM 2010 Signalized Intersection Summary  
38: SR-55 SB Ramps & Katella Ave

2035 plus Project  
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑
Traffic Volume (veh/h)	0	1940	1000	551	1915	0	0	0	0	404	0	484
Future Volume (veh/h)	0	1940	1000	551	1915	0	0	0	0	404	0	484
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	0				1863	0	1863
Adj Flow Rate, veh/h	0	2109	1087	599	2082	0				439	0	526
Adj No. of Lanes	0	3	2	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	2119	1161	602	3221	0				975	0	449
Arrive On Green	0.00	0.42	0.42	0.17	0.63	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	5253	2787	3442	5253	0				3442	0	1583
Grp Volume(v), veh/h	0	2109	1087	599	2082	0				439	0	526
Grp Sat Flow(s),veh/h/ln	0	1695	1393	1721	1695	0				1721	0	1583
Q Serve(g_s), s	0.0	49.6	44.8	20.9	30.5	0.0				12.6	0.0	34.0
Cycle Q Clear(g_c), s	0.0	49.6	44.8	20.9	30.5	0.0				12.6	0.0	34.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2119	1161	602	3221	0				975	0	449
V/C Ratio(X)	0.00	1.00	0.94	0.99	0.65	0.00				0.45	0.00	1.17
Avail Cap(c_a), veh/h	0	2119	1161	602	3221	0				975	0	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.09	0.09	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	34.9	33.5	49.4	13.7	0.0				35.3	0.0	43.0
Incr Delay (d2), s/veh	0.0	18.5	15.0	9.8	0.1	0.0				1.5	0.0	99.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	26.7	19.6	10.7	14.1	0.0				6.2	0.0	27.2
LnGrp Delay(d),s/veh	0.0	53.4	48.4	59.3	13.8	0.0				36.8	0.0	142.0
LnGrp LOS		D	D	E	B					D		F
Approach Vol, veh/h		3196			2681						965	
Approach Delay, s/veh		51.7			23.9						94.2	
Approach LOS		D			C						F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	26.0	55.0		39.0		81.0						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	21.0	50.0		34.0		76.0						
Max Q Clear Time (g_c+I1), s	22.9	51.6		36.0		32.5						
Green Ext Time (p_c), s	0.0	0.0		0.0		31.9						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				46.8								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary  
 39: SR-55 NB Ramps & Katella Ave

2035 plus Project  
 Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑↑		↑		↕	
Traffic Volume (veh/h)	0	1643	921	0	1259	360	1022	0	769	0	0	16
Future Volume (veh/h)	0	1643	921	0	1259	360	1022	0	769	0	0	16
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863	1863	0	1863	1900	1863	1900
Adj Flow Rate, veh/h	0	1786	0	0	1368	391	1111	0	836	0	0	17
Adj No. of Lanes	0	3	1	0	3	1	2	0	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2	2	0	2	2	2	2
Cap, veh/h	0	2755	858	0	2755	858	860	0	0	0	0	132
Arrive On Green	0.00	0.18	0.00	0.00	0.54	0.54	0.25	0.00	0.00	0.00	0.00	0.08
Sat Flow, veh/h	0	5253	1583	0	5253	1583	3442	1111		0	0	1583
Grp Volume(v), veh/h	0	1786	0	0	1368	391	1111	184.8		0	0	17
Grp Sat Flow(s),veh/h/ln	0	1695	1583	0	1695	1583	1721	F		0	0	1583
Q Serve(g_s), s	0.0	39.1	0.0	0.0	20.2	18.0	30.0			0.0	0.0	1.2
Cycle Q Clear(g_c), s	0.0	39.1	0.0	0.0	20.2	18.0	30.0			0.0	0.0	1.2
Prop In Lane	0.00		1.00	0.00		1.00	1.00			0.00		1.00
Lane Grp Cap(c), veh/h	0	2755	858	0	2755	858	860			0	0	132
V/C Ratio(X)	0.00	0.65	0.00	0.00	0.50	0.46	1.29			0.00	0.00	0.13
Avail Cap(c_a), veh/h	0	2755	858	0	2755	858	860			0	0	132
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	0.31	0.00	0.00	1.00	1.00	1.00			0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	38.7	0.0	0.0	17.2	16.7	45.0			0.0	0.0	51.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.2	0.5	139.8			0.0	0.0	2.0
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
%ile BackOfQ(50%),veh/ln	0.0	18.5	0.0	0.0	9.4	7.9	30.9			0.0	0.0	0.6
LnGrp Delay(d),s/veh	0.0	39.0	0.0	0.0	17.4	17.3	184.8			0.0	0.0	53.0
LnGrp LOS		D			B	B	F					D
Approach Vol, veh/h		1786			1759							17
Approach Delay, s/veh		39.0			17.4							53.0
Approach LOS		D			B							D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6						
Phs Duration (G+Y+Rc), s		70.0	35.0	15.0		70.0						
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0						
Max Green Setting (Gmax), s		34.0	30.0	10.0		26.0						
Max Q Clear Time (g_c+I1), s		41.1	32.0	3.2		22.2						
Green Ext Time (p_c), s		0.0	0.0	0.0		3.3						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			65.6									
HCM 2010 LOS			E									

Intersection: 8: Ball Rd & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	R	R
Maximum Queue (ft)	351	343	233	125	110	85	316	200	197
Average Queue (ft)	238	201	106	72	57	25	168	111	47
95th Queue (ft)	322	295	205	110	100	67	269	173	126
Link Distance (ft)	580	580	580	1103	1103	1103	707		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)								600	600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 9: SR-57 NB Ramps & Ball Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	181	198	216	144	109	35	137	235	196
Average Queue (ft)	102	106	117	75	34	6	77	140	61
95th Queue (ft)	167	180	183	117	78	25	123	218	162
Link Distance (ft)	1103	1103	1103	483	483	483	680	680	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)									600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 24: Katella Ave & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	398	322	214	105	105	106	226	318	256
Average Queue (ft)	270	204	104	46	33	58	77	195	130
95th Queue (ft)	387	293	191	89	74	92	194	281	241
Link Distance (ft)	376	376	376	639	639	639		854	
Upstream Blk Time (%)	1	0							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)							750		750
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 25: SR-57 NB Ramps & Katella Ave

Movement	EB	EB	EB	B15	B15	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	171	179	159	34	11	257	176	97	344	419	376
Average Queue (ft)	107	96	99	2	0	147	86	35	194	291	229
95th Queue (ft)	153	154	143	16	4	220	150	76	318	393	349
Link Distance (ft)	190	190	190	639	639	305	305	305		743	
Upstream Blk Time (%)	0	0	0			0					
Queuing Penalty (veh)	0	0	0			0					
Storage Bay Dist (ft)									600		600
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	SB	SB
Directions Served	T	T	T	R	R	L	L	T	T	T	T	L	L
Maximum Queue (ft)	336	291	240	282	257	285	316	288	341	296	556	739	
Average Queue (ft)	224	180	138	205	167	199	213	230	246	234	132	519	
95th Queue (ft)	305	258	224	273	242	281	301	283	303	285	333	998	
Link Distance (ft)	830	830	830	830	830				478	478	478	698	698
Upstream Blk Time (%)										0		0	35
Queuing Penalty (veh)										0		0	0
Storage Bay Dist (ft)						500	500						
Storage Blk Time (%)													0
Queuing Penalty (veh)													2

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	525
Average Queue (ft)	480
95th Queue (ft)	623
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	43
Queuing Penalty (veh)	62

Intersection: 39: SR-55 NB Ramps & Katella Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	T	T	T	T	T	T	R	L	L	R	LTR
Maximum Queue (ft)	440	422	385	818	801	776	672	558	528	409	51
Average Queue (ft)	326	316	269	780	740	652	348	491	454	316	13
95th Queue (ft)	421	406	356	848	863	874	914	616	618	536	36
Link Distance (ft)	478	478	478	776	776	776	776	518	518		366
Upstream Blk Time (%)	0	0		41	13	12	9	31	18		
Queuing Penalty (veh)	1	0		0	0	0	0	0	0		
Storage Bay Dist (ft)											400
Storage Blk Time (%)									24	2	
Queuing Penalty (veh)									117	9	

Network Summary

Network wide Queuing Penalty: 191



Intersection: 8: Ball Rd & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	R	R
Maximum Queue (ft)	295	275	174	191	191	187	189	311	264
Average Queue (ft)	189	148	54	121	121	103	111	198	146
95th Queue (ft)	265	237	117	171	173	170	173	282	259
Link Distance (ft)	580	580	580	1103	1103	1103	707		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)								600	600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 9: SR-57 NB Ramps & Ball Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	176	190	183	299	259	173	252	245	214
Average Queue (ft)	90	88	89	196	156	58	152	154	67
95th Queue (ft)	153	157	149	268	246	124	221	230	178
Link Distance (ft)	1103	1103	1103	483	483	483	680	680	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)									600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 24: Katella Ave & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	351	259	145	226	226	222	260	342	292
Average Queue (ft)	204	148	61	160	156	146	96	209	157
95th Queue (ft)	302	235	120	209	212	203	217	308	270
Link Distance (ft)	376	376	376	639	639	639		854	
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)							750		750
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 25: SR-57 NB Ramps & Katella Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	99	112	86	339	316	202	173	236	183
Average Queue (ft)	64	56	43	272	191	102	29	127	44
95th Queue (ft)	91	92	77	356	289	177	111	208	139
Link Distance (ft)	190	190	190	305	305	305		743	
Upstream Blk Time (%)				5	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (ft)							600		600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	SB	SB
Directions Served	T	T	T	R	R	L	L	T	T	T	T	L	L
Maximum Queue (ft)	839	859	880	876	827	228	251	180	83	72	204	220	220
Average Queue (ft)	631	804	839	809	482	145	154	48	33	27	127	121	121
95th Queue (ft)	877	957	926	1044	849	213	221	115	67	62	190	195	195
Link Distance (ft)	830	830	830	830	830			478	478	478	698	698	698
Upstream Blk Time (%)	1	17	78	56	0								
Queuing Penalty (veh)	0	0	0	0	0								
Storage Bay Dist (ft)						500	500						
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	379
Average Queue (ft)	217
95th Queue (ft)	360
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 39: SR-55 NB Ramps & Katella Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	T	T	T	T	T	T	R	L	L	R	LTR
Maximum Queue (ft)	508	524	503	826	807	816	799	557	572	425	33
Average Queue (ft)	482	487	469	785	762	715	517	505	538	424	8
95th Queue (ft)	541	553	530	844	857	910	1080	609	555	436	25
Link Distance (ft)	478	478	478	776	776	776	776	518	518		366
Upstream Blk Time (%)	11	9	5	67	25	19	13	30	62		
Queuing Penalty (veh)	64	54	28	0	0	0	0	0	0		
Storage Bay Dist (ft)											400
Storage Blk Time (%)									17	58	
Queuing Penalty (veh)									134	294	

Network Summary

Network wide Queuing Penalty: 573

Intersection: 8: Ball Rd & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	R	R
Maximum Queue (ft)	374	353	223	137	127	94	502	406	215
Average Queue (ft)	251	213	111	76	62	28	214	129	55
95th Queue (ft)	349	312	207	120	106	69	400	271	148
Link Distance (ft)	580	580	580	1103	1103	1103	707		
Upstream Blk Time (%)							0		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)								600	600
Storage Blk Time (%)							0	0	
Queuing Penalty (veh)							2	0	

Intersection: 9: SR-57 NB Ramps & Ball Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	171	181	192	133	74	39	183	259	225
Average Queue (ft)	102	102	118	79	30	7	84	150	82
95th Queue (ft)	159	169	181	122	61	29	143	230	194
Link Distance (ft)	1103	1103	1103	483	483	483	680	680	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)									600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 24: Katella Ave & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	391	331	230	101	102	96	213	312	290
Average Queue (ft)	278	208	107	45	35	59	73	198	150
95th Queue (ft)	388	296	198	83	75	90	188	281	268
Link Distance (ft)	376	376	376	639	639	639		854	
Upstream Blk Time (%)	2	0							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)							750		750
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 25: SR-57 NB Ramps & Katella Ave

Movement	EB	EB	EB	B15	B15	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	146	159	164	28	5	249	174	91	349	443	401
Average Queue (ft)	100	90	96	1	0	152	93	38	187	285	231
95th Queue (ft)	141	137	143	12	3	218	154	75	304	393	351
Link Distance (ft)	190	190	190	639	639	305	305	305		743	
Upstream Blk Time (%)			0			0					
Queuing Penalty (veh)			0			0					
Storage Bay Dist (ft)									600		600
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	SB	SB
Directions Served	T	T	T	R	R	L	L	T	T	T	T	L	L
Maximum Queue (ft)	337	296	276	320	302	320	342	283	295	310	540	540	707
Average Queue (ft)	221	188	144	205	170	211	228	226	244	239	138	138	447
95th Queue (ft)	304	267	233	288	264	294	315	276	288	290	364	364	961
Link Distance (ft)	830	830	830	830	830				478	478	478	698	698
Upstream Blk Time (%)												0	26
Queuing Penalty (veh)												0	0
Storage Bay Dist (ft)						500	500						
Storage Blk Time (%)													0
Queuing Penalty (veh)													1

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	525
Average Queue (ft)	473
95th Queue (ft)	616
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	36
Queuing Penalty (veh)	51

Intersection: 39: SR-55 NB Ramps & Katella Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	T	T	T	T	T	T	R	L	L	R	LTR
Maximum Queue (ft)	469	459	414	824	803	794	664	556	548	425	54
Average Queue (ft)	335	328	276	779	741	638	263	499	470	335	13
95th Queue (ft)	459	444	395	857	863	856	767	620	626	554	36
Link Distance (ft)	478	478	478	776	776	776	776	518	518		366
Upstream Blk Time (%)	2	1	0	42	11	7	4	38	22		
Queuing Penalty (veh)	6	2	0	0	0	0	0	0	0		
Storage Bay Dist (ft)											400
Storage Blk Time (%)									33	1	
Queuing Penalty (veh)									159	5	

Network Summary

Network wide Queuing Penalty: 226

Intersection: 8: Ball Rd & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	R	R
Maximum Queue (ft)	300	277	176	185	189	190	242	334	285
Average Queue (ft)	197	156	60	121	121	105	120	209	163
95th Queue (ft)	273	245	126	171	172	169	198	301	275
Link Distance (ft)	580	580	580	1103	1103	1103	707		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)								600	600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 9: SR-57 NB Ramps & Ball Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	171	179	170	320	274	180	280	277	236
Average Queue (ft)	90	90	87	212	169	72	153	173	87
95th Queue (ft)	152	157	147	287	244	151	228	255	213
Link Distance (ft)	1103	1103	1103	483	483	483	680	680	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)									600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 24: Katella Ave & SR-57 SB Ramps

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	367	280	161	228	252	216	224	335	285
Average Queue (ft)	212	153	59	160	161	143	102	210	158
95th Queue (ft)	309	238	117	205	222	206	222	296	270
Link Distance (ft)	376	376	376	639	639	639		854	
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)							750		750
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 25: SR-57 NB Ramps & Katella Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	LR	R
Maximum Queue (ft)	110	107	89	339	308	212	162	226	171
Average Queue (ft)	67	58	43	278	189	98	24	121	33
95th Queue (ft)	101	93	77	359	279	171	98	193	114
Link Distance (ft)	190	190	190	305	305	305		743	
Upstream Blk Time (%)				5	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (ft)							600		600
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	SB	SB
Directions Served	T	T	T	R	R	L	L	T	T	T	T	L	L
Maximum Queue (ft)	834	852	877	875	830	231	236	130	89	66	207	207	417
Average Queue (ft)	570	788	835	812	467	134	142	49	38	25	120	120	129
95th Queue (ft)	853	1007	944	1022	808	208	209	99	77	63	194	194	272
Link Distance (ft)	830	830	830	830	830				478	478	478	698	698
Upstream Blk Time (%)	2	18	74	51	0								
Queuing Penalty (veh)	0	0	0	0	0								
Storage Bay Dist (ft)						500	500						
Storage Blk Time (%)													
Queuing Penalty (veh)													

Intersection: 38: SR-55 SB Ramps & Katella Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	469
Average Queue (ft)	261
95th Queue (ft)	443
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	1
Queuing Penalty (veh)	3



Intersection: 39: SR-55 NB Ramps & Katella Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	T	T	T	T	T	T	R	L	L	R	LTR
Maximum Queue (ft)	507	530	507	827	810	795	747	550	570	425	38
Average Queue (ft)	475	477	455	792	766	714	454	479	539	425	8
95th Queue (ft)	541	551	543	821	840	879	1045	620	558	431	26
Link Distance (ft)	478	478	478	776	776	776	776	518	518		366
Upstream Blk Time (%)	8	7	4	63	24	22	14	27	64		
Queuing Penalty (veh)	48	39	22	0	0	0	0	0	0		
Storage Bay Dist (ft)											400
Storage Blk Time (%)									16	60	
Queuing Penalty (veh)									124	306	

Network Summary

Network wide Queuing Penalty: 542