

APPENDIX D
**HORIZON YEAR (2035) - IMPROVED
INTERSECTION CAPACITY WORKSHEETS**



Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR		NBT	NBR	SBL SBT
Vol, veh/h	48	20		170	89	37 221
Conflicting Peds, #/hr	0	0		0	0	0 0
Sign Control	Stop	Stop		Free	Free	Free Free
RT Channelized	-	None		-	None	- None
Storage Length	-	-		-	-	- -
Veh in Median Storage, #	0	-		0	-	- 0
Grade, %	0	-		0	-	- 0
Peak Hour Factor	90	90		90	90	90 90
Heavy Vehicles, %	0	0		3	0	0 1
Mvmt Flow	53	22		189	99	41 246
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	566	238		0	0	288 0
Stage 1	238	-		-	-	- -
Stage 2	328	-		-	-	- -
Critical Hdwy	6.4	6.2		-	-	4.1 -
Critical Hdwy Stg 1	5.4	-		-	-	- -
Critical Hdwy Stg 2	5.4	-		-	-	- -
Follow-up Hdwy	3.5	3.3		-	-	2.2 -
Pot Cap-1 Maneuver	489	806		-	-	1286 -
Stage 1	806	-		-	-	- -
Stage 2	734	-		-	-	- -
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	471	806		-	-	1286 -
Mov Cap-2 Maneuver	471	-		-	-	- -
Stage 1	806	-		-	-	- -
Stage 2	707	-		-	-	- -
Approach	WB		NB		SB	
HCM Control Delay, s	12.8		0		1.1	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	537	1286	-	
HCM Lane V/C Ratio	-	-	0.141	0.032	-	
HCM Control Delay (s)	-	-	12.8	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-	

Intersection												
Int Delay, s/veh	13											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	89	154	9	4	45	113	0	95	14	97	42	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	6	0	0	8	2	0	6	0	2	0	0
Mvmt Flow	99	171	10	4	50	126	0	106	16	108	47	37
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	482	402	65	484	412	113	83	0	0	121	0	0
Stage 1	281	281	-	113	113	-	-	-	-	-	-	-
Stage 2	201	121	-	371	299	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.56	6.2	7.1	6.58	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.56	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.56	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.054	3.3	3.5	4.072	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	498	531	1005	496	521	940	1527	-	-	1467	-	-
Stage 1	730	671	-	897	790	-	-	-	-	-	-	-
Stage 2	805	788	-	653	656	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	374	490	1005	338	480	940	1527	-	-	1467	-	-
Mov Cap-2 Maneuver	374	490	-	338	480	-	-	-	-	-	-	-
Stage 1	730	619	-	897	790	-	-	-	-	-	-	-
Stage 2	653	788	-	431	605	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	25.4			11.7			0			4.3		
HCM LOS	D			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1527	-	-	449	717	1467	-	-				
HCM Lane V/C Ratio	-	-	-	0.624	0.251	0.073	-	-				
HCM Control Delay (s)	0	-	-	25.4	11.7	7.6	0	-				
HCM Lane LOS	A	-	-	D	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	4.2	1	0.2	-	-				

Intersection												
Int Delay, s/veh	18.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	250	22	29	142	12	37	91	40	61	121	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	4	0	27	4	0	0	2	5	0	2	7
Mvmt Flow	17	278	24	32	158	13	41	101	44	68	134	30
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	576	513	149	642	506	123	164	0	0	146	0	0
Stage 1	285	285	-	206	206	-	-	-	-	-	-	-
Stage 2	291	228	-	436	300	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.54	6.2	7.37	6.54	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.54	-	6.37	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.54	-	6.37	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.036	3.3	3.743	4.036	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	431	462	903	354	466	933	1427	-	-	1448	-	-
Stage 1	727	672	-	742	728	-	-	-	-	-	-	-
Stage 2	721	712	-	553	662	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	285	424	903	154	428	933	1427	-	-	1448	-	-
Mov Cap-2 Maneuver	285	424	-	154	428	-	-	-	-	-	-	-
Stage 1	704	637	-	719	705	-	-	-	-	-	-	-
Stage 2	535	690	-	288	628	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	33.6			29.7			1.7			2.2		
HCM LOS	D			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1427	-	-	431	343	1448	-	-				
HCM Lane V/C Ratio	0.029	-	-	0.74	0.593	0.047	-	-				
HCM Control Delay (s)	7.6	0	-	33.6	29.7	7.6	0	-				
HCM Lane LOS	A	A	-	D	D	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	6	3.6	0.1	-	-				

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	35	335	2	12	148	14	4	26	31	97	22	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	6	3	100	0	7	0	0	0	0	0	0	0
Mvmt Flow	39	372	2	13	164	16	4	29	34	108	24	39
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	180	0	0	374	0	0	682	658	373	682	651	172
Stage 1	-	-	-	-	-	-	451	451	-	199	199	-
Stage 2	-	-	-	-	-	-	231	207	-	483	452	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.254	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1372	-	-	1196	-	-	367	387	678	367	390	877
Stage 1	-	-	-	-	-	-	592	574	-	807	740	-
Stage 2	-	-	-	-	-	-	776	734	-	569	574	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1372	-	-	1196	-	-	321	369	678	316	371	877
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	369	-	316	371	-
Stage 1	-	-	-	-	-	-	571	553	-	778	731	-
Stage 2	-	-	-	-	-	-	708	725	-	493	553	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.6			13.9			22.1		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	474	1372	-	-	1196	-	-	379				
HCM Lane V/C Ratio	0.143	0.028	-	-	0.011	-	-	0.451				
HCM Control Delay (s)	13.9	7.7	0	-	8	0	-	22.1				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	2.3				

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	34	53	0	2	44	11	0	58	11	12	31	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	48	48	48	57	57	57	71	71	71	59	59	59
Heavy Vehicles, %	5	7	0	0	12	0	0	3	0	0	0	0
Mvmt Flow	71	110	0	4	77	19	0	82	15	20	53	24
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	243	202	64	249	206	89	76	0	0	97	0	0
Stage 1	105	105	-	89	89	-	-	-	-	-	-	-
Stage 2	138	97	-	160	117	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.57	6.2	7.1	6.62	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.15	5.57	-	6.1	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.57	-	6.1	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.063	3.3	3.5	4.108	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	705	685	1006	709	673	975	1536	-	-	1509	-	-
Stage 1	893	799	-	923	802	-	-	-	-	-	-	-
Stage 2	858	805	-	847	780	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	623	675	1006	614	664	975	1536	-	-	1509	-	-
Mov Cap-2 Maneuver	623	675	-	614	664	-	-	-	-	-	-	-
Stage 1	893	788	-	923	802	-	-	-	-	-	-	-
Stage 2	760	805	-	718	769	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.6			10.9			0			1.6		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1536	-	-	654	705	1509	-	-				
HCM Lane V/C Ratio	-	-	-	0.277	0.142	0.013	-	-				
HCM Control Delay (s)	0	-	-	12.6	10.9	7.4	0	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.1	0.5	0	-	-				

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	71	5	23	45	4	7	74	14	18	111	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	0	7	12	0	0	5	13	0	0	0
Mvmt Flow	4	79	6	26	50	4	8	82	16	20	123	4
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	299	279	126	314	274	90	128	0	0	98	0	0
Stage 1	166	166	-	106	106	-	-	-	-	-	-	-
Stage 2	133	113	-	208	168	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.17	6.62	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.17	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.17	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.563	4.108	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	657	624	930	629	617	973	1470	-	-	1508	-	-
Stage 1	841	755	-	888	789	-	-	-	-	-	-	-
Stage 2	875	796	-	783	741	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	603	612	930	555	605	973	1470	-	-	1508	-	-
Mov Cap-2 Maneuver	603	612	-	555	605	-	-	-	-	-	-	-
Stage 1	836	744	-	883	784	-	-	-	-	-	-	-
Stage 2	811	791	-	686	731	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.7			11.9			0.5			1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1470	-	-	625	600	1508	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.142	0.133	0.013	-	-				
HCM Control Delay (s)	7.5	0	-	11.7	11.9	7.4	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.5	0	-	-				

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	143	0	14	56	11	4	12	53	13	7	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	0	0	13	0	0	0	3	14	25	0
Mvmt Flow	2	159	0	16	62	12	4	13	59	14	8	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	159	0	0	271	269	159	298	262	68
Stage 1	-	-	-	-	-	-	163	163	-	99	99	-
Stage 2	-	-	-	-	-	-	108	106	-	199	163	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.23	7.24	6.75	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.24	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.24	5.75	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.327	3.626	4.225	3.3
Pot Cap-1 Maneuver	1538	-	-	1433	-	-	686	641	884	631	606	1001
Stage 1	-	-	-	-	-	-	844	767	-	879	771	-
Stage 2	-	-	-	-	-	-	902	811	-	776	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1538	-	-	1433	-	-	666	633	884	574	598	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	666	633	-	574	598	-
Stage 1	-	-	-	-	-	-	843	766	-	878	762	-
Stage 2	-	-	-	-	-	-	873	801	-	711	721	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.3			9.9			10.7		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	813	1538	-	-	1433	-	-	669				
HCM Lane V/C Ratio	0.094	0.001	-	-	0.011	-	-	0.048				
HCM Control Delay (s)	9.9	7.3	0	-	7.5	0	-	10.7				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2				

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	187	100	159	78	40	136
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	4	1	2	9	0
Mvmt Flow	208	111	177	87	44	151
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	319	0	703	263
Stage 1	-	-	-	-	263	-
Stage 2	-	-	-	-	440	-
Critical Hdwy	-	-	4.11	-	6.49	6.2
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.209	-	3.581	3.3
Pot Cap-1 Maneuver	-	-	1247	-	393	781
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1247	-	334	781
Mov Cap-2 Maneuver	-	-	-	-	334	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	540	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		5.6		13.9	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	599	-	-	1247	-	
HCM Lane V/C Ratio	0.326	-	-	0.142	-	
HCM Control Delay (s)	13.9	-	-	8.4	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	1.4	-	-	0.5	-	

HCM 2010 Signalized Intersection Summary

1: 62nd Street West & Rimrock Road

3/30/2016

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Volume (veh/h)	6	153	89	69	48	191	37	88	55	543	182	8	
Number	7	4	14	3	8	18	5	2	12	1	6	16	
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	1900	1900	1900	1845	1462	1900	1900	1900	1900	1900	1900	1900	
Adj Flow Rate, veh/h	7	170	99	77	53	212	41	98	61	603	202	9	
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Percent Heavy Veh, %	0	0	0	3	30	0	0	0	0	0	0	0	
Cap, veh/h	435	303	177	314	393	929	412	171	107	806	770	34	
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.16	0.16	0.31	0.43	0.43	
Sat Flow, veh/h	1132	1128	657	1095	1462	1615	1810	1097	683	1810	1805	80	
Grp Volume(v), veh/h	7	0	269	77	53	212	41	0	159	603	0	211	
Grp Sat Flow(s),veh/h/ln	1132	0	1784	1095	1462	1615	1810	0	1780	1810	0	1886	
Q Serve(g_s), s	0.2	0.0	5.8	2.9	1.2	2.9	0.8	0.0	3.7	11.0	0.0	3.2	
Cycle Q Clear(g_c), s	1.4	0.0	5.8	8.7	1.2	2.9	0.8	0.0	3.7	11.0	0.0	3.2	
Prop In Lane	1.00		0.37	1.00		1.00	1.00		0.38	1.00		0.04	
Lane Grp Cap(c), veh/h	435	0	480	314	393	929	412	0	278	806	0	804	
V/C Ratio(X)	0.02	0.00	0.56	0.25	0.13	0.23	0.10	0.00	0.57	0.75	0.00	0.26	
Avail Cap(c_a), veh/h	535	0	639	411	523	1073	509	0	637	901	0	1182	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	12.9	0.0	14.0	17.8	12.4	4.6	14.9	0.0	17.5	8.8	0.0	8.3	
Incr Delay (d2), s/veh	0.0	0.0	1.0	0.4	0.2	0.1	0.1	0.0	1.8	3.1	0.0	0.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.1	0.0	3.0	0.9	0.5	1.3	0.4	0.0	2.0	5.9	0.0	1.7	
LnGrp Delay(d),s/veh	12.9	0.0	15.1	18.2	12.5	4.8	15.0	0.0	19.3	11.9	0.0	8.4	
LnGrp LOS	B		B	B	B	A	B		B	B		A	
Approach Vol, veh/h	276				342				200				814
Approach Delay, s/veh	15.0				9.0				18.4				11.0
Approach LOS	B				A				B				B
Timer	1	2	3	4	5	6	7	8					
Assigned Phs	1	2			4	5	6	8					
Phs Duration (G+Y+Rc), s	17.7	11.0			16.0	5.6	23.1	16.0					
Change Period (Y+Rc), s	4.0	4.0			4.0	4.0	4.0	4.0					
Max Green Setting (Gmax), s	16.0	16.0			16.0	4.0	28.0	16.0					
Max Q Clear Time (g_c+I1), s	13.0	5.7			7.8	2.8	5.2	10.7					
Green Ext Time (p_c), s	0.7	1.3			1.8	0.0	1.8	1.3					
Intersection Summary													
HCM 2010 Ctrl Delay			12.2										
HCM 2010 LOS			B										

HCM 2010 Signalized Intersection Summary

2: 54th Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	836	62	158	307	51	7	13	176	182	156	4
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1845	1776	1624	1712	1681	1429	1900	1681	1881	1823	1900
Adj Flow Rate, veh/h	0	929	69	176	341	57	8	14	196	202	173	4
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	3	7	17	11	13	33	0	13	1	2	2
Cap, veh/h	627	995	826	227	1123	1004	195	297	323	346	347	8
Arrive On Green	0.00	0.54	0.54	0.07	0.66	0.66	0.01	0.16	0.16	0.05	0.20	0.20
Sat Flow, veh/h	1810	1845	1509	1547	1712	1429	1361	1900	1429	1792	1775	41
Grp Volume(v), veh/h	0	929	69	176	341	57	8	14	196	202	0	177
Grp Sat Flow(s),veh/h/ln	1810	1845	1509	1547	1712	1429	1361	1900	1429	1792	0	1816
Q Serve(g_s), s	0.0	39.9	1.8	4.0	7.3	1.1	0.4	0.5	10.5	4.0	0.0	7.4
Cycle Q Clear(g_c), s	0.0	39.9	1.8	4.0	7.3	1.1	0.4	0.5	10.5	4.0	0.0	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	627	995	826	227	1123	1004	195	297	323	346	0	355
V/C Ratio(X)	0.00	0.93	0.08	0.77	0.30	0.06	0.04	0.05	0.61	0.58	0.00	0.50
Avail Cap(c_a), veh/h	710	995	826	229	1123	1004	248	401	401	346	0	383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.2	9.1	19.4	6.3	3.9	30.0	30.6	29.6	30.8	0.0	30.6
Incr Delay (d2), s/veh	0.0	16.4	0.2	15.1	0.7	0.1	0.1	0.1	1.8	2.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	24.7	0.8	3.3	3.6	0.4	0.2	0.3	4.3	2.7	0.0	3.8
LnGrp Delay(d),s/veh	0.0	34.6	9.3	34.5	7.0	4.0	30.1	30.6	31.4	33.4	0.0	31.7
LnGrp LOS		C	A	C	A	A	C	C	C	C		C
Approach Vol, veh/h		998			574			218			379	
Approach Delay, s/veh		32.9			15.1			31.3			32.6	
Approach LOS		C			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	17.3	9.9	50.0	4.7	20.7	0.0	59.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	18.0	6.0	46.0	4.0	18.0	4.0	48.0				
Max Q Clear Time (g_c+I1), s	6.0	12.5	6.0	41.9	2.4	9.4	0.0	9.3				
Green Ext Time (p_c), s	0.0	0.9	0.0	2.8	0.0	1.2	0.0	10.9				
Intersection Summary												
HCM 2010 Ctrl Delay			28.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

6: Grand Avenue & 54th Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	80	772	319	87	424	181		
Number	7	4	8	18	1	16		
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	1462	1863	1727	1557	1845	1792		
Adj Flow Rate, veh/h	89	858	354	97	471	201		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	30	2	10	22	3	6		
Cap, veh/h	450	1037	962	737	534	463		
Arrive On Green	0.56	0.56	0.56	0.56	0.30	0.30		
Sat Flow, veh/h	734	1863	1727	1324	1757	1524		
Grp Volume(v), veh/h	89	858	354	97	471	201		
Grp Sat Flow(s),veh/h/ln	734	1863	1727	1324	1757	1524		
Q Serve(g_s), s	4.4	21.8	6.6	2.0	14.7	6.1		
Cycle Q Clear(g_c), s	11.0	21.8	6.6	2.0	14.7	6.1		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	450	1037	962	737	534	463		
V/C Ratio(X)	0.20	0.83	0.37	0.13	0.88	0.43		
Avail Cap(c_a), veh/h	450	1037	962	737	611	530		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	10.2	10.5	7.1	6.1	19.0	16.0		
Incr Delay (d2), s/veh	1.0	7.6	1.1	0.4	12.9	0.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.0	13.1	3.3	0.8	9.0	2.6		
LnGrp Delay(d),s/veh	11.2	18.1	8.2	6.5	31.9	16.7		
LnGrp LOS	B	B	A	A	C	B		
Approach Vol, veh/h		947	451		672			
Approach Delay, s/veh		17.4	7.8		27.4			
Approach LOS		B	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				36.0		21.5		36.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				32.0		20.0		32.0
Max Q Clear Time (g_c+l1), s				23.8		16.7		8.6
Green Ext Time (p_c), s				5.0		0.8		9.4
Intersection Summary								
HCM 2010 Ctrl Delay			18.6					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary

7: 56th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	732	210	120	370	55	113		
Number	4	14	3	8	5	12		
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	1863	1696	1743	1827	1520		
Adj Flow Rate, veh/h	813	233	133	411	61	126		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	12	9	4	25		
Cap, veh/h	1306	1110	395	1222	220	164		
Arrive On Green	0.70	0.70	0.70	0.70	0.13	0.13		
Sat Flow, veh/h	1863	1583	489	1743	1740	1292		
Grp Volume(v), veh/h	813	233	133	411	61	126		
Grp Sat Flow(s),veh/h/ln	1863	1583	489	1743	1740	1292		
Q Serve(g_s), s	10.1	2.2	8.6	4.0	1.4	4.1		
Cycle Q Clear(g_c), s	10.1	2.2	18.7	4.0	1.4	4.1		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1306	1110	395	1222	220	164		
V/C Ratio(X)	0.62	0.21	0.34	0.34	0.28	0.77		
Avail Cap(c_a), veh/h	1306	1110	395	1222	280	208		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.5	2.3	8.4	2.5	17.2	18.4		
Incr Delay (d2), s/veh	2.2	0.4	2.3	0.7	0.7	12.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.8	1.1	1.4	2.1	0.7	2.0		
LnGrp Delay(d),s/veh	5.7	2.7	10.7	3.3	17.9	30.9		
LnGrp LOS	A	A	B	A	B	C		
Approach Vol, veh/h	1046			544	187			
Approach Delay, s/veh	5.0			5.1	26.7			
Approach LOS	A			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.5		34.0				34.0
Change Period (Y+Rc), s		4.0		3.5				3.5
Max Green Setting (Gmax), s		7.0		30.5				30.5
Max Q Clear Time (g_c+I1), s		6.1		12.1				20.7
Green Ext Time (p_c), s		0.0		9.7				6.3
Intersection Summary								
HCM 2010 Ctrl Delay			7.3					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary

8: 48th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1241	164	93	566	32	292		
Number	4	14	3	8	5	12		
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	1900	1863	1792	1776	1881		
Adj Flow Rate, veh/h	1379	182	103	629	36	324		
Adj No. of Lanes	2	0	1	2	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	6	7	1		
Cap, veh/h	1983	260	255	2146	372	352		
Arrive On Green	0.63	0.63	0.63	0.63	0.22	0.22		
Sat Flow, veh/h	3241	412	329	3495	1691	1599		
Grp Volume(v), veh/h	770	791	103	629	36	324		
Grp Sat Flow(s),veh/h/ln	1770	1790	329	1703	1691	1599		
Q Serve(g_s), s	14.3	14.6	15.1	4.2	0.8	9.9		
Cycle Q Clear(g_c), s	14.3	14.6	29.8	4.2	0.8	9.9		
Prop In Lane		0.23	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1115	1128	255	2146	372	352		
V/C Ratio(X)	0.69	0.70	0.40	0.29	0.10	0.92		
Avail Cap(c_a), veh/h	1115	1128	255	2146	372	352		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.1	6.1	16.0	4.2	15.5	19.1		
Incr Delay (d2), s/veh	3.5	3.6	4.7	0.3	0.1	28.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	7.7	8.2	1.7	2.0	0.4	7.1		
LnGrp Delay(d),s/veh	9.6	9.8	20.7	4.5	15.7	47.9		
LnGrp LOS	A	A	C	A	B	D		
Approach Vol, veh/h	1561			732	360			
Approach Delay, s/veh	9.7			6.8	44.7			
Approach LOS	A			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		15.0		35.0				35.0
Change Period (Y+Rc), s		4.0		3.5				3.5
Max Green Setting (Gmax), s		11.0		31.5				31.5
Max Q Clear Time (g_c+I1), s		11.9		16.6				31.8
Green Ext Time (p_c), s		0.0		12.1				0.0
Intersection Summary								
HCM 2010 Ctrl Delay			13.6					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary

13: 48th Street West & Central Avenue

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	555	42	17	155	49	10	61	52	139	170	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1883	1900	1900	1844	1900	1583	1870	1900	1845	1900	1900
Adj Flow Rate, veh/h	29	617	47	19	172	54	11	68	58	154	189	14
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	1	1	0	4	4	20	3	3	3	0	0
Cap, veh/h	765	998	76	429	778	244	313	228	195	391	428	32
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1173	1728	132	784	1347	423	998	933	796	1247	1748	129
Grp Volume(v), veh/h	29	0	664	19	0	226	11	0	126	154	0	203
Grp Sat Flow(s),veh/h/ln	1173	0	1859	784	0	1769	998	0	1729	1247	0	1877
Q Serve(g_s), s	0.6	0.0	10.6	0.7	0.0	2.8	0.4	0.0	2.7	5.2	0.0	4.1
Cycle Q Clear(g_c), s	3.3	0.0	10.6	11.3	0.0	2.8	4.5	0.0	2.7	7.8	0.0	4.1
Prop In Lane	1.00		0.07	1.00		0.24	1.00		0.46	1.00		0.07
Lane Grp Cap(c), veh/h	765	0	1074	429	0	1022	313	0	423	391	0	459
V/C Ratio(X)	0.04	0.00	0.62	0.04	0.00	0.22	0.04	0.00	0.30	0.39	0.00	0.44
Avail Cap(c_a), veh/h	765	0	1074	429	0	1022	423	0	615	529	0	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.4	0.0	6.2	10.0	0.0	4.6	16.3	0.0	13.8	17.0	0.0	14.4
Incr Delay (d2), s/veh	0.1	0.0	2.7	0.2	0.0	0.5	0.0	0.0	0.4	0.6	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	6.1	0.2	0.0	1.5	0.1	0.0	1.3	1.8	0.0	2.2
LnGrp Delay(d),s/veh	5.5	0.0	8.9	10.2	0.0	5.1	16.4	0.0	14.2	17.7	0.0	15.1
LnGrp LOS	A		A	B		A	B		B	B		B
Approach Vol, veh/h		693			245			137			357	
Approach Delay, s/veh		8.8			5.5			14.4			16.2	
Approach LOS		A			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.0		30.0		15.0		30.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		26.0		16.0		26.0				
Max Q Clear Time (g_c+l1), s		6.5		12.6		9.8		13.3				
Green Ext Time (p_c), s		1.6		4.5		1.2		4.4				
Intersection Summary												
HCM 2010 Ctrl Delay			10.6									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

18: 48th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	607	12	10	414	30	6	42	44	139	73	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1867	1900	1900	1749	1900	1900	1768	1900	1900	1900	1900
Adj Flow Rate, veh/h	72	674	13	11	460	33	7	47	49	154	81	17
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	8	8	8	0	0	0	0	0	0
Cap, veh/h	141	1049	19	75	1032	73	80	165	157	292	115	22
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	104	1615	30	11	1590	112	41	814	776	909	566	107
Grp Volume(v), veh/h	759	0	0	504	0	0	103	0	0	252	0	0
Grp Sat Flow(s), veh/h/ln	1750	0	0	1713	0	0	1632	0	0	1581	0	0
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0
Cycle Q Clear(g_c), s	13.2	0.0	0.0	7.8	0.0	0.0	2.9	0.0	0.0	7.9	0.0	0.0
Prop In Lane	0.09		0.02	0.02		0.07	0.07		0.48	0.61		0.07
Lane Grp Cap(c), veh/h	1209	0	0	1180	0	0	402	0	0	428	0	0
V/C Ratio(X)	0.63	0.00	0.00	0.43	0.00	0.00	0.26	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	1209	0	0	1180	0	0	581	0	0	595	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.6	0.0	0.0	4.7	0.0	0.0	18.3	0.0	0.0	20.1	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	1.1	0.0	0.0	0.3	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	0.0	4.0	0.0	0.0	1.3	0.0	0.0	3.7	0.0	0.0
LnGrp Delay(d),s/veh	8.1	0.0	0.0	5.8	0.0	0.0	18.6	0.0	0.0	21.4	0.0	0.0
LnGrp LOS	A			A			B			C		
Approach Vol, veh/h		759			504			103			252	
Approach Delay, s/veh		8.1			5.8			18.6			21.4	
Approach LOS		A			A			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.9		39.0		14.9		39.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		17.0		35.0		17.0		35.0				
Max Q Clear Time (g_c+l1), s		4.9		15.2		9.9		9.8				
Green Ext Time (p_c), s		1.4		7.8		1.0		8.6				
Intersection Summary												
HCM 2010 Ctrl Delay				10.1								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
20: 64th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	157	404	85	102	219	30	14	98	76	15	85	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1856	1900	1900	1738	1900	1900	1884	1900	1900	1882	1900
Adj Flow Rate, veh/h	174	449	94	113	243	33	16	109	84	17	94	102
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	0	8	8	0	0	0	0	2	2
Cap, veh/h	498	596	125	304	599	81	569	395	305	574	331	359
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1121	1490	312	877	1499	204	1206	988	761	1209	827	897
Grp Volume(v), veh/h	174	0	543	113	0	276	16	0	193	17	0	196
Grp Sat Flow(s),veh/h/ln	1121	0	1801	877	0	1702	1206	0	1749	1209	0	1724
Q Serve(g_s), s	5.3	0.0	10.4	5.1	0.0	4.6	0.4	0.0	3.0	0.4	0.0	3.1
Cycle Q Clear(g_c), s	9.9	0.0	10.4	15.4	0.0	4.6	3.4	0.0	3.0	3.4	0.0	3.1
Prop In Lane	1.00		0.17	1.00		0.12	1.00		0.44	1.00		0.52
Lane Grp Cap(c), veh/h	498	0	721	304	0	681	569	0	700	574	0	689
V/C Ratio(X)	0.35	0.00	0.75	0.37	0.00	0.41	0.03	0.00	0.28	0.03	0.00	0.28
Avail Cap(c_a), veh/h	498	0	721	304	0	681	569	0	700	574	0	689
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	10.3	16.9	0.0	8.6	9.3	0.0	8.1	9.2	0.0	8.1
Incr Delay (d2), s/veh	0.4	0.0	4.5	0.8	0.0	0.4	0.1	0.0	1.0	0.1	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	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	5.9	1.3	0.0	2.2	0.1	0.0	1.6	0.1	0.0	1.6
LnGrp Delay(d),s/veh	12.6	0.0	14.8	17.7	0.0	9.0	9.4	0.0	9.1	9.3	0.0	9.2
LnGrp LOS	B		B	B		A	A		A	A		A
Approach Vol, veh/h		717			389			209			213	
Approach Delay, s/veh		14.3			11.5			9.1			9.2	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+l1), s		5.4		12.4		5.4		17.4				
Green Ext Time (p_c), s		1.6		2.0		1.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			12.1									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

37: Grand Avenue & 62nd Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	102	358	162	75	328	130		
Number	7	4	8	18	1	16		
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	1792	1810	1827	1743	1881	1810		
Adj Flow Rate, veh/h	113	398	180	83	364	144		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	6	5	4	9	1	5		
Cap, veh/h	675	876	884	717	491	421		
Arrive On Green	0.48	0.48	0.48	0.48	0.27	0.27		
Sat Flow, veh/h	1070	1810	1827	1482	1792	1538		
Grp Volume(v), veh/h	113	398	180	83	364	144		
Grp Sat Flow(s),veh/h/ln	1070	1810	1827	1482	1792	1538		
Q Serve(g_s), s	2.2	4.8	1.9	1.0	6.1	2.5		
Cycle Q Clear(g_c), s	4.1	4.8	1.9	1.0	6.1	2.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	675	876	884	717	491	421		
V/C Ratio(X)	0.17	0.45	0.20	0.12	0.74	0.34		
Avail Cap(c_a), veh/h	675	876	884	717	867	745		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.1	5.6	4.9	4.7	10.9	9.6		
Incr Delay (d2), s/veh	0.5	1.7	0.5	0.3	2.2	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	0.8	2.7	1.0	1.2	3.2	1.1		
LnGrp Delay(d),s/veh	6.6	7.3	5.4	5.0	13.2	10.1		
LnGrp LOS	A	A	A	A	B	B		
Approach Vol, veh/h		511	263		508			
Approach Delay, s/veh		7.2	5.3		12.3			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				20.0		13.1		20.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				16.0		16.0		16.0
Max Q Clear Time (g_c+l1), s				6.8		8.1		3.9
Green Ext Time (p_c), s				2.7		1.0		3.1
Intersection Summary								
HCM 2010 Ctrl Delay			8.8					
HCM 2010 LOS			A					

Queues

1: 62nd Street West & Rimrock Road

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	7	269	77	53	212	41	159	603	211
v/c Ratio	0.02	0.58	0.39	0.15	0.19	0.11	0.43	0.75	0.21
Control Delay	14.7	18.8	22.1	16.0	1.2	7.9	16.9	14.4	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	18.8	22.1	16.0	1.2	7.9	16.9	14.4	8.5
Queue Length 50th (ft)	1	53	18	12	0	4	26	83	21
Queue Length 95th (ft)	9	120	52	35	17	15	74	#222	80
Internal Link Dist (ft)		919		4037			5231		921
Turn Bay Length (ft)	250		250		250	250		250	
Base Capacity (vph)	494	677	302	526	1178	382	677	853	1195
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.40	0.25	0.10	0.18	0.11	0.23	0.71	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

2: 54th Street West & Rimrock Road

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	929	69	176	341	57	8	14	196	202	177
v/c Ratio	0.91	0.07	0.93	0.30	0.04	0.07	0.08	0.73	0.55	0.62
Control Delay	33.6	2.1	70.5	7.4	0.8	32.0	34.2	33.6	35.6	43.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	2.1	70.5	7.4	0.8	32.0	34.2	33.6	35.6	43.1
Queue Length 50th (ft)	435	0	50	69	0	4	7	48	92	89
Queue Length 95th (ft)	#776	16	#191	130	9	14	23	94	#174	154
Internal Link Dist (ft)	1084			924			5202			920
Turn Bay Length (ft)		250	250		250	250		250	250	
Base Capacity (vph)	1020	1004	189	1152	1350	122	411	267	365	394
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.07	0.93	0.30	0.04	0.07	0.03	0.73	0.55	0.45

Intersection Summary

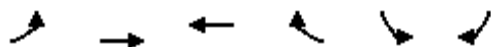
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Grand Avenue & 54th Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	89	858	354	97	471	201
v/c Ratio	0.22	0.84	0.37	0.13	0.86	0.33
Control Delay	9.2	21.8	9.4	2.3	36.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	21.8	9.4	2.3	36.2	4.3
Queue Length 50th (ft)	15	244	68	0	152	0
Queue Length 95th (ft)	39	#476	118	17	#297	37
Internal Link Dist (ft)		1579	867		5202	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	406	1022	947	770	600	654
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.84	0.37	0.13	0.79	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

7: 56th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	813	233	133	411	61	126
v/c Ratio	0.57	0.18	0.35	0.31	0.26	0.45
Control Delay	5.6	0.9	6.5	3.4	20.9	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	0.9	6.5	3.4	20.9	10.1
Queue Length 50th (ft)	86	0	11	32	16	0
Queue Length 95th (ft)	163	12	37	60	39	34
Internal Link Dist (ft)	884			1579	5173	
Turn Bay Length (ft)		250	250			250
Base Capacity (vph)	1426	1266	375	1334	248	292
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.18	0.35	0.31	0.25	0.43
Intersection Summary						

Queues

8: 48th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1561	103	629	36	324
v/c Ratio	0.70	0.69	0.29	0.10	0.84
Control Delay	7.9	36.8	4.6	16.5	37.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	36.8	4.6	16.5	37.8
Queue Length 50th (ft)	123	16	35	8	74
Queue Length 95th (ft)	184	#94	54	26	#192
Internal Link Dist (ft)	2574		424	5188	
Turn Bay Length (ft)		250		250	250
Base Capacity (vph)	2231	150	2164	374	400
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.69	0.29	0.10	0.81

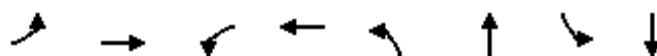
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

13: 48th Street West & Central Avenue

3/30/2016

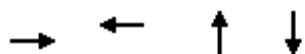


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	664	19	226	11	126	154	203
v/c Ratio	0.04	0.59	0.05	0.21	0.05	0.28	0.54	0.46
Control Delay	5.5	9.5	5.9	4.8	12.9	9.8	22.2	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.5	9.5	5.9	4.8	12.9	9.8	22.2	17.7
Queue Length 50th (ft)	3	88	2	18	2	14	34	42
Queue Length 95th (ft)	13	225	10	54	11	43	75	85
Internal Link Dist (ft)		1097		420		5201		5188
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	705	1124	355	1088	315	625	420	639
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.59	0.05	0.21	0.03	0.20	0.37	0.32
Intersection Summary								

Queues

18: 48th Street West & King Avenue West

3/30/2016

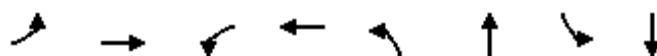


Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	759	504	103	252
v/c Ratio	0.70	0.47	0.25	0.71
Control Delay	12.9	8.1	11.6	31.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.9	8.1	11.6	31.3
Queue Length 50th (ft)	156	80	14	76
Queue Length 95th (ft)	316	158	46	142
Internal Link Dist (ft)	5180	420	5199	5201
Turn Bay Length (ft)				
Base Capacity (vph)	1083	1081	495	432
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.47	0.21	0.58
Intersection Summary				

Queues

20: 64th Street West & King Avenue West

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	174	543	113	276	16	193	17	196
v/c Ratio	0.43	0.79	0.57	0.43	0.03	0.25	0.03	0.25
Control Delay	12.7	20.6	24.3	10.5	7.6	5.8	7.7	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	20.6	24.3	10.5	7.6	5.8	7.7	5.3
Queue Length 50th (ft)	26	90	18	38	2	15	2	12
Queue Length 95th (ft)	62	#220	#72	80	9	43	10	40
Internal Link Dist (ft)		420		5100		5198		5203
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	457	775	224	727	505	786	506	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.70	0.50	0.38	0.03	0.25	0.03	0.25

Intersection Summary

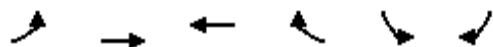
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

37: Grand Avenue & 62nd Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	113	398	180	83	364	144
v/c Ratio	0.21	0.47	0.21	0.11	0.63	0.24
Control Delay	8.6	10.3	8.0	3.0	15.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	10.3	8.0	3.0	15.8	3.2
Queue Length 50th (ft)	12	50	20	0	57	0
Queue Length 95th (ft)	40	123	54	16	112	21
Internal Link Dist (ft)		1482	2578		5231	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	539	846	853	736	753	731
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.47	0.21	0.11	0.48	0.20
Intersection Summary						

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR		NBT	NBR	SBL SBT
Vol, veh/h	67	28		246	47	13 199
Conflicting Peds, #/hr	0	0		0	0	0 0
Sign Control	Stop	Stop		Free	Free	Free Free
RT Channelized	-	None		-	None	- None
Storage Length	0	250		-	250	250 -
Veh in Median Storage, #	0	-		0	-	- 0
Grade, %	0	-		0	-	- 0
Peak Hour Factor	90	90		90	90	90 90
Heavy Vehicles, %	0	0		0	4	0 1
Mvmt Flow	74	31		273	52	14 221
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	523	273		0	0	273 0
Stage 1	273	-		-	-	- -
Stage 2	250	-		-	-	- -
Critical Hdwy	6.4	6.2		-	-	4.1 -
Critical Hdwy Stg 1	5.4	-		-	-	- -
Critical Hdwy Stg 2	5.4	-		-	-	- -
Follow-up Hdwy	3.5	3.3		-	-	2.2 -
Pot Cap-1 Maneuver	518	771		-	-	1302 -
Stage 1	778	-		-	-	- -
Stage 2	796	-		-	-	- -
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	512	771		-	-	1302 -
Mov Cap-2 Maneuver	512	-		-	-	- -
Stage 1	778	-		-	-	- -
Stage 2	787	-		-	-	- -
Approach	WB		NB		SB	
HCM Control Delay, s	12.2		0		0.5	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	512	771	1302	-
HCM Lane V/C Ratio	-	-	0.145	0.04	0.011	-
HCM Control Delay (s)	-	-	13.2	9.9	7.8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0	-

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	31	39	4	16	82	56	2	35	7	35	53	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	50	0	0	0	0	0	0	0	0	0
Mvmt Flow	34	43	4	18	91	62	2	39	8	39	59	16
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	268	195	67	215	199	43	74	0	0	47	0	0
Stage 1	144	144	-	47	47	-	-	-	-	-	-	-
Stage 2	124	51	-	168	152	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.7	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.75	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	689	704	877	746	700	1033	1538	-	-	1573	-	-
Stage 1	864	782	-	972	860	-	-	-	-	-	-	-
Stage 2	885	856	-	839	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	569	685	877	692	681	1033	1538	-	-	1573	-	-
Mov Cap-2 Maneuver	569	685	-	692	681	-	-	-	-	-	-	-
Stage 1	863	762	-	971	859	-	-	-	-	-	-	-
Stage 2	743	855	-	767	755	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.5			10.9			0.3			2.5		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1538	-	-	638	779	1573	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.129	0.22	0.025	-	-				
HCM Control Delay (s)	7.3	0	-	11.5	10.9	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.4	0.8	0.1	-	-				

Intersection												
Int Delay, s/veh	9.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	95	9	56	148	69	15	112	23	16	89	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	0	0	0	0	0	0	2	0
Mvmt Flow	14	106	10	62	164	77	17	124	26	18	99	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	425	317	99	363	305	137	99	0	0	150	0	0
Stage 1	134	134	-	171	171	-	-	-	-	-	-	-
Stage 2	291	183	-	192	134	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.52	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.018	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	543	599	962	597	612	917	1507	-	-	1444	-	-
Stage 1	874	785	-	836	761	-	-	-	-	-	-	-
Stage 2	721	748	-	814	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	385	584	962	499	597	917	1507	-	-	1444	-	-
Mov Cap-2 Maneuver	385	584	-	499	597	-	-	-	-	-	-	-
Stage 1	864	775	-	826	752	-	-	-	-	-	-	-
Stage 2	510	739	-	687	779	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	13.2			16			0.7			1.1		
HCM LOS	B			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1507	-	-	569	627	1444	-	-				
HCM Lane V/C Ratio	0.011	-	-	0.228	0.484	0.012	-	-				
HCM Control Delay (s)	7.4	0	-	13.2	16	7.5	0	-				
HCM Lane LOS	A	A	-	B	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	2.6	0	-	-				

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	20	140	6	23	296	83	2	35	6	14	47	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	33	0	0	0	0	0	0	0	4	0
Mvmt Flow	22	156	7	26	329	92	2	39	7	16	52	27
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	421	0	0	162	0	0	669	675	159	652	633	375
Stage 1	-	-	-	-	-	-	203	203	-	426	426	-
Stage 2	-	-	-	-	-	-	466	472	-	226	207	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.54	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.036	3.3
Pot Cap-1 Maneuver	1149	-	-	1429	-	-	374	378	892	384	394	676
Stage 1	-	-	-	-	-	-	804	737	-	610	582	-
Stage 2	-	-	-	-	-	-	581	562	-	781	727	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1149	-	-	1429	-	-	310	361	892	338	376	676
Mov Cap-2 Maneuver	-	-	-	-	-	-	310	361	-	338	376	-
Stage 1	-	-	-	-	-	-	787	722	-	597	568	-
Stage 2	-	-	-	-	-	-	495	549	-	718	712	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.4			15.5			16		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	390	1149	-	-	1429	-	-	421				
HCM Lane V/C Ratio	0.123	0.019	-	-	0.018	-	-	0.224				
HCM Control Delay (s)	15.5	8.2	0	-	7.6	0	-	16				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	0.8				

Intersection												
Int Delay, s/veh		5.3										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	40	2	9	58	5	0	39	5	0	60	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	9	0	0	6	0	0	0	0	0	0	17
Mvmt Flow	11	44	2	10	64	6	0	43	6	0	67	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	153	121	72	142	124	46	78	0	0	49	0	0
Stage 1	72	72	-	46	46	-	-	-	-	-	-	-
Stage 2	81	49	-	96	78	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.59	6.2	7.1	6.56	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.59	-	6.1	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.59	-	6.1	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.081	3.3	3.5	4.054	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	819	756	996	832	759	1029	1533	-	-	1571	-	-
Stage 1	943	821	-	973	849	-	-	-	-	-	-	-
Stage 2	932	840	-	916	822	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	762	756	996	793	759	1029	1533	-	-	1571	-	-
Mov Cap-2 Maneuver	762	756	-	793	759	-	-	-	-	-	-	-
Stage 1	943	821	-	973	849	-	-	-	-	-	-	-
Stage 2	857	840	-	864	822	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.1			10.2			0			0		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1533	-	-	764	777	1571	-	-				
HCM Lane V/C Ratio	-	-	-	0.076	0.103	-	-	-				
HCM Control Delay (s)	0	-	-	10.1	10.2	0	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-				

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	36	0	16	67	11	4	98	11	16	65	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	0	0	8	0	0	2	0	11	3	0
Mvmt Flow	12	40	0	18	74	12	4	109	12	18	72	4
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	277	240	74	254	236	115	77	0	0	121	0	0
Stage 1	110	110	-	124	124	-	-	-	-	-	-	-
Stage 2	167	130	-	130	112	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.1	6.58	6.2	4.1	-	-	4.21	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.5	4.072	3.3	2.2	-	-	2.299	-	-
Pot Cap-1 Maneuver	679	656	993	703	654	943	1535	-	-	1412	-	-
Stage 1	900	799	-	885	782	-	-	-	-	-	-	-
Stage 2	840	783	-	878	791	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	604	646	993	662	644	943	1535	-	-	1412	-	-
Mov Cap-2 Maneuver	604	646	-	662	644	-	-	-	-	-	-	-
Stage 1	897	789	-	882	780	-	-	-	-	-	-	-
Stage 2	748	781	-	823	781	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.2			11.3			0.3			1.4		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1535	-	-	636	672	1412	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.082	0.155	0.013	-	-				
HCM Control Delay (s)	7.4	0	-	11.2	11.3	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0.5	0	-	-				

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	76	0	65	116	22	0	21	23	14	32	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	5	0	0	0	0	25	0	0
Mvmt Flow	2	84	0	72	129	24	0	23	26	16	36	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	84	0	0	395	387	84	399	375	141
Stage 1	-	-	-	-	-	-	89	89	-	286	286	-
Stage 2	-	-	-	-	-	-	306	298	-	113	89	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.35	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.35	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.35	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.725	4	3.3
Pot Cap-1 Maneuver	1440	-	-	1526	-	-	568	551	981	522	559	912
Stage 1	-	-	-	-	-	-	923	825	-	674	679	-
Stage 2	-	-	-	-	-	-	708	671	-	839	825	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1440	-	-	1526	-	-	514	522	981	471	529	912
Mov Cap-2 Maneuver	-	-	-	-	-	-	514	522	-	471	529	-
Stage 1	-	-	-	-	-	-	922	824	-	673	644	-
Stage 2	-	-	-	-	-	-	630	636	-	793	824	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			2.4			10.6			12.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	691	1440	-	-	1526	-	-	533				
HCM Lane V/C Ratio	0.071	0.002	-	-	0.047	-	-	0.106				
HCM Control Delay (s)	10.6	7.5	0	-	7.5	0	-	12.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.4				

Intersection						
Int Delay, s/veh	7.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	110	51	161	187	74	198
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	122	57	179	208	82	220
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	179	0	717	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	566	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1409	-	399	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1409	-	342	901
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	490	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.7		16.1	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	624	-	-	1409	-	
HCM Lane V/C Ratio	0.484	-	-	0.127	-	
HCM Control Delay (s)	16.1	-	-	7.9	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	2.6	-	-	0.4	-	

HCM 2010 Signalized Intersection Summary

1: 62nd Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	63	30	31	54	498	65	140	33	379	94	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1900	1900	1900	1845	1845	1900	1900	1828	1900
Adj Flow Rate, veh/h	0	70	33	34	60	553	72	156	37	421	104	7
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	3	2	2	0	2	2
Cap, veh/h	158	430	203	568	668	923	459	238	56	633	563	38
Arrive On Green	0.00	0.35	0.35	0.35	0.35	0.35	0.05	0.16	0.16	0.22	0.33	0.33
Sat Flow, veh/h	822	1222	576	1312	1900	1615	1757	1443	342	1810	1694	114
Grp Volume(v), veh/h	0	0	103	34	60	553	72	0	193	421	0	111
Grp Sat Flow(s),veh/h/ln	822	0	1798	1312	1900	1615	1757	0	1785	1810	0	1808
Q Serve(g_s), s	0.0	0.0	1.8	0.8	1.0	10.2	1.5	0.0	4.6	7.9	0.0	2.0
Cycle Q Clear(g_c), s	0.0	0.0	1.8	2.6	1.0	10.2	1.5	0.0	4.6	7.9	0.0	2.0
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.19	1.00		0.06
Lane Grp Cap(c), veh/h	158	0	632	568	668	923	459	0	294	633	0	600
V/C Ratio(X)	0.00	0.00	0.16	0.06	0.09	0.60	0.16	0.00	0.66	0.67	0.00	0.18
Avail Cap(c_a), veh/h	158	0	632	568	668	923	521	0	628	672	0	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	10.1	11.0	9.9	6.4	14.5	0.0	17.8	10.4	0.0	10.8
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.2	0.3	2.9	0.2	0.0	2.5	2.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.0	0.3	0.5	5.1	0.7	0.0	2.5	4.3	0.0	1.0
LnGrp Delay(d),s/veh	0.0	0.0	10.7	11.3	10.1	9.2	14.7	0.0	20.3	12.7	0.0	11.0
LnGrp LOS			B	B	B	A	B		C	B		B
Approach Vol, veh/h		103			647			265			532	
Approach Delay, s/veh		10.7			9.4			18.8			12.3	
Approach LOS		B			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	11.5		20.0	6.4	19.1		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	16.0		16.0	4.0	23.0		16.0				
Max Q Clear Time (g_c+I1), s	9.9	6.6		3.8	3.5	4.0		12.2				
Green Ext Time (p_c), s	0.2	1.0		2.4	0.0	1.3		1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			12.1									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

2: 54th Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	462	32	146	608	226	14	73	183	136	68	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1667	1863	1900	1810	1900	1900	1900	1900	1827	1881	1900	1900
Adj Flow Rate, veh/h	16	513	36	162	676	251	16	81	203	151	76	9
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	14	2	0	5	0	0	0	0	4	1	0	0
Cap, veh/h	231	696	629	390	837	833	388	320	390	414	379	45
Arrive On Green	0.02	0.37	0.37	0.08	0.44	0.44	0.02	0.17	0.17	0.08	0.23	0.23
Sat Flow, veh/h	1587	1863	1615	1723	1900	1615	1810	1900	1553	1792	1668	197
Grp Volume(v), veh/h	16	513	36	162	676	251	16	81	203	151	0	85
Grp Sat Flow(s),veh/h/ln	1587	1863	1615	1723	1900	1615	1810	1900	1553	1792	0	1865
Q Serve(g_s), s	0.3	12.7	0.7	2.8	16.5	4.8	0.4	2.0	6.0	3.6	0.0	2.0
Cycle Q Clear(g_c), s	0.3	12.7	0.7	2.8	16.5	4.8	0.4	2.0	6.0	3.6	0.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	231	696	629	390	837	833	388	320	390	414	0	424
V/C Ratio(X)	0.07	0.74	0.06	0.42	0.81	0.30	0.04	0.25	0.52	0.36	0.00	0.20
Avail Cap(c_a), veh/h	325	839	753	409	891	879	495	570	595	414	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	14.4	10.2	10.1	12.9	7.4	17.9	19.3	17.2	15.8	0.0	16.7
Incr Delay (d2), s/veh	0.1	2.8	0.0	0.7	5.3	0.2	0.0	0.4	1.1	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.9	0.3	1.4	9.7	2.1	0.2	1.1	2.7	1.8	0.0	1.0
LnGrp Delay(d),s/veh	11.8	17.2	10.2	10.8	18.2	7.6	17.9	19.7	18.3	16.4	0.0	16.9
LnGrp LOS	B	B	B	B	B	A	B	B	B	B		B
Approach Vol, veh/h		565			1089			300			236	
Approach Delay, s/veh		16.6			14.7			18.6			16.6	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	13.0	8.4	23.9	4.8	16.1	4.8	27.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	16.0	5.0	24.0	4.0	16.0	4.0	25.0				
Max Q Clear Time (g_c+I1), s	5.6	8.0	4.8	14.7	2.4	4.0	2.3	18.5				
Green Ext Time (p_c), s	0.0	1.0	0.0	5.2	0.0	1.2	0.0	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay			15.9									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

6: Grand Avenue & 54th Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	82	436	523	292	224	101		
Number	7	4	8	18	1	16		
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	1845	1845	1881	1881	1881	1597		
Adj Flow Rate, veh/h	91	484	581	324	249	112		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	3	3	1	1	1	19		
Cap, veh/h	437	1069	1090	927	358	271		
Arrive On Green	0.58	0.58	0.58	0.58	0.20	0.20		
Sat Flow, veh/h	608	1845	1881	1599	1792	1357		
Grp Volume(v), veh/h	91	484	581	324	249	112		
Grp Sat Flow(s),veh/h/ln	608	1845	1881	1599	1792	1357		
Q Serve(g_s), s	3.9	5.4	6.8	3.9	4.7	2.6		
Cycle Q Clear(g_c), s	10.7	5.4	6.8	3.9	4.7	2.6		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	437	1069	1090	927	358	271		
V/C Ratio(X)	0.21	0.45	0.53	0.35	0.70	0.41		
Avail Cap(c_a), veh/h	437	1069	1090	927	791	599		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	7.9	4.3	4.6	4.0	13.5	12.6		
Incr Delay (d2), s/veh	1.1	1.4	1.9	1.0	2.4	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	0.8	3.1	4.0	1.9	2.5	1.0		
LnGrp Delay(d),s/veh	9.0	5.7	6.5	5.1	15.9	13.7		
LnGrp LOS	A	A	A	A	B	B		
Approach Vol, veh/h		575	905		361			
Approach Delay, s/veh		6.2	6.0		15.2			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				25.0		11.2		25.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				21.0		16.0		21.0
Max Q Clear Time (g_c+l1), s				12.7		6.7		8.8
Green Ext Time (p_c), s				4.9		0.8		6.3
Intersection Summary								
HCM 2010 Ctrl Delay			7.9					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary

7: 56th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	401	114	117	507	187	117		
Number	4	14	3	8	5	12		
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	1863	1610	1881	1900	1759		
Adj Flow Rate, veh/h	446	127	130	563	208	130		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	18	1	0	8		
Cap, veh/h	1117	950	548	1128	311	257		
Arrive On Green	0.60	0.60	0.60	0.60	0.17	0.17		
Sat Flow, veh/h	1863	1583	723	1881	1810	1495		
Grp Volume(v), veh/h	446	127	130	563	208	130		
Grp Sat Flow(s),veh/h/ln	1863	1583	723	1881	1810	1495		
Q Serve(g_s), s	4.4	1.2	4.0	6.0	3.8	2.8		
Cycle Q Clear(g_c), s	4.4	1.2	8.5	6.0	3.8	2.8		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1117	950	548	1128	311	257		
V/C Ratio(X)	0.40	0.13	0.24	0.50	0.67	0.51		
Avail Cap(c_a), veh/h	1117	950	548	1128	569	470		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	3.7	3.0	5.9	4.0	13.6	13.2		
Incr Delay (d2), s/veh	1.1	0.3	1.0	1.6	2.5	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	2.6	0.6	0.9	3.5	2.1	1.2		
LnGrp Delay(d),s/veh	4.8	3.3	6.9	5.6	16.1	14.7		
LnGrp LOS	A	A	A	A	B	B		
Approach Vol, veh/h	573			693	338			
Approach Delay, s/veh	4.4			5.8	15.5			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		10.0		25.0				25.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		11.0		21.0				21.0
Max Q Clear Time (g_c+I1), s		5.8		6.4				10.5
Green Ext Time (p_c), s		0.5		6.2				5.1
Intersection Summary								
HCM 2010 Ctrl Delay			7.4					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary

8: 48th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	665	75	223	868	121	112		
Number	4	14	3	8	5	12		
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	1861	1900	1900	1881	1900	1845		
Adj Flow Rate, veh/h	739	83	248	964	134	124		
Adj No. of Lanes	2	0	1	2	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	0	1	0	3		
Cap, veh/h	2290	257	577	2553	213	184		
Arrive On Green	0.71	0.71	0.71	0.71	0.12	0.12		
Sat Flow, veh/h	3298	360	676	3668	1810	1568		
Grp Volume(v), veh/h	407	415	248	964	134	124		
Grp Sat Flow(s),veh/h/ln	1768	1797	676	1787	1810	1568		
Q Serve(g_s), s	4.1	4.1	10.2	5.0	3.4	3.6		
Cycle Q Clear(g_c), s	4.1	4.1	14.3	5.0	3.4	3.6		
Prop In Lane		0.20	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1263	1284	577	2553	213	184		
V/C Ratio(X)	0.32	0.32	0.43	0.38	0.63	0.67		
Avail Cap(c_a), veh/h	1263	1284	577	2553	304	264		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	2.5	2.5	5.2	2.7	20.0	20.1		
Incr Delay (d2), s/veh	0.7	0.7	2.3	0.4	3.1	4.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.2	2.2	2.2	2.6	1.9	1.8		
LnGrp Delay(d),s/veh	3.2	3.2	7.5	3.1	23.1	24.3		
LnGrp LOS	A	A	A	A	C	C		
Approach Vol, veh/h	822			1212	258			
Approach Delay, s/veh	3.2			4.0	23.7			
Approach LOS	A			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		9.6		38.0				38.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		8.0		34.0				34.0
Max Q Clear Time (g_c+I1), s		5.6		6.1				16.3
Green Ext Time (p_c), s		0.2		15.8				11.8
Intersection Summary								
HCM 2010 Ctrl Delay			5.9					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary

13: 48th Street West & Central Avenue

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	217	25	56	413	95	46	119	50	54	88	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1883	1900	1900	1878	1900	1900	1887	1900	1827	1900	1900
Adj Flow Rate, veh/h	14	241	28	62	459	106	51	132	56	60	98	24
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	1	1	0	1	1	0	1	1	4	0	0
Cap, veh/h	476	843	98	709	752	174	464	298	126	401	349	85
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	859	1657	192	1128	1477	341	1289	1259	534	1168	1475	361
Grp Volume(v), veh/h	14	0	269	62	0	565	51	0	188	60	0	122
Grp Sat Flow(s),veh/h/ln	859	0	1849	1128	0	1818	1289	0	1793	1168	0	1836
Q Serve(g_s), s	0.4	0.0	2.6	1.1	0.0	7.0	1.1	0.0	2.8	1.5	0.0	1.7
Cycle Q Clear(g_c), s	7.3	0.0	2.6	3.7	0.0	7.0	2.8	0.0	2.8	4.3	0.0	1.7
Prop In Lane	1.00		0.10	1.00		0.19	1.00		0.30	1.00		0.20
Lane Grp Cap(c), veh/h	476	0	941	709	0	925	464	0	424	401	0	434
V/C Ratio(X)	0.03	0.00	0.29	0.09	0.00	0.61	0.11	0.00	0.44	0.15	0.00	0.28
Avail Cap(c_a), veh/h	476	0	941	709	0	925	815	0	912	719	0	935
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.1	0.0	4.4	5.5	0.0	5.5	10.9	0.0	10.2	12.1	0.0	9.8
Incr Delay (d2), s/veh	0.1	0.0	0.8	0.2	0.0	3.0	0.1	0.0	0.7	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.5	0.4	0.0	4.2	0.4	0.0	1.4	0.5	0.0	0.9
LnGrp Delay(d),s/veh	8.2	0.0	5.2	5.7	0.0	8.5	11.0	0.0	11.0	12.2	0.0	10.2
LnGrp LOS	A		A	A		A	B		B	B		B
Approach Vol, veh/h		283			627			239			182	
Approach Delay, s/veh		5.3			8.2			11.0			10.8	
Approach LOS		A			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		11.4		20.0		11.4		20.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+l1), s		4.8		9.3		6.3		9.0				
Green Ext Time (p_c), s		1.5		2.8		1.4		2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			8.5									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

18: 48th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	48	501	4	27	662	86	4	84	79	56	69	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1900	1877	1900	1900	1837	1900	1900	1900	1900
Adj Flow Rate, veh/h	53	557	4	30	736	96	4	93	88	62	77	40
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	1	1	0	0	0	0	0	0
Cap, veh/h	383	1239	9	575	1070	140	313	171	162	254	232	120
Arrive On Green	0.66	0.66	0.66	0.66	0.66	0.66	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	670	1884	14	862	1627	212	1295	870	823	1222	1179	613
Grp Volume(v), veh/h	53	0	561	30	0	832	4	0	181	62	0	117
Grp Sat Flow(s),veh/h/ln	670	0	1898	862	0	1839	1295	0	1692	1222	0	1792
Q Serve(g_s), s	2.9	0.0	7.9	1.0	0.0	15.5	0.1	0.0	5.3	2.6	0.0	3.1
Cycle Q Clear(g_c), s	18.4	0.0	7.9	8.8	0.0	15.5	3.2	0.0	5.3	7.9	0.0	3.1
Prop In Lane	1.00		0.01	1.00		0.12	1.00		0.49	1.00		0.34
Lane Grp Cap(c), veh/h	383	0	1248	575	0	1210	313	0	332	254	0	352
V/C Ratio(X)	0.14	0.00	0.45	0.05	0.00	0.69	0.01	0.00	0.54	0.24	0.00	0.33
Avail Cap(c_a), veh/h	383	0	1248	575	0	1210	437	0	495	371	0	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	4.6	6.7	0.0	5.9	20.3	0.0	19.8	23.4	0.0	18.9
Incr Delay (d2), s/veh	0.8	0.0	1.2	0.2	0.0	3.2	0.0	0.0	1.4	0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.5	0.3	0.0	8.7	0.1	0.0	2.6	0.9	0.0	1.6
LnGrp Delay(d),s/veh	12.4	0.0	5.7	6.9	0.0	9.1	20.3	0.0	21.2	23.8	0.0	19.5
LnGrp LOS	B		A	A		A	C		C	C		B
Approach Vol, veh/h		614			862			185			179	
Approach Delay, s/veh		6.3			9.0			21.2			21.0	
Approach LOS		A			A			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.7		40.0		14.7		40.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		36.0		16.0		36.0				
Max Q Clear Time (g_c+l1), s		7.3		20.4		9.9		17.5				
Green Ext Time (p_c), s		1.1		8.0		0.9		8.9				
Intersection Summary												
HCM 2010 Ctrl Delay			10.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
20: 64th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	127	333	18	45	430	56	11	83	50	22	69	161
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1900	1877	1900	1900	1900	1900	1900	1887	1900
Adj Flow Rate, veh/h	141	370	20	50	478	62	12	92	56	24	77	179
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	1	1	0	0	0	0	0	0
Cap, veh/h	505	969	52	622	884	115	314	266	162	411	121	282
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.54	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	879	1786	97	1010	1628	211	1141	1107	674	1259	505	1174
Grp Volume(v), veh/h	141	0	390	50	0	540	12	0	148	24	0	256
Grp Sat Flow(s),veh/h/ln	879	0	1883	1010	0	1840	1141	0	1781	1259	0	1680
Q Serve(g_s), s	4.6	0.0	4.4	1.1	0.0	7.0	0.4	0.0	2.5	0.6	0.0	5.0
Cycle Q Clear(g_c), s	11.6	0.0	4.4	5.5	0.0	7.0	5.4	0.0	2.5	3.1	0.0	5.0
Prop In Lane	1.00		0.05	1.00		0.11	1.00		0.38	1.00		0.70
Lane Grp Cap(c), veh/h	505	0	1022	622	0	998	314	0	428	411	0	404
V/C Ratio(X)	0.28	0.00	0.38	0.08	0.00	0.54	0.04	0.00	0.35	0.06	0.00	0.63
Avail Cap(c_a), veh/h	505	0	1022	622	0	998	566	0	821	689	0	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	4.9	6.5	0.0	5.5	15.0	0.0	11.6	12.9	0.0	12.5
Incr Delay (d2), s/veh	1.4	0.0	1.1	0.3	0.0	2.1	0.0	0.0	0.5	0.1	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.6	0.3	0.0	4.0	0.1	0.0	1.3	0.2	0.0	2.5
LnGrp Delay(d),s/veh	10.6	0.0	5.9	6.7	0.0	7.6	15.0	0.0	12.1	13.0	0.0	14.2
LnGrp LOS	B		A	A		A	B		B	B		B
Approach Vol, veh/h		531			590			160			280	
Approach Delay, s/veh		7.2			7.5			12.3			14.1	
Approach LOS		A			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.9		24.0		12.9		24.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		17.0		20.0		17.0		20.0				
Max Q Clear Time (g_c+l1), s		7.4		13.6		7.0		9.0				
Green Ext Time (p_c), s		1.6		3.2		1.6		4.6				
Intersection Summary												
HCM 2010 Ctrl Delay			9.1									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

37: Grand Avenue & 62nd Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	109	248	297	202	159	102		
Number	7	4	8	18	1	16		
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	1863	1881	1900	1845	1863		
Adj Flow Rate, veh/h	121	276	330	224	177	113		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	1	0	3	2		
Cap, veh/h	654	1102	1113	955	280	252		
Arrive On Green	0.59	0.59	0.59	0.59	0.16	0.16		
Sat Flow, veh/h	851	1863	1881	1615	1757	1583		
Grp Volume(v), veh/h	121	276	330	224	177	113		
Grp Sat Flow(s),veh/h/ln	851	1863	1881	1615	1757	1583		
Q Serve(g_s), s	2.6	2.3	2.8	2.1	3.0	2.1		
Cycle Q Clear(g_c), s	5.4	2.3	2.8	2.1	3.0	2.1		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	654	1102	1113	955	280	252		
V/C Ratio(X)	0.19	0.25	0.30	0.23	0.63	0.45		
Avail Cap(c_a), veh/h	654	1102	1113	955	711	641		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	4.6	3.1	3.2	3.1	12.6	12.2		
Incr Delay (d2), s/veh	0.6	0.5	0.7	0.6	2.4	1.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.7	1.3	1.6	3.0	1.6	1.0		
LnGrp Delay(d),s/veh	5.2	3.7	3.9	3.7	15.0	13.5		
LnGrp LOS	A	A	A	A	B	B		
Approach Vol, veh/h		397	554		290			
Approach Delay, s/veh		4.2	3.8		14.4			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				23.0		9.1		23.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				19.0		13.0		19.0
Max Q Clear Time (g_c+I1), s				7.4		5.0		4.8
Green Ext Time (p_c), s				3.7		0.5		4.0
Intersection Summary								
HCM 2010 Ctrl Delay			6.4					
HCM 2010 LOS			A					

Queues

1: 62nd Street West & Rimrock Road

3/30/2016



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	34	60	553	72	193	421	111
v/c Ratio	0.16	0.07	0.09	0.43	0.19	0.49	0.71	0.16
Control Delay	10.3	13.3	13.1	1.8	8.5	19.5	15.1	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	13.3	13.1	1.8	8.5	19.5	15.1	10.5
Queue Length 50th (ft)	14	7	12	1	9	43	69	20
Queue Length 95th (ft)	44	24	35	32	23	90	121	46
Internal Link Dist (ft)	919		4467			5231		921
Turn Bay Length (ft)		250		250	250		250	
Base Capacity (vph)	662	464	673	1280	376	649	623	928
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.07	0.09	0.43	0.19	0.30	0.68	0.12

Intersection Summary

Queues

2: 54th Street West & Rimrock Road

3/30/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	513	36	162	676	251	16	81	203	151	85
v/c Ratio	0.06	0.76	0.04	0.47	0.70	0.22	0.05	0.29	0.32	0.44	0.20
Control Delay	6.4	22.9	0.5	11.2	16.6	1.4	14.8	23.8	4.3	20.6	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	22.9	0.5	11.2	16.6	1.4	14.8	23.8	4.3	20.6	20.1
Queue Length 50th (ft)	2	131	0	22	129	0	3	23	0	35	21
Queue Length 95th (ft)	9	241	3	50	#391	25	15	58	38	80	57
Internal Link Dist (ft)		654			924			5202			920
Turn Bay Length (ft)	250		250	250		250	250		250	250	
Base Capacity (vph)	261	874	877	342	1006	1161	339	594	641	343	591
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.59	0.04	0.47	0.67	0.22	0.05	0.14	0.32	0.44	0.14

Intersection Summary

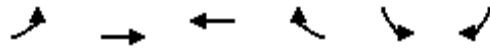
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Grand Avenue & 54th Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	91	484	581	324	249	112
v/c Ratio	0.22	0.43	0.50	0.29	0.53	0.26
Control Delay	8.1	8.0	8.9	1.9	16.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	8.0	8.9	1.9	16.8	4.6
Queue Length 50th (ft)	9	57	73	0	46	0
Queue Length 95th (ft)	37	146	186	29	92	23
Internal Link Dist (ft)		1579	2667		5202	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	417	1135	1157	1108	700	600
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.43	0.50	0.29	0.36	0.19
Intersection Summary						

Queues

7: 56th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	446	127	130	563	208	130
v/c Ratio	0.38	0.12	0.26	0.47	0.50	0.29
Control Delay	6.4	1.7	7.2	7.4	17.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	1.7	7.2	7.4	17.1	5.1
Queue Length 50th (ft)	47	0	13	65	38	0
Queue Length 95th (ft)	101	15	39	137	80	26
Internal Link Dist (ft)	884			1579	5173	
Turn Bay Length (ft)		250	250			250
Base Capacity (vph)	1187	1054	491	1198	500	508
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.12	0.26	0.47	0.42	0.26
Intersection Summary						

Queues

8: 48th Street West & Grand Avenue

3/30/2016

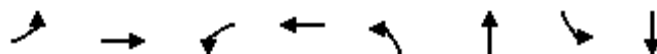


Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	822	248	964	134	124
v/c Ratio	0.31	0.52	0.36	0.51	0.37
Control Delay	3.1	9.0	3.5	27.2	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.1	9.0	3.5	27.2	8.3
Queue Length 50th (ft)	36	28	48	36	0
Queue Length 95th (ft)	54	86	71	78	35
Internal Link Dist (ft)	774		424	5188	
Turn Bay Length (ft)		250			250
Base Capacity (vph)	2632	481	2688	278	346
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.52	0.36	0.48	0.36
Intersection Summary					

Queues

13: 48th Street West & Central Avenue

3/30/2016



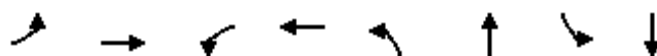
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	14	269	62	565	51	188	60	122
v/c Ratio	0.03	0.24	0.09	0.51	0.17	0.40	0.22	0.27
Control Delay	5.2	5.4	5.4	7.6	10.5	9.9	11.4	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	5.4	5.4	7.6	10.5	9.9	11.4	9.5
Queue Length 50th (ft)	1	20	4	50	7	18	8	13
Queue Length 95th (ft)	6	54	18	132	21	46	24	35
Internal Link Dist (ft)		837		420		5201		5188
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	439	1114	675	1105	623	900	564	903
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.24	0.09	0.51	0.08	0.21	0.11	0.14

Intersection Summary

Queues

18: 48th Street West & King Avenue West

3/30/2016



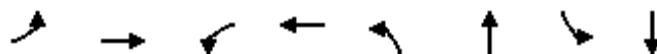
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	561	30	832	4	181	62	117
v/c Ratio	0.14	0.40	0.05	0.61	0.02	0.53	0.37	0.35
Control Delay	5.0	5.2	3.9	7.7	17.8	17.7	25.7	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	5.2	3.9	7.7	17.8	17.7	25.7	16.6
Queue Length 50th (ft)	4	59	2	108	1	29	17	21
Queue Length 95th (ft)	19	143	11	276	7	75	46	57
Internal Link Dist (ft)		5180		420		5199		5201
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	371	1398	583	1364	383	558	302	561
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.40	0.05	0.61	0.01	0.32	0.21	0.21

Intersection Summary

Queues

20: 64th Street West & King Avenue West

3/30/2016



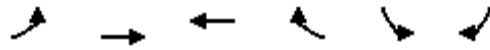
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	390	50	540	12	148	24	256
v/c Ratio	0.31	0.35	0.09	0.50	0.06	0.36	0.09	0.52
Control Delay	7.6	5.9	5.0	7.3	11.3	10.3	11.5	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	5.9	5.0	7.3	11.3	10.3	11.5	8.6
Queue Length 50th (ft)	11	31	3	47	2	15	4	12
Queue Length 95th (ft)	46	89	16	135	10	44	15	51
Internal Link Dist (ft)		420		5100		5198		5188
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	449	1104	578	1085	437	826	559	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.35	0.09	0.50	0.03	0.18	0.04	0.30

Intersection Summary

Queues

37: Grand Avenue & 62nd Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	121	276	330	224	177	113
v/c Ratio	0.19	0.24	0.28	0.20	0.43	0.25
Control Delay	6.3	5.8	6.0	1.7	14.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	5.8	6.0	1.7	14.9	4.4
Queue Length 50th (ft)	10	24	30	0	29	0
Queue Length 95th (ft)	36	65	79	22	63	22
Internal Link Dist (ft)		1482	2578		5231	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	653	1165	1176	1094	598	614
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.24	0.28	0.20	0.30	0.18
Intersection Summary						

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	Yield	117	191	131	131	751	1062	1000	0.1116	0.1937
2	62nd	None	733		154		285	1044		0.7208	
3	Rimrock	None	248		794		93	606		0.4209	
4	62nd	None	180		702		340	749		0.2459	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	Yield	3.62	4.40	4.10	0.35	0.71	A	A	A
2	62nd	None	10.09		10.09	7.13		B		B
3	Rimrock	None	8.21		8.21	1.92		A		A
4	62nd	None	5.93		5.93	0.96		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	Yield	85	498	205	205	475	1092	996	0.0788	0.5103
2	62nd	None	479		150		638	1095		0.4450	
3	Rimrock	None	93		504		125	846		0.1118	
4	62nd	None	238		442		155	973		0.2489	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	Yield	3.51	7.15	6.62	0.25	3.21	A	A	A
2	62nd	None	5.59		5.59	2.35		A		A
3	Rimrock	None	4.46		4.46	0.36		A		A
4	62nd	None	4.85		4.85	1.01		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	Yield	465	51	20	20	1194	1120	1058	0.4214	0.0488
2	54th	None	342		472		64	879		0.3971	
3	Rimrock	None	898		496		318	1456		0.6284	
4	54th	None	196		1018		376	745		0.2693	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	Yield	5.09	3.54	4.94	2.05	0.15	A	A	A
2	54th	None	6.22		6.22	1.92		A		A
3	Rimrock	None	5.21		5.21	4.49		A		A
4	54th	None	6.14		6.14	1.09		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	Yield	754	226	101	101	781	1147	1049	0.6731	0.2184
2	54th	None	212		768		313	769		0.2821	
3	Rimrock	None	508		350		630	1821		0.2823	
4	54th	None	270		612		246	987		0.2782	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	Yield	8.89	4.32	7.84	6.34	0.83	A	A	A
2	54th	None	6.24		6.24	1.21		A		A
3	Rimrock	None	2.70		2.70	1.19		A		A
4	54th	None	4.96		4.96	1.17		A		A

Operational Results

2017 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	62nd St West	None	458		162		177	1021		0.4609	
2	Grand Avenue	None	460		328		292	936		0.5081	
3	Grand Avenue	None	237		102		686	1053		0.2304	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	62nd St West	None	5.90		5.90	2.41		A		A
2	Grand Avenue	None	7.01		7.01	2.95		A		A
3	Grand Avenue	None	4.13		4.13	0.84		A		A

Operational Results

2017 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	62nd St West	None	261		297		311	952		0.2819	
2	Grand Avenue	None	357		159		399	1023		0.3580	
3	Grand Avenue	None	499		109		407	1049		0.4889	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	62nd St West	None	4.88		4.88	1.12		A		A
2	Grand Avenue	None	5.03		5.03	1.57		A		A
3	Grand Avenue	None	6.02		6.02	2.68		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th Street West	None	168		732		330	727		0.2410	
2	Grand Avenue	None	490		55		845	1077		0.4669	
3	Grand Avenue	Yield	732	210	120	120	425	1043	994	0.7282	0.2164

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th Street West	None	6.12		6.12	0.94		A		A
2	Grand Avenue	None	5.65		5.65	2.44		A		A
3	Grand Avenue	Yield	10.42	4.58	9.12	7.29	0.82	B	A	A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th Street West	None	304		401		231	898		0.3494	
2	Grand Avenue	None	624		187		518	1009		0.6400	
3	Grand Avenue	Yield	401	114	117	117	694	1045	996	0.3937	0.1171

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th Street West	None	5.67		5.67	1.54		A		A
2	Grand Avenue	None	8.54		8.54	4.97		A		A
3	Grand Avenue	Yield	5.18	4.06	4.94	1.82	0.39	A	A	A

Operational Results

2017 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	54th St West	None	605		319		167	996		0.6287	
2	Grand Avenue	None	852		424		500	1611		0.5453	
3	Grand Avenue	None	406		80		1196	2100		0.1971	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	54th St West	None	8.42		8.42	4.76		A		A
2	Grand Avenue	None	4.89		4.89	3.92		A		A
3	Grand Avenue	None	2.54		2.54	0.88		A		A

Operational Results

2017 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	54th St West	None	325		523		374	925		0.3619	
2	Grand Avenue	None	518		224		624	1811		0.2926	
3	Grand Avenue	None	815		82		660	2098		0.3973	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	54th St West	None	5.60		5.60	1.62		A		A
2	Grand Avenue	None	3.10		3.10	1.40		A		A
3	Grand Avenue	None	4.05		4.05	2.85		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	48th Street West	None	324		1241		257	658		0.5219	
2	Grand Avenue	None	659		32		1533	2002		0.3356	
3	Grand Avenue	None	1405		93		598	2087		0.6909	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	48th Street West	None	10.42		10.42	3.39		B		B
2	Grand Avenue	None	2.91		2.91	1.65		A		A
3	Grand Avenue	None	5.44		5.44	7.17		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	48th Street West	None	233		665		298	865		0.2780	
2	Grand Avenue	None	1091		121		777	1913		0.5848	
3	Grand Avenue	None	740		223		989	1953		0.3875	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	48th Street West	None	5.35		5.35	1.11		A		A
2	Grand Avenue	None	5.04		5.04	4.98		A		A
3	Grand Avenue	None	3.08		3.08	2.01		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th	None	330		216		123	1017		0.3296	
2	Central	None	199		400		146	916		0.2208	
3	56th	None	172		309		290	822		0.2126	
4	Central	None	243		96		385	1066		0.2310	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th	None	4.90		4.90	1.40		A		A
2	Central	None	4.72		4.72	0.81		A		A
3	56th	None	4.72		4.72	0.69		A		A
4	Central	None	4.10		4.10	0.84		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th	None	299		260		307	1062		0.2859	
2	Central	None	116		377		182	975		0.1207	
3	56th	None	245		327		166	935		0.2662	
4	Central	None	394		173		399	1120		0.3574	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th	None	4.62		4.62	1.19		A		A
2	Central	None	4.06		4.06	0.40		A		A
3	56th	None	4.80		4.80	1.02		A		A
4	Central	None	4.90		4.90	1.68		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Central	None	221		97		746	1079		0.2076	
2	48th	None	322		182		136	1030		0.3175	
3	Central	None	623		326		178	814		0.7899	
4	48th	None	123		720		229	721		0.1744	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Central	None	3.96		3.96	0.74		A		A
2	48th	None	4.74		4.74	1.32		A		A
3	Central	None	12.15		12.15	7.53		B		B
4	48th	None	5.66		5.66	0.63		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Central	None	564		178		321	1106		0.5197	
2	48th	None	164		515		227	902		0.1849	
3	Central	None	255		198		481	999		0.2591	
4	48th	None	215		284		169	1057		0.2064	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Central	None	6.47		6.47	3.29		A		A
2	48th	None	4.71		4.71	0.67		A		A
3	Central	None	4.46		4.46	0.97		A		A
4	48th	None	4.23		4.23	0.78		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	King	None	351		269		495	983		0.3632	
2	64th	None	192		335		285	950		0.2052	
3	King	None	646		202		325	870		0.7640	
4	64th	None	188		576		272	797		0.2408	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	King	None	5.32		5.32	1.63		A		A
2	64th	None	4.47		4.47	0.74		A		A
3	King	None	10.68		10.68	6.63		B		B
4	64th	None	5.54		5.54	0.93		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	King	None	531		221		405	1080		0.5013	
2	64th	None	252		486		266	918		0.2797	
3	King	None	478		136		602	1029		0.4725	
4	64th	None	144		482		132	943		0.1553	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	King	None	6.40		6.40	3.06		A		A
2	64th	None	5.21		5.21	1.16		A		A
3	King	None	5.86		5.86	2.47		A		A
4	64th	None	4.46		4.46	0.56		A		A

Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR		NBT	NBR	SBL SBT
Vol, veh/h	58	25		202	107	45 262
Conflicting Peds, #/hr	0	0		0	0	0 0
Sign Control	Stop	Stop		Free	Free	Free Free
RT Channelized	-	None		-	None	- None
Storage Length	-	-		-	-	- -
Veh in Median Storage, #	0	-		0	-	- 0
Grade, %	0	-		0	-	- 0
Peak Hour Factor	90	90		90	90	90 90
Heavy Vehicles, %	0	0		3	0	0 1
Mvmt Flow	64	28		224	119	50 291
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	675	284		0	0	343 0
Stage 1	284	-		-	-	- -
Stage 2	391	-		-	-	- -
Critical Hdwy	6.4	6.2		-	-	4.1 -
Critical Hdwy Stg 1	5.4	-		-	-	- -
Critical Hdwy Stg 2	5.4	-		-	-	- -
Follow-up Hdwy	3.5	3.3		-	-	2.2 -
Pot Cap-1 Maneuver	422	760		-	-	1227 -
Stage 1	769	-		-	-	- -
Stage 2	688	-		-	-	- -
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	401	760		-	-	1227 -
Mov Cap-2 Maneuver	401	-		-	-	- -
Stage 1	769	-		-	-	- -
Stage 2	654	-		-	-	- -
Approach	WB		NB		SB	
HCM Control Delay, s	14.6		0		1.2	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	468	1227	-	
HCM Lane V/C Ratio	-	-	0.197	0.041	-	
HCM Control Delay (s)	-	-	14.6	8.1	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-	

Intersection												
Int Delay, s/veh	23.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	105	186	10	4	54	136	0	112	17	116	50	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	6	0	0	8	2	0	6	0	2	0	0
Mvmt Flow	117	207	11	4	60	151	0	124	19	129	56	43
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	574	478	77	578	491	134	99	0	0	143	0	0
Stage 1	335	335	-	134	134	-	-	-	-	-	-	-
Stage 2	239	143	-	444	357	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.56	6.2	7.1	6.58	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.56	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.56	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.054	3.3	3.5	4.072	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	433	481	990	430	470	915	1507	-	-	1440	-	-
Stage 1	683	635	-	874	774	-	-	-	-	-	-	-
Stage 2	769	771	-	597	618	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	299	435	990	249	425	915	1507	-	-	1440	-	-
Mov Cap-2 Maneuver	299	435	-	249	425	-	-	-	-	-	-	-
Stage 1	683	575	-	874	774	-	-	-	-	-	-	-
Stage 2	592	771	-	342	559	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	53.5			13			0			4.4		
HCM LOS	F			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1507	-	-	382	665	1440	-	-				
HCM Lane V/C Ratio	-	-	-	0.876	0.324	0.09	-	-				
HCM Control Delay (s)	0	-	-	53.5	13	7.7	0	-				
HCM Lane LOS	A	-	-	F	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	8.6	1.4	0.3	-	-				

Intersection												
Int Delay, s/veh	10.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	43	413	2	14	183	17	5	31	37	118	27	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	6	3	100	0	7	0	0	0	0	0	0	0
Mvmt Flow	48	459	2	16	203	19	6	34	41	131	30	48
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	222	0	0	461	0	0	839	809	460	837	801	213
Stage 1	-	-	-	-	-	-	556	556	-	244	244	-
Stage 2	-	-	-	-	-	-	283	253	-	593	557	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.254	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1324	-	-	1111	-	-	288	317	605	288	320	832
Stage 1	-	-	-	-	-	-	519	516	-	764	708	-
Stage 2	-	-	-	-	-	-	728	701	-	496	515	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1111	-	-	239	297	605	233	299	832
Mov Cap-2 Maneuver	-	-	-	-	-	-	239	297	-	233	299	-
Stage 1	-	-	-	-	-	-	494	491	-	727	697	-
Stage 2	-	-	-	-	-	-	646	690	-	409	490	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.5			16.6			43.8		
HCM LOS							C			E		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	392	1324	-	-	1111	-	-	290				
HCM Lane V/C Ratio	0.207	0.036	-	-	0.014	-	-	0.72				
HCM Control Delay (s)	16.6	7.8	0	-	8.3	0	-	43.8				
HCM Lane LOS	C	A	A	-	A	A	-	E				
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	5.1				

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	62	0	2	52	12	0	68	12	14	36	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	7	0	0	12	0	0	3	0	0	0	0
Mvmt Flow	44	69	0	2	58	13	0	76	13	16	40	18
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	198	169	49	196	171	82	58	0	0	89	0	0
Stage 1	80	80	-	82	82	-	-	-	-	-	-	-
Stage 2	118	89	-	114	89	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.57	6.2	7.1	6.62	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.15	5.57	-	6.1	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.57	-	6.1	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.063	3.3	3.5	4.108	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	754	715	1025	767	704	983	1559	-	-	1519	-	-
Stage 1	921	819	-	931	808	-	-	-	-	-	-	-
Stage 2	879	811	-	896	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	691	707	1025	704	696	983	1559	-	-	1519	-	-
Mov Cap-2 Maneuver	691	707	-	704	696	-	-	-	-	-	-	-
Stage 1	921	810	-	931	808	-	-	-	-	-	-	-
Stage 2	805	811	-	811	793	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.1			10.4			0			1.6		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1559	-	-	701	735	1519	-	-				
HCM Lane V/C Ratio	-	-	-	0.162	0.1	0.01	-	-				
HCM Control Delay (s)	0	-	-	11.1	10.4	7.4	0	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	0.3	0	-	-				

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	84	6	27	54	4	8	87	17	22	130	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	0	7	12	0	0	5	13	0	0	0
Mvmt Flow	4	93	7	30	60	4	9	97	19	24	144	4
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	352	329	147	370	322	106	149	0	0	116	0	0
Stage 1	196	196	-	124	124	-	-	-	-	-	-	-
Stage 2	156	133	-	246	198	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.17	6.62	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.17	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.17	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.563	4.108	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	607	585	905	577	579	954	1445	-	-	1485	-	-
Stage 1	810	733	-	868	774	-	-	-	-	-	-	-
Stage 2	851	781	-	747	719	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	545	570	905	491	565	954	1445	-	-	1485	-	-
Mov Cap-2 Maneuver	545	570	-	491	565	-	-	-	-	-	-	-
Stage 1	804	720	-	862	769	-	-	-	-	-	-	-
Stage 2	775	776	-	634	706	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.5			12.9			0.5			1.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1445	-	-	583	549	1485	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.179	0.172	0.016	-	-				
HCM Control Delay (s)	7.5	0	-	12.5	12.9	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	0.6	0.1	-	-				

Intersection												
Int Delay, s/veh		3.5										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	170	0	17	67	13	4	14	62	15	8	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	0	0	13	0	0	0	3	14	25	0
Mvmt Flow	2	189	0	19	74	14	4	16	69	17	9	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	189	0	0	323	320	189	355	312	82
Stage 1	-	-	-	-	-	-	193	193	-	119	119	-
Stage 2	-	-	-	-	-	-	130	127	-	236	193	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.23	7.24	6.75	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.24	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.24	5.75	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.327	3.626	4.225	3.3
Pot Cap-1 Maneuver	1519	-	-	1397	-	-	634	600	850	578	567	983
Stage 1	-	-	-	-	-	-	813	745	-	857	755	-
Stage 2	-	-	-	-	-	-	878	795	-	741	700	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1397	-	-	611	591	850	515	559	983
Mov Cap-2 Maneuver	-	-	-	-	-	-	611	591	-	515	559	-
Stage 1	-	-	-	-	-	-	812	744	-	856	744	-
Stage 2	-	-	-	-	-	-	845	784	-	666	699	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.3			10.2			11.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	775	1519	-	-	1397	-	-	622				
HCM Lane V/C Ratio	0.115	0.001	-	-	0.014	-	-	0.061				
HCM Control Delay (s)	10.2	7.4	0	-	7.6	0	-	11.2				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2				

Intersection						
Int Delay, s/veh	6.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	225	118	193	94	48	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	4	1	2	9	0
Mvmt Flow	250	131	214	104	53	183
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	381	0	849	316
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	533	-
Critical Hdwy	-	-	4.11	-	6.49	6.2
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.209	-	3.581	3.3
Pot Cap-1 Maneuver	-	-	1183	-	322	729
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1183	-	260	729
Mov Cap-2 Maneuver	-	-	-	-	260	-
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	465	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		5.9		17.7	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	518	-	-	1183	-	
HCM Lane V/C Ratio	0.457	-	-	0.181	-	
HCM Control Delay (s)	17.7	-	-	8.7	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	2.4	-	-	0.7	-	

Intersection												
Intersection Delay, s/veh	17.4											
Intersection LOS	C											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	19	306	27	0	35	174	14	0	45	110	49
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	4	0	2	27	4	0	2	0	2	5
Mvmt Flow	0	21	340	30	0	39	193	16	0	50	122	54
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	20.8	16.2	14.3
HCM LOS	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	5%	16%	30%
Vol Thru, %	54%	87%	78%	58%
Vol Right, %	24%	8%	6%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	204	352	223	252
LT Vol	45	19	35	75
Through Vol	110	306	174	145
RT Vol	49	27	14	32
Lane Flow Rate	227	391	248	280
Geometry Grp	1	1	1	1
Degree of Util (X)	0.414	0.668	0.476	0.507
Departure Headway (Hd)	6.577	6.147	6.913	6.516
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	544	587	520	552
Service Time	4.65	4.208	4.983	4.583
HCM Lane V/C Ratio	0.417	0.666	0.477	0.507
HCM Control Delay	14.3	20.8	16.2	16.2
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	2	5	2.5	2.8

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	75	145	32
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	2	7
Mvmt Flow	0	83	161	36
Number of Lanes	0	0	1	0

Approach SB

Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	16.2
HCM LOS	C

Lane

HCM 2010 Signalized Intersection Summary

1: 62nd Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	191	110	87	60	235	45	109	70	669	226	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1845	1462	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	212	122	97	67	261	50	121	78	743	251	11
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	3	30	0	0	0	0	0	0	0
Cap, veh/h	381	318	183	237	410	1032	372	176	114	837	875	38
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.04	0.16	0.16	0.36	0.48	0.48
Sat Flow, veh/h	1069	1133	652	1032	1462	1615	1810	1081	697	1810	1807	79
Grp Volume(v), veh/h	8	0	334	97	67	261	50	0	199	743	0	262
Grp Sat Flow(s),veh/h/ln	1069	0	1785	1032	1462	1615	1810	0	1777	1810	0	1886
Q Serve(g_s), s	0.3	0.0	10.0	5.6	2.1	4.2	1.4	0.0	6.4	18.8	0.0	5.0
Cycle Q Clear(g_c), s	2.4	0.0	10.0	15.6	2.1	4.2	1.4	0.0	6.4	18.8	0.0	5.0
Prop In Lane	1.00		0.37	1.00		1.00	1.00		0.39	1.00		0.04
Lane Grp Cap(c), veh/h	381	0	500	237	410	1032	372	0	290	837	0	913
V/C Ratio(X)	0.02	0.00	0.67	0.41	0.16	0.25	0.13	0.00	0.69	0.89	0.00	0.29
Avail Cap(c_a), veh/h	381	0	500	237	410	1032	423	0	498	904	0	1151
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	19.3	26.2	16.5	4.7	19.9	0.0	23.9	11.2	0.0	9.4
Incr Delay (d2), s/veh	0.0	0.0	3.4	1.1	0.2	0.1	0.2	0.0	2.9	10.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	5.4	1.7	0.9	1.9	0.7	0.0	3.4	11.5	0.0	2.7
LnGrp Delay(d),s/veh	17.4	0.0	22.7	27.4	16.6	4.8	20.1	0.0	26.8	21.4	0.0	9.5
LnGrp LOS	B		C	C	B	A	C		C	C		A
Approach Vol, veh/h		342			425			249			1005	
Approach Delay, s/veh		22.6			11.8			25.4			18.3	
Approach LOS		C			B			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.7	13.9		21.0	6.3	33.4		21.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	24.0	17.0		17.0	4.0	37.0		17.0				
Max Q Clear Time (g_c+I1), s	20.8	8.4		12.0	3.4	7.0		17.6				
Green Ext Time (p_c), s	0.9	1.5		1.6	0.0	2.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			18.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

2: 54th Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1070	71	205	393	64	28	16	172	231	200	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1840	1900	1624	1707	1900	1429	1698	1900	1881	1817	1900
Adj Flow Rate, veh/h	0	1189	79	228	437	71	31	18	191	257	222	6
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	3	3	17	11	11	33	0	0	1	2	2
Cap, veh/h	473	1348	89	299	1598	258	244	23	245	289	404	11
Arrive On Green	0.00	0.40	0.40	0.11	0.57	0.57	0.03	0.18	0.18	0.07	0.23	0.23
Sat Flow, veh/h	1810	3328	221	1547	2798	452	1361	126	1336	1792	1761	48
Grp Volume(v), veh/h	0	624	644	228	252	256	31	0	209	257	0	228
Grp Sat Flow(s),veh/h/ln	1810	1748	1801	1547	1622	1628	1361	0	1462	1792	0	1808
Q Serve(g_s), s	0.0	22.8	22.9	5.5	5.5	5.5	1.3	0.0	9.4	5.0	0.0	7.7
Cycle Q Clear(g_c), s	0.0	22.8	22.9	5.5	5.5	5.5	1.3	0.0	9.4	5.0	0.0	7.7
Prop In Lane	1.00		0.12	1.00		0.28	1.00		0.91	1.00		0.03
Lane Grp Cap(c), veh/h	473	708	729	299	926	929	244	0	268	289	0	415
V/C Ratio(X)	0.00	0.88	0.88	0.76	0.27	0.28	0.13	0.00	0.78	0.89	0.00	0.55
Avail Cap(c_a), veh/h	576	708	729	333	926	929	287	0	360	289	0	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	19.0	19.1	14.7	7.5	7.5	22.3	0.0	26.9	26.0	0.0	23.5
Incr Delay (d2), s/veh	0.0	14.8	14.6	8.9	0.7	0.7	0.2	0.0	7.6	26.8	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.8	14.2	3.0	2.6	2.7	0.5	0.0	4.3	4.5	0.0	3.9
LnGrp Delay(d),s/veh	0.0	33.8	33.6	23.6	8.3	8.3	22.5	0.0	34.5	52.8	0.0	24.6
LnGrp LOS		C	C	C	A	A	C		C	D		C
Approach Vol, veh/h	1268			736				240			485	
Approach Delay, s/veh	33.7			13.0				33.0			39.6	
Approach LOS	C			B				C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	16.7	11.5	32.0	5.8	19.9	0.0	43.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	5.0	17.0	9.0	28.0	4.0	18.0	4.0	33.0				
Max Q Clear Time (g_c+I1), s	7.0	11.4	7.5	24.9	3.3	9.7	0.0	7.5				
Green Ext Time (p_c), s	0.0	1.2	0.1	2.4	0.0	1.6	0.0	11.9				
Intersection Summary												
HCM 2010 Ctrl Delay	29.1											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

6: Grand Avenue & 54th Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	103	1009	399	112	549	233		
Number	7	4	8	18	1	16		
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	1462	1863	1727	1557	1845	1792		
Adj Flow Rate, veh/h	114	1121	443	124	610	259		
Adj No. of Lanes	1	2	2	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	30	2	10	22	3	6		
Cap, veh/h	395	1698	1120	971	689	705		
Arrive On Green	0.07	0.48	0.34	0.34	0.39	0.39		
Sat Flow, veh/h	1392	3632	3368	1324	1757	1524		
Grp Volume(v), veh/h	114	1121	443	124	610	259		
Grp Sat Flow(s),veh/h/ln	1392	1770	1641	1324	1757	1524		
Q Serve(g_s), s	2.5	12.4	5.3	1.4	16.6	5.7		
Cycle Q Clear(g_c), s	2.5	12.4	5.3	1.4	16.6	5.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	395	1698	1120	971	689	705		
V/C Ratio(X)	0.29	0.66	0.40	0.13	0.89	0.37		
Avail Cap(c_a), veh/h	419	1698	1120	971	809	809		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	9.1	10.2	12.9	2.0	14.6	9.0		
Incr Delay (d2), s/veh	0.4	2.0	1.0	0.3	10.4	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.0	6.4	2.6	1.3	9.9	5.7		
LnGrp Delay(d),s/veh	9.5	12.2	14.0	2.3	25.0	9.3		
LnGrp LOS	A	B	B	A	C	A		
Approach Vol, veh/h		1235	567		869			
Approach Delay, s/veh		12.0	11.4		20.3			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				28.0		23.5	7.1	20.9
Change Period (Y+Rc), s				* 3.3		3.3	3.5	* 3.3
Max Green Setting (Gmax), s				* 25		23.7	4.5	* 17
Max Q Clear Time (g_c+I1), s				14.4		18.6	4.5	7.3
Green Ext Time (p_c), s				6.7		1.5	0.0	6.3
Intersection Summary								
HCM 2010 Ctrl Delay			14.6					
HCM 2010 LOS			B					
Notes								

HCM 2010 Signalized Intersection Summary

7: 56th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	939	267	152	476	70	144		
Number	4	14	3	8	5	12		
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	1863	1696	1743	1827	1520		
Adj Flow Rate, veh/h	1043	297	169	529	78	160		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	12	9	4	25		
Cap, veh/h	1213	1031	316	1379	127	181		
Arrive On Green	0.65	0.65	0.07	0.79	0.07	0.07		
Sat Flow, veh/h	1863	1583	1616	1743	1740	1292		
Grp Volume(v), veh/h	1043	297	169	529	78	160		
Grp Sat Flow(s),veh/h/ln	1863	1583	1616	1743	1740	1292		
Q Serve(g_s), s	24.4	4.4	1.6	5.0	2.4	4.0		
Cycle Q Clear(g_c), s	24.4	4.4	1.6	5.0	2.4	4.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1213	1031	316	1379	127	181		
V/C Ratio(X)	0.86	0.29	0.53	0.38	0.62	0.88		
Avail Cap(c_a), veh/h	1213	1031	325	1379	127	181		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	7.6	4.1	12.3	1.7	24.8	23.2		
Incr Delay (d2), s/veh	8.1	0.7	1.6	0.8	8.7	36.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	14.9	2.1	1.9	2.7	1.5	4.2		
LnGrp Delay(d),s/veh	15.7	4.8	13.9	2.5	33.4	59.9		
LnGrp LOS	B	A	B	A	C	E		
Approach Vol, veh/h	1340			698	238			
Approach Delay, s/veh	13.3			5.3	51.2			
Approach LOS	B			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		8.0	7.7	39.3				47.0
Change Period (Y+Rc), s		4.0	4.0	3.5				3.5
Max Green Setting (Gmax), s		4.0	4.0	35.5				43.5
Max Q Clear Time (g_c+I1), s		6.0	3.6	26.4				7.0
Green Ext Time (p_c), s		0.0	0.0	6.6				16.3
Intersection Summary								
HCM 2010 Ctrl Delay			14.8					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary

8: 48th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Volume (veh/h)	1607	209	119	733	41	372		
Number	4	14	3	8	5	12		
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	1863	1863	1792	1776	1881		
Adj Flow Rate, veh/h	1786	232	132	814	46	413		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	6	7	1		
Cap, veh/h	2017	902	172	1941	474	448		
Arrive On Green	0.57	0.57	0.57	0.57	0.28	0.28		
Sat Flow, veh/h	3632	1583	211	3495	1691	1599		
Grp Volume(v), veh/h	1786	232	132	814	46	413		
Grp Sat Flow(s),veh/h/ln	1770	1583	211	1703	1691	1599		
Q Serve(g_s), s	21.9	3.7	6.6	6.8	1.0	12.5		
Cycle Q Clear(g_c), s	21.9	3.7	28.5	6.8	1.0	12.5		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2017	902	172	1941	474	448		
V/C Ratio(X)	0.89	0.26	0.77	0.42	0.10	0.92		
Avail Cap(c_a), veh/h	2017	902	172	1941	474	448		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	9.3	5.4	24.3	6.1	13.3	17.5		
Incr Delay (d2), s/veh	6.2	0.7	27.5	0.7	0.1	24.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	12.1	1.8	3.1	3.2	0.5	8.6		
LnGrp Delay(d),s/veh	15.5	6.1	51.8	6.7	13.4	42.1		
LnGrp LOS	B	A	D	A	B	D		
Approach Vol, veh/h	2018			946	459			
Approach Delay, s/veh	14.4			13.0	39.2			
Approach LOS	B			B	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		18.0		32.0				32.0
Change Period (Y+Rc), s		4.0		3.5				3.5
Max Green Setting (Gmax), s		14.0		28.5				28.5
Max Q Clear Time (g_c+I1), s		14.5		23.9				30.5
Green Ext Time (p_c), s		0.0		4.4				0.0
Intersection Summary								
HCM 2010 Ctrl Delay			17.4					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary

13: 48th Street West & Central Avenue

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	694	52	21	194	62	13	75	61	174	212	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1882	1900	1900	1844	1900	1583	1869	1900	1845	1900	1900
Adj Flow Rate, veh/h	36	771	58	23	216	69	14	83	68	193	236	18
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	1	1	0	4	4	20	3	3	3	0	0
Cap, veh/h	693	1020	77	300	791	253	275	258	212	371	473	36
Arrive On Green	0.59	0.59	0.59	0.59	0.59	0.59	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1112	1729	130	672	1340	428	953	952	780	1219	1744	133
Grp Volume(v), veh/h	36	0	829	23	0	285	14	0	151	193	0	254
Grp Sat Flow(s),veh/h/ln	1112	0	1860	672	0	1769	953	0	1732	1219	0	1877
Q Serve(g_s), s	0.9	0.0	19.0	1.5	0.0	4.5	0.7	0.0	4.0	8.7	0.0	6.6
Cycle Q Clear(g_c), s	5.5	0.0	19.0	20.5	0.0	4.5	7.3	0.0	4.0	12.7	0.0	6.6
Prop In Lane	1.00		0.07	1.00		0.24	1.00		0.45	1.00		0.07
Lane Grp Cap(c), veh/h	693	0	1097	300	0	1043	275	0	470	371	0	509
V/C Ratio(X)	0.05	0.00	0.76	0.08	0.00	0.27	0.05	0.00	0.32	0.52	0.00	0.50
Avail Cap(c_a), veh/h	693	0	1097	300	0	1043	314	0	541	421	0	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	0.0	8.7	16.3	0.0	5.8	20.8	0.0	16.8	21.8	0.0	17.7
Incr Delay (d2), s/veh	0.1	0.0	4.9	0.5	0.0	0.6	0.1	0.0	0.4	1.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	10.9	0.3	0.0	2.4	0.2	0.0	1.9	3.0	0.0	3.5
LnGrp Delay(d),s/veh	7.3	0.0	13.6	16.8	0.0	6.4	20.9	0.0	17.2	23.0	0.0	18.5
LnGrp LOS	A		B	B		A	C		B	C		B
Approach Vol, veh/h	865			308			165			447		
Approach Delay, s/veh	13.3			7.2			17.5			20.4		
Approach LOS	B			A			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.6			38.0			19.6			38.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	18.0			34.0			18.0			34.0		
Max Q Clear Time (g_c+l1), s	9.3			21.0			14.7			22.5		
Green Ext Time (p_c), s	1.9			5.8			1.0			5.4		
Intersection Summary												
HCM 2010 Ctrl Delay	14.4											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

18: 48th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	766	15	13	523	38	8	47	58	174	89	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1863	1900	1357	1760	1900	1429	1791	1900	1900	1900	1900
Adj Flow Rate, veh/h	89	851	17	14	581	42	9	52	64	193	99	20
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	40	8	8	33	0	0	0	0	0
Cap, veh/h	450	1117	22	253	996	72	315	180	222	370	378	76
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.61	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	814	1821	36	463	1622	117	972	732	901	1296	1535	310
Grp Volume(v), veh/h	89	0	868	14	0	623	9	0	116	193	0	119
Grp Sat Flow(s),veh/h/ln	814	0	1857	463	0	1740	972	0	1632	1296	0	1845
Q Serve(g_s), s	4.2	0.0	19.3	1.3	0.0	12.3	0.4	0.0	3.3	8.1	0.0	3.0
Cycle Q Clear(g_c), s	16.5	0.0	19.3	20.6	0.0	12.3	3.4	0.0	3.3	11.4	0.0	3.0
Prop In Lane	1.00		0.02	1.00		0.07	1.00		0.55	1.00		0.17
Lane Grp Cap(c), veh/h	450	0	1140	253	0	1068	315	0	402	370	0	454
V/C Ratio(X)	0.20	0.00	0.76	0.06	0.00	0.58	0.03	0.00	0.29	0.52	0.00	0.26
Avail Cap(c_a), veh/h	450	0	1140	253	0	1068	365	0	487	438	0	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	8.0	15.5	0.0	6.6	18.7	0.0	17.5	22.1	0.0	17.3
Incr Delay (d2), s/veh	1.0	0.0	4.8	0.4	0.0	2.3	0.0	0.0	0.4	1.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	11.2	0.2	0.0	6.4	0.1	0.0	1.5	3.0	0.0	1.5
LnGrp Delay(d),s/veh	12.6	0.0	12.8	15.9	0.0	9.0	18.7	0.0	17.8	23.2	0.0	17.6
LnGrp LOS	B		B	B		A	B		B	C		B
Approach Vol, veh/h	957				637				125		312	
Approach Delay, s/veh	12.8				9.1				17.9		21.1	
Approach LOS	B				A				B		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	18.0		39.0		18.0		39.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	17.0		35.0		17.0		35.0					
Max Q Clear Time (g_c+I1), s	5.4		21.3		13.4		22.6					
Green Ext Time (p_c), s	1.4		8.0		0.7		7.5					
Intersection Summary												
HCM 2010 Ctrl Delay	13.2											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

20: 64th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	187	485	101	123	264	36	17	116	92	18	101	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1856	1900	1900	1738	1900	1900	1883	1900	1900	1882	1900
Adj Flow Rate, veh/h	208	539	112	137	293	40	19	129	102	20	112	122
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	0	8	8	0	0	0	0	2	2
Cap, veh/h	564	763	159	333	766	105	402	318	251	407	269	293
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1064	1492	310	793	1497	204	1165	976	772	1168	825	899
Grp Volume(v), veh/h	208	0	651	137	0	333	19	0	231	20	0	234
Grp Sat Flow(s),veh/h/ln	1064	0	1802	793	0	1702	1165	0	1747	1168	0	1723
Q Serve(g_s), s	7.3	0.0	13.6	7.8	0.0	5.8	0.6	0.0	5.0	0.7	0.0	5.2
Cycle Q Clear(g_c), s	13.1	0.0	13.6	21.4	0.0	5.8	5.8	0.0	5.0	5.7	0.0	5.2
Prop In Lane	1.00		0.17	1.00		0.12	1.00		0.44	1.00		0.52
Lane Grp Cap(c), veh/h	564	0	922	333	0	871	402	0	569	407	0	561
V/C Ratio(X)	0.37	0.00	0.71	0.41	0.00	0.38	0.05	0.00	0.41	0.05	0.00	0.42
Avail Cap(c_a), veh/h	583	0	953	347	0	900	402	0	569	407	0	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	0.0	9.2	17.4	0.0	7.3	15.2	0.0	12.9	15.1	0.0	12.9
Incr Delay (d2), s/veh	0.4	0.0	2.3	0.8	0.0	0.3	0.2	0.0	2.1	0.2	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	7.3	1.8	0.0	2.7	0.2	0.0	2.8	0.2	0.0	2.8
LnGrp Delay(d),s/veh	11.7	0.0	11.5	18.2	0.0	7.6	15.4	0.0	15.0	15.3	0.0	15.2
LnGrp LOS	B		B	B		A	B		B	B		B
Approach Vol, veh/h	859			470			250			254		
Approach Delay, s/veh	11.5			10.7			15.1			15.2		
Approach LOS	B			B			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	20.0			29.1			20.0			29.1		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	16.0			26.0			16.0			26.0		
Max Q Clear Time (g_c+l1), s	7.8			15.6			7.7			23.4		
Green Ext Time (p_c), s	1.7			5.3			1.7			1.7		
Intersection Summary												
HCM 2010 Ctrl Delay	12.3											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

37: Grand Avenue & 62nd Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	127	448	203	95	414	161		
Number	7	4	8	18	1	16		
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	1792	1810	1827	1743	1881	1810		
Adj Flow Rate, veh/h	141	498	226	106	460	179		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	6	5	4	9	1	5		
Cap, veh/h	591	869	878	712	568	488		
Arrive On Green	0.48	0.48	0.48	0.48	0.32	0.32		
Sat Flow, veh/h	1004	1810	1827	1482	1792	1538		
Grp Volume(v), veh/h	141	498	226	106	460	179		
Grp Sat Flow(s),veh/h/ln	1004	1810	1827	1482	1792	1538		
Q Serve(g_s), s	3.8	7.8	2.9	1.6	9.3	3.6		
Cycle Q Clear(g_c), s	6.7	7.8	2.9	1.6	9.3	3.6		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	591	869	878	712	568	488		
V/C Ratio(X)	0.24	0.57	0.26	0.15	0.81	0.37		
Avail Cap(c_a), veh/h	591	869	878	712	816	700		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.1	7.4	6.1	5.7	12.4	10.4		
Incr Delay (d2), s/veh	1.0	2.7	0.7	0.4	4.1	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	1.2	4.5	1.6	1.8	5.2	1.6		
LnGrp Delay(d),s/veh	9.0	10.1	6.8	6.2	16.5	10.9		
LnGrp LOS	A	B	A	A	B	B		
Approach Vol, veh/h		639	332		639			
Approach Delay, s/veh		9.9	6.6		14.9			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				23.0		16.5		23.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				19.0		18.0		19.0
Max Q Clear Time (g_c+l1), s				9.8		11.3		4.9
Green Ext Time (p_c), s				3.4		1.2		4.3
Intersection Summary								
HCM 2010 Ctrl Delay			11.2					
HCM 2010 LOS			B					

Queues

1: 62nd Street West & Rimrock Road

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	334	97	67	261	50	199	743	262
v/c Ratio	0.02	0.71	0.69	0.19	0.22	0.15	0.55	0.88	0.26
Control Delay	19.4	28.9	51.4	21.0	1.2	10.4	24.7	22.9	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	28.9	51.4	21.0	1.2	10.4	24.7	22.9	9.3
Queue Length 50th (ft)	2	101	33	20	0	7	55	167	56
Queue Length 95th (ft)	13	#223	#112	53	21	17	112	#379	97
Internal Link Dist (ft)		919		4037			5231		921
Turn Bay Length (ft)	250		250		250	250		250	
Base Capacity (vph)	402	561	169	434	1257	331	562	906	1223
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.60	0.57	0.15	0.21	0.15	0.35	0.82	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

2: 54th Street West & Rimrock Road

3/30/2016



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1268	228	508	31	209	257	228
v/c Ratio	0.88	0.77	0.26	0.15	0.59	1.02	0.54
Control Delay	28.8	32.3	7.0	19.2	14.2	88.4	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	32.3	7.0	19.2	14.2	88.4	28.8
Queue Length 50th (ft)	224	41	36	10	14	~94	77
Queue Length 95th (ft)	#446	#179	85	27	69	#223	158
Internal Link Dist (ft)	1084		924		5202		920
Turn Bay Length (ft)		250		250		250	
Base Capacity (vph)	1439	299	1934	202	496	252	482
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.76	0.26	0.15	0.42	1.02	0.47

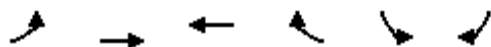
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

6: Grand Avenue & 54th Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	114	1121	443	124	610	259
v/c Ratio	0.36	0.67	0.42	0.12	0.87	0.28
Control Delay	12.7	13.9	16.3	0.6	29.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	13.9	16.3	0.6	29.5	3.4
Queue Length 50th (ft)	21	145	60	0	165	13
Queue Length 95th (ft)	47	208	95	5	#332	39
Internal Link Dist (ft)		1579	867		5202	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	319	1668	1046	1125	792	912
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.67	0.42	0.11	0.77	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

7: 56th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1043	297	169	529	78	160
v/c Ratio	0.82	0.25	0.67	0.36	0.63	0.46
Control Delay	15.5	1.2	21.6	2.4	51.1	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	1.2	21.6	2.4	51.1	10.9
Queue Length 50th (ft)	223	0	8	29	26	8
Queue Length 95th (ft)	#514	19	#41	51	#80	49
Internal Link Dist (ft)	884			1579	5173	
Turn Bay Length (ft)		250	250			250
Base Capacity (vph)	1265	1170	251	1451	123	346
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.25	0.67	0.36	0.63	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

8: 48th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1786	232	132	814	46	413
v/c Ratio	0.88	0.23	0.89	0.42	0.10	0.91
Control Delay	16.7	1.6	69.8	6.9	14.1	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	1.6	69.8	6.9	14.1	45.6
Queue Length 50th (ft)	205	0	29	60	10	111
Queue Length 95th (ft)	#380	20	#79	91	29	#255
Internal Link Dist (ft)	2574			424	5188	
Turn Bay Length (ft)		250	250			250
Base Capacity (vph)	2022	1004	148	1946	473	459
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.23	0.89	0.42	0.10	0.90

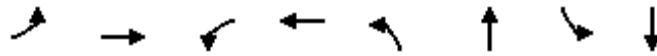
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

13: 48th Street West & Central Avenue

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	829	23	285	14	151	193	254
v/c Ratio	0.05	0.72	0.10	0.26	0.08	0.32	0.66	0.56
Control Delay	5.8	13.4	7.0	5.6	16.5	11.8	30.4	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	13.4	7.0	5.6	16.5	11.8	30.4	22.7
Queue Length 50th (ft)	4	162	3	31	4	22	57	71
Queue Length 95th (ft)	15	#365	13	73	15	59	115	129
Internal Link Dist (ft)		1097		420		5201		5188
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	685	1154	242	1114	236	603	389	605
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.72	0.10	0.26	0.06	0.25	0.50	0.42

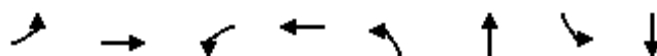
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

18: 48th Street West & King Avenue West

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	868	14	623	9	116	193	119
v/c Ratio	0.21	0.73	0.08	0.56	0.04	0.28	0.67	0.28
Control Delay	7.2	13.3	6.8	9.1	16.4	10.7	31.7	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	13.3	6.8	9.1	16.4	10.7	31.7	16.5
Queue Length 50th (ft)	11	174	2	102	2	14	58	28
Queue Length 95th (ft)	35	#406	9	214	11	47	115	63
Internal Link Dist (ft)		5180		420		5199		5201
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	421	1190	172	1119	281	520	374	547
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.73	0.08	0.56	0.03	0.22	0.52	0.22

Intersection Summary

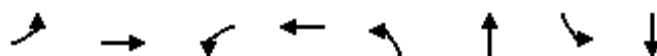
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

20: 64th Street West & King Avenue West

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	208	651	137	333	19	231	20	234
v/c Ratio	0.47	0.78	0.74	0.43	0.05	0.33	0.05	0.33
Control Delay	11.9	17.0	38.1	9.2	11.9	9.6	12.0	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	17.0	38.1	9.2	11.9	9.6	12.0	8.3
Queue Length 50th (ft)	33	119	26	48	3	26	3	21
Queue Length 95th (ft)	74	217	#105	91	15	75	15	67
Internal Link Dist (ft)		420		5100		5198		5203
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	584	1086	242	1021	420	696	423	707
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.60	0.57	0.33	0.05	0.33	0.05	0.33

Intersection Summary

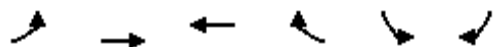
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

37: Grand Avenue & 62nd Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	141	498	226	106	460	179
v/c Ratio	0.28	0.60	0.27	0.14	0.74	0.27
Control Delay	10.1	13.2	9.1	2.9	19.8	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	13.2	9.1	2.9	19.8	3.2
Queue Length 50th (ft)	20	85	32	0	90	0
Queue Length 95th (ft)	53	176	72	19	168	26
Internal Link Dist (ft)		1472	2578		5231	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	508	832	840	738	768	763
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.60	0.27	0.14	0.60	0.23
Intersection Summary						

Intersection

Int Delay, s/veh 2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	80	34	292	56	16	237
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	0	1
Mvmt Flow	89	38	324	62	18	263

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	655	356	0 0 387 0
Stage 1	356	-	- - - -
Stage 2	299	-	- - - -
Critical Hdwy	6.4	6.2	- - 4.1 -
Critical Hdwy Stg 1	5.4	-	- - - -
Critical Hdwy Stg 2	5.4	-	- - - -
Follow-up Hdwy	3.5	3.3	- - 2.2 -
Pot Cap-1 Maneuver	434	693	- - 1183 -
Stage 1	713	-	- - - -
Stage 2	757	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	426	693	- - 1183 -
Mov Cap-2 Maneuver	426	-	- - - -
Stage 1	713	-	- - - -
Stage 2	743	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	- 481	1183	-
HCM Lane V/C Ratio	-	- 0.263	0.015	-
HCM Control Delay (s)	-	- 15.1	8.1	0
HCM Lane LOS	-	- C	A	A
HCM 95th %tile Q(veh)	-	- 1	0	-

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	37	47	4	19	98	67	2	41	9	42	62	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	50	0	0	0	0	0	0	0	0	0
Mvmt Flow	41	52	4	21	109	74	2	46	10	47	69	19
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	319	232	78	255	236	51	88	0	0	56	0	0
Stage 1	172	172	-	55	55	-	-	-	-	-	-	-
Stage 2	147	60	-	200	181	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.7	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.75	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	638	672	864	702	668	1023	1520	-	-	1562	-	-
Stage 1	835	760	-	962	853	-	-	-	-	-	-	-
Stage 2	860	849	-	806	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	502	650	864	639	646	1023	1520	-	-	1562	-	-
Mov Cap-2 Maneuver	502	650	-	639	646	-	-	-	-	-	-	-
Stage 1	834	736	-	961	852	-	-	-	-	-	-	-
Stage 2	695	848	-	721	730	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.4			11.7			0.3			2.6		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1520	-	-	584	745	1562	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.167	0.274	0.03	-	-				
HCM Control Delay (s)	7.4	0	-	12.4	11.7	7.4	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.6	1.1	0.1	-	-				

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	24	173	7	28	365	101	2	42	7	17	56	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	1	33	0	0	0	0	0	0	0	4	0
Mvmt Flow	27	192	8	31	406	112	2	47	8	19	62	32
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	518	0	0	200	0	0	820	829	196	801	777	462
Stage 1	-	-	-	-	-	-	249	249	-	524	524	-
Stage 2	-	-	-	-	-	-	571	580	-	277	253	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.54	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4.036	3.3
Pot Cap-1 Maneuver	1058	-	-	1384	-	-	296	308	850	305	326	604
Stage 1	-	-	-	-	-	-	759	704	-	540	527	-
Stage 2	-	-	-	-	-	-	509	503	-	734	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1058	-	-	1384	-	-	226	289	850	253	306	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	289	-	253	306	-
Stage 1	-	-	-	-	-	-	737	684	-	524	510	-
Stage 2	-	-	-	-	-	-	410	487	-	658	674	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.4			19			20.7		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	314	1058	-	-	1384	-	-	342				
HCM Lane V/C Ratio	0.18	0.025	-	-	0.022	-	-	0.331				
HCM Control Delay (s)	19	8.5	0	-	7.7	0	-	20.7				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.1	-	-	1.4				

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	48	2	10	68	6	0	46	6	0	70	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	9	0	0	6	0	0	0	0	0	0	17
Mvmt Flow	13	53	2	11	76	7	0	51	7	0	78	13
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	180	142	84	166	145	54	91	0	0	58	0	0
Stage 1	84	84	-	54	54	-	-	-	-	-	-	-
Stage 2	96	58	-	112	91	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.59	6.2	7.1	6.56	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.59	-	6.1	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.59	-	6.1	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.081	3.3	3.5	4.054	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	786	736	981	803	739	1019	1517	-	-	1559	-	-
Stage 1	929	812	-	963	842	-	-	-	-	-	-	-
Stage 2	916	833	-	898	812	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	720	736	981	757	739	1019	1517	-	-	1559	-	-
Mov Cap-2 Maneuver	720	736	-	757	739	-	-	-	-	-	-	-
Stage 1	929	812	-	963	842	-	-	-	-	-	-	-
Stage 2	828	833	-	837	812	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.4			10.4			0			0		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1517	-	-	739	756	1559	-	-				
HCM Lane V/C Ratio	-	-	-	0.093	0.123	-	-	-				
HCM Control Delay (s)	0	-	-	10.4	10.4	0	-	-				
HCM Lane LOS	A	-	-	B	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0	-	-				

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	43	0	19	80	13	4	116	12	19	77	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	0	0	8	0	0	2	0	11	3	0
Mvmt Flow	14	48	0	21	89	14	4	129	13	21	86	4
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	326	281	88	298	276	136	90	0	0	142	0	0
Stage 1	130	130	-	144	144	-	-	-	-	-	-	-
Stage 2	196	151	-	154	132	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.55	6.2	7.1	6.58	6.2	4.1	-	-	4.21	-	-
Critical Hdwy Stg 1	6.1	5.55	-	6.1	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.55	-	6.1	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.045	3.3	3.5	4.072	3.3	2.2	-	-	2.299	-	-
Pot Cap-1 Maneuver	631	622	976	658	621	918	1518	-	-	1387	-	-
Stage 1	878	783	-	864	766	-	-	-	-	-	-	-
Stage 2	810	767	-	853	776	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	544	610	976	610	609	918	1518	-	-	1387	-	-
Mov Cap-2 Maneuver	544	610	-	610	609	-	-	-	-	-	-	-
Stage 1	875	770	-	861	764	-	-	-	-	-	-	-
Stage 2	702	765	-	787	764	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.8			12.1			0.2			1.5		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1518	-	-	593	634	1387	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.105	0.196	0.015	-	-				
HCM Control Delay (s)	7.4	0	-	11.8	12.1	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.4	0.7	0	-	-				

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	90	0	77	138	26	0	25	27	17	37	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	5	0	0	0	0	25	0	0
Mvmt Flow	2	100	0	86	153	29	0	28	30	19	41	7
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	100	0	0	467	457	100	472	443	168
Stage 1	-	-	-	-	-	-	104	104	-	339	339	-
Stage 2	-	-	-	-	-	-	363	353	-	133	104	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.35	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.35	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.35	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.725	4	3.3
Pot Cap-1 Maneuver	1405	-	-	1505	-	-	509	503	961	466	512	881
Stage 1	-	-	-	-	-	-	907	813	-	630	643	-
Stage 2	-	-	-	-	-	-	660	634	-	818	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1405	-	-	1505	-	-	448	470	961	410	478	881
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	470	-	410	478	-
Stage 1	-	-	-	-	-	-	905	811	-	629	602	-
Stage 2	-	-	-	-	-	-	571	593	-	764	811	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			2.4			11.2			13.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	640	1405	-	-	1505	-	-	477				
HCM Lane V/C Ratio	0.09	0.002	-	-	0.057	-	-	0.14				
HCM Control Delay (s)	11.2	7.6	0	-	7.5	0	-	13.8				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.5				

Intersection						
Int Delay, s/veh	10					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	132	60	195	225	87	239
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	2	0	0
Mvmt Flow	147	67	217	250	97	266
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	213	0	863	180
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	683	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1369	-	328	868
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	505	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1369	-	268	868
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	412	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.8		23.9	
HCM LOS					C	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	543	-	-	1369	-	
HCM Lane V/C Ratio	0.667	-	-	0.158	-	
HCM Control Delay (s)	23.9	-	-	8.1	0	
HCM Lane LOS	C	-	-	A	A	
HCM 95th %tile Q(veh)	4.9	-	-	0.6	-	

Intersection												
Intersection Delay, s/veh	11.6											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	16	116	11	0	67	181	84	0	18	134	28
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	2	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	18	129	12	0	74	201	93	0	20	149	31
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	10.1	13.2	10.9
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	11%	20%	15%
Vol Thru, %	74%	81%	55%	85%
Vol Right, %	16%	8%	25%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	143	332	126
LT Vol	18	16	67	19
Through Vol	134	116	181	107
RT Vol	28	11	84	0
Lane Flow Rate	200	159	369	140
Geometry Grp	1	1	1	1
Degree of Util (X)	0.303	0.238	0.512	0.22
Departure Headway (Hd)	5.452	5.389	5	5.66
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	658	666	719	633
Service Time	3.492	3.431	3.034	3.703
HCM Lane V/C Ratio	0.304	0.239	0.513	0.221
HCM Control Delay	10.9	10.1	13.2	10.3
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.3	0.9	2.9	0.8

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	19	107	0
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	2	0
Mvmt Flow	0	21	119	0
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	10.3
HCM LOS	B

Lane

HCM 2010 Signalized Intersection Summary

1: 62nd Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	191	38	39	68	613	80	174	42	467	117	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1900	1900	1900	1845	1845	1900	1900	1830	1900
Adj Flow Rate, veh/h	0	212	42	43	76	681	89	193	47	519	130	8
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	3	2	2	0	2	2
Cap, veh/h	142	488	97	380	601	929	474	269	65	681	664	41
Arrive On Green	0.00	0.32	0.32	0.32	0.32	0.32	0.06	0.19	0.19	0.26	0.39	0.39
Sat Flow, veh/h	719	1541	305	1143	1900	1615	1757	1434	349	1810	1707	105
Grp Volume(v), veh/h	0	0	254	43	76	681	89	0	240	519	0	138
Grp Sat Flow(s),veh/h/ln	719	0	1846	1143	1900	1615	1757	0	1783	1810	0	1812
Q Serve(g_s), s	0.0	0.0	5.5	1.6	1.4	15.7	2.0	0.0	6.4	10.5	0.0	2.5
Cycle Q Clear(g_c), s	0.0	0.0	5.5	7.1	1.4	15.7	2.0	0.0	6.4	10.5	0.0	2.5
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.20	1.00		0.06
Lane Grp Cap(c), veh/h	142	0	584	380	601	929	474	0	334	681	0	705
V/C Ratio(X)	0.00	0.00	0.43	0.11	0.13	0.73	0.19	0.00	0.72	0.76	0.00	0.20
Avail Cap(c_a), veh/h	142	0	584	380	601	929	513	0	565	786	0	1004
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	13.7	16.5	12.3	7.9	15.2	0.0	19.3	10.5	0.0	10.2
Incr Delay (d2), s/veh	0.0	0.0	2.3	0.6	0.4	5.1	0.2	0.0	2.9	3.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.1	0.6	0.8	8.0	1.0	0.0	3.4	5.8	0.0	1.3
LnGrp Delay(d),s/veh	0.0	0.0	16.0	17.1	12.7	13.0	15.4	0.0	22.2	14.3	0.0	10.3
LnGrp LOS			B	B	B	B	B		C	B		B
Approach Vol, veh/h		254			800			329			657	
Approach Delay, s/veh		16.0			13.2			20.3			13.5	
Approach LOS		B			B			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.1	13.5		20.0	6.9	23.7		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	16.0	16.0		16.0	4.0	28.0		16.0				
Max Q Clear Time (g_c+I1), s	12.5	8.4		7.5	4.0	4.5		17.7				
Green Ext Time (p_c), s	0.6	1.1		3.0	0.0	1.8		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			14.8									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

2: 54th Street West & Rimrock Road

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	591	36	158	777	316	27	91	176	173	86	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1667	1865	1900	1810	1900	1900	1900	1851	1900	1881	1900	1900
Adj Flow Rate, veh/h	20	657	40	176	863	351	30	101	196	192	96	11
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	14	2	2	5	0	0	0	0	0	1	0	0
Cap, veh/h	187	1027	62	397	949	384	480	127	247	333	459	53
Arrive On Green	0.02	0.30	0.30	0.09	0.38	0.38	0.03	0.23	0.23	0.08	0.27	0.27
Sat Flow, veh/h	1587	3394	206	1723	2509	1016	1810	564	1094	1792	1674	192
Grp Volume(v), veh/h	20	343	354	176	620	594	30	0	297	192	0	107
Grp Sat Flow(s),veh/h/ln	1587	1772	1828	1723	1805	1721	1810	0	1658	1792	0	1866
Q Serve(g_s), s	0.5	8.9	8.9	3.4	17.3	17.4	0.7	0.0	9.0	4.0	0.0	2.3
Cycle Q Clear(g_c), s	0.5	8.9	8.9	3.4	17.3	17.4	0.7	0.0	9.0	4.0	0.0	2.3
Prop In Lane	1.00		0.11	1.00		0.59	1.00		0.66	1.00		0.10
Lane Grp Cap(c), veh/h	187	536	554	397	683	651	480	0	375	333	0	512
V/C Ratio(X)	0.11	0.64	0.64	0.44	0.91	0.91	0.06	0.00	0.79	0.58	0.00	0.21
Avail Cap(c_a), veh/h	276	600	620	428	683	651	567	0	500	333	0	562
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.1	16.0	16.0	10.9	15.6	15.7	15.1	0.0	19.4	15.8	0.0	14.8
Incr Delay (d2), s/veh	0.2	1.9	1.9	0.8	16.0	17.4	0.1	0.0	6.3	2.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.6	4.7	1.7	11.5	11.4	0.3	0.0	4.7	1.0	0.0	1.2
LnGrp Delay(d),s/veh	14.4	17.9	17.9	11.7	31.6	33.0	15.1	0.0	25.7	18.3	0.0	15.0
LnGrp LOS	B	B	B	B	C	C	B		C	B		B
Approach Vol, veh/h		717			1390			327			299	
Approach Delay, s/veh		17.8			29.7			24.7			17.1	
Approach LOS		B			C			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	16.0	9.0	20.1	5.4	18.6	5.0	24.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	16.0	6.0	18.0	4.0	16.0	4.0	20.0				
Max Q Clear Time (g_c+I1), s	6.0	11.0	5.4	10.9	2.7	4.3	2.5	19.4				
Green Ext Time (p_c), s	0.0	1.0	0.0	5.2	0.0	1.8	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			24.6									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

6: Grand Avenue & 54th Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	106	556	680	378	290	131		
Number	7	4	8	18	1	16		
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	1845	1845	1881	1881	1881	1597		
Adj Flow Rate, veh/h	118	618	756	420	322	146		
Adj No. of Lanes	1	2	2	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	3	3	1	1	1	19		
Cap, veh/h	413	2058	1529	684	416	409		
Arrive On Green	0.07	0.59	0.43	0.43	0.23	0.23		
Sat Flow, veh/h	1757	3597	3668	1599	1792	1357		
Grp Volume(v), veh/h	118	618	756	420	322	146		
Grp Sat Flow(s),veh/h/ln	1757	1752	1787	1599	1792	1357		
Q Serve(g_s), s	1.5	3.9	6.8	9.0	7.4	3.7		
Cycle Q Clear(g_c), s	1.5	3.9	6.8	9.0	7.4	3.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	413	2058	1529	684	416	409		
V/C Ratio(X)	0.29	0.30	0.49	0.61	0.77	0.36		
Avail Cap(c_a), veh/h	530	2058	1529	684	647	584		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.1	4.6	9.2	9.8	15.9	12.1		
Incr Delay (d2), s/veh	0.4	0.4	1.1	4.1	3.1	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	0.7	2.0	3.5	4.7	4.0	3.1		
LnGrp Delay(d),s/veh	6.5	5.0	10.3	13.9	19.0	12.6		
LnGrp LOS	A	A	B	B	B	B		
Approach Vol, veh/h		736	1176		468			
Approach Delay, s/veh		5.2	11.6		17.0			
Approach LOS		A	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				30.0		14.3	7.1	22.9
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				26.0		16.0	6.0	16.0
Max Q Clear Time (g_c+l1), s				5.9		9.4	3.5	11.0
Green Ext Time (p_c), s				10.2		0.9	0.1	3.7
Intersection Summary								
HCM 2010 Ctrl Delay			10.7					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary

7: 56th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	515	145	151	650	238	151		
Number	4	14	3	8	5	12		
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	1863	1610	1881	1900	1759		
Adj Flow Rate, veh/h	572	161	168	722	264	168		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	18	1	0	8		
Cap, veh/h	1094	930	444	1105	360	298		
Arrive On Green	0.59	0.59	0.59	0.59	0.20	0.20		
Sat Flow, veh/h	1863	1583	623	1881	1810	1495		
Grp Volume(v), veh/h	572	161	168	722	264	168		
Grp Sat Flow(s),veh/h/ln	1863	1583	623	1881	1810	1495		
Q Serve(g_s), s	6.9	1.7	8.2	9.6	5.1	3.8		
Cycle Q Clear(g_c), s	6.9	1.7	15.1	9.6	5.1	3.8		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	1094	930	444	1105	360	298		
V/C Ratio(X)	0.52	0.17	0.38	0.65	0.73	0.56		
Avail Cap(c_a), veh/h	1094	930	444	1105	483	399		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	4.6	3.6	9.1	5.2	14.1	13.5		
Incr Delay (d2), s/veh	1.8	0.4	2.4	3.0	3.8	1.7		
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	0.8	1.7	5.7	2.9	1.7		
LnGrp Delay(d),s/veh	6.4	4.0	11.5	8.2	17.9	15.2		
LnGrp LOS	A	A	B	A	B	B		
Approach Vol, veh/h	733			890	432			
Approach Delay, s/veh	5.9			8.8	16.9			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		11.5		26.0				26.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		10.0		22.0				22.0
Max Q Clear Time (g_c+l1), s		7.1		8.9				17.1
Green Ext Time (p_c), s		0.4		7.8				3.6
Intersection Summary								
HCM 2010 Ctrl Delay			9.5					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary

8: 48th Street West & Grand Avenue

3/30/2016

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Volume (veh/h)	861	96	285	1123	154	146		
Number	4	14	3	8	5	12		
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	1845	1900	1881	1900	1845		
Adj Flow Rate, veh/h	957	107	317	1248	171	162		
Adj No. of Lanes	2	1	1	2	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	3	0	1	0	3		
Cap, veh/h	2597	1151	462	2623	240	208		
Arrive On Green	0.73	0.73	0.73	0.73	0.13	0.13		
Sat Flow, veh/h	3632	1568	539	3668	1810	1568		
Grp Volume(v), veh/h	957	107	317	1248	171	162		
Grp Sat Flow(s),veh/h/ln	1770	1568	539	1787	1810	1568		
Q Serve(g_s), s	5.9	1.2	31.3	8.6	5.4	6.0		
Cycle Q Clear(g_c), s	5.9	1.2	37.2	8.6	5.4	6.0		
Prop In Lane		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2597	1151	462	2623	240	208		
V/C Ratio(X)	0.37	0.09	0.69	0.48	0.71	0.78		
Avail Cap(c_a), veh/h	2597	1151	462	2623	241	209		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	2.9	2.3	9.7	3.3	24.9	25.1		
Incr Delay (d2), s/veh	0.4	0.2	8.0	0.6	9.4	16.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.9	0.6	5.5	4.4	3.3	3.5		
LnGrp Delay(d),s/veh	3.3	2.4	17.7	3.9	34.3	41.9		
LnGrp LOS	A	A	B	A	C	D		
Approach Vol, veh/h	1064			1565	333			
Approach Delay, s/veh	3.2			6.7	38.0			
Approach LOS	A			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		12.0		48.0				48.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		8.0		44.0				44.0
Max Q Clear Time (g_c+I1), s		8.0		7.9				39.2
Green Ext Time (p_c), s		0.0		26.4				4.5
Intersection Summary								
HCM 2010 Ctrl Delay			9.0					
HCM 2010 LOS			A					

HCM 2010 Signalized Intersection Summary

13: 48th Street West & Central Avenue

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	272	31	70	516	118	57	150	62	67	109	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1883	1900	1900	1878	1900	1900	1887	1900	1827	1900	1900
Adj Flow Rate, veh/h	18	302	34	78	573	131	63	167	69	74	121	30
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	1	1	0	1	1	0	1	1	4	0	0
Cap, veh/h	390	956	108	669	851	194	386	315	130	309	365	91
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	755	1663	187	1061	1480	338	1256	1270	525	1118	1471	365
Grp Volume(v), veh/h	18	0	336	78	0	704	63	0	236	74	0	151
Grp Sat Flow(s),veh/h/ln	755	0	1850	1061	0	1818	1256	0	1794	1118	0	1836
Q Serve(g_s), s	0.8	0.0	4.3	1.9	0.0	12.2	2.0	0.0	5.1	2.8	0.0	3.0
Cycle Q Clear(g_c), s	12.9	0.0	4.3	6.1	0.0	12.2	5.0	0.0	5.1	7.9	0.0	3.0
Prop In Lane	1.00		0.10	1.00		0.19	1.00		0.29	1.00		0.20
Lane Grp Cap(c), veh/h	390	0	1063	669	0	1045	386	0	446	309	0	456
V/C Ratio(X)	0.05	0.00	0.32	0.12	0.00	0.67	0.16	0.00	0.53	0.24	0.00	0.33
Avail Cap(c_a), veh/h	390	0	1063	669	0	1045	519	0	635	427	0	649
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	0.0	5.0	6.6	0.0	6.7	16.0	0.0	14.7	18.1	0.0	13.9
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.4	0.0	3.5	0.2	0.0	1.0	0.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.4	0.6	0.0	6.9	0.7	0.0	2.6	0.9	0.0	1.6
LnGrp Delay(d),s/veh	11.4	0.0	5.8	6.9	0.0	10.1	16.2	0.0	15.7	18.5	0.0	14.3
LnGrp LOS	B		A	A		B	B		B	B		B
Approach Vol, veh/h		354			782			299			225	
Approach Delay, s/veh		6.1			9.8			15.8			15.7	
Approach LOS		A			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.2		30.0		15.2		30.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		26.0		16.0		26.0				
Max Q Clear Time (g_c+l1), s		7.1		14.9		9.9		14.2				
Green Ext Time (p_c), s		1.7		5.0		1.3		5.2				
Intersection Summary												
HCM 2010 Ctrl Delay			10.9									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

18: 48th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	632	5	34	836	108	5	104	97	70	84	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1900	1877	1900	1900	1838	1900	1900	1900	1900
Adj Flow Rate, veh/h	67	702	6	38	929	120	6	116	108	78	93	49
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	1	1	0	0	0	0	0	0
Cap, veh/h	216	1223	10	447	1060	137	312	195	182	237	261	138
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	546	1881	16	752	1629	210	1266	877	817	1175	1173	618
Grp Volume(v), veh/h	67	0	708	38	0	1049	6	0	224	78	0	142
Grp Sat Flow(s),veh/h/ln	546	0	1897	752	0	1840	1266	0	1694	1175	0	1791
Q Serve(g_s), s	7.2	0.0	13.1	1.9	0.0	29.2	0.3	0.0	7.5	4.0	0.0	4.2
Cycle Q Clear(g_c), s	36.4	0.0	13.1	15.0	0.0	29.2	4.5	0.0	7.5	11.5	0.0	4.2
Prop In Lane	1.00		0.01	1.00		0.11	1.00		0.48	1.00		0.35
Lane Grp Cap(c), veh/h	216	0	1234	447	0	1196	312	0	377	237	0	399
V/C Ratio(X)	0.31	0.00	0.57	0.09	0.00	0.88	0.02	0.00	0.59	0.33	0.00	0.36
Avail Cap(c_a), veh/h	216	0	1234	447	0	1196	351	0	430	273	0	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	6.2	10.3	0.0	9.0	22.6	0.0	21.9	27.1	0.0	20.7
Incr Delay (d2), s/veh	3.7	0.0	1.9	0.4	0.0	9.2	0.0	0.0	1.7	0.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	7.4	0.4	0.0	17.6	0.1	0.0	3.7	1.4	0.0	2.2
LnGrp Delay(d),s/veh	27.5	0.0	8.1	10.7	0.0	18.2	22.6	0.0	23.7	27.9	0.0	21.2
LnGrp LOS	C		A	B		B	C		C	C		C
Approach Vol, veh/h		775			1087			230			220	
Approach Delay, s/veh		9.8			17.9			23.6			23.6	
Approach LOS		A			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.0		45.0		18.0		45.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		41.0		16.0		41.0				
Max Q Clear Time (g_c+l1), s		9.5		38.4		13.5		31.2				
Green Ext Time (p_c), s		1.2		2.2		0.6		7.4				
Intersection Summary												
HCM 2010 Ctrl Delay				16.3								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary

20: 64th Street West & King Avenue West

3/30/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	151	400	22	54	516	67	13	99	60	27	82	191
Number	7	4	14	3	8	18	5	2	12	1	6	16
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	1900	1900	1900	1900	1877	1900	1900	1900	1900	1900	1887	1900
Adj Flow Rate, veh/h	168	444	24	60	573	74	14	110	67	30	91	212
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	1	1	0	0	0	0	0	0
Cap, veh/h	449	1077	58	583	983	127	221	267	163	333	122	284
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	796	1786	97	940	1629	210	1093	1107	674	1227	504	1175
Grp Volume(v), veh/h	168	0	468	60	0	647	14	0	177	30	0	303
Grp Sat Flow(s),veh/h/ln	796	0	1883	940	0	1840	1093	0	1781	1227	0	1679
Q Serve(g_s), s	8.4	0.0	6.7	1.9	0.0	11.1	0.6	0.0	4.3	1.1	0.0	8.6
Cycle Q Clear(g_c), s	19.5	0.0	6.7	8.6	0.0	11.1	9.2	0.0	4.3	5.4	0.0	8.6
Prop In Lane	1.00		0.05	1.00		0.11	1.00		0.38	1.00		0.70
Lane Grp Cap(c), veh/h	449	0	1136	583	0	1110	221	0	430	333	0	405
V/C Ratio(X)	0.37	0.00	0.41	0.10	0.00	0.58	0.06	0.00	0.41	0.09	0.00	0.75
Avail Cap(c_a), veh/h	449	0	1136	583	0	1110	298	0	554	419	0	523
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	5.4	7.7	0.0	6.2	22.3	0.0	16.4	18.7	0.0	18.1
Incr Delay (d2), s/veh	2.4	0.0	1.1	0.4	0.0	2.2	0.1	0.0	0.6	0.1	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	3.7	0.5	0.0	6.3	0.2	0.0	2.2	0.4	0.0	4.4
LnGrp Delay(d),s/veh	14.6	0.0	6.5	8.0	0.0	8.5	22.4	0.0	17.1	18.8	0.0	22.4
LnGrp LOS	B		A	A		A	C		B	B		C
Approach Vol, veh/h	636			707			191			333		
Approach Delay, s/veh	8.6			8.4			17.5			22.1		
Approach LOS	A			A			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	16.4			35.0			16.4			35.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	16.0			31.0			16.0			31.0		
Max Q Clear Time (g_c+l1), s	11.2			21.5			10.6			13.1		
Green Ext Time (p_c), s	1.2			5.1			1.3			7.5		
Intersection Summary												
HCM 2010 Ctrl Delay	11.9											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary

37: Grand Avenue & 62nd Street West

3/30/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Volume (veh/h)	135	311	373	254	201	127		
Number	7	4	8	18	1	16		
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	1863	1881	1900	1845	1863		
Adj Flow Rate, veh/h	150	346	414	282	223	141		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	1	0	3	2		
Cap, veh/h	533	984	994	853	364	328		
Arrive On Green	0.53	0.53	0.53	0.53	0.21	0.21		
Sat Flow, veh/h	746	1863	1881	1615	1757	1583		
Grp Volume(v), veh/h	150	346	414	282	223	141		
Grp Sat Flow(s),veh/h/ln	746	1863	1881	1615	1757	1583		
Q Serve(g_s), s	4.6	3.3	4.0	3.0	3.5	2.3		
Cycle Q Clear(g_c), s	8.6	3.3	4.0	3.0	3.5	2.3		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	533	984	994	853	364	328		
V/C Ratio(X)	0.28	0.35	0.42	0.33	0.61	0.43		
Avail Cap(c_a), veh/h	533	984	994	853	928	837		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.9	4.1	4.3	4.1	10.9	10.4		
Incr Delay (d2), s/veh	1.3	1.0	1.3	1.0	1.7	0.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.1	1.9	2.4	1.6	1.8	1.1		
LnGrp Delay(d),s/veh	8.2	5.1	5.6	5.1	12.6	11.3		
LnGrp LOS	A	A	A	A	B	B		
Approach Vol, veh/h		496	696		364			
Approach Delay, s/veh		6.1	5.4		12.1			
Approach LOS		A	A		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				20.0		10.3		20.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s				10.6		5.5		6.0
Green Ext Time (p_c), s				2.8		0.8		4.4
Intersection Summary								
HCM 2010 Ctrl Delay			7.2					
HCM 2010 LOS			A					

Queues

1: 62nd Street West & Rimrock Road

3/30/2016



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	254	43	76	681	89	240	519	138
v/c Ratio	0.45	0.15	0.13	0.58	0.23	0.60	0.76	0.16
Control Delay	19.1	17.8	16.7	4.5	9.1	24.6	15.7	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	17.8	16.7	4.5	9.1	24.6	15.7	9.3
Queue Length 50th (ft)	65	11	19	29	12	66	91	26
Queue Length 95th (ft)	133	34	49	99	26	125	#159	53
Internal Link Dist (ft)	919		4467			5231		921
Turn Bay Length (ft)		250		250	250		250	
Base Capacity (vph)	562	287	565	1223	394	548	721	949
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.15	0.13	0.56	0.23	0.44	0.72	0.15

Intersection Summary

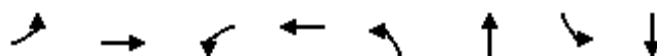
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

2: 54th Street West & Rimrock Road

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	20	697	176	1214	30	297	192	107
v/c Ratio	0.08	0.55	0.46	0.70	0.08	0.64	0.71	0.21
Control Delay	9.1	17.2	12.8	15.5	11.9	16.3	31.3	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	17.2	12.8	15.5	11.9	16.3	31.3	15.9
Queue Length 50th (ft)	3	94	27	121	6	38	42	20
Queue Length 95th (ft)	13	164	69	#347	20	103	#110	61
Internal Link Dist (ft)		654		924		5202		920
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	243	1375	383	1723	385	666	272	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.51	0.46	0.70	0.08	0.45	0.71	0.16

Intersection Summary

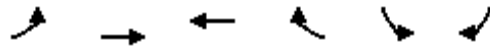
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

6: Grand Avenue & 54th Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	118	618	756	420	322	146
v/c Ratio	0.29	0.31	0.53	0.47	0.67	0.22
Control Delay	7.8	6.6	14.5	3.8	22.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	6.6	14.5	3.8	22.9	5.6
Queue Length 50th (ft)	14	42	89	0	76	14
Queue Length 95th (ft)	35	76	147	48	141	36
Internal Link Dist (ft)		1579	2667		5202	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	406	1986	1431	892	586	667
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.31	0.53	0.47	0.55	0.22
Intersection Summary						

Queues

7: 56th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	572	161	168	722	264	168
v/c Ratio	0.53	0.16	0.48	0.66	0.66	0.36
Control Delay	7.8	1.5	11.4	10.1	22.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	1.5	11.4	10.1	22.8	5.4
Queue Length 50th (ft)	69	0	19	98	52	0
Queue Length 95th (ft)	131	15	#63	189	#109	31
Internal Link Dist (ft)	884			1579	5173	
Turn Bay Length (ft)		250	250			250
Base Capacity (vph)	1089	992	353	1099	432	485
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.16	0.48	0.66	0.61	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

8: 48th Street West & Grand Avenue

3/30/2016



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	957	107	317	1248	171	162
v/c Ratio	0.36	0.09	0.78	0.47	0.75	0.48
Control Delay	3.3	0.8	23.5	3.9	48.5	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.3	0.8	23.5	3.9	48.5	10.0
Queue Length 50th (ft)	47	0	53	70	60	0
Queue Length 95th (ft)	67	8	#227	97	#143	45
Internal Link Dist (ft)	774			424	5188	
Turn Bay Length (ft)		250	250			250
Base Capacity (vph)	2640	1197	404	2666	229	341
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.09	0.78	0.47	0.75	0.48

Intersection Summary

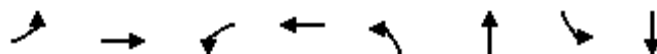
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

13: 48th Street West & Central Avenue

3/30/2016



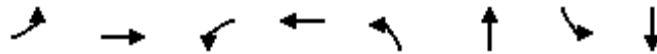
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	336	78	704	63	236	74	151
v/c Ratio	0.05	0.29	0.12	0.62	0.23	0.55	0.36	0.36
Control Delay	5.6	5.7	5.6	9.6	15.6	17.4	19.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	5.7	5.6	9.6	15.6	17.4	19.1	14.0
Queue Length 50th (ft)	2	32	7	88	13	42	16	26
Queue Length 95th (ft)	9	84	26	232	35	89	42	61
Internal Link Dist (ft)		837		420		5201		5188
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	336	1139	643	1128	429	646	325	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.29	0.12	0.62	0.15	0.37	0.23	0.23

Intersection Summary

Queues

18: 48th Street West & King Avenue West

3/30/2016



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	67	708	38	1049	6	224	78	142
v/c Ratio	0.37	0.54	0.09	0.81	0.03	0.63	0.54	0.41
Control Delay	12.6	7.2	4.8	15.2	19.4	23.8	36.2	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	7.2	4.8	15.2	19.4	23.8	36.2	19.1
Queue Length 50th (ft)	8	101	4	213	2	51	26	33
Queue Length 95th (ft)	44	228	15	#607	10	110	63	75
Internal Link Dist (ft)		5180		420		5199		5201
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	182	1320	422	1288	313	489	211	491
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.54	0.09	0.81	0.02	0.46	0.37	0.29

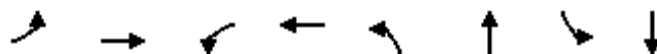
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

20: 64th Street West & King Avenue West

3/30/2016

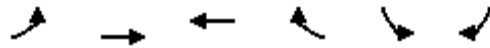


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	168	468	60	647	14	177	30	303
v/c Ratio	0.40	0.38	0.11	0.54	0.09	0.46	0.13	0.62
Control Delay	9.0	5.9	5.0	7.5	16.5	15.8	16.9	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	5.9	5.0	7.5	16.5	15.8	16.9	11.9
Queue Length 50th (ft)	17	45	5	70	3	30	7	22
Queue Length 95th (ft)	72	130	22	205	14	71	23	74
Internal Link Dist (ft)		420		5100		5198		5188
Turn Bay Length (ft)	250		250		250		250	
Base Capacity (vph)	423	1224	569	1202	262	618	381	690
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.38	0.11	0.54	0.05	0.29	0.08	0.44
Intersection Summary								

Queues

37: Grand Avenue & 62nd Street West

3/30/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	150	346	414	282	223	141
v/c Ratio	0.35	0.39	0.46	0.31	0.46	0.26
Control Delay	9.4	7.9	8.6	2.2	13.0	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	7.9	8.6	2.2	13.0	3.6
Queue Length 50th (ft)	14	34	42	0	32	0
Queue Length 95th (ft)	50	88	109	26	67	21
Internal Link Dist (ft)		1482	2578		5231	
Turn Bay Length (ft)	250			250	250	
Base Capacity (vph)	430	894	902	921	840	833
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.39	0.46	0.31	0.27	0.17

Intersection Summary

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	Yield	147	235	161	161	930	1046	985	0.1424	0.2423
2	62nd	None	922		192		351	2021		0.4626	
3	Rimrock	None	308		999		115	890		0.3530	
4	62nd	None	224		867		440	815		0.2805	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	Yield	3.79	4.75	4.38	0.47	0.95	A	A	A
2	62nd	None	4.16		4.16	3.36		A		A
3	Rimrock	None	5.13		5.13	1.43		A		A
4	62nd	None	5.69		5.69	1.14		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	Yield	107	613	254	254	587	1066	971	0.1018	0.6486
2	62nd	None	591		187		786	2122		0.2817	
3	Rimrock	None	116		623		155	1172		0.1002	
4	62nd	None	296		545		194	1017		0.2960	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	Yield	3.69	9.98	9.04	0.33	5.84	A	A	A
2	62nd	None	2.87		2.87	1.45		A		A
3	Rimrock	None	3.18		3.18	0.31		A		A
4	62nd	None	4.94		4.94	1.28		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	None	662		44		1473	2187		0.3061	
2	54th	None	436		626		80	908		0.4907	
3	Rimrock	None	1070		636		426	1332		0.8258	
4	54th	None	216		1301		405	640		0.3476	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	None	3.21		3.21	1.80		A		A
2	54th	None	7.00		7.00	2.80		A		A
3	Rimrock	None	8.75		8.75	10.60		A		A
4	54th	None	7.92		7.92	1.64		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Rimrock	None	935		136		940	2227		0.4249	
2	54th	None	269		962		109	837		0.3285	
3	Rimrock	None	645		417		814	1754		0.3725	
4	54th	None	294		782		280	923		0.3248	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Rimrock	None	3.28		3.28	2.68		A		A
2	54th	None	6.11		6.11	1.49		A		A
3	Rimrock	None	3.14		3.14	1.80		A		A
4	54th	None	5.66		5.66	1.49		A		A

Operational Results

2017 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	62nd St West	None	575		203		222	1000		0.5938	
2	Grand Avenue	None	575		414		364	891		0.6732	
3	Grand Avenue	None	298		127		862	1040		0.2937	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	62nd St West	None	7.75		7.75	4.11		A		A
2	Grand Avenue	None	10.55		10.55	5.92		B		B
3	Grand Avenue	None	4.53		4.53	1.17		A		A

Operational Results

2017 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	62nd St West	None	328		373		389	912		0.3708	
2	Grand Avenue	None	446		201		500	1001		0.4583	
3	Grand Avenue	None	627		135		512	1035		0.6252	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	62nd St West	None	5.75		5.75	1.69		A		A
2	Grand Avenue	None	6.00		6.00	2.39		A		A
3	Grand Avenue	None	8.02		8.02	4.65		A		A

Operational Results

2017 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th St West	None	214		939		419	774		0.2873	
2	Grand Avenue	None	628		70		1083	2114		0.3030	
3	Grand Avenue	None	1206		152		546	2070		0.5973	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th St West	None	6.08		6.08	1.18		A		A
2	Grand Avenue	None	2.98		2.98	1.61		A		A
3	Grand Avenue	None	4.90		4.90	5.35		A		A

Operational Results

2017 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th St West	None	389		515		296	924		0.4347	
2	Grand Avenue	None	801		238		666	1951		0.4204	
3	Grand Avenue	None	660		151		888	2070		0.3254	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th St West	None	6.27		6.27	2.20		A		A
2	Grand Avenue	None	3.59		3.59	2.55		A		A
3	Grand Avenue	None	3.05		3.05	1.74		A		A

Operational Results

2017 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	54th St West	None	782		399		215	1903		0.4217	
2	Grand Avenue	None	1112		549		632	1798		0.6375	
3	Grand Avenue	None	511		103		1558	2110		0.2469	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	54th St West	None	4.26		4.26	2.95		A		A
2	Grand Avenue	None	5.38		5.38	5.74		A		A
3	Grand Avenue	None	2.70		2.70	1.18		A		A

Operational Results

2017 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	54th St West	None	421		680		484	1706		0.2539	
2	Grand Avenue	None	662		290		811	1979		0.3419	
3	Grand Avenue	None	1058		106		846	2108		0.5142	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	54th St West	None	3.82		3.82	1.42		A		A
2	Grand Avenue	None	3.04		3.04	1.76		A		A
3	Grand Avenue	None	4.90		4.90	4.55		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	48th Street West	None	413		1607		328	553		0.8344	
2	Grand Avenue	None	852		41		1978	1997		0.4356	
3	Grand Avenue	None	1816		119		774	2060		0.9260	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	48th Street West	None	29.34		29.34	14.41		D		D
2	Grand Avenue	None	3.38		3.38	2.52		A		A
3	Grand Avenue	None	15.74		15.74	31.09		C		C

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	48th Street West	None	300		861		381	809		0.3850	
2	Grand Avenue	None	1408		154		1007	1893		0.7691	
3	Grand Avenue	None	957		285		1277	1889		0.5196	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	48th Street West	None	6.65		6.65	1.83		A		A
2	Grand Avenue	None	8.47		8.47	11.51		A		A
3	Grand Avenue	None	3.98		3.98	3.48		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th	None	439		268		156	990		0.4519	
2	Central	None	245		526		181	851		0.2937	
3	56th	None	216		402		369	781		0.2817	
4	Central	None	303		121		497	1052		0.2921	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th	None	6.05		6.05	2.37		A		A
2	Central	None	5.56		5.56	1.21		A		A
3	56th	None	5.36		5.36	1.01		A		A
4	Central	None	4.48		4.48	1.16		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th	None	377		323		387	1028		0.3731	
2	Central	None	143		474		226	924		0.1573	
3	56th	None	307		409		208	895		0.3495	
4	Central	None	492		218		498	1094		0.4579	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th	None	5.41		5.41	1.80		A		A
2	Central	None	4.46		4.46	0.55		A		A
3	56th	None	5.60		5.60	1.52		A		A
4	Central	None	5.91		5.91	2.59		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Central	None	277		120		929	1067		0.2634	
2	48th	None	402		228		169	1006		0.4066	
3	Central	None	778		407		223	1534		0.5149	
4	48th	None	149		900		285	788		0.1928	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Central	None	4.29		4.29	1.01		A		A
2	48th	None	5.52		5.52	1.95		A		A
3	Central	None	4.03		4.03	2.86		A		A
4	48th	None	5.29		5.29	0.70		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Central	None	704		223		401	1082		0.6674	
2	48th	None	203		643		284	835		0.2480	
3	Central	None	319		246		600	1923		0.1676	
4	48th	None	269		355		210	1084		0.2518	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Central	None	9.28		9.28	6.26		A		A
2	48th	None	5.50		5.50	1.00		A		A
3	Central	None	2.31		2.31	0.62		A		A
4	48th	None	4.37		4.37	1.01		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th	None	443		488		147	853		0.5321	
2	King	None	702		451		480	872		0.8406	
3	56th	None	175		874		278	653		0.2752	
4	King	None	485		150		899	1028		0.4804	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th	None	7.89		7.89	3.27		A		A
2	King	None	17.10		17.10	13.30		C		C
3	56th	None	6.99		6.99	1.14		A		A
4	King	None	5.99		5.99	2.57		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	56th	None	216		702		372	742		0.2976	
2	King	None	561		191		727	1006		0.5689	
3	56th	None	291		597		155	796		0.3736	
4	King	None	790		284		604	958		0.8591	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	56th	None	6.32		6.32	1.24		A		A
2	King	None	7.18		7.18	3.66		A		A
3	56th	None	6.53		6.53	1.73		A		A
4	King	None	16.76		16.76	14.35		C		C

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	King	None	574		135		998	2085		0.2780	
2	48th	None	281		544		165	936		0.3053	
3	King	None	861		276		549	1650		0.5292	
4	48th	None	113		1020		117	744		0.1553	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	King	None	2.40		2.40	1.18		A		A
2	48th	None	5.13		5.13	1.26		A		A
3	King	None	3.94		3.94	3.06		A		A
4	48th	None	5.38		5.38	0.54		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	King	None	978		169		799	2189		0.4521	
2	48th	None	198		875		272	867		0.2327	
3	King	None	697		188		885	1980		0.3560	
4	48th	None	206		762		123	929		0.2257	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	King	None	3.27		3.27	2.83		A		A
2	48th	None	5.19		5.19	0.91		A		A
3	King	None	2.81		2.81	1.70		A		A
4	48th	None	4.92		4.92	0.89		A		A

Operational Results

2035 AM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Hesper	None	223		174		430	1039		0.2177	
2	56th	None	152		254		143	992		0.1554	
3	Hesper	None	352		155		251	890		0.4020	
4	56th	None	204		400		107	898		0.2310	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Hesper	None	4.16		4.16	0.79		A		A
2	56th	None	4.04		4.04	0.52		A		A
3	Hesper	None	5.46		5.46	1.66		A		A
4	56th	None	4.86		4.86	0.86		A		A

Operational Results

2035 PM Peak - 60 minutes

Flows and Capacity

Leg	Leg Names	Bypass Type	Flows (veh/hr)					Capacity (veh/hr)			
			Arrival Flow		Opposing Flow		Exit Flow	Capacity		Average VCR	
			Entry	Bypass	Entry	Bypass		Entry	Bypass	Entry	Bypass
1	Hesper	None	332		168		163	1111		0.3032	
2	56th	None	126		266		234	1034		0.1236	
3	Hesper	None	143		193		199	1001		0.1448	
4	56th	None	180		151		185	1132		0.1610	

Delays, Queues and Level of Service

Leg	Leg Names	Bypass Type	Average Delay (sec)			95% Queue (veh)		Level of Service		
			Entry	Bypass	Leg	Entry	Bypass	Entry	Bypass	Leg
1	Hesper	None	4.52		4.52	1.29		A		A
2	56th	None	3.84		3.84	0.41		A		A
3	Hesper	None	3.90		3.90	0.47		A		A
4	56th	None	3.74		3.74	0.57		A		A