



Henry Ave S8  
 South of Roberts Ave  
 Clear

Site Code:  
 Station ID:

Start Time	Mon 31-Oct-05	Tue 01-Nov-05	Wed 02-Nov-05	Thu 03-Nov-05	Fri 04-Nov-05	Average Day	Sat 05-Nov-05	Sun 06-Nov-05	Week Average
12:00 AM							87	95	91
01:00							41	44	42
02:00							38	48	43
03:00							24	21	22
04:00							17	15	16
05:00							47	15	31
06:00							129	78	104
07:00							197	109	153
08:00							267	169	218
09:00							285	240	262
10:00				461	461	461	346	342	383
11:00				358	358	358	322	307	328
12:00 PM				451	451	451	387	272	370
01:00				430	430	430	376	336	361
02:00				552	552	552	406	349	436
03:00				730	730	730	405	373	503
04:00				723	723	723	385	300	470
05:00				678	678	678	380	259	439
06:00				589	589	589	405	264	419
07:00				413	413	413	296	221	310
08:00				242	242	242	231	196	223
09:00				227	227	227	211	113	184
10:00				186	186	186	183	109	159
11:00				152	152	152	150	91	131
Day Total	0	0	0	0	6189	6189	5815	4369	5718
% Avg. WkDay	0.0%	0.0%	0.0%	0.0%	100.0%				
% Avg. Week	0.0%	0.0%	0.0%	0.0%	108.2%	108.2%	98.2%	76.4%	
AM Peak				10:00	10:00	10:00	10:00	10:00	10:00
Vol.				461	461	461	346	342	383
PM Peak				15:00	15:00	15:00	14:00	15:00	15:00
Vol.				730	730	730	406	373	503

Henry Ave S8  
 South of Roberts Ave  
 Clear

Site Code:  
 Station ID:

Start Time	Mon 07-Nov-05	Tue 08-Nov-05	Wed 09-Nov-05	Thu 10-Nov-05	Fri 11-Nov-05	Average Day	Sat 12-Nov-05	Sun 13-Nov-05	Week Average
12:00 AM	59					59			59
01:00	27					27			27
02:00	19					19			19
03:00	19					19			19
04:00	25					25			25
05:00	101					101			101
06:00	586					586			586
07:00	1464					1464			1464
08:00	1457					1457			1457
09:00	639					639			639
10:00	359					359			359
11:00	367					367			367
12:00 PM									
01:00									
02:00									
03:00									
04:00									
05:00									
06:00									
07:00									
08:00									
09:00									
10:00									
11:00									
Day Total	5088	0	0	0	0	5088	0	0	5088
% Avg. WkDay	100.0%	0.0%	0.0%	0.0%	0.0%				
% Avg. Week	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	07:00					07:00			07:00
Vol.	1464					1464			1464
PM Peak									
Vol.									
Grand Total	5088	0	0	0	6189	11277	5815	4369	10806
ADT	Not Calculated								

Tri-State Traffic Data, Inc.  
184 Baker Road  
Coatesville, PA 19320  
610-466-1469

Street: W Hunting Park EB  
Location: East of Henry Ave  
Weather: Clear  
Counter: TSTD

Site Code: 000000000000  
Station ID:

Latitude: 0 0.000 Undefined

Start Time	Mon	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM							175	140	158
01:00 AM							110	110	110
02:00 AM							117	107	112
03:00 AM							77	79	78
04:00 AM							44	43	44
05:00 AM							59	48	54
06:00 AM							106	71	88
07:00 AM							214	129	172
08:00 AM							251	161	206
09:00 AM							303	198	250
10:00 AM							364	226	290
11:00 AM							409	280	347
12:00 PM									
01:00 PM					489	489	453	277	406
02:00 PM					492	492	432	370	431
03:00 PM					617	617	497	538	551
04:00 PM					1054	1054	503	504	697
05:00 PM					1113	1113	508	349	657
06:00 PM					740	740	400	382	507
07:00 PM					427	427	351	341	373
08:00 PM					381	381	284	232	299
09:00 PM					350	350	269	0	206
10:00 PM					359	359	266	0	208
11:00 PM					288	288	264	0	184
Total	0	0	0	0	7849	7849	6853	4962	7075
% Avg WkDay	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%			
% Avg Week	0.0%	0.0%	0.0%	0.0%	110.9%	110.9%	96.8%	70.1%	
AM Peak					11:00	11:00	10:00	11:00	11:00
Vol.					409	409	354	280	347
PM Peak					17:00	17:00	16:00	14:00	15:00
Vol.					1190	1130	506	538	697

Tri-State Traffic Data, Inc.  
184 Baker Road  
Coatesville, PA 19320  
610-466-1469

Street: W Hunting Park EB  
Location: East of Henry Ave  
Weather: Clear  
Counter: TSTD

Site Code: 000000000000  
Station ID:

Latitude: 0 0.000 Undefined

Start Time	Mon	Tue	Wed	Thu	Fri	Average Day	Sat	Sun	Week Average
12:00 AM									
01:00 AM									
02:00 AM									
03:00 AM									
04:00 AM									
05:00 AM									
06:00 AM									
07:00 AM									
08:00 AM									
09:00 AM									
10:00 AM									
11:00 AM									
12:00 PM									
01:00 PM									
02:00 PM									
03:00 PM									
04:00 PM									
05:00 PM									
06:00 PM									
07:00 PM									
08:00 PM									
09:00 PM									
10:00 PM									
11:00 PM									
Total	4	0	0	0	0	4	0	0	4
% Avg WkDay	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%			
% Avg Week	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	
AM Peak	10:00					10:00			10:00
Vol.	3					3			3
PM Peak									
Vol.									
Total	4	0	0	0	0	7849	7853	4962	7079

ADT Not Calculated



Street: Roberts Ave  
Location: East of Henry Ave  
Weather: Clear  
Counter: TSTD

Site Code: 00000000000  
Station ID: 00000000000

Start Time	31-Oct-05		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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06:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
04:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lane Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM Peak Vol.									188	179	195	155	180	136	124	157
PM Peak Vol.									322	341	146	204	106	189	186	243
Week Average									5415	3020	1857	2647	1462	2218	2056	2788

Street: Roberts Ave  
Location: East of Henry Ave  
Weather: Clear  
Counter: TSTD

Site Code: 00000000000  
Station ID: 00000000000

Start Time	07-Nov-05		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
04:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
01:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
02:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
03:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
04:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
05:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
07:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
08:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
09:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11:00 PM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12:00 AM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lane Day	1471	1571	0	0	0	0	0	0	0	0	0	0	0	0	1471	1571
AM Peak Vol.																
PM Peak Vol.																
Week Average																

Comb. Total	3042	0	0	0	5415	4504	3680	7887
ADT	Not Calculated							

Street: Fox Street  
Location: South of Roberts Ave  
Weather: Clear  
Counter: TSTD

Site Code:  
Station ID:

Start Time	31-Oct-05		Tue		Wed		Thu		Fri		Sat		Sun		Week Average		
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	
12:00 AM																	
01:00											167	128	136	131	152	130	
02:00											98	92	127	90	113	91	
03:00											100	60	95	68	98	62	
04:00											51	30	50	30	50	30	
05:00											84	45	52	33	88	39	
06:00											133	97	82	57	108	77	
07:00											202	181	143	104	172	142	
08:00											285	220	187	146	236	183	
09:00											304	243	199	235	252	239	
10:00											354	253	271	270	312	252	
11:00										399	304	340	276	289	320	301	
12:00 PM																	
01:00										474	340	446	306	258	235	393	294
02:00										449	314	391	333	354	241	398	296
03:00										553	369	399	286	467	289	483	315
04:00										884	408	437	334	394	314	505	352
05:00										714	390	440	328	389	306	513	341
06:00										722	415	443	304	353	282	506	334
07:00										500	368	368	290	325	254	398	304
08:00										416	308	321	250	318	235	352	284
09:00										316	256	311	226	304	197	310	226
10:00										281	237	285	248	197	176	248	220
11:00										324	215	292	178	175	139	264	177
12:00 PM										214	163	194	176	128	114	179	151
Lane Day	0	0	0	0	0	0	0	0	0	6076	4087	6468	4930	5358	4401	6517	4921
AM Peak Vol.										10163		11418		9759		11438	
PM Peak Vol.																	
AM Peak										11:00	11:00	10:00	11:00	11:00	10:00	11:00	10:00
PM Peak										17:00	17:00	12:00	15:00	14:00	15:00	16:00	15:00
AM Peak										399	304	352	278	289	371	345	317
PM Peak										722	415	446	334	467	314	514	352

Street: Fox Street  
Location: South of Roberts Ave  
Weather: Clear  
Counter: TSTD

Site Code:  
Station ID:

Start Time	07-Nov-05		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM																
01:00																
02:00																
03:00																
04:00																
05:00																
06:00																
07:00																
08:00																
09:00																
10:00																
11:00																
12:00 PM																
01:00																
02:00																
03:00																
04:00																
05:00																
06:00																
07:00																
08:00																
09:00																
10:00																
11:00																
Lane Day	2650	2493	0	0	0	0	0	0	0	0	0	0	0	0	2650	2493
AM Peak																
AM Peak	08:00	08:00														
AM Peak	490	569													490	569
PM Peak																
PM Peak																

Comb. Total 5143 0 0 0 10163 11418 9759 16581  
ADT Not Calculated

## APPENDIX C

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### Dover Downs Sample Count Data

Vollmer Associates LLP

161 Gailher Drive, Suite 105  
Mt Laurel, NJ 08054

856-234-0800 Fax: 856-234-5928

Dover DE  
Dover Downs  
8/29/2006

File Name : weekday pm combined  
Site Code : 00563073  
Start Date : 8/29/2006  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Exiting		Entering		Int. Total
	Thru	App. Total	Thru	App. Total	
03:30 PM	87	87	84	84	151
03:45 PM	74	74	85	85	139
Total	141	141	149	149	290
04:00 PM	43	43	92	92	135
04:15 PM	54	54	54	54	108
04:30 PM	48	48	69	69	117
04:45 PM	61	61	65	65	126
Total	206	206	280	280	486
05:00 PM	39	39	135	135	174
05:15 PM	58	58	71	71	129
05:30 PM	58	58	58	58	114
05:45 PM	65	65	55	55	120
Total	218	218	319	319	537
06:00 PM	62	62	58	58	120
06:15 PM	58	58	42	42	100
Grand Total	885	885	848	848	1533
Approch %	100		100		
Total %	44.7	44.7	55.3	55.3	
Cars	882	882	843	843	1525
% Cars	99.6	99.6	99.4	99.4	99.5
Heavy Vehicles	3	3	5	5	8
% Heavy Vehicles	0.4	0.4	0.6	0.6	0.5

Start Time	Exiting		Entering		Int. Total
	Thru	App. Total	Thru	App. Total	
04:30 PM	48	48	69	69	117
04:45 PM	61	61	65	65	126
05:00 PM	39	39	135	135	174
05:15 PM	58	58	71	71	129
Total Volume	206	206	340	340	546
% App. Total	100		100		
PHF	.844	.844	.630	.630	.784

Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 04:30 PM

Approch	05:15 PM	04:30 PM
+0 mins.	58	69
+15 mins.	56	65
+30 mins.	65	135
+45 mins.	62	71
Total Volume	241	340
% App. Total	100	100
PHF	.927	.630

Vollmer Associates LLP

161 Gailher Drive, Suite 105  
Mt Laurel, NJ 08054

856-234-0800 Fax: 856-234-5928

Dover, DE  
Dover Downs  
Friday 9/1/2006

File Name : fri combined  
Site Code : 00563073  
Start Date : 9/1/2006  
Page No : 1

Groups Printed- Unshifted - Bank 1

Start Time	Entering		Exiting		Int. Total
	Thru	App. Total	Thru	App. Total	
03:30 PM	92	92	79	79	171
03:45 PM	56	56	87	87	143
Total	148	148	166	166	314
04:00 PM	88	88	71	71	159
04:15 PM	88	89	65	65	154
04:30 PM	93	93	70	70	163
04:45 PM	90	90	79	79	169
Total	360	360	285	285	645
05:00 PM	127	127	52	52	179
05:15 PM	73	73	73	73	146
05:30 PM	62	62	80	80	142
05:45 PM	85	85	84	84	169
Total	347	347	289	289	636
06:00 PM	76	76	69	69	145
06:15 PM	70	70	61	61	131
Grand Total	1001	1001	870	870	1871
Approch %	100		100		
Total %	53.5	53.5	46.5	46.5	
Unshifted	1001	1001	869	869	1870
% Unshifted	100	100	99.9	99.9	99.9
Bank 1	0	0	1	1	1
% Bank 1	0	0	0.1	0.1	0.1

Start Time	Entering		Exiting		Int. Total
	Thru	App. Total	Thru	App. Total	
04:15 PM	89	89	65	65	154
04:30 PM	93	93	70	70	163
04:45 PM	90	90	79	79	169
05:00 PM	127	127	52	52	179
Total Volume	399	399	266	266	665
% App. Total	100		100		
PHF	.785	.785	.842	.842	.929

Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

Approch	04:15 PM	05:15 PM
+0 mins.	89	73
+15 mins.	93	80
+30 mins.	90	84
+45 mins.	127	69
Total Volume	399	306
% App. Total	100	100
PHF	.785	.911



Vollmer Associates LLP

161 Galther Drive, Suite 105  
 Mt Laurel, NJ 08054  
 856-234-0800 Fax: 856-234-5928

Dover, DE  
 Dover Downs  
 Saturday, August 26, 2006

File Name : sat combined  
 Site Code : 00000001  
 Start Date : 8/26/2006  
 Page No : 1

Groups Printed-Unshifted - Bank 1

Start Time	Exiting		Entering		Int. Total
	Thru	App. Total	Thru	App. Total	
01:00 PM	84	84	108	108	172
01:15 PM	75	75	101	101	176
01:30 PM	63	63	97	97	160
01:45 PM	75	75	119	119	194
Total	277	277	425	425	702
02:00 PM	82	82	80	80	162
02:15 PM	86	86	80	80	166
02:30 PM	77	77	92	92	169
02:45 PM	62	62	95	95	157
Total	307	307	347	347	654
03:00 PM	81	81	108	108	189
03:15 PM	107	107	103	103	210
03:30 PM	71	71	101	101	172
03:45 PM	71	71	95	95	166
Total	330	330	407	407	737
04:00 PM	83	83	93	93	176
04:15 PM	83	83	120	120	203
04:30 PM	82	82	115	115	197
04:45 PM	84	84	109	109	193
Total	332	332	437	437	769
05:00 PM	91	91	93	93	184
05:15 PM	75	75	93	93	168
05:30 PM	74	74	102	102	176
05:45 PM	88	88	122	122	220
Total	338	338	410	410	748
06:00 PM	102	102	111	111	213
06:15 PM	103	103	111	111	214
06:30 PM	85	85	92	92	177
06:45 PM	88	88	105	105	191
Total	376	376	419	419	795
Grand Total	1960	1960	2445	2445	4405
Approch %	100		100		
Total %	44.5	44.5	55.5	55.5	
Unshifted	1960	1960	2427	2427	4387
% Unshifted	100	100	99.3	99.3	99.6
Bank 1	0	0	18	18	18
% Bank 1	0	0	0.7	0.7	0.4

Start Time	Exiting		Entering		Int. Total
	Thru	App. Total	Thru	App. Total	
05:45 PM	98	98	122	122	220
06:00 PM	102	102	111	111	213
06:15 PM	103	103	111	111	214
06:30 PM	85	85	92	92	177
Total Volume	388	388	436	436	824
% App. Total	100		100		
PHF	.942	.942	.893	.893	.936

Vollmer Associates LLP

161 Galther Drive, Suite 105  
 Mt Laurel, NJ 08054  
 856-234-0800 Fax: 856-234-5928

File Name : sat combined  
 Site Code : 00000001  
 Start Date : 8/26/2006  
 Page No : 2

Start Time	Exiting		Entering		Int. Total
	Thru	App. Total	Thru	App. Total	
Peak Hour Analysis From 01:00 PM to 06:45 PM - Peak 1 of 1					
Peak Hour for Each Approach Begins at:					
	05:45 PM		05:30 PM		
+0 mins.	98	98	102	102	102
+15 mins.	102	102	122	122	122
+30 mins.	103	103	111	111	111
+45 mins.	85	85	111	111	111
Total Volume	388	388	446	446	446
% App. Total	100		100		
PHF	.942	.942	.914	.914	.914

## APPENDIX D

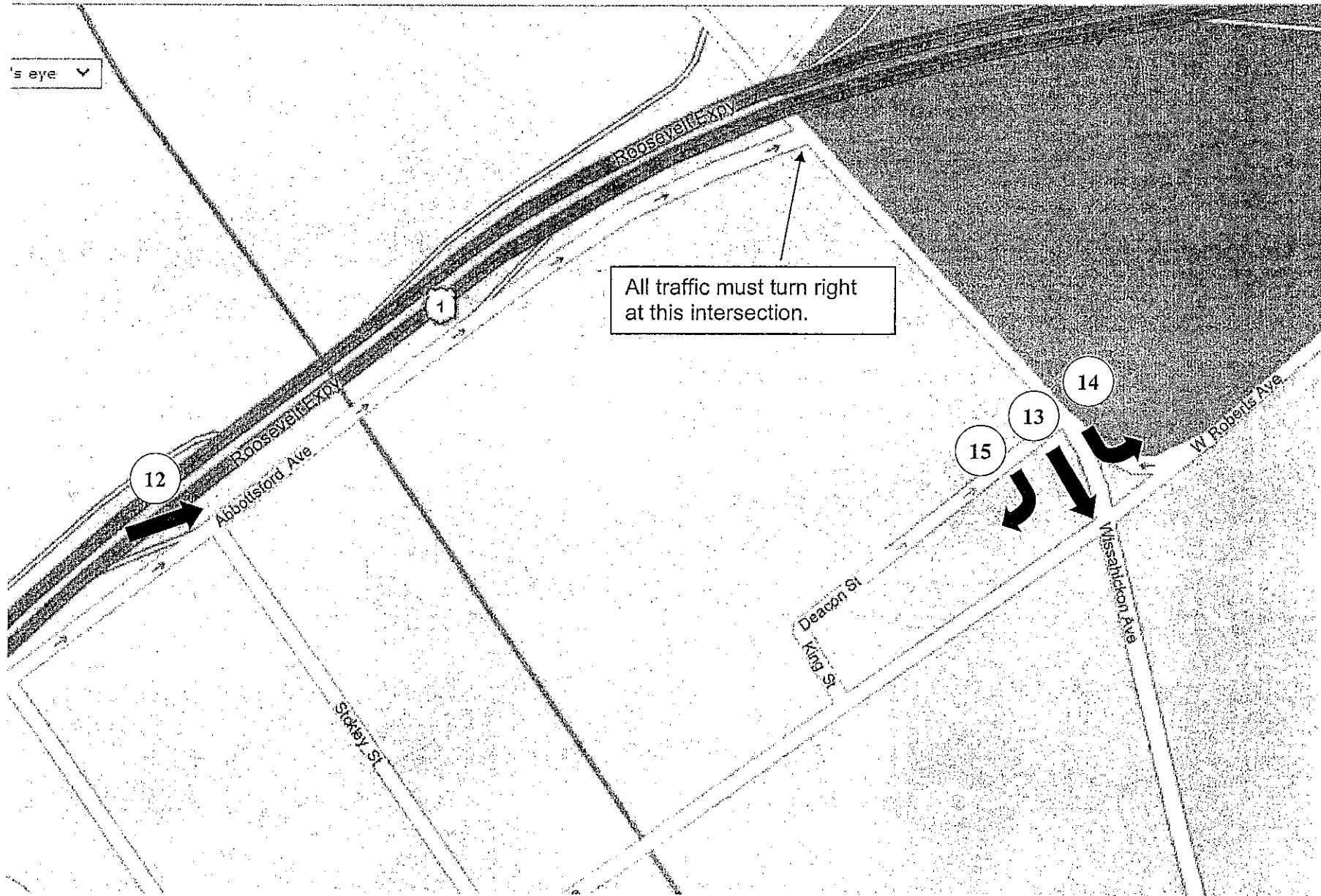
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### Origin-Destination Study

's eye ▾

All traffic must turn right at this intersection.



- LOC 12 Route 1 Southbound Off-Ramp
- LOC 13 Southbound Thru Movement at the Wissahickon Ave / Roberts Ave Intersection
- LOC 14 Southbound Left Turn Movement at the Wissahickon Ave / Roberts Ave Intersection
- LOC 15 Southbound Right Turn Movement at the Wissahickon Ave / Roberts Ave Intersection

**TUESDAY 4-6 PM**

LOC 12 TOTAL COUNT = 630

MATCHES LOC 12 WITH:

				ADJUSTED
Back On Highway	112	18%	139	22% of Loc 11
LOC 14 (LEFT) =	24	4%	30	5% of Loc 12
LOC 13 (THRU) =	281	45%	348	55% of Loc 12
LOC 15 (RIGHT) =	92	15%	114	18% of Loc 12

**SATURDAY 2-6 PM**

LOC 12 TOTAL COUNT = 1321

MATCHES LOC 12 WITH:

				ADJUSTED
LOC 14 (LEFT) =	57	4%	88	7% of Loc 12
LOC 13 (THRU) =	577	44%	888	67% of Loc 12
LOC 15 (RIGHT) =	224	17%	345	26% of Loc 12

Location 12 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
M429	1809	4163	0678	G19B	574V	3989	5107
1989	9029	8964	5418	NFB	0712	4193	9987
3088	MOTORCYCL E	7406	9342	8663	6734	2670	6340
4597	0076	5951	8391	4160	5342	330A	8267
6166	1068	9457	8758	8635	3569	3157	8792
5374	763L	1RMV	4428	35MM	8107	7974	9437
9762	8623	2427	5519	8404	8714	NANCY 46A	8079
0970	8852	215L	Y910	8552	20714	2257	3383
4697	1047	1270	8529	751M	3079	1732	7509
0878	TRA	170A	4643	0309	7142	2585	5181
SW55	9954	3337	3057	7755	3984	N/C	2502
3713	70630	661A	C024	9167	7610	7907	4N1F
1929	CPI	U52R	9322	8440	2098	9082	1469
1943	2469	8870	6315	3325	2315	0502	8494
9434	8691	NO PLATE	0098	2380	4291	2203	5438
2846	8950	4339	760K	5726	8618	0365	9431
7070	9558	6881	3312	5593	4989	6363	8750
0879	9952	2636	1236	3684	1955	5603	730T
809A	7950	8829	?JLU	1316	3115	8461	0404
1577	0842	9828	1343	5548	0197	4145	4BEZ
5132	7330	1341	3143	4986	7606	4846	9840
2081	8266	1051	4329	7296	8155	9761	2184
7414	1896	3236	1364	7532	1334	0847K	1927
6203	2873	9847	2363	S0UL 9	HAMS	9972	1694
9750	5717	3642	8054	6354	4652	C/S/P	6422
6241	2677	9464	0454	1609	7432	1196	474508
5661	7889	5372	0845	4704	3454	8189	0864
5602	9798	5700	1118	3694	3486	1569	86508
4026	2625	2812	9116	9207	3482	9988	6280
8441	2144	7236	BIG TRUCK	0068	3588	8415	0395
3353	8173	5672	7303	Z65U	1557	C/S/P	RP44
9595	9567	1UJL	4027	8614	8661	0029X	3908
9534	5098	4804	MISS ONE	6275	3581	88180	6128
9474	0408	4044	7790	9582	HTR	4343	4376
0965	5264	5312	FIRE F. TRUCK	6939	MOTORCYCL E	4073	7856
3937	MISS ONE	N368	6195	4572	807P	7707	1904
TRACKER TRAILER	34388966	8992	5512	1163	1650	9187	6011
2355	8966	W438	4947	2449	1139	0312	9976
S5SJ	5057	USD74	8475	9405	8401	0706	3801
4996	6795	8349	3694	1715	9171	5005	3906
7984	1848	4144	9769	6932	3246	42448	6642
7063	6960	7250	1762	0903	9416	8118	8847
3584	4094	2330	6222	1092	9762	9482	0276
1065	3094	8854	2031	DISABLE VECHICLE	2996	1637A	5735
8698	7750	6996	2351	7003	7656	8209	5445
1466	6790	0589	8367	FHAY	3978	3182	1761
1561	L41D	8935	3366	9859	3917	4034	3491
0292	8473	D88T	6721	0425	6629	1766	7622
8200	8396	MOTORCYCL E	8286	9683	SJAS	0142	8422

Location 12 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
4375	3654	5689	8106	9280	1084	3184	3580
0692	1571	5580	3798	2549	1372	2828	8115
4375	6594	2039	2862	NO PLATE	5766	2103	10302
2791	7312	7295	99862	3900	2037	2693	1903
7901	3311	1197	D53	8757	3231	2556	9652
42JS	8966	R992	7683	9796	2531	1417	2659
5292	2325	8711	NO PLATE	0841	2287	0755	2798
1686	U54Z	4365	3773	4644	FH2U	1457	5094
554H	3737	9730	6967	649?	6938	7477	1672
2226	7386	6164	POET	9798	6854	5778	7436
9768	4368	8636	8691	0728 T. TRAILER	8224	3879	8836
8787	3440	4416	8595	0117	8192	7780	7102
2725	B96A	7035	4095	0540	79182	3796	7121
4772	Y849K	1733	3953	8871	0731	44536	9711
8725	2524	Y26N	4458	9651	9145	7328	3395
0064	6805	2877	0087	9355	3300	6455	7677
4780	4367	5501	8813	5410	3114	9538	2072
4CVW	5683	5614	0836	6406	8002	1644	2672
5431	7435	6310	1881	9285	B7800	MOL12	2967
7432	3192B	9228	6742	1169	5651	SLIM	7395
7761	7885	E96V	4664	4432	5683	0148	5974
2940	9413	9563	5970	9547	0687	9077	5912
	9711	2997	4590	9946	0281	R55E	5985
	3939	8117	8298	8405	8008	3434	9246
	1966	7386	5930	0425	2587	682M	9074
	3683	0086	5108	1224	2518	48MM	8018
	5382	7853	1189	H32M	4573	5998	5454
	3873	NO PLATE	7244	7985	4570	3405	8735
	FLAT BED TRUCK	4023	1098	0920	X8517	45190	3142
	0106	5922	MOTORCYCL E	8555	9118	4592	115H
	6621	7674	9984	0253	3094	7482	722H
	PA59	8212	712T	0184	5679	1626	883L
	419P	1067	170W	5233	538C	LL15	6214
	1179	1054	7545	3???	2298	T34D	6217
	S69M	6972	5279	9182	7608	9219	7219
	6002	6629	3648	6588	7601B	4528	9386
	6878	0856	3647	1404	0614	4280	7727
	4667	6080	1928	7723	8354	3754	6575
	866A	8862	7817	6476	3350	9928	
	0891	2400	7722	3672	2019	4748	
	5684	2695	P57N	IYAH	7410	6498	
	9724	2701	318B*	5160	4730	7044	
	5353	3880	Y533	6479	8177	1222	
	1179	5620	7732	3672	8132	M127	
	6102	2510	9688 BUS	4608	7131	3083	
	8132	9742	5441	9106	6773	405N	
	894N	02M3	8946	6196	4540	3201B	
	3206	5315	8537	9595	7179	5479	
	W573	8845	5432 TRUCK	0716		3075	
		6954	0830	?K07		8426	

Location 12 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
			6400	5508		0558	
			7508	6946		1776	
			5155	?4602		C46D	
			8184	M/P		394D	
			3004	M/P		2402	
			7460	8343		AMAE	
			5211	8328		2446	
			6180	1445		8029	
			3455	3007		3320	
			82973	1974		37200	
			4202	3978		0103	
				5688		4587	
				7331		8819	
				9771		9086	
				6483		9108	
				649M		4012	
				4756		3448	
				6546			
				0818			
				0866			
				0176			
				0656			
				3668			
				820520			
				4329			
				36PX			
				9116			
				P109			
				1355			
				3879			
				11X5			
				3340			
				1521			
				9486			
				9473			
				2833			
				1764			
				8367			
				1011			
				8411			

Location 12 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
6575	1214	8301	5243	8284	4777	9333	2241
8PVW	O548	3912	9429	2617	8299	8264	2275
7764	9601	8116	OO70	9669	9238	6166	9138
1418	8670	3517	O770	531C	3792	2333	3727
4456	O573	2517	4417	3399	8578	9778	2500
9596	3410	5888	6SMB	N/P	2959	O404	2536
2038	2370	643	W44H	9836	3695	7371	9235
O929	3889	2825	2924	8652	879A	5339	3139
4979	5343	4123	2448	7228	2787	O783	2109
1490	5293	1971	8418	7604	1938	O117	9764
8058	7517	SDSH	7040	O505	1299	3565	426
69Y2	2488	6832	3174	6604	MM41	O974	3870
3410	7577	1304	O115	3800	8955	7699	3492
3188	3202	5626	3519	3744	A12U	6157	9209
7668	4523	2791	8058	5074	8803	Z48C	6822
N929	3132	8017	4610	N/C	8161	4484	2860
O004	4692	SSRN	O967	2657	4717	9721	8280
B143	5520	690T	4222	2498	4888	9287	MISSED
8796	2730	1178	Y30T	1724	4019	5018	6758
3625	7129	Y831	9763	8439	2217	6558	1535
3624	W109	2255	D123	1351	3729	O040	3752
2908	O518	O646	3168	723A	5279	9415	78MG
1131	O526	2777	7657	392X	4855	6782	G12W
5937	7755	4753	3942	6033	5428	5013	1221W
7713	3299	?5SJ	3370	9133	7524	6210	779E
O172	3299	7302	O564	4421	1318	4782	W21X
Y26J	3101	4225	QUEEN DI	O357	1063	4682	8344
5816	7779	7173	O524	4547	2807	9590	61876
TRACKER	9403	M697	921V	F007	9007	4794	2184
TRAILER							
C576	800P	URJS	1972	1497	1528	7736	9663
6887	554	SKIP ONE	2282	1466	1734	2239	4930
2478	3108	M273	6635	2688	7167	8203	8139
6893	4488	3120	3974	1276	?H3P	6728	7188
1993	8332	317X	9000	1232	2740	9469	8145
6485	O579	?7VD	O822	3402	1689	9427	2168
O335	7950	7629	LP/COVER	ED	3508	97221	HP54
2533	3494	1BNC	O436	2037	1240M	O420	5434
MSP	3750	7593	2609	2441	5654	9899	2567
O888	3740	515E	5515	N/P	4877	7058	6146
7052	1155	5546	5510	7070	9543	9403	6158
3445	9852	8439	5943	7750	POSTAL	4905	7829
OSPA	8668	572	8627	3699	O888	4170	9546
1715	ROL-6	EPAS	9029	9803	2713	4026	1561
1140	410J	74184	2903	3271	4297	9940	3871
M971	9860	2136	N/LP	6700	7930	9453	4142
6370	9080	9352	9857	O085	6068	6924	9984
O185	2986	414	4532	7257	4360	MOTORCYC	1385
O805	5824	3166	Z24F	9233	4015	2184	FEAR
8718	8612	1603	2381	4611	8578	5616	2533
N/P	69V6	1674	5734	7043	1075	6081	6631

Location 12 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
1177	9200	8348	9514	W13S	2122	MOTORCYC LE	8546
5275	MOTORCYC LE	6573	6745	3353	2792	MOTORCYC LE	9040
9276	4169	5842	0053	J10K	2381	5542	9849
6746	C/S/P	0544	ALAN	1341	4656	1052	7940
9969	7649	9423	2332	4418	1189	7770	1005
7663	0876	3858	3394	0367	4290	9031	9953
UCIE	0519	0742	4674	0967	MM41	5194	3895
2979	3386	7617	9406	0977	8955	912	8882
159B	6263	2438	9408	5146	A12U	635B	0051
8586	8447	2519	FREEDOM	7774	8003	6313	8713
2356	0057	3492	4863	1203	8161	P390	9200
2100	5839	5907	8301	9094	47AT	7338	7736
3550	5485	390	POSTAL TRUCK	1761	4888	4717	6356
81MG	5674	5008	5053	7893	6896	88SV	8968
8955	3525	K18N	3827	T.TRAILER	1900	L50A	5684
7679	6185	1196	2715	9115	3792	9017	U HAUL
3444	4659	0230	4714	4832	5279	D42C	6155
0917	LYL	5565	2323	4334	8166	PX90	7150
0811	3959	1974	2758	3859	4855	1844	2934
2951	1346	2829	MOTORCYC LE	6665	5428	6019	8745
0425	5984	32NG	5524	7102	7628	5139	2856
2800	609C	4321	5453	2682	1318	5179	3886
V95X	7856	3123	RWYM	2457	4245	7917	4374
0546	9200	8254	6432	1274	6053	M801	4225
0093	5243	OMMI	7680	4170	2867	1030	3335
2834	3210	4691		0527	6053	2302	7126
4565	9171	7772		0876	4496	37L2	777C
8911	5326	7100		7886	1904	9291	18B
MOTORCYC LE	8846	9051		3047	9038	8882	9487
3280	930N	4428		532X	6828	0401	2471
8888	9751			8601	3610	0390	
0840	0497			1581	7269	8935	
7714	FSY			0510	7976	764U	
6800	9683			7726	8025	2055	
6055	1655			3139	3D08	7462	
2809	8444			937L	2822	2101	
5896	MISSED			8930	1509	6570	
2546	4878			8702	8475		
8574	2480				ORXZ	2495	
3074	5308						
7527	0134				11H1		
1572	L90P				0698		
6905	0868				5926		
1759	8012				9877		
6254	7047				8536		
N/P	5849				3748		
4477	0071				8201		
2616	8846				4921		
9637	5340				9670		

Location 12 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
9464	1060				8819		
7155	3652				5103		
7483	N/P				1896		
1150	3817				3434		
7610	566A				5316		
6973	964A				4105		
509	1590				0925		
7650	9946						
H23L	9720						
O111	3054						
6015	5409						
6462	1UCB						
HCIN	1206						
2346	7136						
7529	8958						
9113	1284						
5394	7702						
9278	9361						

Location 12 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
7059	6591	7839	5341	0769	7417	31766	3293
6148	1557	9951	2918	41429	9622	IAMANGEL	9807
40042	3337	6927	1678	1761	1005	2911	9687
4654	8498	3194	1411	8443	6301	6836	1968
1059	8714	9971	5150	0459	8557H	F84K	8999
3639	8327	9539	9290X	9861	5587	5080	8865
2662	8916	0047	5505	0254	531Z	1847	6151
3360	9631	9737	4836M	3819	0345	7904	1718
6899	11709W TRAILER	WEIGHT-I	9142	5957	6476	76823	6287
6549	0124J	4235	8624	0362	1904	5980	NO PLATE
1464	2149	8278	4070	4819	5554	0268	2550
5802	2647	2479	1059	8734	5096	25136	4777
B436 NY	7717	5140	6708	7755	8627	0859	9323
9198	0545	0413	3961	9770	9075	8299849	2522
1329	8713	1452	6443	0671	1561	GRL	2589
1067	8078	3971B	XL_FL	0557	7737	6562 DE	3197
2891	3412	7233	6197	1UNIQUE	0529	M18F	7589
4591	5677	1813	WIFE	4759	9208	M49X	4704
5522	3638	0538	3062	42-MG MUNICIPAL	3222	4154	9217
9955	2627	4888	4273	0734	5525	4999	6162
1783	7210	6033	9774	4382	8276	5607	2026
37483	1901	2215	7412	3473	8631	9075C	43322 TAXI
6891	6953	5615	6845	0945	8754	6200	6495
0560	6745	1419	1385	7842	9587	0537	1950
7073	0487	8045	3184	5SWZ	1887	9444	4471
7448	9973	9911	8188	6212	7459	5015	3366
7393	5251	6880	91983 DE	2447	0156	3047	6255
6165	5434	0816	4166	5637	N502	9972	2701
5434	8145	5668	5324	4431	5689	6193	3766
3159	8495	2306	5713	7039	3017	2110	7743
7352	0219	3011	1614	5129	7496	2139	2388
6196	7773	9320	7432	3910	5213	C869	7523
4084	6061	6443	1676	7470	5888	4203	5888
4360	6446	0213	9898	2219	D55V	84300	8828
9390	1475	1263	7201	6119	0323	2934	4551
1736	1066	6399	5504	2988	0903	8101	2325
8069	PW90	3554	0134	MKZ209	8508	8676	4839
123F TRUCK	4940	7203	5918	8306	9266	8534	0220
1491	6154	0455	85882 TRAILER	4175	4048	0059	44454 TAXI
2032	8725	844 DRUG AWARENESS	9089G TRAILER	54F NJ	5071	5402	7318
4326	2365	5035	0256	9530	1268	3289	4500
5107	0036	0252	44620	3016	1002	6138	8179
4991	5136	7886	6144	2176	3047	2545	6722
0198	2118	387G	5061	6343	4293	9133	0142
0149	5542	2480	9100	6144	4435	0015	6589
4121	0511	3649	744K	7789	7732	2349	2608
8470	5242	8523	7853	44486 TRAILER	2743	9261	5812

Location 12 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
9120	0537	6673 TRUCK	52572	K163 MD	1630	8532	0024
6104	6769	9818	Z8RY DC	35716	7002	1857	54309
1648	2712	7845	3633	1138	7784	4634	7278
1371	1425	7310	466U	38002	0222	D38Z	8853
7477	7332 TRAILER	3273	8446E	5415	5220	1187	5698
38868	9113	2283	7019	2563	2900	37976	0224
7069	8039	9306	5305	3581	1720	2056	2884
M284 MD	6014	5117	6503	5778	MOTO Y04	4105	8065
7299	8258	8271	1996	4178	8761	92G	3247
9735	5623	9461C	4975	8262	3032	7717	1397
9710W	8911	5979	1722	2095	8650	5850	0955
0822	9842	2039	6623	9536	0068	9321	9947
1468	7279	0732	7JLK	0054	4318	8078	9750
3546	5580	0711	9445	3728	3020	0885	8011
8983	7207	1573	2394	3261	4LLZ	5494	0127
M031	4123	4357	6202	0816	8451	3521	9843
6296	6614	2429	ZJ56	9156	6385	5115	8226
8583	1612	R91M	0422	9272W	0873	1472	8929
9452	0014	FF80	851G	0882	9762	3276 TRAILER	12895
L194	2270	8861	3615	7740	1615	9927	4496
4212	7545	2699	323926	2516	5386	9381	4584
1990	0227	1415	9262	8273	2061	8888	4822
S10	1995	0697	7849	6692	5555	B40L	9288
4789	2515	39136	1637	7663	9456	8372	9726
4448	8301	6965	9134	0814	J673	8694	4525
NO PLATE	2438	6572	0642	0320	6119	6280	
5826	GURL-2	4438	9895	8788	3179	3324	
6878	7157	1366	7012	5128	3116	4133	
7993	0410	6361	SCHOOL BUS	2031	1170	0194	
5026	2387	6066	4190	6818	3453	1615	
7349	5133	K41Y	6399	6454	4408	2102	
7502	3073		5746	1755	0335	8891	
0039	W60W NJ		6572	1277	7009	7099	
6839			39436 SCHOOL BUS	1889	2304	8443	
3146			0468	6631	2081	0816	
604T				7365	MANTON	9108	
6505				9017	3573	3683	
7192				46F NJ	7983	3751	
2415					8482	5000	
2663					8930	9602	
0148					7657		
M398							
6265							
0076							
3219							
1208A POLICE							



Location 12 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
5744							
7892							
1822							

Location 13 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
8999	3070	8825	8366	0301	5160	9971	7712
90767	22K	0571	3256	2467	8241	3094	2569
1437	5434	0347	0472	8552	5514	7411	1551
0645	7432	3332	0678	3773	0808	760	5107
2883	0671	8132	5418	1562	8536	1201	9458
6452	6610	0573	9342	0309	7992	614	6340
2639	0076	9851	59841	0775	1423	2298	5234
3950	43y	3724	1626	1967	0373	9416	7493
0573	9238	0264	5519	8440	7448	2019	5613
7844	1106	5692	91D	2110	1455	7840	86F
8543	0600	71356	8529	3335	2364	690G	7522
0906	0707	MG55	6856	2380	0881	2723	1548
9659	21158	0457	3073	9544	8115	6561	37B
8021	8852	8994	6315	4084	5805	2046	1469
2935	5951	RMD	3102	1316	5353	8176	5186
0719	8623	205L	1236	5548	9818	3320	8872
0227	1855	0320	4833	7296	C07	1653	7364
8088	7630	2874	49B	7483	15008	3989	0404
0489	9696	5884	9844	6266T	6946	3157	0940
9126	5268	8019	1118	1609	3092	7974	0694
7351	2120	3337	0729	8013	4620	45A	0795
6657	9995	52R	7790	3504	0420	1723	6430
7768	2465	4133	5692	5939	7594	7907	0978
8566	8950	83Y	37189	0069	1445	9963H	4990
8273	8693	4339	8495	65U	3978	536	5660
3669	6524	6681	2684	5228	37879	397	27664
8187	9952	1980	0263	6275	7255	5603	6620
2122	7850	8870	0498	9549	0518	1399	8590
0010	0642	0449	5723	9601	7865	9207	7872
2403	7689	6947	7920	5668	1131	4145	1376
8323	2144	9628	0506	1572	5420	1806	3908
9250	5092	1341	1851	6963	0349	10024	1904
5687	9259	3564	9962	2354	4756	7966	6227
17C	3861	2358	2568	1183	0866	8297	1373
0518	3207	3286	0045	6025B	6670	1359	9975
7185	9041	8750	9595	4210	6151	4415	37990
5182	7976B	5700	6248	0903	5116	7818	9361
4038	0646	3036	7566	9080	0109	5169	2307
H654	8966	7236	3215	1715	1365	7231	3801
308H	1848	5672	1486	TOUCHE	6624	6470	6243
4997	5057	UJO	2254	SHAY	3879	32730	8889
6166	11B	4338	3005	0439	11521	8610	7107
5374	0361	5372	2407	0425	5102	0884	4794
5620	0693	9427	0089	9895	2761	1070	0454
1999	6960	8292	56K	6119	9305	7832	5735
4657	6943	36B	8298	9683	1464	5015	5167 BUS
0878	2795	5372	5106	7553	8367	9429	2675R
6258	4095	4142	2654	9080	1011	0132	22MG
W56	3194	UST	3698	44921	39018	3706	8873
9833	3094	38841	1478	3202	7893	8118	3491
3773	1382	1919	5236	3900	148	9482	3292
3278	6994	4758	5214	24D	6442	1329	7822
1929	7312	6392	8963	0757	8107	38304	9585
9434	41G	7294	4125	0641	6734	3182	8422

Location 13 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
2848	38473	5892	4568	4190	5342	4492	5352
7696	8398	2469	3745	972S	6911	3397	1154
5187 BUS	9405	0599	8661	91049 Truck	3379	0132	1893
7070	1571	3903	1913	S10	3261	4035	2709
1889A	7403	1161	0276	0117	3242	8424	2359
5004	9103	0835	0142	9651	0305	3184	43316
0485	3785	5689	56MG	8871	7142	3207	7986
1577	8966	8521	0153	4723	1260	1417	5602
7414	2325	2039	1809	8093	7610	8031	1884
0966	3793	5689	4202	9359	4291	4869	1672
6323	54Z	6004	0297	1169	1995	1420	2910
6055	3737	9039	19B	6470	3115	4730	8778
4636	436B	7846	BALON	0669	3984	7933	
6203	5187	39MG	5235	8479	5300	9657	
9750	8364	4823		5371	0200	5778	
5661	M644	9730		7826L	7437	6996	
0241	7372	1959		0049	6155	4784	
4026	5607	8626		9547	7234	1845	
6538	96K	2654		9446	3454	6308	
2699	9613	0862		1024	5824	41532	
9471	6805	0275		7563	1557	7865	
9695	5683	9199		8405	32061	MIKEBLU	
9534	1968	4416		7985	92R	3659	
0315	7435	28N		6114D	807B	7245	
0665	3192B	0501		0908	1651	6200	
3612	9711	5614		6077	7501	MNAD7	
2356	5382	92MG		5392	1235	55E	
6920	7202	7753		4178	8404	2434	
58J	6798	2221		2918	3655	682N	
79HA	0517	1049		9530	9171	5998	
9659	8779	3151		9186	0353L	3405	
9875	5018	7386		3187	0469	4190	
1561	0106	9317		9285	8815	7482	
1466	39892	6006		6588	3239	4952	
0692	9636	NO PLATE		7723	0094	RELLI5	
0666	3419P	3726			4629	4528	
8200	0859	4023			MSGAS	3751	
0550	1179	6674			1372	7648	
4375	4836M	3322			47??	0642	
7901	2292	8212			2537	1248	
5292	6260	7154			0028	2BZ	
3101	849K	83W			3505	5479	
9768	5866A	0072			82U	0558	
8536	80584PB	0856			6854	9792	
0051	0891	G74			9612	6562	
	2300	8105			0237	8426	
	5684	6052			9102	6748	
	5786	4896			3787	5553	
	0745	2880			516C	8029	
	8352	9712			1380	0164	
	3230	5315			38276	9019	
	8760	7883			9145	4323	
	3714				2289	1012	
	9559				6382	5730	

Location 13 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
						5683	
						2851	
						1107	
						8008	
						7494	
						7351	
						2587	





Location 13 - TUES Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
6266				4402			
208A				9622			
6593				6612			
6617				0517			
5744				5642			
6928				1005			
				7873			
				0345			
				6476			
				3190			
				0097			
				1904			
				1841			
				5554			
				2493			
				2203			
				9850			
				8273			
				6905			
				5096			
				5774			
				47R			
				2668			
				1456			
				9075			
				1561			
				6753			
				7737			
				4X90			
				9029			
				9829			
				5525			
				8440			
				8276			
				8754			
				1870			
				7459			
				0156			
				5689			
				4004			

Location 14 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
0699	9438	5982	47M	4365	1269	2922	7222
1378	9014	2894N	58106	6800	6196	370S	7349
6632	067	3731	5602	NATAE	3688	7398	1690
8432	4542	8829	POET	3031	9486	1457	2184
8371		9464	83P	4986	0618	7880	1927
8233		5584	7564	9207	5619	9538	4903
4824		6301	21G	5671	4555	UMM	5101
2608		6117	0087	54T	1433	7143	2140
8710		7862	1098	6410	9126	2402	1701
1570		M53	2727	7398	4374	3320	
2047		2904	43198	8555	7660		
4998		5204	49S	0253	6111		
H434		0024		0184	4573		
8787		9322		0541	9559		
1047		5887			23C		
9558							
6054							
1896							
8173							

Location 14 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
7764	228F	67MG POLICE	4124	2617	4170	5744	2582
4752	9008	7530	FJF	9350	79AA NJ	8264	4011
NO PLATE	4052	0767	108 MN	8439	4677	5357	3584
1177	7571	3557	7182	6327	7552	4461	
6746	5101	9916	9191	9232	4125	6558	
2356	0526	1603 FEDEX	4850		5481	4555	
0425	9403	18N NJ	5943			1551	
23C NJ	539H	0200	0057			4753	
3280	0579		M69			1079	
1163	3470		4536				
7650	4859	MISLOVLY					
2346	039B	9916					
	0638	USPS TRUCK NO PLATE					
	9687						
	6224						
	0934						

Location 14 - TUES Peak 2-4 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
2682	2627	W60WV	4531	3326	6631	J673	8247
1597	PW90	AITI	0593	6149	S31Z	4408	2616
5363	7475	6212	9171	6SWZ	7731	4428	8948
6891		0538	0484	5731	9189	0268	8865
2070		6335	1996	Z209	AX05	2139	2021
5825		1994		1550	7878	3096	7648
87NG		5359		1136	4923	0059	0220
8470		2306		272W	K163	0622	3419
1499		6443		6635		3250	1120
1692		5946		0320			1114
7425		4624		0783			
1943		0692					

Location 15 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
7879	8349	2015	6954	4190	7619	4730	2502
6218	5590	5353	8391	6118	3328	1811	0124
3579	9438	4884	4428	9053	3037	1028	9152
0464	752S	4662	8819	751M	1974	2870	9054
M429	1177	1270	1547	0198	5688	2285	4NIF
7652	2940	U70A	4643	3068	9771	2585	5938
0942	763L	8518	0151	8069	3093	6135	8929
1378	FINE	2406	5934	7532	689M	2203	4BEZ
7410	0715	2482	0061	0UL9	P41L	6363	1694
3479	3695	5202	2770	6354	3449	1357	6422
7607	2873	2812	0125	1591	6483	4893	9336
7059	1036	4884	6191	9643	6446	5591	Z466
2836	0408	M936	2839	379V	0171	9992	2191
5547	5251	0854	7373	7412	8458	3171	RP44
8798	6885	4402	52MG	8314	5301	8199	7856
	6560	D98T	4027	4190	0424	8415	9184
	7750	0424	5688	2704	4375	0144	232T
	6354	R99Z	0081	4407	7702	6541	9987
	5658	8711	6155	9798	3569	3437	UITY
	8873	4365	9044	2449	2014	7707	2885
	3440	7035	2301	6932	231J	0155	5329
	3730	1733	8367	9412	2098	9187	2756
	849K	5563	9988	2549	7093	0143	5806
	2524	4793	D53U	4699	3730	1766	5045
	3732	E96Z	7325	3734	7348	2828	1761
	3683	4216	3280	4432	9400	2103	9985
	3873	9563	0595	6831	7179	2556	S133
	1650	6448	3953	3575	3853	4497	5509
	2888	2997	3781	0920	4652	4087	7994
	6821	3873	4179	3504	6498	D75Y	8866
	4674	77MG	3876	6133	3486	7749	335
	5112	9120	1881	0667	0112	5678	7121
	8623	4843	LYL	9999	8076	8594	7415
	L69M	2563	4190	6795	3569	U45Y	6136
		7354	170W	1402	8788	0148	
		2701	4314	006K	3246	8929	
		X564	6437	3267	4547	4659	
		2510	7817	4608	5788	1626	
		0188	2057	9106	8411	9077	
		5975	8946	6223	2037	1680	
		4190	6922	2019	3231	1105	
			6508	1183	0640	N40S	
			895A	4893	6938	3208	
			6155	9595	8192	5285	
			4722		3300	C43T	
					3470	3940	
					6138	2402	
					BA70	7300	
					5851	9103	
					0687	8970	
					0281	12BZ	
					9518	2560	
					2298	8568	
					N40X	3276	

Location 15 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
					8352	5736	
					3350	3428	
					1148		

Location 15 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
6575	1312	0128	9439	4670	7725	0698	0501
5674	2488	0616	4403	1359	8601	8201	6453
6750	8664	9844	0111	RWIN	7841	9333	0390
1490	3202	3054	4610	5591	0510	2333	1535
3188	2132	5509	7344	0266	9238	1172	5331
0004	2730	0498	V30Z	1724	3792	7099	4391
B143	7008	8958	8008	5495	8578	3536	3560
9246	0178	1284	3188	613W	2959	7994	2834
5937	3108	5188	3942	3776	3643	7736	9663
6887	4488	5736	ENDI	8780	6595	R99Z	5492
5906	3678	6428	921V	2688	4179	4927	4142
1993	7279	5889	4284	6035	0888	1115	4129
8796	6101	3875	9857	2139	RA25	9247	6086
1715	1508	SDS8	Z24F	2441	NM41	9914	709A
1745	5674	6632	2381	7070	8955	6924	8713
1000	6084	2825	7509	7750	0649	2184	0801
6370	3859	5108	4874	3699	5428	0850	
0805	7956	6569	4863	3271	1318	2313	
4715	6813	47VD	8301	4639	6053	4717	
5225	4502	7629	8908	J10J	233H	L50A	
0976	9751	2884		0367	0RXD	D42C	
090M	1834	2137		4832	U69G	PX90	
UCIE	5844	3166		9115		E34L	
3550	93MG	0742		7400			
7412	5303	K18N					
7679	6600	2829					
1089							
2823							
0917							
7711							
8991							
2546							
8731							
9188							
1759							
9037							
7155							
655L							
8112							
7483							
9113							
89Y2							
6384							

Location 15 - TUES Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
5522	8390	0047	2850	1411	9791	6816	LEES
0837	6223	3232	1059	3129	7417	5692	9800
8352	6039	4040	290X	7832	4310	1182	9087
326V	8714	4235	O150	7609	3261	8113	2587
O465	2239	156G	8700	9351	8661	4154	2022
O703	1111	8212	1059	M76L	O659	O537	2589
7448	1901	4366	3961	O659	2837	9444	9217
2414	K96H	O288	9528	365J	174Z	O622	3510
3990	8495	3408	2054	4082	362R	2816	8517
8739	6289	1452	7202	3816	6717	2110	3366
5434	3089	1813	O19B	945X	5722	8101	356
54VW	1475	9706	5324	O422	8701	8900	2008
6196	1466	6033	1614	2588	O529	4097	7809
P49M	3243	2215	7432	8534	9208	7252	2608
U44P	CA23	2428	9609	6257	7225	3289	886K
O439	7520	O601	2209	2536	1897	1324	0040
1491	6908	2987	326V	2910	4483	D38Z	7278
1814	5464	T696	6144	2816	4048	1187	4650
8913	5823	O616	1442	4668	8527	2055	5169
9250	8482	38TG	8246	9552	3047	7824	5658
797K	7207	O809	T44K	4443	188B	9321	0058
8868	0017	6673	5930	7332	4955	5155	2695
8371	8301	H91N	2572	7332	5184	4335	
N284	1775	7845	2118	6580	6970	222	
6981	43EM	6006	9359	D94F	9999	1SRU	
7299	5133	9060	3633	2576	8942	2102	
6522	3073	4042	6503	6144	9255	3536	
710W	997Y	5441	1268	7219	0068	9108	
1940		7400	7GLK	O916	6608	95	
4257		6572	6623	9840	9762	9301	
8563		6743	886X	5578	3526	1546	
L914		8912	2394	4178	2325	4039	
O89		5341	7010	3261	1170		
5826			8145	O816			
3148			2218	9156			
143B			7539	7639			
1305			1637	2516			
7293			9134	6692			
4132			3959	O674			
2663			3128	2031			
2277			5746	1456			
499W			6572	6818			
HB98			9435	3757			
3499			2220	4913			



Location 16 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
7539	7025	1930	8391	6155	106K	N40X	O401
8364	2808	4884	4428	1197	7465	8352	6093
1665	1592	4663	9488	N81K	1160	3350	2190
2287	7797	8455	8756	4160	1711	8203	8052
5599	4231	2866	6195	1079	5393	9319	3276
7287	5652	1203	8759	5847	3267	5189	3428
6674	4790	3059	5758	5821	6476	7889	7085X
134A	7270	8345	ATNAT	9021	ASSYAA	3730	7134
1905	2964	FU7A	E47M	1817	9246	1911	5737
3121	1177	8518	7653	3250	4608	1028	8792
7648	8978	1660	1547	6629	9106	2670	2502
3069	224	3837	4643	035N	6223	2286	O124
6105	6359	851	O151	6653	2019	3984	9152
6704	7040	7429	OO61	6118	1183	OOO1	9054
1778	763L	1093	WEEZY	9053	4893	7821	5606
7879	3705	2406	7063	2651N	9595	3279	OO81
3579	9543	1935	O783	6483	7875	4637	O356
6699	O855N	3119	OO7H	1243	8828	O829	4N1F
1388	1639	4691	07SHA	8089	7619	5696	5938
6761	715	4699	4575	7532	3328	2585	7572
3188B	3695	9368	6071	SOU1 9	3077	6135	4395
O406	7474	71B	22770	5979	1934	2203	8257
5532	1757	9249	215	O809	2608	6366	5654
4702	3949	2812	6191	6745	2588	1357	1561
4200	2360	5813	2839	6354	4744	4893	7183
7683	1036	4759	C/S/#	1591	Z032	5591	3644
6405	5261	4884	8729	9643	8715	1371	2847
9525	6895	462	7529	8093	5420	9282	1694
7652	4998	3003	567	2324	O403	1720	6422
8365	6190	1303	7174	2004	O487	6696	Z466
3443	2600	1672	9876	1236	O709	9992	7474
O942	7850	Z852	2171	5183	9771	3174	7485
3556	7750	5584	3998	8314	3093	8199	8828
5523	7554	854	6067	6531	P41L	8415	7675
1566X	5744	4402	2027	8957	6446	6541	O138
5126	6799	9743	7373	4407	O171	C/S/#	886Z
5132	1852	146	4027	3790	8468	8860	3469
7410	4459	010L	6155	7796T	5301	1712	9159
7607	7901	98T	OO39	4168	4910	1502	1084
7847	2714	2645	7814	6614	1372	9485	2191
4980	2259	E60W	6052	1079	6106	1761	RP44
59022	3173	N/C	G599	5522	9988	9982	7856
3068	3040	STARIN	8749	O757	TEESHLL	7744	6232T
8553	37130	8711	9044	5590	3937	7707	9987
3271	849K	2877	1271	2449	7455	O155	5705
8807	8883	4365	2301	6932	6178	9187	O187
O846	2524	7035	8367	9412	1479	8166	1992
7259	3683	1733	9986	8365	4983	O143	5139
2393	7889	6563	3551	226K	BURG	O42A	8317
7059	3873	5490	8466	3110	7702	1766	4445
O521	L429	9812	8566	X17M	3569	2103	3156
O 54C	2419	9667	1056	1297	3650	2556	7676
1256	6117	E96B	GOOS	N/C	O791	4497	9184
O550	1974	O424	577B	O738	O707	SONSIE	8389

Location 16 - SAT Peak 2-4 PM

2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45
8987	3333	4216	7325	4699	1990	5658	5329
6593	5114	9563	3200	3732	4241	9181	4448
2836	1650	6448	9029	3564	5150	7749	6463
5447	5112	2997	9517	9208	O190	5678	O348
8798	7326	3873	7362	6164	7093	6594	2756
7523	4674	2311	6823	1411	2098	5698	5806
1921	4833	9407	6500	3278	3740	1929	5046
7556	8623	1489	2570	2057	7340	O410Y	1761
7112	69F	1205	6050	O259	N/C	2823	9885
8349	L69M	4972	O595	3396	7179	2394	X133
	8740	4843	3953	6406	3853	5202	6193
	3658	N/C	7406	4710	4352	8929	5509
	2619	5922	3781	O608	4989	MY HAVN	0944T
	3642	9127	7714	4432	1557	3901	4103
	3839	9120	3876	6831	1448	3260	4639
	1020	E77J	1881	3575	6312	7643	7994
	2015	2271	3081	O920	3126	6420	2807
	5353	5624	6495	3504	6812	1626	1690
	2873	2510	38883	9291	3016	9077	52479
		O2MG	6938	IAMIN	2201	1680	4239
			2661	6970	8989	5426	7733
			4333	9170W	1893	3486	3772
			5641	2310	63585	O112	5699
			JAN	6437	C/S/#	8076	2554
				7817	3734	3569	1405
				7341	6133	8788	3208
				9171	O667	43449*	C43T
				2310	6795	3246	3940
				6437	1404	5317	3083
				7817	2549	7533	9572
				2824		9762	8949
				3914		4547	7546
				8946		5678	6166
				2840		2037	2943
				8572		3231	1852
				O590		5748	2402
				LYL		7648	7300
				5476		6938	9103
				9203		8192	12BZ
				6503		3380	
				5236		3470	
						PABA 70	
						4542	
						4142	
						3173	
						O687	
						O587	
						3934	
						O281	
						9518	
						2298	



Location 16 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
2616	9097			24421	5179	8489	
3998	3715			353	17106	4977	
8074	3959			4095	5692	2055	
46064262	43128			O814	O821	7824	
9160	5746			1975	5829	9321	
4942	6572 BUS			1399	O475	3482	
5930	39435			6062	4488	6635	
3569	2220			4082	5987	5732	
1730				3816	24895	5115	
5042				5924	5184	1472	
5078				5935	36970	13410	
9351				9047C	8642	135471X	
O653				5203	3348	1354	
52572 TAXI				6022A	9192	4351	
				2390	7338	8694	
				4223	68	222	
				667	6508	1F4U	
				870B	F892	102	
				6945X	A364	1918	
				O422	9762	4133	
				5407	2314	O615	
				5788	2871	6378	
				971	9517		
				O845	O894		
				3489	9091		
				8408	O306		
				54231	5354J		
				O562	8047		
				4588	6253		
				8534	6172W		
				3910 HEART WAY			
				3805	3526		
				4688	2352		
				9582	1170		
				4463	76148		
				7332	4396		
				1448	4214		
				1701	6351		
				1948	1639		
				6805	6506		
				5414	8153		
				1219	8691		
				916			
				9224			
				4617			
				1512			
				7859			
				4051			
				6981			
				87722			
				1592			
				1075			
				8562			
				9840			

Location 16 - SAT Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
				5578			
				3659			
				57739			
				4765			
				RIV			
				5503			
				1755			
				6574			
				691			
				O790			
				O129			
				861			
				9156			
				7639			
				8473			
				6219			
				1575W			
				3225			
				8116			
				8128			
				2893			
				9643			
				94Z			
				6892			
				159J			
				A326			
				O674			
				2031			
				4496			
				O8748			
				2248			
				6257			
				5321L			
				4913			
				O747			
				3373			
				1439			
				44G			
				8111			
				1516			
				N/C			
				7990			



Location 16 - TUES Peak 4-6 PM

4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45
4132		2694	1637	4178			
2663		9017	9134	3678			
		8808	5802	5460			
		6572	5804	5730			
		1366	9097	6559			
		8912	3715	57735			
		4896	3959	5462			
		AMARA	43128	RIV			
		5317	5746	5203			
		5341	6572	1755			
		4167	39435	6514			
		2369	2220	2095			
		4623		0619			
		R19S		0790			
		2850		0129			
		1059		3261			
		9290X		0816			
		8700		9156			
		1059		7369			
		1445		8473			
		0298		0219			
		3961		1575W			
		6672		6116			
				3325			
				8128			
				2893			
				9643			
				94Z			
				6692			
				159J			
				A326			
				674			
				2031			
				1456			
				6818			
				2245			
				6257			
				S32L			
				4913			

## APPENDIX E

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SYNCHRO Results

## LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption and lost travel time. Delay may be measured in the field or may be estimated. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the volume-to-capacity (v/c) ratio for the lane group or approach in question. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay is that portion of total delay attributed to traffic control measures, either traffic signals or stop signs. It includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria and a brief description are given in *Table D-1*.

**TABLE D-1**  
Level Of Service Criteria For Signalized Intersections

Level of Service	Control Delay per Vehicle(sec/veh)	Description
A	$\leq 10$	This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	$> 10$ and $\leq 20$	This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	$> 20$ and $\leq 35$	These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	$> 35$ and $\leq 55$	The influence of congestion becomes more noticeable. Longer delays may result from some combinations of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	$> 55$ and $\leq 80$	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	$> 80$	This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Transportation Research Board, *Highway Capacity Manual*, HCM2000 (Washington, D.C., 2000) pg. 16-2.

## LEVELS OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is defined in terms of delay. However, the delay thresholds for each Level of Service are lower for unsignalized intersections than for signalized intersections, as stated in the *Highway Capacity Manual*:

The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection would be designed to carry higher traffic volumes than an unsignalized intersection. In addition, a number of driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

In unsignalized intersections, it is assumed that the through and right-turning vehicles on the major street can proceed without delay and therefore the methodology does not compute a level of service for these movements. The left turns from the major street and all minor street movements must yield to other conflicting traffic and levels of service are computed for these movements.

In *Highway Capacity Manual 2000* (HCM2000), level of service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay is that portion of total delay attributed to traffic control measures, either traffic signals or stop signs. It includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This analysis procedure is entirely different than in the 1994 HCM, and the thresholds between levels of service are different. Experience has indicated that the newer methodology will sometimes overstate the delay, as indicated by comparing the computed delay with observed delays. Where the computed delay does not correlate with the observed delay, the 1994 methodology has also been used.

The Level of Service criteria are given in *Table D-2*

**TABLE D-2**  
**Level Of Service Criteria For Unsignalized Intersections**

Level of Service	1994 HCM Average Total Delay (sec/veh)	HCM2000 Average Control Delay (sec/veh)
A	≤ 5	< 10
B	> 5 and ≤ 10	> 10 and ≤ 15
C	> 10 and ≤ 20	> 15 and ≤ 25
D	> 20 and ≤ 30	> 25 and ≤ 35
E	> 30 and ≤ 45	> 35 and ≤ 50
F	> 45	> 50
	Source: Transportation Research Board, <i>Highway Capacity Manual</i> , Special Report 209 (Washington, D.C., 1994) pg. 10-12.	Source: Transportation Research Board, <i>Highway Capacity Manual</i> , HCM2000 (Washington, D.C., 2000) pg. 17-2.





**2005 EXISTING: PM PEAK**

### HCM Signalized Intersection Capacity Analysis 10: Hunting Park Ave & Henry Ave

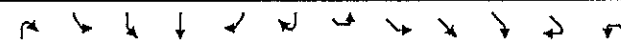


Movements	EBR2	EBT	EBR	EBR2	WBT	WBR	WBR	WBR2	NBT	NBT	NBR	NBR
Lane Configurations	A		4T		↑↑		↑↑		A		4	
Volume (vph)	12	948	592	58	5	355	58	39	5	116	116	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	12	12	12	12	12
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	0.91		0.91		1.00		0.95		1.00		1.00	
Fit	1.00		0.99		1.00		0.85		1.00		0.99	
Fit Protected	0.95		0.99		1.00		1.00		0.95		1.00	
Satd. Flow (prot)	1588		3260		3336		1492		1859		1859	
Fit Permitted	0.93		0.96		1.00		1.00		0.97		1.00	
Satd. Flow (perm)	556		1505		3336		1492		1821		1821	
Peak-hour factor: PHF	0.92		0.92		0.92		0.92		0.92		0.92	
Adj. Flow (vph)	1	702	633	63	5	394	64	43	5	6	151	1
RTOR Reduction (vph)	0		0		0		0		0		0	
Lane Group Flow (vph)	0	408	995	0	0	394	80	0	0	0	175	0
Heavy Vehicles (%)	2.0%		0%		0%		1%		1%		4%	
Turn Type	pm-pt	pm-pt				Perm		Perm		Perm		
Protected Phases	2	2	5			6		8		8		
Permitted Phases												
Actuated Green, G (s)	35.1	35.1				20.7		20.7		12.6		
Effective Green, g (s)	34.7	37.4				23.0		23.0		14.0		
Actuated g/C Ratio	0.39	0.42				0.26		0.26		0.16		
Clearance Time (s)	3.6	6.3				6.3		6.3		5.4		
Lane Grp Cap (vph)	334	1359				853		1381		283		
v/s Ratio Prot	c.0.14	0.31				0.12		0.12		0.10		
v/s Ratio Perm	c.0.33	0.96				0.95		0.95		0.92		
v/c Ratio	1.22	0.73				0.45		0.21		0.62		
Uniform Delay, d1 (s)	25.3	22.1				28.3		26.4		35.5		
Progression Factor	1.00	1.00				1.61		1.95		1.00		
Incremental Delay, d2 (s)	123.7	9.6				1.7		3.6		9.7		
Delay (s)	148.9	25.7				47.2		52.8		45.2		
Level of Service	D	C				D		D		D		
Approach Delay (s)	61.5		48.4		48.4		45.2		666.6		49.1	
Approach LOS	E		D		D		D		F		D	

Intersection Summary		
HCM Average Control Delay (s)	86.4	HCM Level of Service
HCM Volume to Capacity ratio	1.17	
Actuated Cycle Length (s)	129.0	Sum of lost time (s)
Intersection Capacity Utilization	99.1%	ICU Level of Service
Analysis Period (min)	15	

c Critical Lane Group

### HCM Signalized Intersection Capacity Analysis 10: Hunting Park Ave & Henry Ave



Movements	NBR2	SBR2	WSBT	SBR	SBR2	SEL2	SEL2	SER	SER2	NWL2
Lane Configurations	A		↑↑		↑↑		A		4	
Volume (vph)	12	59	96	117	396	36	78	89	179	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		1.00		0.88		1.00		1.00	
Fit	1.00		1.00		0.85		1.00		0.98	
Fit Protected	0.95		1.00		1.00		0.95		1.00	
Satd. Flow (prot)	1829		1925		2787		1752		1871	
Fit Permitted	0.93		1.00		1.00		0.97		1.00	
Satd. Flow (perm)	530		1925		2787		495		1871	
Peak-hour factor: PHF	0.77		0.89		0.89		0.89		0.92	
Adj. Flow (vph)	16	66	108	131	406	39	89	101	197	9
RTOR Reduction (vph)	0		0		0		0		0	
Lane Group Flow (vph)	0	0	174	131	438	0	0	190	223	0
Heavy Vehicles (%)	4%		2%		2%		3%		2%	
Turn Type	pm-pt	pm-pt			Perm		Perm		Perm	
Protected Phases	4	4			4		9		9	
Permitted Phases										
Actuated Green, G (s)	24.3	24.3			24.3		13.6		13.6	
Effective Green, g (s)	23.9	25.7			25.7		14.9		14.9	
Actuated g/C Ratio	0.27	0.28			0.29		0.17		0.17	
Clearance Time (s)	3.6	5.4			5.4		5.4		5.4	
Lane Grp Cap (vph)	252	550			1796		62		610	
v/s Ratio Prot	c.0.06	0.07			0.16		0.12		0.12	
v/s Ratio Perm	c.0.12	0.33			0.92		0.92		0.92	
v/c Ratio	0.69	0.24			0.55		2.32		0.72	
Uniform Delay, d1 (s)	27.8	24.6			27.2		37.6		35.6	
Progression Factor	0.83	0.81			0.84		1.00		1.00	
Incremental Delay, d2 (s)	14.1	1.0			1.7		629.1		13.5	
Delay (s)	37.2	21.0			25.5		666.6		49.1	
Level of Service	D	C			C		F		D	
Approach Delay (s)	27.5		27.5		27.5		331.8		27.5	
Approach LOS	D		D		D		F		D	

Intersection Summary		
HCM Average Control Delay (s)	86.4	HCM Level of Service
HCM Volume to Capacity ratio	1.17	
Actuated Cycle Length (s)	129.0	Sum of lost time (s)
Intersection Capacity Utilization	99.1%	ICU Level of Service
Analysis Period (min)	15	

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	NWB	NWT	NWR	NWR2	N	N
Lane Configurations						
Volume (vph)	69	95	145	143	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12		
Total Lost time (s)	4.0	4.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	0.91				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1679	1652				
Flt Permitted	0.34	1.00				
Satd. Flow (perm)	599	1652				
Peak-hour factor, PHF	0.87	0.87	0.87	0.87		
Adj. Flow (vph)	78	109	167	3		
RTOR Reduction (vph)	0	0	0	0		
Lane Group Flow (vph)	85	278	0	0		
Heavy Vehicles (%)	8%	8%	8%	8%		
Turn Type	Perm					
Protected Phases		13				
Permitted Phases	13	13				
Actuated Green, G (s)		13.5	13.5			
Effective Green, g (s)		14.9	14.9			
Actuated g/C Ratio		0.17	0.17			
Clearance Time (s)		5.4	5.4			
Lane Grp Cap (vph)	99	273				
v/s Ratio Prot		0.17				
v/s Ratio Perm	0.14					
v/c Ratio	0.86	1.02				
Uniform Delay, d1 (s)	36.5	37.6				
Progression Factor	1.00	1.00				
Incremental Delay, d2 (s)	57.8	59.4				
Delay (s)	94.4	97.0				
Level of Service						
Approach Delay (s)		96.3				
Approach LOS						
Intersection Summary						

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave



Movement	NWB	NWB	NBT	NBR	SBL	SBL	
Lane Configurations							
Volume (vph)	199	159	862	162	58	436	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	11	12	12	12	12	12	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	
Frt	0.94	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.97	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1835	3693	1599	1770	3539	3539	
Flt Permitted	0.97	1.00	1.00	0.28	1.00	1.00	
Satd. Flow (perm)	1835	3693	1599	493	3539	3539	
Peak-hour factor, PHF	0.99	0.99	0.97	0.97	0.94	0.94	
Adj. Flow (vph)	201	161	889	167	62	464	
RTOR Reduction (vph)	32	190	0	69	0	0	
Lane Group Flow (vph)	330	0	889	99	62	464	
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%	
Turn Type			Perm	Perm			
Protected Phases			2	6			
Permitted Phases			2	6			
Actuated Green, G (s)			27.0	50.4	50.4	50.4	
Effective Green, g (s)			29.3	52.7	52.7	52.7	
Actuated g/C Ratio			0.33	0.59	0.59	0.59	
Clearance Time (s)			6.3	6.3	6.3	6.3	
Lane Grp Cap (vph)	597	2162	1936	299	2072	2072	
v/s Ratio Prot	c0.18		c0.24		c0.13		
v/s Ratio Perm				0.06	0.13		
v/c Ratio	0.55		0.41	0.10	0.21	0.22	
Uniform Delay, d1 (s)	25.0		10.2	8.2	8.8	8.9	
Progression Factor	1.00		0.92	1.65	1.00	1.00	
Incremental Delay, d2 (s)	3.7		0.11	0.0	1.7	0.3	
Delay (s)	28.6		9.4	13.6	10.5	9.1	
Level of Service	C		A	B	B	A	
Approach Delay (s)	28.6		10.0		9.3		
Approach LOS	D		B		A		
Intersection Summary							
HCM Average Control Delay			13.3			HCM Level of Service	B
HCM Volume to Capacity ratio			0.46				
Actuated Cycle Length (s)			90.0			Sum of lost time (s)	8.0
Intersection Capacity Utilization			57.9%			ICU Level of Service	B
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	0	974	47	288	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor		0.95	1.00	0.95		
Flt Protected		1.00	0.95	1.00		
Satd. Flow (prot)		3515	1770	3539		
Flt Permitted		1.00	0.95	1.00		
Satd. Flow (perm)		3515	1770	3539		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	0	0	1059	51	297	509
RTOR Reduction (vph)	0	0	4	0	0	0
Lane Group Flow (vph)	0	0	1106	0	297	509
Turn Type	Prot					
Protected Phases	3					
Permitted Phases	3					
Actuated Green, G (s)			53.7		23.4	53.7
Effective Green, g (s)			53.7		23.4	53.7
Actuated g/C Ratio			0.60		0.26	0.60
Clearance Time (s)			6.3		6.3	6.3
Lane Grp Cap (vph)			2104		462	2119
v/s Ratio Prot			c0.31		c0.17	0.14
v/s Ratio Perm						
v/c Ratio			0.53		0.64	0.24
Uniform Delay, d1			10.5		29.4	8.4
Progression Factor			1.00		1.00	1.00
Incremental Delay, d2			0.9		6.7	0.3
Delay (s)			11.5		36.2	8.7
Level of Service			B		D	A
Approach Delay (s)	0.0	11.5		18.8		
Approach LOS	A	B		C		B
Intersection Summary						
HCM Average Control Delay	14.6		HCM Level of Service			
HCM Volume to Capacity ratio	0.56					
Actuated Cycle Length (s)	89.7		Sum of lost time (s)			
Intersection Capacity Utilization	54.9%		ICU Level of Service			
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	119	864	131	136	551	39	2	446	119	176	36	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.85	1.00	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.99	1.00	0.99	1.00	1.00	0.85	1.00	1.00	0.95
Satd. Flow (prot)	1711	3416	1694	3351	1787	1881	1599	1787	1813	1599	1787	1813
Flt Permitted	0.34	1.00	0.28	1.00	0.30	1.00	0.27	1.00	0.27	1.00	1.00	0.27
Satd. Flow (perm)	614	3416	501	3351	571	1881	1599	501	1813	1599	501	1813
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.92	0.92	0.92	0.89	0.90	0.80
Adj. Flow (vph)	131	960	10	136	517	41	2	446	191	45	314	100
RTOR Reduction (vph)	29	10	2	10	40	2	2	446	119	45	401	0
Lane Group Flow (vph)	131	969	0	136	551	0	2	446	119	45	401	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Perm			Perm		
Protected Phases	2			5			6			8		
Permitted Phases	2			5			6			8		
Actuated Green, G (s)	48.6			48.6			38.7			38.7		
Effective Green, g (s)	48.2			50.0			40.1			40.1		
Actuated g/C Ratio	0.54			0.56			0.45			0.45		
Clearance Time (s)	3.6			5.4			5.4			5.4		
Lane Grp Cap (vph)	401			1698			223			1493		
v/s Ratio Prot	0.02			c0.28			0.16			c0.24		
v/s Ratio Perm	0.15			0.27			0.27			0.00		
v/c Ratio	0.33			0.51			0.61			0.37		
Uniform Delay, d1	11.1			12.1			19.0			16.6		
Progression Factor	1.61			1.69			1.11			1.05		
Incremental Delay, d2	1.6			0.7			1.1			0.7		
Delay (s)	19.5			21.7			32.2			18.5		
Level of Service	B			C			C			B		
Approach Delay (s)	21.5			21.2			27.1			28.0		
Approach LOS	C			C			C			C		
Intersection Summary												
HCM Average Control Delay	23.7			HCM Level of Service								
HCM Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)								
Intersection Capacity Utilization	69.7%			ICU Level of Service								
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		P	P		P	P		P	P		P	P	
Volume (vph)	32	188	38	130	249	85	135	328	171	190	190	60	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	14	12	12	12	12	16	12	12	
Total Lost time (s)	4.0	4.0	4.0	4.0			4.0			4.0			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flt	1.00	0.97		1.00	0.96		0.97			0.97			
Flt Protected	0.95	1.00		0.95	1.00		0.99			1.00			
Satd. Flow (prot)	1770	1816		1805	1949		2023			2042			
Flt Permitted	0.40	1.00		0.54	1.00		0.90			0.99			
Satd. Flow (perm)	751	1816		1019	1949		1827			2014			
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.94	0.94	0.94	
Adj. Flow (vph)	37	219	44	146	280	95	99	342	147	7	202	64	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	37	251	0	146	356	0	0	568	0	0	254	0	
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%	
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm		
Protected Phases	4		8		2		6		6		6		
Permitted Phases	4		8		2		6		6		6		
Actuated Green, G (s)	22.0	22.0	22.0	22.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	
Effective Green, g (s)	23.0	23.0	23.0	23.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	
Actuated g/C Ratio	0.36	0.36	0.36	0.36	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	
Clearance Time (s)	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Grp Cap (vph)	288	696	391	747	883	973	973	973	973	973	973	973	
v/s Ratio Prot		0.14		0.18			0.31			0.13			
v/s Ratio Perm	0.05		0.14		0.31					0.13			
v/c Ratio	0.13	0.36	0.37	0.48	0.64	0.64	0.64	0.64	0.64	0.26	0.26	0.26	
Uniform Delay, d1	12.0	13.2	13.9	14.0	11.6	11.6	11.6	11.6	11.6	9.2	9.2	9.2	
Progression Factor	1.00	1.00	0.67	0.63	1.00	1.00	1.00	1.00	1.00	1.54	1.54	1.54	
Incremental Delay, d2	0.9	1.4	2.6	2.0	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	
Delay (s)	12.9	14.7	11.5	10.9	15.2	15.2	15.2	15.2	15.2	14.8	14.8	14.8	
Level of Service	B	B	B	B	B	B	B	B	B	B	B	B	
Approach Delay (s)	14.5		11.0		15.2		14.8		14.8		14.8		
Approach LOS	B		B		B		B		B		B		
Intersection Summary													
HCM Average Control Delay	13.7						HCM Level of Service						B
HCM Volume to Capacity ratio	0.57												
Actuated Cycle Length (s)	60.0												
Intersection Capacity Utilization	80.1%						ICU Level of Service						D
Analysis Period (min)	15												

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		P	P		P	P		P	P		P	P	
Volume (vph)	59	336	14	0	0	0	0	0	434	68	229	238	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	13	12	12	12	12	12	12	12	11	12	12	
Total Lost time (s)		4.0							4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95							0.95		1.00	1.00	
Flt	0.99								0.99		1.00	1.00	
Flt Protected	1.00								1.00		0.95	1.00	
Satd. Flow (prot)	3685								3385		1745	1837	
Flt Permitted	0.99								1.00		0.29	1.00	
Satd. Flow (perm)	3685								3385		526	1837	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.89	0.88	0.85	0.85	0.94	0.94	
Adj. Flow (vph)	68	386	16	0	0	0	0	0	493	77	244	253	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	466	0	0	0	0	0	0	570	0	244	253	
Heavy Vehicles (%)	0%	10%	0%	0%	2%	2%	2%	2%	11%	1%	0%	0%	
Turn Type	Perm												
Protected Phases	4												
Permitted Phases	6												
Actuated Green, G (s)	21.0												
Effective Green, g (s)	22.4												
Actuated g/C Ratio	0.37												
Clearance Time (s)	5.4												
Lane Grp Cap (vph)	1376												
v/s Ratio Prot	0.17												
v/s Ratio Perm	0.13												
v/c Ratio	0.34												
Uniform Delay, d1	13.5												
Progression Factor	1.00												
Incremental Delay, d2	0.7												
Delay (s)	14.2												
Level of Service	B												
Approach Delay (s)	14.2						0						
Approach LOS	B						A						
Intersection Summary													
HCM Average Control Delay	13.7						HCM Level of Service						B
HCM Volume to Capacity ratio	0.51												
Actuated Cycle Length (s)	60.0												
Intersection Capacity Utilization	71.6%						ICU Level of Service						C
Analysis Period (min)	15												

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St

Movement	EB	WB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	219	327	281	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)							4.0	4.0	4.0			
Friction							0.91	1.00	1.00			0.95
Satd. Flow (prot)							3559	1711	1801			3263
Satd. Flow (perm)							3559	681	1801			3263
Adj. Flow (vph)	0	0	0	154	221	552	228	297	0	0	295	132
Lane Group Flow (vph)	0	0	0	552	0	228	297	0	0	428	0	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm			pm+pt					Perm
Permitted Phases				8			2	5				8
Effective Green, g (s)				22.4			27.8	29.6				20.6
Clearance Time (s)				4.8			3.0	4.8				4.8
v/s Ratio Prot				0.05			0.16	0.13				0.13
v/c Ratio				0.49			0.57	0.33				0.38
Progression Factor				0.87			1.27	0.28				1.00
Delay (s)				13.8			18.3	3.5				15.9
Level of Service				B			B	A				B
Approach Delay (s)				0.0			13.8	9.9				15.9
Approach LOS				A			A	A				A
HCM Level of Service				A			A	A				A
HCM Volume to Capacity ratio				0.51			0.68	0.33				0.38
Intersection Capacity Utilization				71.6%			71.6%	60.0%				60.0%
ICU Level of Service				C			C	C				C

HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave

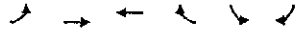
Movement	EB	WB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Lane Configurations												
Volume (vph)	142	291	23	0	511	144	36	310	239	104	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)							4.0	4.0				
Friction							1.00	0.95				1.00
Satd. Flow (prot)							1745	3477				1561
Satd. Flow (perm)							1745	3477				1561
Adj. Flow (vph)	151	970	24	0	594	167	46	335	20	323	249	108
Lane Group Flow (vph)	151	992	0	0	732	0	0	401	0	323	249	38
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type							pm+pt			Perm		Perm
Permitted Phases							2	5		8		4
Effective Green, g (s)							48.6	48.6		37.8		30.6
Clearance Time (s)							3.6	5.4		5.4		3.6
v/s Ratio Prot							0.03	0.29		0.19		0.14
v/c Ratio							0.21	0.44		0.67		0.38
Progression Factor							0.73	0.48		1.00		1.00
Delay (s)							12.9	6.9		18.5		19.4
Level of Service							B	A		B		C
Approach Delay (s)							7.7	18.5		35.4		54.6
Approach LOS							A	B		D		D
HCM Level of Service							A	B		D		D
HCM Volume to Capacity ratio							0.68	0.33		0.60		0.38
Intersection Capacity Utilization							66.0%	60.0%		66.0%		60.0%
ICU Level of Service							C	C		C		C

HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations											
Volume (vph)	106	267	42	113	293	224	27	519	86	115	531
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Flt Permitted	1.00	0.98	1.00	1.00	0.85	1.00	0.98	1.00	0.97	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	1825	1770	1863	1863	1770	3464	1770	1770	3443	3443
Flt Permitted	0.46	1.00	0.44	1.00	1.00	0.31	1.00	0.38	1.00	0.38	1.00
Satd. Flow (perm)	820	1825	820	1863	1863	586	3464	662	662	3443	3443
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	118	297	47	127	329	252	29	564	93	131	603
RTOR Reduction (vph)	0	9	0	0	0	147	0	22	0	0	32
Lane Group Flow (vph)	118	335	47	127	329	105	29	635	93	131	704
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	4	4	8	8	8	2	6	6	6	6
Permitted Phases	4	4	4	8	8	8	2	6	6	6	6
Actual Green, G (s)	21.6	21.6	21.6	21.6	21.6	27.0	27.0	27.0	27.0	27.0	27.0
Effective Green, g (s)	23.0	23.0	23.0	23.0	23.0	29.0	29.0	29.0	29.0	29.0	29.0
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.48	0.48	0.48	0.48	0.48	0.48
Clearance Time (s)	5.4	5.4	5.4	5.4	5.4	6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap. (vph)	327	700	314	714	607	283	1674	320	1664	320	1664
v/s Ratio Prot	c0.18	c0.18	c0.18	0.18	0.18	0.18	0.18	c0.20	c0.20	c0.20	c0.20
v/s Ratio Perm	0.14	0.48	0.15	0.40	0.45	0.17	0.10	0.38	0.41	0.42	0.42
v/c Ratio	0.36	0.48	0.40	0.45	0.17	0.10	0.38	0.41	0.42	0.42	0.42
Uniform Delay, d1 (s)	13.2	14.0	13.9	13.9	12.2	9.8	9.8	10.0	10.1	10.1	10.1
Progression Factor	1.26	1.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2 (s)	2.9	2.2	2.1	2.1	0.6	0.7	0.7	3.8	3.8	3.8	3.8
Delay (s)	19.7	20.1	17.3	16.0	12.8	9.2	10.5	13.8	13.8	13.8	13.8
Level of Service	B	C	B	B	B	A	A	B	B	B	B
Approach Delay (s)	20.0		15.1			10.4		11.3			
Approach LOS	C		B			B		B			
<b>Intersection Summary</b>											
HCM Average Control Delay	13.5										
HCM Volume to Capacity ratio	0.45										
Actuated Cycle Length (s)	60.0										
Intersection Capacity Utilization	59.7%										
Analysis Period (min)	15										
ICU Level of Service	B										
c Critical Lane Group											

HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & Abbottsford Home Dr

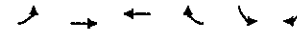


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		T	T	T	T	T
Volume (veh/h)	0	230	362	42	15	15
Sign Control		Free	Free		Stop	
Grade (%)		0.0%	0.0%		0.0%	
Peak Hour Factor		0.72	0.72		0.92	0.70
Hourly flow rate (vph)		124	319		393	146
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1050	419			
pX, platoon unblocked		0.91			0.91	0.91
vC, conflicting volume		439			76	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		330			685	305
IC, single (s)		4.1			6.4	6.2
IC, 2 stage (s)						
IF (s)		2.2			3.5	3.3
p0 queue free %		99			94	99
CM capacity (veh/h)		1115			1371	666

Direction/Lane #	EBL	EBT	WBT	WBR	SBL	SBR
Volume Total	0	230	362	42	15	15
Volume Left	0	0	0	21	0	0
Volume Right	0	16	7	0	0	0
cSH	1115	1700	417			
Volume to Capacity	0.0	0.0	0.0	0.0	0.0	0.0
Queue Length 95th (ft)	1	0	5			
Control Delay (s)	0.4	0.0	14.3			
Lane LOS	A		B			
Approach Delay (s)	0.4	0.0	14.3			
Approach LOS			B			

Intersection Summary	
Average Delay	0.7
Intersection Capacity Utilization	31.6%
Analysis Period (min)	15
ICU Level of Service	

HCM Unsignalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		T	T	T	T	T
Volume (veh/h)	24	304	148	24	5	17
Sign Control		Free	Free		Stop	
Grade (%)		0.0%	0.0%		0.0%	
Peak Hour Factor		0.82	0.82		0.96	0.60
Hourly flow rate (vph)		29	371		47	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		535				
pX, platoon unblocked					0.97	
vC, conflicting volume		492			608	479
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		492			892	479
IC, single (s)		4.1			6.4	6.2
IC, 2 stage (s)						
IF (s)		2.2			3.5	3.3
p0 queue free %		97			97	98
CM capacity (veh/h)		1072			296	586

Direction/Lane #	EBL	EBT	WBT	WBR	SBL	SBR
Volume Total	24	304	148	24	5	17
Volume Left	29	0	8			
Volume Right	0	26	12			
cSH	1072	1700	416			
Volume to Capacity	0.03	0.29	0.05			
Queue Length 95th (ft)	2	0	4			
Control Delay (s)	0.9	0.0	14.1			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	14.1			
Approach LOS			B			

Intersection Summary	
Average Delay	0.7
Intersection Capacity Utilization	45.8%
Analysis Period (min)	15
ICU Level of Service	



HCM Unsignalized Intersection Capacity Analysis  
120: Abbottsford Ave & Stokley St



Movement	EBL	EBR	WBL	WBR	NBL	NBR
Lane Configurations	↑					
Volume (veh/h)	667	0	0	0	10	39
Sign Control	Free		Free	Stop		
Grade (%)	0%		0%	0%	0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.56	0.56
Hourly flow rate (vph)	710	0	0	0	10	69
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	542					
pX, platoon unblocked		0.83		0.83	0.83	
vC, conflicting volume	712		711		711	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	547		545		545	
IC, single (s)	4.1		6.4		6.2	
IC, 2 stage (s)						
IF (s)	2.2		3.5		3.3	
p0 queue free %	100		100		80	
GM capacity (veh/h)	846		413		445	
Direction, Lane #	EBL	NBL				
Volume Total	712	89				
Volume Left	0	0				
Volume Right	712	89				
cSH	1700	445				
Volume to Capacity	0.42	0.20				
Queue Length 95th (ft)	0	18				
Control Delay (s)	0.0	15.1				
Lane LOS	C	C				
Approach Delay (s)	0.0	15.1				
Approach LOS	C	C				
Intersection Summary						
Average Delay	1.6					
Intersection Capacity Utilization	45.2%					
ICU Level of Service	A					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & Wissahickon Ave



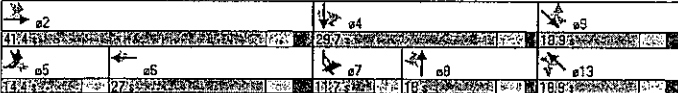
Movement	EBL	EBR	NBL	NBR	SBT	SBR
Lane Configurations	↑↑					
Volume (veh/h)	10	479	0	934	367	0
Sign Control	Stop		Free	Free		
Grade (%)	0%		0%	0%	0%	
Peak Hour Factor	0.87	0.87	0.88	0.88	0.83	0.83
Hourly flow rate (vph)	0	551	0	1061	442	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			1046			
pX, platoon unblocked						
vC, conflicting volume	973	221	442			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	973	221	442			
IC, single (s)	16.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	30	100			
GM capacity (veh/h)	263	789	129			
Direction, Lane #	EBL	NBL	NBR	SBT	SBR	
Volume Total	551	531	1221	221	442	
Volume Left	0	0	0	0	0	
Volume Right	551	531	1221	221	442	
cSH	789	1700	1700	1700	1700	
Volume to Capacity	0.70	0.31	0.31	0.13	0.13	
Queue Length 95th (ft)	145	0	0	0	0	
Control Delay (s)	19.4	0.0	0.0	0.0	0.0	
Lane LOS	C	C	C	C	C	
Approach Delay (s)	19.4	0.0	0.0	0.0	0.0	
Approach LOS	C	C	C	C	C	
Intersection Summary						
Average Delay	5.2					
Intersection Capacity Utilization	52.5%					
ICU Level of Service	B					
Analysis Period (min)	15					

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	EBL2	EBU2	EBT	WBT	WBR	NBL2	NBU2	NBT	SBL2	SBU2	SBT	SBR
Lane Configurations			↑↑	↑↑	↑↑				↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	408	896	394	107	0	0	179	0	174	131	445
Lane Group Flow (vph)	0	408	896	394	107	0	0	179	0	174	131	445
Turn Type		Perm	Perm	Perm	Perm			Perm	Perm	Perm	Perm	Perm
Protected Phases	5	5	2	6	6	8	7	7	4	4	4	4
Permitted Phases	EBL2	EBU2	EBT	WBT	WBR	NBL2	NBU2	NBT	SBL2	SBU2	SBT	SBR
Minimum Split (s)	7.6	7.6	10.3	10.3	10.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Total Split (s)	14.4	14.4	41.4	27.0	27.0	18.0	18.0	18.0	17.7	17.7	29.7	29.7
Total Split (%)	16.0%	16.0%	45.0%	30.0%	30.0%	20.0%	20.0%	20.0%	13.0%	13.0%	33.0%	33.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	0.0	2.7	2.7	2.7	1.8	1.8	1.8	0.0	0.0	1.8	1.8
Lost Time Adjust (s)	0.4	0.4	2.3	2.3	2.3	0.0	0.0	0.4	0.4	0.4	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag (s)	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead
Lead-Lag Optimize?												
v/c Ratio	1.16	0.74	0.46	0.26	0.26	0.62	0.62	0.62	0.24	0.24	0.55	0.55
Control Delay	124.7	26.1	47.9	38.1	38.1	45.0	45.0	45.0	34.9	21.4	25.4	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.7	26.1	47.9	38.1	38.1	45.0	45.0	45.0	34.9	21.4	25.4	25.4
Queue Length 50th (ft)	242	254	125	75	75	94	94	94	42	42	128	128
Queue Length 95th (ft)	#500	334	171	m96	m96	155	155	155	84	84	180	180
Internal Link Dist (ft)	658	658	1975	407	407	407	407	407	1653	1653	1653	1653
Turn Bay Length (ft)	450	450	250	250	250	150	150	150	415	415	415	415
Base Capacity (vph)	351	355	653	408	408	267	267	267	550	550	803	803
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.74	0.46	0.26	0.26	0.62	0.62	0.62	0.24	0.24	0.55	0.55

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) referenced to phase EBT, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Pretime  
 - 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 10: Hunting Park Ave & Henry Ave



Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	SBL2	SBU2	SBT	NWL2	NWL	NWT
Lane Configurations			↑			↑
Volume (vph)	78	89	173	68	85	279
Lane Group Flow (vph)	78	89	173	68	85	279
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases			9			13
Permitted Phases	SBL2	SBU2	SBT	NWL2	NWL	NWT
Minimum Split (s)	9.4	9.4	9.4	9.4	9.4	9.4
Total Split (s)	18.8	18.9	18.9	18.9	18.9	18.9
Total Split (%)	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	1.4	1.4	1.4	0.0	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	5.4	4.0	4.0
Lead/Lag (s)	Lead	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?						
v/c Ratio	2.32	0.72	0.59	0.86	1.02	1.02
Control Delay	650.8	50.1	98.7	98.5	98.5	98.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	650.8	50.1	98.7	98.5	98.5	98.5
Queue Length 50th (ft)	178	221	48	164	164	164
Queue Length 95th (ft)	#301	#214	#128	#310	#310	#310
Internal Link Dist (ft)	1387	1387	1698	1698	1698	1698
Turn Bay Length (ft)	105	105	105	105	105	105
Base Capacity (vph)	62	71	199	127	127	127
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	2.32	0.72	0.59	0.86	1.02	1.02

Intersection Summary

Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↓	↓	↑↑
Volume (vph)	199	882	167	62	436
Lane Group Flow (vph)	362	889	167	62	464
Turn Type	Permi	Permi	Permi	Permi	Permi
Protected Phases	8	2			6
Permitted Phases					
Minimum Split (s)	33.3	10.3	10.3	10.3	10.3
Total Split (s)	33.3	86.7	56.7	56.7	56.7
Total Split (%)	37.0%	63.0%	63.0%	63.0%	63.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	2.3	2.3	2.3	2.3	2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
v/c Ratio	0.57	0.41	0.17	0.21	0.22
Control Delay	25.9	9.5	2.4	11.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	9.5	2.4	11.2	9.2
Queue Length 50th (ft)	146	91	15	61	61
Queue Length 95th (ft)	236	m99	m10	38	85
Internal Link Dist (ft)	970	1553		767	
Turn Bay Length (ft)		250	130		
Base Capacity (vph)	630	2162	1006	289	2072
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	0.57	0.41	0.17	0.21	0.22

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT; Start of Green  
 Natural Cycle: 60  
 Control Type: Prelimed  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Roberts Ave & Henry Ave

↑ e2	
66%	
↓ e6	↙ e8
56%	33%

Lanes, Volumes, Timings  
30: Abbottsford Ave & Henry Ave


Lane Group	NBT	SBL	SBT
Lane Configurations	↑↑	↓	↑↑
Volume (vph)	974	288	494
Lane Group Flow (vph)	1110	297	509
Turn Type	Permi	Permi	Permi
Protected Phases	2	3	6
Permitted Phases			
Minimum Split (s)	22.3	10.3	22.3
Total Split (s)	60.0	29.7	60.0
Total Split (%)	65.9%	33.1%	66.9%
Yellow Time (s)	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3
Lead/Lag			
Lead-Lag Optimize?			
v/c Ratio	0.53	0.84	0.24
Control Delay	11.6	36.9	8.8
Queue Delay	0.0	0.0	0.0
Total Delay	11.6	36.9	8.8
Queue Length 50th (ft)	176	149	66
Queue Length 95th (ft)	227	237	90
Internal Link Dist (ft)	767	576	
Turn Bay Length (ft)		200	
Base Capacity (vph)	2106	1462	2119
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.53	0.84	0.24

**Intersection Summary**  
 Cycle Length: 89.7  
 Actuated Cycle Length: 89.7  
 Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Prelimed

Splits and Phases: 30: Abbottsford Ave & Henry Ave

↑ e2	
60%	29%
↓ e6	
60%	

Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	118	864	131	495	27	410	176	36	251
Lane Group Flow (vph)	131	970	136	558	2	446	191	45	414
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	6	8	8	8	4	4
Permitted Phases	2	5	6	6	8	8	8	4	4
Minimum Split (s)	7.6	9.4	9.4	9.4	20.0	20.0	20.0	20.0	20.0
Total Split (s)	9.9	54.0	44.1	44.1	36.0	36.0	36.0	36.0	36.0
Total Split (%)	11.0%	60.0%	49.0%	49.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.32	0.51	0.61	0.37	0.01	0.67	0.30	0.25	0.63
Control Delay	17.3	22.0	36.3	19.3	19.0	30.4	10.5	25.3	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	22.0	36.3	19.3	19.0	30.4	10.5	25.3	28.0
Queue Length 50th (ft)	55	255	77	148	211	30	18	183	183
Queue Length 95th (ft)	m#8	m#289	m#142	198	6	317	79	41	239
Internal Link Dist (ft)	1975	1584	699	718	105	105	658	718	658
Turn Bay Length (ft)	100	100	100	100	100	105	105	105	105
Base Capacity (vph)	413	1898	223	1500	203	669	640	78	658
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	0.32	0.51	0.61	0.37	0.01	0.67	0.30	0.25	0.63

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%); Referenced to phase 2:EBTL and 6:WBTL; Start of Green  
 Natural Cycle: 50  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 60: Hunting Park Ave & Fox St

← e2	→ e4
← e5	← e6

Lanes, Volumes, Timings  
80: Roberts Ave & Fox St



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↑	↑	↑	↑	↑	↑	↑
Volume (vph)	32	188	130	249	95	328	7	190
Lane Group Flow (vph)	37	263	146	376	0	588	0	273
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	8	2	6	4	4	6	6
Permitted Phases	4	8	2	6	4	4	6	6
Minimum Split (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.13	0.37	0.37	0.49	0.66	0.28	0.28	0.28
Control Delay	13.5	14.1	12.0	10.4	15.1	13.2	13.2	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	14.1	12.0	10.4	15.1	13.2	13.2	13.2
Queue Length 50th (ft)	6	60	24	54	139	45	45	45
Queue Length 95th (ft)	25	105	45	86	236	89	89	89
Internal Link Dist (ft)	339	455	718	658	658	658	658	
Turn Bay Length (ft)	105	105	105	105	105	105	105	
Base Capacity (vph)	285	709	390	768	903	992	992	
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	0.13	0.37	0.37	0.49	0.66	0.28	0.28	

Intersection Summary  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%); Referenced to phase 2:NBTL and 6:SBTL; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed

Splits and Phases: 80: Roberts Ave & Fox St

← e2	→ e4
← e5	← e6

Lanes, Volumes, Timings  
90: Abbottsford Ave & Fox St

Lane Group	EBT	NBT	SBT	SBT
Lane Configurations	←↑	↑↑	↓	↑
Volume (vph)	336	434	229	238
Lane Group Flow (vph)	470	570	244	253
Turn Type		pm	pt	
Protected Phases	4	2	1	6
Permitted Phases				
Minimum Split (s)	9.4	9.4	7.6	9.4
Total Split (s)	26.4	24.6	9.0	33.6
Total Split (%)	44.0%	41.0%	15.0%	58.0%
Yellow Time (s)	3.6	3.6	3.6	3.6
All-Red Time (s)	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	1.4	1.4	0.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
v/c Ratio	0.34	0.49	0.68	0.28
Control Delay	14.2	22.9	23.1	7.1
Queue Delay	0.0	0.0	2.0	0.8
Total Delay	14.2	22.9	25.1	7.9
Queue Length 50th (ft)	61	102	36	34
Queue Length 95th (ft)	90	145	120	61
Internal Link Dist (ft)	1415	932	119	
Turn Bay Length (ft)				
Base Capacity (vph)	380	163	361	906
Starvation Cap Reductn	0	0	40	402
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.49	0.76	0.50

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 90: Abbottsford Ave & Fox St

← e1	↑ e2	→ e4
93.6%	24.6%	26.4%
↓ e3		
32.6%		

Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St

Lane Group	WBT	NBT	SBT	SBT
Lane Configurations	←↑	↑↑	↓	↑
Volume (vph)	212	214	279	281
Lane Group Flow (vph)	367	228	297	428
Turn Type		pm	pt	
Protected Phases	8	5	2	6
Permitted Phases				
Minimum Split (s)	8.8	7.0	8.8	8.8
Total Split (s)	26.4	9.0	33.6	24.6
Total Split (%)	44.0%	15.0%	56.0%	41.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.8	1.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag
Lead-Lag Optimize?				
v/c Ratio	0.59	0.54	0.33	0.38
Control Delay	7.6	16.7	3.6	16.1
Queue Delay	0.0	1.0	0.4	0.0
Total Delay	7.6	17.7	3.9	16.1
Queue Length 50th (ft)	49	18	16	60
Queue Length 95th (ft)	70	81	26	94
Internal Link Dist (ft)	377	192	119	792
Turn Bay Length (ft)				
Base Capacity (vph)	1644	422	888	1121
Starvation Cap Reductn	0	58	224	0
Spillback Cap Reductn	23	15	0	10
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.63	0.45	0.38

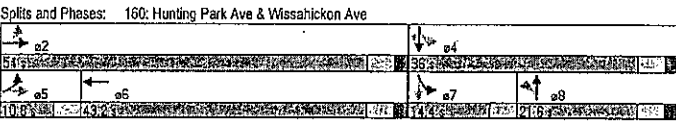
**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%) Referenced to phase 2:NBT and 6:SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed

Splits and Phases: 100: SB Route 1 On Ramp & Fox St

← e2	↑ e3	→ e4
32.8%	24.6%	26.4%
↓ e5	↓ e6	← e8
32.6%	24.6%	26.4%

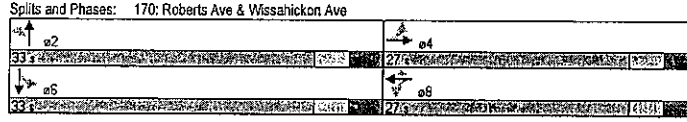
Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	142	912	511	136	285	310	239	104	
Lane Group Flow (vph)	151	994	761	0	401	323	249	108	
Turn Type	pm-tp	Perm	Perm	Perm	pm-tp	Perm	Perm	Perm	
Protected Phases	5	2	6		8	7	4		
Permitted Phases	2	5	8		8	7	4		
Minimum Split (s)	7.6	9.4	9.4		9.4	7.6	9.4		
Total Split (s)	10.8	54.0	13.2		21.6	14.4	36.0		
Total Split (%)	12.0%	60.0%	48.0%		24.0%	16.0%	40.0%		
Yellow Time (s)	3.6	3.6	3.6		3.6	3.6	3.6		
All-Red Time (s)	0.0	1.8	1.8		1.8	0.0	1.8		
Lost Time Adjust (s)	0.4	1.4	1.4		1.4	0.4	1.4		
Total Lost Time (s)	4.0	4.0	4.0		4.0	4.0	4.0		
Lead/Lag	Lead	Lead	Lag		Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes		
V/C Ratio	0.44	0.51	0.45		0.67	0.38	0.17		
Control Delay	11.0	6.9	17.5		39.8	81.5	23.8		
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0		
Total Delay	11.0	6.9	17.5		39.8	81.5	23.8		
Queue Length 50th (ft)	20	30	17		12	146	104		
Queue Length 95th (ft)	35	93	180		138	284	169		
Internal Link Dist (ft)	1684	1151	1484		2048	966	1100		
Turn Bay Length (ft)	85					275			
Base Capacity (vph)	340	1933	1701		598	319	625		
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	0.44	0.51	0.45		0.67	0.38	0.17		



Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	109	257	119	223	224	27	519	115	531
Lane Group Flow (vph)	118	344	127	329	252	29	657	131	735
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4		8			2		6
Permitted Phases		8		8			6		6
Minimum Split (s)		9.4		9.4			10.0		10.0
Total Split (s)		27.0		27.0			33.0		33.0
Total Split (%)		45.0%		45.0%			55.0%		55.0%
Yellow Time (s)		3.0		3.0			3.0		3.0
All-Red Time (s)		2.4		2.4			3.0		3.0
Lost Time Adjust (s)		1.4		1.4			2.0		2.0
Total Lost Time (s)		4.0		4.0			4.0		4.0
Lead/Lag		Lead		Lead			Lead		Lead
Lead-Lag Optimize?		Yes		Yes			Yes		Yes
V/C Ratio	0.36	0.49	0.40	0.46	0.33	0.10	0.39	0.41	0.43
Control Delay	20.9	20.0	18.4	16.5	3.9	9.7	10.0	15.0	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	20.0	18.4	16.5	3.9	9.7	10.0	15.0	10.2
Queue Length 50th (ft)	94	101	32	86	15	28	67	28	76
Queue Length 95th (ft)	167	165	74	146	40	18	102	67	110
Internal Link Dist (ft)	1436	1436	740	740	2048	966	1100	966	1100
Turn Bay Length (ft)	100	150		100		65			
Base Capacity (vph)	326	2709	313	214	754	283	1697	319	1662
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	0.36	0.49	0.40	0.46	0.33	0.10	0.39	0.41	0.43





**2007 NO BUILD: PM PEAK**

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL	EBL	EBT	EBR	EBR	WB	WB	WB	WB	NBL	NBL	NBL	NBL	
Lane Configurations	4		4		-		-		-		-		-	
Volume (vph)	1665	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	0.91		0.91		0.95		0.95		0.95		0.95		0.95	
Fr	1.00		0.99		1.00		0.85		1.00		0.85		1.00	
Fit Protected	0.95		0.99		1.00		0.95		1.00		0.95		1.00	
Satd. Flow (prot)	1588		3261		3336		1492		1859		1859		1859	
Fit Permitted	0.31		0.46		0.99		1.00		0.99		0.99		0.99	
Satd. Flow (perm)	523		1506		3336		1492		1823		1823		1823	
Peak hour factor, PHF	0.92		0.92		0.92		0.92		0.92		0.92		0.92	
Adj. Flow (vph)	1745		671		66		5		68		46		5	
RTOR Reduction (vph)	0		0		0		0		0		0		0	
Lane Group Flow (vph)	0		433		1054		0		418		87		0	
Heavy Vehicles (%)	0%		0%		0%		0%		0%		0%		0%	
Turn Type	pm+pt		pm+pt		Perm		Perm		Perm		Perm		Perm	
Protected Phases	2		2		5		5		8		8		8	
Permitted Phases	2		5		5		8		8		8		8	
Actuated Green, G (s)	35.1		35.1		20.7		20.7		12.6		12.6		12.6	
Effective Green, g (s)	34.7		37.4		23.0		23.0		14.0		14.0		14.0	
Actuated G/C Ratio	0.39		0.42		0.26		0.26		0.16		0.16		0.16	
Clearance Time (s)	3.6		6.3		6.3		6.3		5.4		5.4		5.4	
Lane Grp Cap (vph)	325		1355		853		361		204		204		204	
v/s Ratio Prot	0.15		0.32		0.13		0.13		0.10		0.10		0.10	
v/s Ratio Perm	0.36		0.49		0.26		0.26		0.17		0.17		0.17	
v/c Ratio	1.33		0.78		0.49		0.23		0.65		0.65		0.65	
Uniform Delay, d1	28.5		22.7		28.5		26.5		35.7		35.7		35.7	
Progression Factor	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Incremental Delay, d2	69.2		4.5		1.8		1.3		11.0		11.0		11.0	
Delay (s)	194.3		27.2		47.4		52.5		46.7		46.7		46.7	
Level of Service	D		C		D		D		D		D		D	
Approach Delay (s)	75.8				48.5				46.7					
Approach LOS	E				D				D					
<b>Intersection Summary</b>														
HCM Average Control Delay	89.0 s													
HCM Volume to Capacity ratio	1.27													
Actuated Cycle Length (s)	90.0													
Intersection Capacity Utilization	103.8%													
Analysis Period (min)	15													
c Critical Lane Group														

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	NBR	NBL	SBL	SBR	SBR	SEL	SEL	SEL	SER	SER	NWB	NWB	
Lane Configurations	-		-		-		-		-		-		
Volume (vph)	1307	63	102	124	383	93	94	193	183	6	6	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12	
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0		
Lane Util. Factor	1.00		1.00		0.88		1.00		1.00		1.00		
Fr	1.00		1.00		0.85		1.00		0.98		1.00		
Fit Protected	0.95		1.00		0.95		1.00		0.95		1.00		
Satd. Flow (prot)	1829		1925		2787		1752		1872		1872		
Fit Permitted	0.25		1.00		1.00		0.27		1.00		1.00		
Satd. Flow (perm)	486		1925		2787		495		1872		1872		
Peak hour factor, PHF	0.77		0.89		0.89		0.89		0.92		0.92		
Adj. Flow (vph)	17		71		115		139		430		41		
RTOR Reduction (vph)	0		0		0		0		0		0		
Lane Group Flow (vph)	0		0		186		139		464		0		
Heavy Vehicles (%)	4%		2%		2%		2%		2%		3%		
Turn Type	pm+pt		pm+pt		Perm		Perm		Perm		Perm		
Protected Phases	4		4		4		9		9		13		
Permitted Phases	4		4		4		9		9		13		
Actuated Green, G (s)	24.3		24.3		24.3		13.5		13.5		14.9		
Effective Green, g (s)	23.9		25.7		25.7		14.9		14.9		14.9		
Actuated G/C Ratio	0.27		0.29		0.29		0.17		0.17		0.17		
Clearance Time (s)	3.6		5.4		5.4		5.4		5.4		5.4		
Lane Grp Cap (vph)	244		550		796		310		310		310		
v/s Ratio Prot	0.07		0.07		0.07		0.13		0.13		0.13		
v/s Ratio Perm	0.14		0.17		0.17		0.41		0.41		0.41		
v/c Ratio	0.76		0.25		0.58		2.45		0.76		0.76		
Uniform Delay, d1	26.1		24.9		27.6		37.6		35.6		35.6		
Progression Factor	0.83		0.81		0.84		1.00		1.00		1.00		
Incremental Delay, d2	19.4		1.1		3.0		68.2		16.0		16.0		
Delay (s)	42.7		21.1		26.1		72.8		51.8		51.8		
Level of Service	D		C		D		E		D		D		
Approach Delay (s)	29.1						361.1						
Approach LOS	D						F						
<b>Intersection Summary</b>													



HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	SW	NW	NW	NW	SW
Lane Configurations	1	1	1	1	1
Volume (vph)	72	101	154	190	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12
Total Lost time (s)	4.0	4.0			
Lane Util. Factor	1.00	1.00			
Frt	1.00	0.91			
Flt Protected	0.95	1.00			
Satd. Flow (prot)	1679	1652			
Flt Permitted	0.31	1.00			
Satd. Flow (perm)	545	1652			
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	83	116	177	3	3
RTOR Reduction (vph)	0	0	0	0	0
Lane Group Flow (vph)	90	295	0	0	0
Heavy Vehicles (%)	8%	8%	8%	8%	8%
Turn Type	Perm				
Protected Phases	13				
Permitted Phases	13				
Activated Green, G (s)	13.5				
Effective Green, g (s)	14.9				
Activated g/C Ratio	0.17				
Clearance Time (s)	5.4				
Lane Grp Cap (vph)	273				
v/s Ratio Prot	0.18				
v/s Ratio Perm	0.17				
v/c Ratio	1.00				
Uniform Delay, d1	37.6				
Progression Factor	1.00				
Incremental Delay, d2	94.9				
Delay (s)	132.4				
Level of Service	F				
Approach Delay (s)	120.1				
Approach LOS	F				

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave



Movement	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations	1	1	1	1	1	1
Volume (vph)	221	169	1914	172	61	462
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	12	13	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.99	1.00	1.00	0.96	1.00
Frt	0.94	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.97	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1835	3693	1599	1770	3539	3539
Flt Permitted	0.97	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	1835	3693	1599	458	3539	3539
Peak-hour factor, PHF	0.99	0.99	0.97	0.97	0.94	0.94
Adj. Flow (vph)	213	171	942	177	65	49
RTOR Reduction (vph)	32	0	0	3	0	0
Lane Group Flow (vph)	352	0	942	104	65	491
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type	Perm Perm					
Protected Phases	6					
Permitted Phases	2 6					
Activated Green, G (s)	27.0					
Effective Green, g (s)	29.3					
Activated g/C Ratio	0.33					
Clearance Time (s)	6.3					
Lane Grp Cap (vph)	2072					
v/s Ratio Prot	0.19					
v/s Ratio Perm	0.26					
v/c Ratio	0.59					
Uniform Delay, d1	25.3					
Progression Factor	1.00					
Incremental Delay, d2	4.2					
Delay (s)	29.5					
Level of Service	C					
Approach Delay (s)	10.2					
Approach LOS	C					

Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Activated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations			↑↑		↑↑	
Volume (vph)	0	0	1032	507	905	524
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.3	6.3	6.3	6.3
Lane Util. Factor			0.95	1.00	0.95	
Fit Protected			1.00		0.95	1.00
Fit Permitted			1.00		0.95	1.00
Satd. Flow (prot)			3515		1770	3539
Satd. Flow (perm)			3515		1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	0	0	1122	554	914	540
RTOR Reduction (vph)	0	0	4	0	0	0
Lane Group Flow (vph)	0	0	1122	554	914	540
Turn Type	Prot					
Protected Phases	3, 6					
Permitted Phases	2, 5					
Actuated Green, G (s)			53.7	23.4	53.7	
Effective Green, g (s)			53.7	23.4	53.7	
Actuated g/C Ratio			0.60	0.26	0.60	
Clearance Time (s)			6.3	6.3	6.3	
Lane Grp Cap (vph)			2104	762	2119	
v/s Ratio Prot			c0.33	c0.18	0.15	
v/s Ratio Perm						
v/c Ratio			0.56	0.68	0.25	
Uniform Delay, d1 (s)			10.8	29.8	6.5	
Progression Factor			1.00	1.00	1.00	
Incremental Delay, d2 (s)			17.8	0.3		
Delay (s)			11.9	37.6	8.8	
Level of Service			A	D	B	
Approach Delay (s)			0.0	11.9	19.4	
Approach LOS			A	B	B	
Intersection Summary						
HCM Average Control Delay (s)			15.1		12.0	
HCM Level of Service			B		C	
HCM Volume to Capacity ratio			0.59		0.26	
Actuated Cycle Length (s)			109.7		120.0	
Intersection Capacity Utilization			57.5%		26.6%	
ICU Level of Service			B		C	
Analysis Period (min)			15		15	
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑↑		↑↑	↑↑		↑↑	↑↑	↑↑
Volume (vph)	1253	816	10	139	1018	41	435	187	39	266	185	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	0.95	1.00	0.95
Fit Protected	1.00	1.00		1.00	0.99		1.00	1.00	0.85	1.00	0.96	0.96
Fit Permitted												
Satd. Flow (prot)	1711	3416		1694	3351		1787	1881	1599	1787	1813	1813
Satd. Flow (perm)	1711	3416		1694	3351		1787	1881	1599	1787	1813	1813
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	139	1018	11	145	548	43	2	473	203	48	332	106
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	139	1028	0	145	584	0	2	473	141	48	425	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pl			Perm			Perm			Perm		
Protected Phases	3, 6			3, 6			3, 6			3, 6		
Permitted Phases	2, 5			2, 5			2, 5			2, 5		
Actuated Green, G (s)	48.6			48.6			30.6			30.6		
Effective Green, g (s)	48.2			50.0			40.1			40.1		
Actuated g/C Ratio	0.54			0.56			0.45			0.49		
Clearance Time (s)	3.6			5.4			5.4			5.4		
Lane Grp Cap (vph)	396			1890			1203			689		
v/s Ratio Prot	0.02			c0.30			0.17			c0.25		
v/s Ratio Perm	0.17			0.32			0.00			0.09		
v/c Ratio	0.38			0.54			0.71			0.39		
Uniform Delay, d1 (s)	17.9			12.7			20.3			16.8		
Progression Factor	1.59			1.67			1.12			1.08		
Incremental Delay, d2 (s)	1.8			0.8			1.0			0.7		
Delay (s)	19.7			21.9			40.7			18.8		
Level of Service	B			C			D			B		
Approach Delay (s)	21.7			23.1			28.2			29.3		
Approach LOS	B			C			D			B		
Intersection Summary												
HCM Average Control Delay (s)	24.7			24.7			24.7			24.7		
HCM Volume to Capacity ratio	0.71			0.71			0.71			0.71		
Actuated Cycle Length (s)	90.0			90.0			90.0			90.0		
Intersection Capacity Utilization	72.9%			72.9%			72.9%			72.9%		
ICU Level of Service	C			C			C			C		
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Volume (vph)	34	199	40	138	264	190	101	348	149	144	201	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	0.97	1.00	0.96	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Flt Protected												
Satd. Flow (prot)	1770	1816	1805	1950	2023	2042						
Flt Permitted												
Satd. Flow (perm)	705	1816	984	1950	1820	2014						
Peak-hour Factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.94	0.94	0.94
Adj. Flow (vph)	40	231	47	155	297	101	105	382	155	7	214	68
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	40	266	0	155	378	0	0	602	0	0	270	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm				Perm	
Protected Phases												
Permitted Phases	4			8			2				6	
Actuated Green, G (s)	22.0	22.0		22.0	22.0		27.0				27.0	
Effective Green, g (s)	23.0	23.0		23.0	23.0		29.0				29.0	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.48				0.48	
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0				6.0	
Lane Grp Cap (vph)	270	696		378	748		860				973	
v/s Ratio Prot		0.15			0.19							
v/s Ratio Perm	0.06	0.13		0.16	0.33		0.13				0.13	
v/c Ratio	0.15	0.38		0.41	0.50		0.68				0.28	
Uniform Delay, d1 (s)	12.1	13.4		13.8	14.1		2.0				9.3	
Progression Factor	1.00	1.00		0.66	0.63		1.00				1.53	
Incremental Delay, d2 (s)	1.1	1.6		1.3	2.3		4.3				0.7	
Delay (s)	13.3	15.0		12.0	11.1		16.3				14.9	
Level of Service	B	B		B	B		B				B	
Approach Delay (s)		14.7			11.4		16.3				14.9	
Approach LOS		B			B		B				B	


Intersection Summary	
HCM Average Control Delay	13.2
HCM Volume to Capacity ratio	0.61
Actuated Cycle Length (s)	60.0
Intersection Capacity Utilization	83.9%
Analysis Period (min)	15
c Critical Lane Group	
HCM Level of Service	B
Sum of lost time (s)	16.0
ICU Level of Service	E

HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Volume (vph)	63	356	56	0	0	0	160	72	243	252	160	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flt	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Flt Protected												
Satd. Flow (prot)	3685	3685	3685	3685	3685	3685	3685	3685	3685	3685	3685	3685
Flt Permitted												
Satd. Flow (perm)	3685	3685	3685	3685	3685	3685	3685	3685	3685	3685	3685	3685
Peak-hour Factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	72	409	17	0	0	0	523	82	259	268	160	68
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	494	0	0	0	0	605	0	259	268	0	68
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	0%	0%
Turn Type		Perm								pm+pt		
Protected Phases												
Permitted Phases		4								6		1
Actuated Green, G (s)		21.0					19.2			28.2		28.2
Effective Green, g (s)		22.4					20.6			27.8		29.6
Actuated g/C Ratio		0.37					0.34			0.46		0.49
Clearance Time (s)		5.4					5.4			3.6		5.4
Lane Grp Cap (vph)		1379					162			331		206
v/s Ratio Prot		0.13					0.18			0.07		0.15
v/s Ratio Perm		0.13					0.30			0.30		0.30
v/c Ratio		0.36					0.52			0.78		0.30
Uniform Delay, d1 (s)		13.8					15.8			11.8		11.8
Progression Factor		1.00					1.35			1.40		0.70
Incremental Delay, d2 (s)		0.7					1.5			1.5		0.7
Delay (s)		14.3					22.7			31.6		7.0
Level of Service		B					C			A		B
Approach Delay (s)		14.3					22.7			19.1		19.1
Approach LOS		B					C			B		B


Intersection Summary	
HCM Average Control Delay	19.0
HCM Volume to Capacity ratio	0.56
Actuated Cycle Length (s)	60.0
Intersection Capacity Utilization	75.5%
Analysis Period (min)	15
c Critical Lane Group	
HCM Level of Service	B
Sum of lost time (s)	16.0
ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St



Movement	EB	WB	SB	EB	WB	SB	EB	WB	SB	EB	WB	SB
Lane Configurations	↑↓			↑↓			↑↓			↑↓		
Volume (vph)	270	0	0	197	225	662	227	296	0	298	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	0.95			1.00			1.00			0.95		
Friction	0.91			1.00			1.00			0.95		
Friction Protected	0.99			1.00			1.00			0.95		
Satd. Flow (prot)	3559			1711			1801			3263		
Friction Permitted	0.99			1.00			1.00			0.95		
Satd. Flow (perm)	3559			649			1801			3263		
Peak Hour Factor (PHF)	0.92			0.92			0.92			0.95		
Adj. Flow (vph)	0	0	0	205	234	585	241	315	0	0	314	140
RTOR Reduction (vph)	0	0	0	0	301	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	723	0	241	315	0	0	454	0	0
Heavy Vehicles (%)	2%	2%	2%	5%	1%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases	8			5			8			7		
Permitted Phases	8			2			5			4		
Actuated Green (s)	21.6			28.8			28.8			19.6		
Effective Green, g (s)	22.4			27.8			29.6			20.6		
Actuated G/C Ratio	0.37			0.46			0.49			0.34		
Clearance Time (s)	4.8			3.0			4.8			4.8		
Lane Grp Cap (vph)	1329			989			888			1120		
v/s Ratio Prot	c0.05			0.17			0.14			0.14		
v/s Ratio Perm	0.20			0.24			0.24			0.24		
w/c Ratio	0.54			0.62			0.35			0.41		
Uniform Delay, d1 (s)	14.8			10.7			9.9			15.0		
Progression Factor	0.76			1.41			0.28			1.00		
Incremental Delay, d2 (s)	0.0			0.6			0.0			0.0		
Delay (s)	12.9			21.5			3.6			16.1		
Level of Service	C			B			A			B		
Approach Delay (s)	0.0			12.9			11.4			16.1		
Approach LOS	A			B			B			C		
Intersection Summary	HCM Average Control Delay: 23.9 s HCM Level of Service: C HCM Volume to Capacity ratio: 0.55 Actuated Cycle Length (s): 60.0 s Sum of lost time (s): 8.0 Intersection Capacity Utilization: 75.5% ICU Level of Service: D Analysis Period (min): 15											

HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave

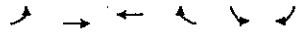


Movement	EB	WB	SB	EB	WB	SB	EB	WB	SB	EB	WB	SB
Lane Configurations	↑↓			↑↓			↑↓			↑↓		
Volume (vph)	151	296	24	153	38	281	175	329	253	110	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	0.95			0.95			0.95			1.00		
Friction	1.00			1.00			0.97			1.00		
Friction Protected	0.95			1.00			1.00			0.99		
Satd. Flow (prot)	1745			3477			3840			3443		
Friction Permitted	0.20			1.00			1.00			0.88		
Satd. Flow (perm)	361			3477			3840			3049		
Peak Hour Factor (PHF)	0.94			0.94			0.89			0.85		
Adj. Flow (vph)	161	1029	26	0	630	178	48	356	22	343	284	115
RTOR Reduction (vph)	0	0	0	0	129	0	0	0	0	0	0	0
Lane Group Flow (vph)	161	1053	0	0	779	0	0	426	0	343	264	45
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt			Perm			pm+pt			Perm		
Protected Phases	2			8			7			4		
Permitted Phases	5			2			5			7		
Actuated Green (s)	45.6			45.6			34.8			16.2		
Effective Green, g (s)	45.2			47.0			36.2			17.6		
Actuated G/C Ratio	0.50			0.52			0.40			0.20		
Clearance Time (s)	3.6			5.4			5.4			3.6		
Lane Grp Cap (vph)	286			1816			1646			586		
v/s Ratio Prot	0.04			c0.30			0.20			c0.14		
v/s Ratio Perm	0.20			0.24			0.24			0.24		
w/c Ratio	0.56			0.58			0.50			0.71		
Uniform Delay, d1 (s)	24.3			14.7			20.2			33.9		
Progression Factor	1.09			0.47			1.00			1.00		
Incremental Delay, d2 (s)	0.0			1.2			0.0			0.0		
Delay (s)	22.5			8.1			21.4			41.0		
Level of Service	C			A			C			E		
Approach Delay (s)	10.0			21.4			41.0			40.1		
Approach LOS	A			C			D			D		
Intersection Summary	HCM Average Control Delay: 23.9 s HCM Level of Service: C HCM Volume to Capacity ratio: 0.71 Actuated Cycle Length (s): 90.0 s Sum of lost time (s): 8.0 Intersection Capacity Utilization: 69.2% ICU Level of Service: C Analysis Period (min): 15											

HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave

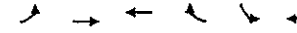
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	283	45	20	97	237	29	550	9	122	563	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd Flow (prot)	1770	1824	1770	1663	1663	1583	1770	1464	1770	1622	1443	1443
Flt Permitted	0.43	1.00	0.42	1.00	1.00	0.29	1.00	0.33	1.00	0.33	1.00	1.00
Satd Flow (perm)	809	1824	809	777	777	545	1464	545	1464	622	3443	3443
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	124	314	50	23	109	266	32	598	9	139	640	141
RTOR Reduction (vph)	0	9	0	0	0	134	6	22	0	0	32	0
Lane Group Flow (vph)	124	365	124	135	349	132	32	675	139	749	139	124
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	8	8	8	8	2	2	2	2	6	6	6
Permitted Phases	4	8	8	8	8	2	2	2	2	6	6	6
Actuated Green, G (s)	21.6	21.6	21.6	21.6	21.6	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Effective Green, g (s)	23.0	23.0	23.0	23.0	23.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Actuated QO Ratio	0.38	0.38	0.38	0.38	0.38	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Clearance Time (s)	5.4	5.4	5.4	5.4	5.4	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	910	699	910	299	714	607	263	1674	30	664	664	910
v/s Ratio Prot	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.22	0.22	0.22
v/s Ratio Perm	0.15	0.15	0.15	0.17	0.17	0.09	0.06	0.09	0.06	0.22	0.22	0.22
v/c Ratio	0.40	0.51	0.45	0.49	0.22	0.12	0.40	0.46	0.45	0.46	0.45	0.45
Uniform Delay, d1 (s)	13.5	14.2	13.8	14.0	12.4	8.5	9.9	10.3	10.2	10.3	10.2	10.2
Progression Factor	1.25	1.27	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2 (s)	3.6	2.5	4.9	2.4	0.8	0.9	0.7	3.0	0.9	3.0	0.9	0.9
Delay (s)	20.4	20.5	18.7	16.4	13.3	9.5	10.7	15.3	11.1	15.3	11.1	11.1
Level of Service	C	C	B	B	B	A	A	B	B	B	B	B
Approach Delay (s)	20.5	15.7	10.6	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
Approach LOS	C	B	B	B	B	A	A	B	B	B	B	B
<b>Intersection Summary</b>												
HCM Average Control Delay (s)	14.0											
HCM Volume to Capacity ratio	0.48											
Actuated Cycle Length (s)	60.0											
Intersection Capacity Utilization	62.5%											
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & Abbottsford Home Dr



Movement	EB	EB	WB	WB	SB	SB
Lane Configurations						
Volume (veh/h)	244	384	167	175		
Sign Control	Free	Free	Stop	Stop		
Grade (%)	0%	0%	0%	0%		
Peak Hour Factor	0.72	0.72	0.92	0.92	0.70	0.70
Hourly flow rate (VPH)	14	39	17	19		
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	1050	219				
pX, platoon unblocked	0.89		0.89	0.89		
vC, conflicting volume	466		809	421		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	343		725	316		
IC, single (s)	4.1		6.4	6.2		
IC, 2 stage (s)						
f (s)	2.2		3.5	3.3		
p0 queue free %	99		93	99		
CM capacity (veh/h)	1086		345	647		
Direction Lane #						
Volume Total	335	466	190	190		
Volume Left	14	0	23			
Volume Right	0	49	167	167		
cSH	1086	1700	388			
Volume to Capacity	0.01	0.27	0.08			
Queue Length 95th (ft)	1	0	6			
Control Delay (s)	0.5	0.0	15.0			
Lane LOS	A		C			
Approach Delay (s)	0.5	0.0	15.0			
Approach LOS			C			
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		32.9%				
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St



Movement	EB	EB	WB	WB	SB	SB
Lane Configurations						
Volume (veh/h)	25	322	175	25	5	
Sign Control	Free	Free	Stop	Stop		
Grade (%)	0%	0%	0%	0%		
Peak Hour Factor	0.82	0.82	0.96	0.96	0.60	0.60
Hourly flow rate (VPH)	15	393	195	26	12	
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	535					
pX, platoon unblocked				0.96		
vC, conflicting volume	521		941	503		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	521		941	503		
IC, single (s)	4.1		6.4	6.2		
IC, 2 stage (s)						
f (s)	2.2		3.5	3.3		
p0 queue free %	97		97	98		
CM capacity (veh/h)	1045		273	565		
Direction Lane #						
Volume Total	423	521	20	20		
Volume Left	30	0	8			
Volume Right	0	25	12	12		
cSH	1045	1700	381			
Volume to Capacity	0.03	0.31	0.05			
Queue Length 95th (ft)	2	0	4			
Control Delay (s)	0.9	0.0	14.7			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	14.7			
Approach LOS			B			
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		47.6%				
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
120: Abbottsford Ave & Stokley St



Movement	EB	EBRT	WB	WB	NB	NB
Lane Configurations	P		P		P	
Volume (veh/h)	707	0	0	0	0	52
Sign Control	Free		Free		Yield	
Grade (%)	0%		0%		0%	
Peak Hour Factor	0.94	0.94	0.92	0.92	0.56	0.56
Hourly flow rate (vph)	752	0	0	0	0	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None		None	
Median storage (veh)						
Upstream signal (ft)	54					
pX, platoon unblocked	0.80		0.80		0.80	
vC, conflicting volume	753		753		753	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	573		572		572	
IC, single (s)	4.1		6.4		6.2	
IC, 2 stage (s)						
IF (s)	2.2		3.5		3.3	
pD queue free %	100		100		78	
cM capacity (veh/h)	604		388		438	
Direction Lane #	EB1	NB1	NB2	SB1	SB2	
Volume Total	754	93	0	0	0	
Volume Left	0	0	0	0	0	
Volume Right	754	93	0	0	0	
cSH	1700	418				
Volume to Capacity	0.44	0.22				
Queue Length 95th (ft)	0	21				
Control Delay (s)	0.0	16.0				
Lane LOS	C	C				
Approach Delay (s)	0.0	16.0				
Approach LOS	C	C				
Intersection Summary						
Average Delay	1.8					
Intersection Capacity Utilization	47.3%					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & Wissahickon Ave

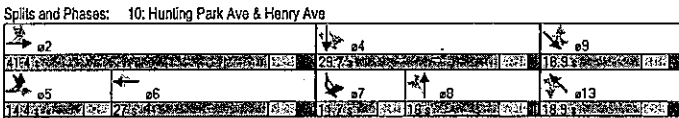


Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Lane Configurations	P			P			P		
Volume (veh/h)	10	508	10	10	690	10	389	10	0
Sign Control	Stop		Free		Free		Free		Free
Grade (%)	0%		0%		0%		0%		0%
Peak Hour Factor	0.87	0.87	0.85	0.88	0.83	0.83			
Hourly flow rate (vph)	10	584	10	10	765	10	469	10	0
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type	None		None		None		None		None
Median storage (veh)									
Upstream signal (ft)							46		
pX, platoon unblocked									
vC, conflicting volume	103	294	17	469					
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	103	234	17	469					
IC, single (s)	6.8	6.9	7.1	7.1					
IC, 2 stage (s)									
IF (s)	3.5	3.3	3.2	2.2					
pD queue free %	100	25	100						
cM capacity (veh/h)	232	774	104						
Direction Lane #	EB1	NB1	NB2	SB1	SB2				
Volume Total	584	582	562	234	234				
Volume Left	0	0	0	0	0				
Volume Right	584	582	562	234	234				
cSH	774	1700	1700	1700	1700				
Volume to Capacity	0.75	0.33	0.33	0.14	0.14				
Queue Length 95th (ft)	178	0	0	0	0				
Control Delay (s)	22.5	0.0	0.0	0.0	0.0				
Lane LOS	C	C	C	C	C				
Approach Delay (s)	22.5	0.0	0.0	0.0	0.0				
Approach LOS	C	C	C	C	C				
Intersection Summary									
Average Delay	6.0								
Intersection Capacity Utilization	52.5%								
Analysis Period (min)	15								

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	EBL2	EBL1	EBT	WBL	WBR	NBL2	NBL1	NBT	SBL2	SBL1	SBT	SEB1
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	689	817	376	61	5	123	63	102	124	383		
Lane Group Flow (vph)	0	433	1055	418	114	0	189	0	186	139	471	
Turn Type												
Protected Phases	5	5	2	6		8	7	7	4			
Permitted Phases												
Minimum Split (s)	7.6	7.6	10.3	10.3	10.3	9.4	9.4	9.4	9.4	9.4	9.4	
Total Split (s)	14.4	14.4	14.4	27.0	27.0	18.0	9.0	18.0	11.7	11.7	29.7	
Total Split (%)	16.0%	16.0%	46.0%	30.0%	30.0%	20.0%	20.0%	20.0%	13.0%	33.0%	33.0%	
Yellow Time (s)	3.6	3.6	2.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	
All-Red Time (s)	0.0	0.0	2.7	2.7	2.7	1.8	1.8	1.8	0.0	0.0	1.8	
Lost Time Adjust (s)	0.0	0.0	2.3	2.3	2.3	0.0	0.0	0.0	0.0	0.0	1.4	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	
Lead-Lag												
Lead-Lag Optimize?												
W/C Ratio	1.27	0.78	0.49	0.28	0.65	0.73	0.29	0.59				
Control Delay	168.2	27.6	48.1	38.7	46.8	40.1	21.5	26.0				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay	168.2	27.6	48.1	38.7	46.8	40.1	21.5	26.0				
Queue Length 50th (ft)	290	277	133	146	100	67	44	137				
Queue Length 95th (ft)	#543	362	179	m101	142	#180	m89	191				
Internal Link Dist (ft)		658	1975			407		1653				
Turn Bay Length (ft)	450		250			150		415				
Base Capacity (vph)	340	1355	859	408	288	264	650	803				
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 W/C Ratio	1.27	0.78	0.49	0.28	0.65	0.73	0.29	0.59				

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to Phase: EBL Start of Green: Master Intersection  
 Natural Cycle: 90  
 Control Type: Permitted  
 - 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.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	SEL2	SEL1	SET	NWL2	NWL1	NWT
Lane Configurations	←	←	←	←	←	←
Volume (vph)	83	94	183	6	72	101
Lane Group Flow (vph)	0	201	237	0	90	296
Turn Type						
Protected Phases			9			13
Permitted Phases						
Minimum Split (s)	9.4	9.4	9.4	9.4	9.4	9.4
Total Split (s)	18.9	18.9	18.9	18.9	18.9	18.9
Total Split (%)	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	1.4	1.4	1.4	0.0	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	5.4	4.0	4.0
Lead-Lag						
Lead-Lag Optimize?						
W/C Ratio	2.45	0.76	1.09	1.08		
Control Delay	709.0	52.7	137.3	116.7		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	709.0	52.7	137.3	116.7		
Queue Length 50th (ft)	191	129	52	190		
Queue Length 95th (ft)	#318	#231	#142	#330		
Internal Link Dist (ft)		1367		1698		
Turn Bay Length (ft)	105		105			
Base Capacity (vph)	82	312	90	273		
Starvation Cap Reductn	0	0	0	0		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced W/C Ratio	2.45	0.76	1.09	1.08		

Intersection Summary

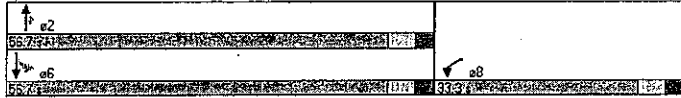


Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↔	↔	↑↑
Volume (vph)	211	914	172	61	462
Lane Group Flow (vph)	384	942	177	65	491
Turn Type	Per	Per	Per	Per	Per
Protected Phases	8	2			6
Permitted Phases					
Minimum Split (s)	33.3	10.3	10.3	10.3	10.3
Total Split (s)	56.7	56.7	56.7	56.7	56.7
Total Split (%)	37.0%	63.0%	63.0%	63.0%	63.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	2.3	2.3	2.3	2.3	2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead-Lag					
Lead-Lag Optimize?					
V/C Ratio	0.61	0.44	0.18	0.24	0.24
Control Delay	27.1	9.7	2.3	12.0	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	9.7	2.3	12.0	9.3
Queue Length 50th (ft)	159	97	6	16	65
Queue Length 95th (ft)	254	101	8	41	91
Internal Link Dist (ft)	970	653	250	130	767
Turn Bay Length (ft)					
Base Capacity (vph)	630	2162	1010	267	2072
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	0.61	0.44	0.18	0.24	0.24

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0.0% Referenced to phase 2-NBT and 6-SBT: Start of Green  
 Natural Cycle: 60  
 Control Type: Preempted  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: Roberts Ave & Henry Ave



Lanes, Volumes, Timings  
30: Abbotsford Ave & Henry Ave

Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑
Volume (vph)	102	309	524	524
Lane Group Flow (vph)	1176	314	540	540
Turn Type	Per	Per	Per	Per
Protected Phases	2	3		6
Permitted Phases				
Minimum Split (s)	22.3	10.3	22.3	
Total Split (s)	60.0	29.7	60.0	
Total Split (%)	66.9%	33.1%	66.9%	
Yellow Time (s)	3.6	3.6	3.6	
All-Red Time (s)	2.7	2.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3	6.3	
Lead-Lag				
Lead-Lag Optimize?				
V/C Ratio	0.56	0.68	0.25	
Control Delay	12.0	38.4	8.9	
Queue Delay	0.0	0.0	0.0	
Total Delay	12.0	38.4	8.9	
Queue Length 50th (ft)	192	160	70	
Queue Length 95th (ft)	247	252	96	
Internal Link Dist (ft)	767	576	576	
Turn Bay Length (ft)		200		
Base Capacity (vph)	2108	482	2119	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced V/C Ratio	0.56	0.68	0.25	

Intersection Summary  
 Cycle Length: 89.7  
 Actuated Cycle Length: 89.7  
 Offset: 0.0% Referenced to phase 2-NBT and 6-SBT: Start of Green  
 Natural Cycle: 50  
 Control Type: Preempted

Splits and Phases: 30: Abbotsford Ave & Henry Ave



Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St

Lane/Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑	←	↑	←	↑	←	↑
Volume (vph)	125	916	139	526	2	473	203	438
Lane Group Flow (vph)	139	1029	145	591	2	473	203	438
Turn Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Protected Phases	5	2	6	8	8	4		
Permitted Phases	5	2	6	8	8	4		
Minimum Split (s)	7.6	9.4	9.4	9.4	20.0	20.0	20.0	20.0
Total Split (s)	9.9	54.0	44.1	44.1	36.0	36.0	36.0	36.0
Total Split (%)	11.0%	60.0%	49.0%	49.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead-Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.55	0.54	0.71	0.39	0.01	0.71	0.30	0.67
Control Delay	17.3	22.3	45.8	20.2	19.0	31.9	12.6	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	22.3	45.8	20.2	19.0	31.9	12.6	29.2
Queue Length 50th (ft)	0	27.4	18.4	16.9	0	22.8	14.1	19.8
Queue Length 95th (ft)	m78	m306	m170	218	6	341	94	256
Internal Link Dist (ft)	1975	1975	1975	1975	699	699	1718	1718
Turn Bay Length (ft)	100	100	100	100	100	105		
Base Capacity (vph)	199	199	199	199	185	669	630	658
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	0.35	0.54	0.71	0.39	0.01	0.71	0.30	0.67

**Interaction Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2:EBT1 and 6:WBT1 Start of Green  
 Natural Cycle: 50  
 Control Type: Preempted  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 60: Hunting Park Ave & Fox St



Lanes, Volumes, Timings  
80: Roberts Ave & Fox St

Lane/Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑	←	↑	←	↑	←	↑
Volume (vph)	34	199	138	264	101	348	77	201
Lane Group Flow (vph)	40	278	155	398	0	622	0	289
Turn Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Protected Phases	4	8	6	2	6			
Permitted Phases	4	8	6	2	6			
Minimum Split (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead-Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.15	0.39	0.41	0.52	0.69	0.69	0.29	0.29
Control Delay	13.9	14.5	12.6	10.8	16.2	13.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	13.9	14.5	12.6	10.8	16.2	13.5		
Queue Length 50th (ft)	0	9.4	6.5	2.5	5.8	1.6		
Queue Length 95th (ft)	26	111	48	92	259	94		
Internal Link Dist (ft)	339	339	339	456	1718	1718		
Turn Bay Length (ft)	105	105						
Base Capacity (vph)	270	708	477	708	899	992		
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	0.15	0.39	0.41	0.52	0.69	0.69		

**Interaction Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%) Referenced to phase 2:NBT1 and 6:SBT1 Start of Green  
 Natural Cycle: 40  
 Control Type: Preempted

Splits and Phases: 80: Roberts Ave & Fox St

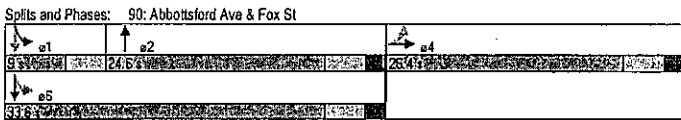


Lanes, Volumes, Timings  
90: Abbotsford Ave & Fox St



Lane Group	EB	NET	SB	SBT
Lane Configurations	←↑	↑↑	↓	↑
Volume (vph)	356	460	243	252
Lane Group Flow (vph)	498	605	259	288
Turn Type	TH	TH	TH	TH
Protected Phases	4	2	1	6
Permitted Phases	2,3	2,3	2,3	2,3
Minimum Split (s)	9.4	9.4	7.5	9.4
Total Split (s)	26.3	24.6	19.0	33.6
Total Split (%)	44.0%	41.0%	15.0%	56.0%
Yellow Time (s)	3.6	3.6	3.6	3.6
All-Red Time (s)	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	0.0	0.0	0.4	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	0	0	0	0
Lead-Lag Optimize?				
v/c Ratio	0.66	0.52	0.75	0.50
Control Delay	14.3	23.1	28.9	7.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.3	23.1	32.6	8.1
Queue Length 50th (ft)	65	110	47	37
Queue Length 95th (ft)	95	153	m#94	m#5
Internal Link Dist (ft)	416	992	119	119
Turn Bay Length (ft)				
Base Capacity (vph)	1380	1163	1345	906
Starvation Cap Reductn	0	0	37	388
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.52	0.84	0.52

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%); Referenced to phase 2: NBT; and 6: SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

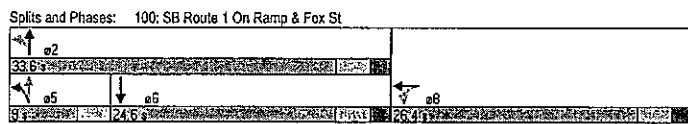


Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St



Lane Group	WB	NB	NBT	SBT
Lane Configurations	←↑	↑	↑	↑↑
Volume (vph)	225	227	256	298
Lane Group Flow (vph)	1024	241	315	454
Turn Type	TH	TH	TH	TH
Protected Phases	8	5	2	6
Permitted Phases	2,3	2,3	2,3	2,3
Minimum Split (s)	8.8	7.0	8.8	8.8
Total Split (s)	28.4	19.0	33.6	24.6
Total Split (%)	44.0%	15.0%	56.0%	41.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.8	0.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	0	0	0	0
Lead-Lag Optimize?				
v/c Ratio	0.63	0.59	0.35	0.40
Control Delay	7.9	19.6	3.7	16.4
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	8.0	20.9	4.0	16.4
Queue Length 50th (ft)	47	27	17	64
Queue Length 95th (ft)	53	92	28	99
Internal Link Dist (ft)	377	119	119	792
Turn Bay Length (ft)				
Base Capacity (vph)	1629	408	1888	1121
Starvation Cap Reductn	0	55	216	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.68	0.47	0.40

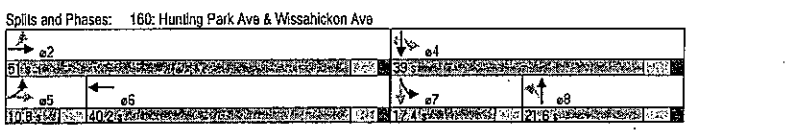
**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%); Referenced to phase 2: NBT; and 6: SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed



Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	151	1055	808	0	426	343	264	115
Lane Group Flow (vph)	151	1055	808	0	426	343	264	115
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	8	7	4		
Permitted Phases	5	2	6	8	7	4		
Minimum Split (s)	7.6	9.4	9.4	9.4	9.4	7.6	9.4	9.4
Total Split (s)	10.9	15.0	13.2	21.6	21.6	17.4	39.0	39.0
Total Split (%)	12.0%	56.7%	44.7%	24.0%	24.0%	19.3%	43.3%	43.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.4	1.4	1.4	0.4	0.4	0.4	2.0	2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		
v/c Ratio	0.55	0.59	0.51	0.71	0.54	0.37	0.17	
Control Delay	19.1	8.2	20.4	41.5	58.2	21.5	4.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.1	8.2	20.4	41.5	58.2	21.5	4.3	
Queue Length 50th (ft)	24	11	8	156	120	145	0	
Queue Length 95th (ft)	73	107	207	147	#294	169	32	
Internal Link Dist (ft)	1584	1584	1151	484	276	2048	966	
Turn Bay Length (ft)	85					275		
Base Capacity (vph)	293	1617	1673	598	598	714	677	
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	0.55	0.59	0.51	0.71	0.54	0.37	0.17	

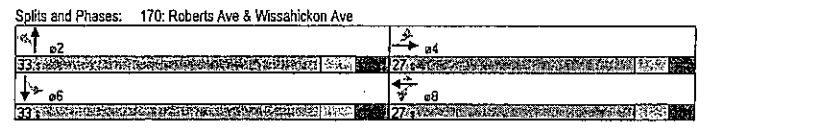
Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 167 (19%) Referenced to phase 2-EBT Start of Green  
 Natural Cycle: 45  
 Control Type: Pretime  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	←	↑	←	↑	↑	←	↑	←	↑
Volume (vph)	112	283	120	311	237	29	550	122	563
Lane Group Flow (vph)	124	354	135	349	266	32	697	139	781
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases		4		8			2		6
Permitted Phases		4		8			2		6
Minimum Split (s)	9.4	9.4	9.4	9.4	9.4	10.0	10.0	10.0	10.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.4	1.4	1.4	1.4	1.4	2.0	2.0	2.0	2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead	Lead
Lead-Lag Optimize?									
v/c Ratio	0.40	0.51	0.45	0.49	0.38	0.12	0.41	0.46	0.46
Control Delay	21.8	20.4	19.9	16.9	5.0	10.0	10.2	16.7	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	20.4	19.9	16.9	5.0	10.0	10.2	16.7	10.5
Queue Length 50th (ft)	36	109	35	92	11	0	77	19	63
Queue Length 95th (ft)	m70	m171	80	155	51	20	109	75	119
Internal Link Dist (ft)	1636	1636	740	2048	2048	2048	966	966	966
Turn Bay Length (ft)	100		160			100		65	
Base Capacity (vph)	310	709	298	714	714	263	1697	301	1697
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	0.40	0.51	0.45	0.49	0.38	0.12	0.41	0.46	0.46

Intersection Summary  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 20 (33%) Referenced to phase 2-NBL and 6-SBL Start of Green  
 Natural Cycle: 40  
 Control Type: Pretime  
 m Volume for 95th percentile queue is metered by upstream signal.





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**2007 BUILD W/ MITIGATION: PM PEAK**

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL2	EBL	EBT	EBR	EBR2	WBL	WBL2	WBR2	NBL2	NBL	NBT	NBR
Lane Configurations	←		←		←		←		←		←	
Volume (vph)	685	639	611	611	611	611	611	611	611	611	611	611
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	10	10	12	12	12	13	12
Total Lost time (s)	4.0	4.0				4.0	4.0				4.0	
Lane Util. Factor	0.91	0.91				0.95	0.95				1.00	
Frt	1.00	0.99				1.00	0.85				0.99	
Flt Protected (s)	0.95	0.99				1.00	1.00				1.00	
Satd. Flow (prot)	1588	3262				3336	1492				1859	
Flt Permitted (s)	0.30	0.46				1.00	1.00				0.98	
Satd. Flow (perm)	500	1506				3336	1492				1823	
Peak-hour factor, PHE	0.92	0.92	0.92	0.92	0.92	0.90	0.90	0.90	0.90	0.92	0.77	0.77
Adj. Flow (vph)	1	745	695	66	5	434	68	46	5	6	160	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	433	1078	0	0	434	87	0	0	0	185	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	1%	1%	2%	4%	4%	4%
Turn Type	pm+pt	pm+pt				Perm	Perm	Perm				Perm
Protected Phases	5	5				6						
Permitted Phases	2	2	5			6		8	8			
Actuated Green, G (s)	35.1	35.1				20.7	20.7				12.9	
Effective Green, g (s)	34.7	37.4				23.0	23.0				14.0	
Actuated g/C Ratio	0.39	0.42				0.26	0.26				0.16	
Clearance Time (s)	3.6	6.3				6.3	6.3				5.4	
Lane Grp Cap (vph)	919	1356				953	381				284	
v/s Ratio Prot	0.16	0.33				0.13					0.10	
v/s Ratio Perm	0.37					0.51	0.23				0.65	
v/c Ratio	1.36	0.80				0.51	0.23				0.65	
Uniform Delay, d1	24.9	23.0				28.7	26.3				35.7	
Progression Factor	1.00	1.00				1.55	1.87				1.00	
Incremental Delay, d2	180.0	4.9				1.9	1.3				11.0	
Delay (s)	204.9	27.9				46.3	50.7				46.7	
Level of Service	D	C				D	D				D	
Approach Delay (s)	78.6		47.2		46.7						351.1	
Approach LOS	E		D		D						C	
Intersection Summary												
HCM Average Control Delay	98.7		58.7		58.7						351.1	
HCM Volume to Capacity ratio	1.28		0.80		0.80						1.20	
Actuated Cycle Length (s)	120											
Intersection Capacity Utilization	104.6%		69.0%		69.0%						100.0%	
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	NBR2	ESB2	WBL	SBT	SBR	GBR2	SEL	SET	SER	SER2	NWB	
Lane Configurations	←		←		←		←		←		←	
Volume (vph)	13	63	102	124	393	38	83	94	183	18	183	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	13	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0							4.0	4.0	
Lane Util. Factor	1.00	1.00	0.88							1.00	1.00	
Frt	1.00	1.00	0.85							1.00	0.88	
Flt Protected (s)	0.95	1.00	1.00							0.95	1.00	
Satd. Flow (prot)	1829	1925	2787							1752	1872	
Flt Permitted (s)	0.25	1.00	1.00							0.27	1.00	
Satd. Flow (perm)	486	1925	2787							495	1872	
Peak-hour factor, PHE	0.77	0.89	0.89	0.89	0.89	0.92	0.88	0.88	0.88	0.88	0.92	0.92
Adj. Flow (vph)	17	71	115	139	430	41	94	107	208	20	9	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	186	139	464	0	0	201	235	0	0	0
Heavy Vehicles (%)	14%	2%	2%	2%	2%	2%	3%	3%	3%	3%	2%	2%
Turn Type	pm+pt	pm+pt				Perm	Perm	Perm				Perm
Protected Phases	4	4				4						
Permitted Phases	4	4	4	4		9	9				13	
Actuated Green, G (s)	24.3	24.3	24.3			13.5	13.5				13.5	
Effective Green, g (s)	23.9	25.7	25.7			14.9	14.9				14.9	
Actuated g/C Ratio	0.27	0.29	0.29			0.17	0.17				0.17	
Clearance Time (s)	3.6	5.4	5.4			5.4	5.4				5.4	
Lane Grp Cap (vph)	244	550	795			310					310	
v/s Ratio Prot	0.07	0.07				0.13					0.13	
v/s Ratio Perm	0.14	0.17	0.17			0.41	0.41				0.41	
v/c Ratio	0.76	0.25	0.58			2.45	0.76				0.76	
Uniform Delay, d1	28.1	24.8	27.6			37.5	35.8				35.8	
Progression Factor	1.02	0.82	0.80			1.00	1.00				1.00	
Incremental Delay, d2	19.3	1.1	3.0			88.2	16.0				16.0	
Delay (s)	48.0	21.4	25.1			725.8	51.8				51.8	
Level of Service	D	C	C			F	D				D	
Approach Delay (s)	29.8		351.1								351.1	
Approach LOS	C		F								C	
Intersection Summary												

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	NWS	NWT	NWR	NWA
Lane Configurations	1	1	1	1
Volume (vph)	72	101	154	113
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12
Total Lost time (s)	4.0	4.0		
Lane Util. Factor	1.00	1.00		
Frt	1.00	0.91		
Flt Protected	0.99	1.00		
Satd. Flow (prot)	1679	1652		
Flt Permitted	0.91	1.00		
Satd. Flow (perm)	545	1652		
Peak Hour factor, PHF	0.87	0.87	0.87	0.87
Adj. Flow (vph)	83	116	177	3
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	50	296	0	0
Heavy Vehicles (%)	8%	8%	8%	8%
Turn Type	Perm			
Protected Phases	1			
Permitted Phases	13			
Actuated Green, G (s)	13.5	13.5		
Effective Green, g (s)	14.9	14.9		
Actuated G/C Ratio	0.17	0.17		
Clearance Time (s)	5.4	5.4		
Lane Grp Cap (vph)	90	273		
v/s Ratio Prot		0.18		
v/s Ratio Perm	0.17			
v/c Ratio	1.00	1.08		
Uniform Delay, d1	37.6	37.6		
Progression Factor	1.00	1.00		
Incremental Delay, d2	194.9	78.9		
Delay (s)	132.4	116.3		
Level of Service	C			
Approach Delay (s)	120.1			

Intersection Summary

HCM Average Control Delay	33.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of Lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave



Movement	WBS	WBR	NBR	SBR	SBT
Lane Configurations	1	1	1	1	1
Volume (vph)	211	191	914	172	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95
Frt	0.94	1.00	0.85	1.00	1.00
Flt Protected	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1830	3693	1599	1770	3539
Flt Permitted	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1830	3693	1599	456	3539
Peak Hour factor, PHF	0.99	0.99	0.97	0.94	0.94
Adj. Flow (vph)	213	193	942	177	101
RTOR Reduction (vph)	36	10	0	0	0
Lane Group Flow (vph)	370	0	942	104	101
Heavy Vehicles (%)	1%	1%	1%	2%	2%
Turn Type	Perm		Perm		
Protected Phases	1		6		
Permitted Phases	9		2		
Actuated Green, G (s)	27.0	50.4	50.4	50.4	50.4
Effective Green, g (s)	29.3	52.7	52.7	52.7	52.7
Actuated G/C Ratio	0.33	0.59	0.59	0.59	0.59
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	596	2162	936	267	2072
v/s Ratio Prot	0.20	0.26			0.14
v/s Ratio Perm	0.33		0.06	0.22	
v/c Ratio	0.62	0.44	0.11	0.38	0.24
Uniform Delay, d1	25.6	10.4	8.3	9.9	9.0
Progression Factor	1.00	0.91	1.80	0.75	0.73
Incremental Delay, d2	4.8	0.3	0.0	4.0	0.3
Delay (s)	30.4	9.5	13.2	11.4	6.8
Level of Service	C	B	B	B	B
Approach Delay (s)	30.4	10.1			7.6

Intersection Summary

HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of Lost time (s)	8.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	EWB	WBR	NBT	ENB	SBL	SBT
Lane Configurations	↑↑		↑	↑↑		
Volume (vph)	1900	1900	1055	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	1.00
Fit Protected	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3515	1770	3539	3515	1770	3539
Fit Permitted	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3515	1770	3539	3515	1770	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	1147	1147	549	1147	1147	1147
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1147	1147	549	1147	1147	1147
Turn Type	Prot					
Protected Phases	2 3 6					
Permitted Phases	-					
Actuated Green, G (s)	54.0	23.4	54.0	54.0	23.4	54.0
Effective Green, g (s)	54.0	23.4	54.0	54.0	23.4	54.0
Actuated G/C Ratio	0.60	0.26	0.60	0.60	0.26	0.60
Clearance Time (s)	5.3	6.3	6.3	5.3	6.3	6.3
Lane Grp. Cap (vph)	2109	469	2123	2109	469	2123
v/s Ratio Prot	0.34	0.18	0.16	0.34	0.18	0.16
v/s Ratio Perm	-	-	-	-	-	-
v/c Ratio	0.57	0.68	0.27	0.57	0.68	0.27
Uniform Delay, d1 (s)	10.9	30.0	9.5	10.9	30.0	9.5
Progression Factor	1.01	1.00	1.00	1.01	1.00	1.00
Incremental Delay, d2 (s)	1.0	1.0	0.3	1.0	1.0	0.3
Delay (s)	12.0	37.9	8.9	12.0	37.9	8.9
Level of Service	B	B	A	B	B	A
Approach Delay (s)	0.0	12.0	19.2	0.0	12.0	19.2
Approach LOS	A	B	B	A	B	B
Intersection Summary						
HCM Average Control Delay (s)	15.1	HCM Level of Service				B
HCM Volume to Capacity ratio	0.80					
Actuated Cycle Length (s)	90.0	Sum of Lost time (s)				12.6
Intersection Capacity Utilization	58.2%	ICU Level of Service				B
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑		↑	↑↑		↑	↑↑		↑	↑↑		↑
Volume (vph)	147	316	10	139	126	63	12	157	187	33	28	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Fit Protected	1.00	1.00	1.00	0.98	1.00	0.95	1.00	1.00	0.85	1.00	0.96	1.00
Satd. Flow (prot)	1711	3416	1694	3333	1787	1881	1599	1787	1881	1599	1787	1807
Fit Permitted	1.00	0.91	1.00	0.98	1.00	0.95	1.00	1.00	0.80	1.00	0.80	1.00
Satd. Flow (perm)	560	3416	455	3333	437	1881	1599	437	1881	1599	437	1607
Peak-hour factor, PHF	0.90	0.90	0.90	0.95	0.98	0.98	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	163	1018	11	145	548	66	2	497	203	66	351	125
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	163	1028	0	145	603	0	2	497	141	66	462	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pl			Perm			Perm			Perm		Perm
Protected Phases	5			6			8			8		4
Permitted Phases	2			5			8			8		4
Actuated Green, G (s)	48.6	48.6		39.7	39.7		30.6	30.6		30.6	30.6	32.0
Effective Green, g (s)	48.2	50.0		40.1	40.1		32.0	32.0		32.0	32.0	32.0
Actuated G/C Ratio	0.54	0.58		0.45	0.45		0.36	0.36		0.36	0.36	0.36
Clearance Time (s)	3.6	5.4		5.4	5.4		5.4	5.4		5.4	5.4	5.4
Lane Grp. Cap (vph)	1755	1898		2031	1485		1557	1669		1669	1669	1407
v/s Ratio Prot	0.03	0.30		0.18	0.18		0.26	0.26		0.26	0.26	0.25
v/s Ratio Perm	0.20	0.32		0.32	0.32		0.00	0.09		0.09	0.17	0.17
v/c Ratio	0.43	0.54		0.71	0.41		0.01	0.74		0.25	0.47	0.72
Uniform Delay, d1 (s)	11.6	12.7		20.3	16.9		18.6	25.4		20.5	22.5	22.5
Progression Factor	1.63	1.67		1.21	1.18		1.00	1.00		1.00	0.85	0.85
Incremental Delay, d2 (s)	2.4	0.7		1.7	0.7		0.12	1.0		1.0	0.5	0.5
Delay (s)	21.3	21.9		41.9	20.6		18.9	32.7		21.5	29.7	27.8
Level of Service	C	C		D	C		B	C		C	C	C
Approach Delay (s)	21.8	24.7		24.7	29.4		29.4	28.1		28.1	28.1	28.1
Approach LOS	C	C		C	C		C	C		C	C	C
Intersection Summary												
HCM Average Control Delay (s)	25.2	HCM Level of Service										C
HCM Volume to Capacity ratio	0.72											
Actuated Cycle Length (s)	90.0	Sum of Lost time (s)										12.0
Intersection Capacity Utilization	74.1%	ICU Level of Service										D
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
65: Temp Exit Drive & Fox St

Movement	EBL	EBR	NBL	NBR	SBL	SBR
Lane Configurations						
Volume (vph)	103	45	100	663	389	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Friction	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1863	1863	1863	1863
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1863	1863	1863	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	49	112	723	423	0
RTOR Reduction (vph)	0	38	0	0	0	0
Lane Group Flow (vph)	112	112	150	723	423	0
Turn Type	Perm					
Projected Phases	4					
Permitted Phases	4					
Actuated Green, G (s)	10.0	10.0	25.0	25.0	25.0	25.0
Effective Green, g (s)	10.0	10.0	25.0	25.0	25.0	25.0
Actuated G/C Ratio	0.22	0.22	0.56	0.56	0.56	0.56
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	393	352	1035	1035	1035	1035
v/s Ratio Prot	c0.06		c0.39	0.23		
v/s Ratio Perm	0.01					
v/c Ratio	0.28	0.03	0.70	0.41		
Uniform Delay, d1 (s)	14.5	13.7	7.3	6.8		
Progression Factor	1.00	1.00	0.58	1.00		
Incremental Delay, d2 (s)	1.1	0.2	3.0	1.2		
Delay (s)	16.3	13.9	7.2	6.9		
Level of Service	B	B	A	A		
Approach Delay (s)	15.6		7.2	6.9		
Approach LOS	B		A	A		
<b>Intersection Summary</b>						
HCM Average Control Delay	9.1		HCM Level of Service			
HCM Volume to Capacity ratio	0.58					
Actuated Cycle Length (s)	45.0		Sum of lost time (s)			
Intersection Capacity Utilization	49.0%		ICU Level of Service			
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	199	73	215	264	90	1123	1411	163	1723	247	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.96	1.00	0.96	1.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Friction	1.00	0.96	1.00	0.96	1.00	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1788	1805	1805	1950	1770	2022	2022	2022	2052	2052	2052
Flt Permitted	0.99	1.00	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	728	1788	915	1950	915	1950	971	2022	2022	2028	2028	2028
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.94	0.94	0.94
Adj. Flow (vph)	40	231	242	297	101	128	431	170	7	263	68	68
RTOR Reduction (vph)	0	22	0	20	0	20	0	23	0	15	0	0
Lane Group Flow (vph)	40	294	0	242	378	0	128	578	0	323	0	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm		
Projected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.0	23.0	23.0	23.0	23.0	26.0	26.0	26.0	26.0	28.0	28.0	28.0
Effective Green, g (s)	24.0	24.0	24.0	24.0	24.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Actuated G/C Ratio	0.40	0.40	0.40	0.40	0.40	0.47	0.47	0.47	0.47	0.47	0.47	0.47
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp Cap (vph)	291	715	966	789	789	453	944	944	944	946	946	946
v/s Ratio Prot		0.16		0.19		c0.29						
v/s Ratio Perm	0.05		0.26		0.13		0.10			0.10		
v/c Ratio	0.14	0.41	0.56	0.48	0.28	0.61	0.34			0.34		
Uniform Delay, d1 (s)	11.4	12.9	14.7	13.4	9.8	11.9	10.2			10.2		
Progression Factor	1.00	1.00	0.67	0.67	1.00	1.00	1.38			1.38		
Incremental Delay, d2 (s)	1.0	0.8	2.3	1.9	1.6	3.0	1.0			1.0		
Delay (s)	12.4	14.7	18.1	11.0	11.4	14.9	15.0			15.0		
Level of Service	B	B	B	B	B	B	B			B		
Approach Delay (s)	14.4		13.7		14.3		15.0			15.0		
Approach LOS	B		B		B		B			B		
<b>Intersection Summary</b>												
HCM Average Control Delay	14.2			HCM Level of Service								
HCM Volume to Capacity ratio	0.63											
Actuated Cycle Length (s)	60.0			Sum of lost time (s)								
Intersection Capacity Utilization	89.2%			ICU Level of Service								
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑			↑			↑↑			↑		
Volume (vph)	63	356	15	0	0	0	1497	102	243	29	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	0.99			0.95			1.00			1.00		
Friction	0.99			1.00			1.00			1.00		
Flt Protected	0.99			1.00			1.00			1.00		
Satd. Flow (prot)	3685			3367			1745			1837		
Flt Permitted	1.00			1.00			0.22			1.00		
Satd. Flow (perm)	3685			3367			404			1837		
Peak-hour factor, PHE	0.87			0.92			0.92			0.88		
Adj. Flow (vph)	72	409	17	0	0	0	565	116	259	316	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	494	0	0	0	0	681	0	298	316	0	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	0%	0%	0%	0%
Turn Type	Perm			pm+pt			pm+pt			pm+pt		
Protected Phases	4			6			1			6		
Permitted Phases	4			6			1			6		
Actuated Green, G (s)	14.6			34.6			34.6			15.2		
Effective Green, g (s)	16.0			34.2			36.0			16.0		
Actuated g/C Ratio	0.27			0.57			0.60			0.27		
Clearance Time (s)	5.4			5.4			3.6			5.4		
Lane Grp Cap (vph)	983			898			588			1102		
v/s Ratio Prot	c0.20			c0.12			0.17			c0.14		
v/s Ratio Perm	0.13			0.13			0.13			0.13		
v/c Ratio	0.50			0.76			0.44			0.29		
Uniform Delay, d1	18.6			7.9			5.6			18.7		
Progression Factor	1.00			0.90			1.57			1.64		
Incremental Delay, d2	20.5			23.5			14.3			10.0		
Delay (s)	20.5			23.5			14.3			10.0		
Level of Service	C			C			B			B		
Approach Delay (s)	20.5			0.0			23.5			12.0		
Approach LOS	C			A			C			B		
<b>Intersection Summary</b>												
HCM Average Control Delay	18.9			12.0			12.0			12.0		
HCM Volume to Capacity ratio	0.57			0.57			0.57			0.57		
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0		
Intersection Capacity Utilization	78.8%			78.8%			78.8%			78.8%		
Analysis Period (min)	5			5			5			5		
c - Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑↑			↑			↑↑			↑		
Volume (vph)	0	0	0	242	562	284	296	0	0	298	81	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	16	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0			4.0			4.0			4.0		
Lane Util. Factor	1.00			0.95			1.00			1.00		
Friction	0.92			1.00			1.00			0.95		
Flt Protected	0.99			0.99			0.95			1.00		
Satd. Flow (prot)	3568			1711			1801			3263		
Flt Permitted	1.00			0.99			1.00			1.00		
Satd. Flow (perm)	3568			658			1801			3263		
Peak-hour factor, PHE	0.92			0.92			0.96			0.96		
Adj. Flow (vph)	0	0	0	252	234	585	281	315	0	0	314	140
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	764	0	281	315	0	0	454	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	1%	1%	2%	2%	2%	2%	2%
Turn Type	Perm			pm+pt			pm+pt			pm+pt		
Protected Phases	6			5			5			6		
Permitted Phases	8			2			5			6		
Actuated Green, G (s)	21.2			29.2			29.2			15.2		
Effective Green, g (s)	22.0			28.2			30.0			16.0		
Actuated g/C Ratio	0.37			0.47			0.50			0.27		
Clearance Time (s)	4.8			3.0			4.8			4.8		
Lane Grp Cap (vph)	1308			1354			901			1070		
v/s Ratio Prot	c0.10			c0.10			0.17			0.14		
v/s Ratio Perm	0.21			0.19			0.19			0.19		
v/c Ratio	0.58			0.62			0.35			0.52		
Uniform Delay, d1	15.3			10.6			9.1			18.7		
Progression Factor	0.71			0.11			0.04			1.00		
Incremental Delay, d2	12.7			5.3			1.1			21.0		
Delay (s)	12.7			5.3			1.1			21.0		
Level of Service	A			A			A			C		
Approach Delay (s)	0.0			12.7			3.1			21.0		
Approach LOS	A			A			A			C		
<b>Intersection Summary</b>												
HCM Average Control Delay	15.9			12.0			12.0			12.0		
HCM Volume to Capacity ratio	0.57			0.57			0.57			0.57		
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0		
Intersection Capacity Utilization	78.8%			78.8%			78.8%			78.8%		
Analysis Period (min)	5			5			5			5		
c - Critical Lane Group												

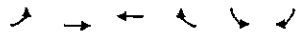
HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB		
Lane Configurations	↑↑		↑↑		↑↑		↑↑		↑↑		↑↑			
Volume (vph)	531	562	24	0	564	163	338	261	217	1329	253	110		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11		
Total Lost time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	4.0		
Lane Util. Factor	1.00	0.95		0.95		0.95		0.95		1.00	1.00	1.00		
Fit	1.00	1.00		0.97		0.99		1.00		1.00	1.00	0.85		
Fit Protected	0.95	1.00		1.00		0.99		0.95		1.00	1.00	0.98		
Satd. Flow (prot)	1745	3477		3844		3443		1745	1837	1561				
Fit Permitted	1.00	1.00		1.00		0.88		0.24	1.00	1.00	1.00	0.97		
Satd. Flow (perm)	340	3477		3844		3049		444	1837	1561				
Peak-hour factor, PHF	0.94	0.94	0.84	0.86	0.86	0.86	0.79	0.79	0.79	0.96	0.96	0.96		
Adj. Flow (vph)	161	1045	26	0	656	178	48	356	22	343	264	115		
RTOR Reduction (vph)	0	19	0	0	27	0	0	50	0	20	0	70		
Lane Group Flow (vph)	161	1069	0	0	807	0	0	426	0	343	264	45		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Turn Type	pm+pl		Perm		pm+pl		Perm		pm+pl		Perm			
Protected Phases	2		5		6		8		4		7			
Permitted Phases	4		8		4		7		4		4			
Actuated Green, G (s)	35.6	45.6		34.8		16.2		33.6		33.6	33.6	33.6		
Effective Green, g (s)	45.2	47.0		36.2		17.6		33.2		35.0	35.0	35.0		
Actuated g/C Ratio	0.50	0.52		0.40		0.20		0.37		0.39	0.39	0.39		
Clearance Time (s)	3.6	5.4		5.4		5.4		3.6		5.4	5.4	5.4		
Lane Grp Cap (vph)	277	1816		1548		596		357		214	165	67		
v/s Ratio Prot	0.04	0.31		0.21		0.14		0.14		0.14	0.14	0.09		
v/s Ratio Perm	0.25	0.12		0.25		0.21		0.21		0.21	0.21	0.49		
w/c Ratio	0.58	0.59		0.52		0.71		0.96		0.37	0.07	0.07		
Uniform Delay, d1 (s)	14.8	14.8		20.4		33.9		23.6		19.6	17.3	17.3		
Progression Factor	1.17	0.46		1.00		1.00		1.00		1.00	1.00	1.00		
Incremental Delay, d2 (s)	7.6	21.2		11.3		7.2		39.7		15.3	10.2	10.2		
Delay (s)	24.6	8.1		21.6		41.0		62.3		21.1	17.5	17.5		
Level of Service	C	A		C		D		E		F	B	B		
Approach Delay (s)	10.2		21.6		41.0		40.1		21.0		11.9			
Approach LOS	D		C		D		E		D		B			
Intersection Summary														
HCM Average Control Delay	14.0						14.3						HCM Level of Service	
HCM Volume to Capacity ratio	0.71						0.71						Sum of Lost Time (s)	
Actuated Cycle Length (s)	90.0						90.0						ICU Level of Service	
Intersection Capacity Utilization	69.8%						63.0%						Analysis Period (min)	
Analysis Period (min)	15						15						c Critical Lane Group	

HCM Signalized Intersection Capacity Analysis  
170: Roberts Ave & Wissahickon Ave

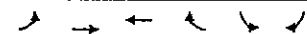
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SBT	SEB		
Lane Configurations	↑↑		↑↑		↑↑		↑↑		↑↑		↑↑			
Volume (vph)	120	290	45	120	344	237	29	550	91	122	115	168		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11		
Total Lost time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	4.0		
Lane Util. Factor	1.00	1.00		1.00		1.00		1.00		1.00	0.95	1.00		
Fit	1.00	1.00		1.00		0.85		1.00		1.00	0.98	1.00		
Fit Protected	0.95	1.00		0.95		1.00		0.95		1.00	0.95	1.00		
Satd. Flow (prot)	1770	3477		3844		3443		1770	1863	1583	1770	3464		
Fit Permitted	0.39	1.00		0.41		1.00		0.27	1.00	1.00	0.33	1.00		
Satd. Flow (perm)	728	1825		760		1683		502	1583	1561	622	3417		
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.92	0.92	0.92	0.88	0.88	0.88		
Adj. Flow (vph)	133	222	50	135	367	266	32	599	99	139	124	191		
RTOR Reduction (vph)	0	9	0	0	0	134	0	22	0	0	47	0		
Lane Group Flow (vph)	133	363	0	135	367	132	32	675	0	139	124	191		
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm			
Protected Phases	4		8		8		2		6		6			
Permitted Phases	4		8		4		7		4		4			
Actuated Green, G (s)	21.6	21.6		21.6		21.6		27.0		27.0	27.0	27.0		
Effective Green, g (s)	23.0	23.0		23.0		23.0		29.0		29.0	29.0	29.0		
Actuated g/C Ratio	0.38	0.38		0.38		0.38		0.48		0.48	0.48	0.48		
Clearance Time (s)	5.4	5.4		5.4		5.4		6.0		6.0	6.0	6.0		
Lane Grp Cap (vph)	279	700		291		714		607		243	167	301		
v/s Ratio Prot	0.18	0.20		0.21		0.21		0.19		0.19	0.23	0.23		
v/s Ratio Perm	0.18	0.18		0.18		0.08		0.06		0.06	0.22	0.49		
w/c Ratio	0.48	0.52		0.46		0.54		0.22		0.13	0.40	0.47		
Uniform Delay, d1 (s)	11.0	14.2		13.9		14.4		12.3		8.6	9.9	10.3		
Progression Factor	1.24	1.25		1.00		1.00		1.00		1.00	1.00	1.00		
Incremental Delay, d2 (s)	5.4	2.6		5.2		2.9		0.8		0.7	5.0	5.0		
Delay (s)	22.7	20.4		19.1		17.3		13.3		9.7	10.7	11.4		
Level of Service	C	C		B		B		B		B	B	B		
Approach Delay (s)	21.0		16.3		10.6		11.9		21.0		11.9			
Approach LOS	D		B		C		B		D		B			
Intersection Summary														
HCM Average Control Delay	14.3						14.3						HCM Level of Service	
HCM Volume to Capacity ratio	0.50						0.50						Sum of Lost Time (s)	
Actuated Cycle Length (s)	60.0						60.0						ICU Level of Service	
Intersection Capacity Utilization	63.0%						63.0%						Analysis Period (min)	
Analysis Period (min)	15						15						c Critical Lane Group	

HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & Abbottsford Home Dr



Movement	EB	EB	WB	WB	WB	WB	SB	SB
Lane Configurations								
Volume (veh/h)	10	277	240	45	16	5	5	5
Sign Control		Free	Free		Stop			
Grade (%)		0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.72	0.72	0.92	0.92	0.70	0.70		
Hourly flow rate (vph)	14	385	441	49	23	7	7	7
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	None					
Median storage (veh)								
Upstream signal (ft)		1050	419					
pX, platoon unblocked		0.90		0.90	0.90			
vC, conflicting volume		490		878	466			
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol		375		808	348			
tC, single (s)		2.2		6.4	6.2			
tC, 2 stage (s)								
tF (s)		2.2		3.5	3.3			
p0 queue free %		99		93	99			
cM capacity (veh/h)		1062		311	624			
Direction/Lane #	EB	EB	WB	WB	WB	WB	SB	SB
Volume Total	389	490	30	8	12	7	7	7
Volume Left	14	0	23					
Volume Right	0	490	7					
cSH	1062	1700	353					
Volume to Capacity	0.01	0.29	0.09					
Queue Length 95th (ft)	1	0	7					
Control Delay (s)	0.4	0.0	16.2					
Lane LOS	A	C	C					
Approach Delay (s)	0.4	0.0	16.2					
Approach LOS	A	C	C					
Intersection Summary								
Average Delay	0.7							
Intersection Capacity Utilization	34.3%		ICU Level of Service					
Analysis Period (min)	15							

HCM Unsignalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St



Movement	EB	EB	WB	WB	WB	WB	SB	SB
Lane Configurations								
Volume (veh/h)	25	398	552	25	5	5	5	5
Sign Control		Free	Free		Stop			
Grade (%)		0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.82	0.82	0.96	0.96	0.60	0.60		
Hourly flow rate (vph)	30	410	575	26	8	8	8	8
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	None					
Median storage (veh)								
Upstream signal (ft)		555						
pX, platoon unblocked				0.98				
vC, conflicting volume		601		1059	588			
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol		801		1051	588			
tC, single (s)		4.1		6.4	6.2			
tC, 2 stage (s)								
tF (s)		2.2		3.5	3.3			
p0 queue free %		97		97	98			
cM capacity (veh/h)		976		239	609			
Direction/Lane #	EB	EB	WB	WB	WB	WB	SB	SB
Volume Total	40	601	20	8	12	7	7	7
Volume Left	30	0	8					
Volume Right	0	601	12					
cSH	976	1700	346					
Volume to Capacity	0.03	0.35	0.06					
Queue Length 95th (ft)	2	0	5					
Control Delay (s)	0.9	0.0	16.0					
Lane LOS	A	C	C					
Approach Delay (s)	0.9	0.0	16.0					
Approach LOS	A	C	C					
Intersection Summary								
Average Delay	0.7							
Intersection Capacity Utilization	46.3%		ICU Level of Service					
Analysis Period (min)	15							

HCM Unsignalized Intersection Capacity Analysis  
120: Abbottsford Ave & Stokley St

Movement	EBL	EBR	WBL	WBR	NBL	NBR
Volume (veh/h)	737	0	0	0	0	52
Sign Control	Free		Free	Yield		
Grade (%)	0%		0%	0%		
Peak Hour Factor	0.94	0.94	0.92	0.92	0.56	0.56
Hourly flow rate (vph)	794	0	0	0	0	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	542					
pX, platoon unblocked		0.81		0.81	0.81	
VC, conflicting volume		786		785	785	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
VCu, unblocked vol		621		620	620	
IC, single (s)		2.41		6.4	6.2	
IC, 2 stage (s)						
IF (s)		3.5		3.5	3.5	
p0 queue free %		100		100	77	
CM capacity (veh/h)		779		367	396	
Direction/Lane #	EBL	NB				
Volume Total	766	93				
Volume Left	0	0				
Volume Right	2	93				
cSH	1700	396				
Volume to Capacity	0.46	0.23				
Queue Length 95th (ft)	0	22				
Control Delay (s)	0.0	16.8				
Lane LOS		C				
Approach Delay (s)	0.0	16.8				
Approach LOS		C				
Intersection Summary						
Average Delay		1.8				
Intersection Capacity Utilization		48.6%				
Analysis Period (min)		15				

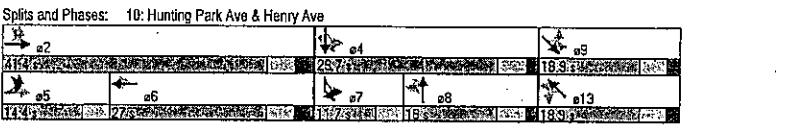
HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & Wissahickon Ave

Movement	EBL	EBR	NBL	NBR	WBL	WBR
Volume (veh/h)	0	541	0	997	400	0
Sign Control	Stop		Free	Free		
Grade (%)	0%		0%	0%		
Peak Hour Factor	0.87	0.87	0.88	0.83	0.83	
Hourly flow rate (vph)	0	622	0	1133	462	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				1046		
pX, platoon unblocked						
VC, conflicting volume		1048	241	482		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
VCu, unblocked vol		1048	241	482		
IC, single (s)		16.8	6.9	14.1		
IC, 2 stage (s)						
IF (s)		3.5	3.3	2.2		
p0 queue free %		100	19	100		
CM capacity (veh/h)		226	766	1091		
Direction/Lane #	EBL	NB	NB	SB	SB	W
Volume Total	0	622	566	241	241	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH		766	1700	1700	1700	
Volume to Capacity		0.81	0.33	0.33	0.14	0.14
Queue Length 95th (ft)		218	0	0	0	
Control Delay (s)		26.6	0.0	0.0	0.0	
Lane LOS		D				
Approach Delay (s)		26.6	0.0	0.0	0.0	
Approach LOS		D				
Intersection Summary						
Average Delay			7.4			
Intersection Capacity Utilization			52.5%			
Analysis Period (min)			15			

Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

Lane Group	EBL2	EBL	EBL	EBL	WBL	NBL2	NBL	NBL	SBL2	SBL	SBL	EBR
Lane Configurations		↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	433	1079	434	114	0	0	189	0	186	139	471
Lane Group Flow (vph)	0	433	1079	434	114	0	0	189	0	186	139	471
Turn Type		Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm
Protected Phases	5	5	2	6	6	8	8	8	7	7	4	
Permitted Phases	2	2	2	2	2	2	2	2	2	2	2	2
Minimum Split (s)	7.6	7.6	10.3	10.3	10.3	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Total Split (s)	14.4	14.4	14.4	27.0	27.0	18.0	18.0	18.0	17.8	17.8	29.7	29.7
Total Split (%)	16.0%	16.0%	48.0%	30.0%	30.0%	20.0%	20.0%	20.0%	13.0%	13.0%	33.0%	33.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	0.0	2.7	2.7	2.7	1.8	1.8	1.8	0.0	0.0	1.8	1.8
Lost Time Adjust (s)	0.0	0.4	2.3	2.3	2.3	0.0	0.0	0.0	0.4	0.4	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	4.0
Lead-Lag		Lead	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
V/C Ratio	0.00	0.80	0.51	0.28	0.28	0.66	0.66	0.73	0.25	0.25	0.69	0.69
Control Delay	177.7	28.3	46.8	37.1	37.1	46.8	46.8	44.8	21.8	21.8	25.0	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	177.7	28.3	46.8	37.1	37.1	46.8	46.8	44.8	21.8	21.8	25.0	25.0
Queue Length 50th (ft)	294	286	134	45	45	100	100	82	78	78	109	109
Queue Length 95th (ft)	#548	373	182	m#6	m#6	142	m#175	m#95	153	153		
Internal Link Dist (ft)		334	1347	853	408	288	288	254	1550	803		
Turn Bay Length (ft)		450		250				150		415		
Base Capacity (vph)		334	1347	853	408	288	288	254	1550	803		
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced V/C Ratio	0.00	0.80	0.51	0.28	0.28	0.66	0.66	0.73	0.25	0.25	0.69	0.69

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2 (EBL) Start of Green. Master Intersection  
 Natural Cycle: 90  
 Control Type: Roundabout  
 - 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.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave

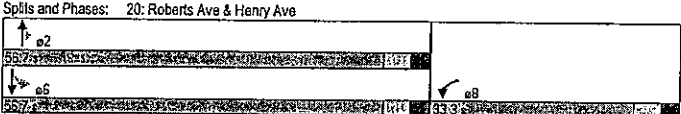
Lane Group	SEL2	SEL	SEL	NWL2	NWL	NWL
Lane Configurations		↑	↑	↑	↑	↑
Volume (vph)	0	201	237	0	90	296
Lane Group Flow (vph)	0	201	237	0	90	296
Turn Type		Prm	Prm	Prm	Prm	Prm
Protected Phases			9			13
Permitted Phases		9	9	9	9	9
Minimum Split (s)		9.4	9.4	9.4	9.4	9.4
Total Split (s)		18.9	18.9	18.9	18.9	18.9
Total Split (%)		21.0%	21.0%	21.0%	21.0%	21.0%
Yellow Time (s)		3.6	3.6	3.6	3.6	3.6
All-Red Time (s)		1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)		1.4	1.4	1.4	1.4	1.4
Total Lost Time (s)		4.0	4.0	4.0	5.4	4.0
Lead-Lag						
Lead-Lag Optimize?						
V/C Ratio		2.45	0.76	1.00	1.08	
Control Delay		709.0	52.7	137.3	116.7	
Queue Delay		0.0	0.0	0.0	0.0	
Total Delay		709.0	52.7	137.3	116.7	
Queue Length 50th (ft)		191	120	52	190	
Queue Length 95th (ft)		#318	#231	#142	#330	
Internal Link Dist (ft)			1397		698	
Turn Bay Length (ft)		105		105		
Base Capacity (vph)		182	312	90	273	
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		15.25	0.76	1.00	1.08	

**Intersection Summary**

Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	WBL	NB	SB	WBL	NB	SB
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	211	914	172	95	492	
Lane Group Flow (vph)	406	942	177	101	491	
Turn Type	Prot	Prot	Prot	Prot	Prot	
Protected Phases	8	2	6			
Permitted Phases						
Minimum Split (s)	33.3	10.3	10.3	10.3	10.3	
Total Split (s)	33.3	56.7	56.7	56.7	56.7	
Total Split (%)	37.0%	63.0%	63.0%	63.0%	63.0%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	
Lost Time Adjust (s)	2.3	2.3	2.3	2.3	2.3	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vic Ratio	0.64	0.44	0.19	0.36	0.24	
Control Delay	27.8	9.6	2.3	12.3	6.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	27.8	9.6	2.3	12.3	6.9	
Queue Length 50th (ft)	169	97	6	15	37	
Queue Length 95th (ft)	269	m100	m8	31	50	
Internal Link Dist (ft)	970	1653	6	267	2072	
Turn Bay Length (ft)		250	130			
Base Capacity (vph)	1162	1010	267	2072		
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 Vic Ratio	0.64	0.44	0.19	0.36	0.24	

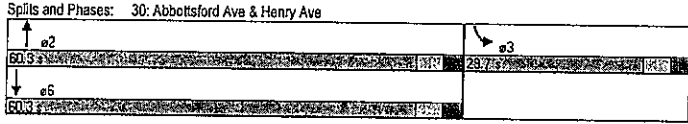
Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset (ft) (0%): Referenced to phase 2:NB and 6:SBTL Start of Green  
 Natural Cycle: 65  
 Control Type: Pre-timed  
 m - Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
30: Abbottsford Ave & Henry Ave

Lane Group	NB	SB	SB
Lane Configurations	↑↑	↑↑	↑↑
Volume (vph)	1055	305	557
Lane Group Flow (vph)	1201	314	574
Turn Type	Prot	Prot	
Protected Phases	2	3	6
Permitted Phases			
Minimum Split (s)	22.3	10.3	22.3
Total Split (s)	60.3	29.7	60.3
Total Split (%)	67.0%	33.0%	67.0%
Yellow Time (s)	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3
Lead/Lag			
Lead-Lag Optimize?			
Vic Ratio	0.57	0.68	0.27
Control Delay	12.1	38.7	9.0
Queue Delay	0.0	0.0	0.0
Total Delay	12.1	38.7	9.0
Queue Length 50th (ft)	168	161	75
Queue Length 95th (ft)	187	252	102
Internal Link Dist (ft)	767	576	
Turn Bay Length (ft)		200	
Base Capacity (vph)	2112	460	2123
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced Vic Ratio	0.57	0.68	0.27

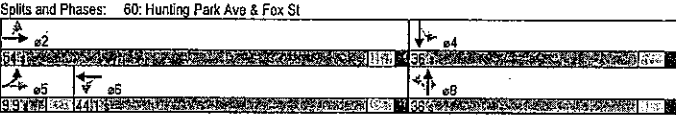
Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset (ft) (0%): Referenced to phase 2:NB and 6:SBTL Start of Green  
 Natural Cycle: 50  
 Control Type: Pre-timed



Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	←	↑	←	↑	←	↑	←	↑	↑
Volume (vph)	47	1029	139	614	2	497	203	86	476
Lane Group Flow (vph)	163	1029	145	614	2	497	203	86	476
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	8	8	4			
Permitted Phases	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3
Minimum Split (s)	7.8	9.4	9.4	20.0	20.0	20.0	20.0	20.0	
Total Split (s)	19.9	54.0	44.1	44.1	36.0	36.0	36.0	36.0	
Total Split (%)	11.0%	60.0%	49.0%	49.0%	40.0%	40.0%	40.0%	40.0%	
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes						
V/C Ratio	0.42	0.54	0.71	0.41	0.01	0.74	0.32	0.47	0.72
Control Delay	18.7	22.3	45.5	20.2	19.5	33.5	12.6	31.9	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	22.3	45.5	20.2	19.5	33.5	12.6	31.9	27.5
Queue Length 60th (ft)	7.1	27.3	8.4	17.2	2.4	24.4	2.8	19.2	19.2
Queue Length 95th (ft)	m91	m308	m171	225	6	354	94	53	237
Internal Link Dist (ft)	1975	1975	1584	1584	899	899	419	419	
Turn Bay Length (ft)	100	100	100	100	100	105			
Base Capacity (vph)	339	1998	203	1496	155	669	630	140	657
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	0.42	0.54	0.71	0.41	0.01	0.74	0.32	0.47	0.72

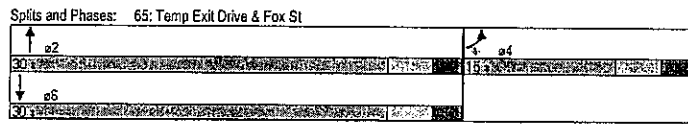
**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%); Referenced to phase 2:EBT and 6:WBT; Start of Green  
 Natural Cycle: 50  
 Control Type: Pretimed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
65: Temp Exit Drive & Fox St

Lane Group	EBL	EBR	NBT	SBT
Lane Configurations	←	←	↑	↑
Volume (vph)	103	665	45	388
Lane Group Flow (vph)	112	49	723	423
Turn Type	Perm	Perm	Perm	Perm
Protected Phases	4	2	6	
Permitted Phases	2,3	2,3	2,3	2,3
Minimum Split (s)	21.0	21.0	21.0	21.0
Total Split (s)	15.0	15.0	30.0	30.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?				
V/C Ratio	0.28	0.13	0.70	0.41
Control Delay	16.9	6.5	7.4	7.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.9	6.5	7.4	7.3
Queue Length 50th (ft)	2.4	0.0	10.6	5.3
Queue Length 95th (ft)	56	19	209	98
Internal Link Dist (ft)	245	245	419	262
Turn Bay Length (ft)				
Base Capacity (vph)	393	390	1035	1035
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	0.28	0.13	0.70	0.41

**Intersection Summary**  
 Cycle Length: 45  
 Actuated Cycle Length: 45  
 Offset: 9 (20%); Referenced to phase 2:NBT and 6:SBT; Start of Green  
 Natural Cycle: 55  
 Control Type: Pretimed





Lanes, Volumes, Timings  
80: Roberts Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	→	←	→	←	→	←	→
Volume (vph)	34	199	215	264	123	218	247	247
Lane Group Flow (vph)	40	316	242	398	128	601	0	338
Turn Type	Thru	Thru	Thru	Thru	Thru	Thru	Thru	Thru
Protected Phases	4	8	6	2	6	2	6	6
Permitted Phases	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0
Minimum Split (s)	28.0	28.0	28.0	28.0	32.0	32.0	32.0	32.0
Total Split (s)	46.7%	46.7%	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Total Split (%)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	13.0	13.6	20.0	10.5	12.0	14.6	14.2	10.4
Total Lost Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead-Lag	13.0	13.6	20.0	10.5	12.0	14.6	14.2	10.4
Lead-Lag Optimize?	0.14	0.43	0.66	0.60	0.28	0.62	0.35	0.29
Vic Ratio	13.0	13.6	20.0	10.5	12.0	14.6	14.2	10.4
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	13.0	13.6	20.0	10.5	12.0	14.6	14.2	10.4
Total Delay	9.7	69	43	60	27	141	18	84
Queue Length 50th (ft)	25	119	#87	99	59	234	195	119
Queue Length 95th (ft)	339	339	339	339	339	339	339	339
Internal Link Dist (ft)	105	200	150	150	150	150	150	150
Turn Bay Length (ft)	29	113	73	68	45	167	66	102
Base Capacity (vph)	0	0	0	0	0	0	0	0
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 Vic Ratio	0.14	0.43	0.66	0.60	0.28	0.62	0.35	0.29

Intersection Summary  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset (0%) Referenced to phase 2-NBT and 6-SBT Start of Green  
 Natural Cycle: 40  
 Control Type: Prelim  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum after two cycles.

Splits and Phases: 80: Roberts Ave & Fox St

← e2	→ e4
↓ e6	← e8

Lanes, Volumes, Timings  
90: Abbotsford Ave & Fox St

Lane Group	EBT	NBT	SBL	SBT
Lane Configurations	←	←	←	←
Volume (vph)	356	497	249	297
Lane Group Flow (vph)	498	681	259	316
Turn Type	Thru	Thru	Thru	Thru
Protected Phases	4	2	1	6
Permitted Phases	9.4	9.4	7.6	9.4
Minimum Split (s)	20.0	20.0	20.0	40.0
Total Split (s)	33.3%	33.3%	33.3%	66.7%
Total Split (%)	3.6	3.6	3.6	3.6
Yellow Time (s)	1.8	1.8	0.0	1.8
All-Red Time (s)	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	20.5	24.3	11.3	10.4
Total Lost Time (s)	0.0	0.0	0.0	0.0
Lead-Lag	20.5	24.3	11.3	10.4
Lead-Lag Optimize?	0.50	0.76	0.43	0.29
Vic Ratio	20.5	24.3	11.3	10.4
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	20.5	24.3	14.1	15.1
Total Delay	78	125	68	84
Queue Length 50th (ft)	114	182	m105	m128
Queue Length 95th (ft)	1415	1632	1119	1119
Internal Link Dist (ft)	102	102	102	102
Turn Bay Length (ft)	89	89	600	102
Base Capacity (vph)	0	0	234	703
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced Vic Ratio	0.50	0.76	0.71	0.79

Intersection Summary  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset (0%) Referenced to phase 2-NBT and 6-SBT Start of Green  
 Natural Cycle: 45  
 Control Type: Prelim  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 90: Abbotsford Ave & Fox St

← e1	← e2	← e4
↓ e5		

Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St

Lane Group	WB	NB	NB	SB
Lane Configurations	←↑	↑	↑	↑↑
Volume (vph)	225	264	296	298
Lane Group Flow (vph)	1071	281	315	454
Turn Type		pm+pl		
Protected Phases	8	5	2	6
Permitted Phases	2	2	5	2
Minimum Split (s)	8.8	7.0	8.8	8.8
Total Split (s)	26.0	14.0	34.0	20.0
Total Split (%)	43.3%	23.3%	55.7%	33.3%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.9	1.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?				
v/c Ratio	0.69	0.80	0.95	0.52
Control Delay	8.1	4.7	1.1	21.3
Queue Delay	0.0	2.9	2.0	0.0
Total Delay	8.1	7.5	3.1	21.3
Queue Length 50th (ft)	146	12	77	0
Queue Length 95th (ft)	44	m2	m2	113
Internal Link Dist (ft)	377	119	792	
Turn Bay Length (ft)				
Base Capacity (vph)	615	471	901	670
Starvation Cap Reductn	0	103	432	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.66	0.76	0.67	0.52
<b>Intersection Summary</b>				
Cycle Length: 60				
Actuated Cycle Length: 60				
Offset: 0 (0%); Referenced to phase 2 (NB); and 6 (SB); Start of Green				
Natural Cycle: 45				
Control Type: Prelimed				
m Volume for 95th percentile queue is metered by upstream signal.				

Splits and Phases: 100: SB Route 1 On Ramp & Fox St

←↑ e2			
← e5	↓ e6		← e8
147	20	26	26

Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave

Lane Group	EB	EB	WB	NB	NB	SB	SB	SB
Lane Configurations	↑	↑↑	↑↑	←↑	←↑	↑	↑	↑
Volume (vph)	151	182	564	38	281	329	253	110
Lane Group Flow (vph)	161	1071	834	0	426	343	264	115
Turn Type	pm+pl			Perm	pm+pl	pm+pl	Perm	Perm
Protected Phases	5	2	6		8	7	4	
Permitted Phases	2	5	8		2	5	2	
Minimum Split (s)	7.6	9.4	9.4	8.4	9.4	7.6	9.4	9.4
Total Split (s)	10.8	31.0	40.2	21.6	21.6	17.4	39.0	39.0
Total Split (%)	12.0%	56.7%	44.7%	24.0%	24.0%	19.3%	43.3%	43.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.4	1.4	1.4	1.4	0.4	1.4	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
v/c Ratio	0.57	0.59	0.53	0.71	0.94	0.37	0.17	0.17
Control Delay	20.7	8.2	20.7	41.5	58.2	21.5	4.3	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	8.2	20.7	41.5	58.2	21.5	4.3	4.3
Queue Length 50th (ft)	24	88	174	120	145	105	0	0
Queue Length 95th (ft)	77	110	216	147	#294	169	32	32
Internal Link Dist (ft)	1594	151		484		2048		
Turn Bay Length (ft)	65					275		
Base Capacity (vph)	284	1817	1574	596	366	714	677	
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	0.57	0.59	0.53	0.71	0.94	0.37	0.17	0.17
<b>Intersection Summary</b>								
Cycle Length: 90								
Actuated Cycle Length: 90								
Offset: 16.7 (19%); Referenced to phase 2 (EB); Start of Green								
Natural Cycle: 45								
Control Type: Prelimed								
# 95th percentile volume exceeds capacity, queue may be longer.								
Queue shown is maximum after two cycles.								

Splits and Phases: 160: Hunting Park Ave & Wissahickon Ave

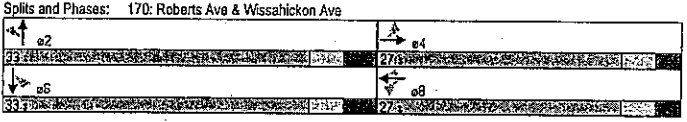
← e2		↓ e4	
← e5	← e6	↓ e7	← e8
106	40	174	216

Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave



Lane Group	EBL		EBL		WBL		WBL		NBL		SBL	
Lane Configurations	T		T		T		T		T		T	
Volume (vph)	120	290	120	344	217	29	250	122	1663			
Lane Group Flow (vph)	133	372	135	387	266	32	697	139	831			
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases	4		8		2		6					
Permitted Phases	4		8		2		6					
Minimum Split (s)	9.4	9.4	9.4	9.4	9.4	10.0	10.0	10.0	10.0			
Total Split (s)	27.0	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0			
Total Split (%)	45.0%	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%			
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	3.0	3.0	3.0	3.0			
Lost Time Adjust (s)	1.4	1.4	1.4	1.4	1.4	2.0	2.0	2.0	2.0			
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Lead/Lag												
Lead-Lag Optimize?												
V/C Ratio	0.46	0.52	0.46	0.54	0.36	0.13	0.41	0.46	0.49			
Control Delay	24.3	20.4	20.4	17.9	5.0	10.3	10.2	16.7	10.4			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	24.3	20.4	20.4	17.9	5.0	10.3	10.2	16.7	10.4			
Queue Length 50th (ft)	41	115	43	105	11	16	16	31	18			
Queue Length 95th (ft)	m85	184	81	176	51	20	109	75	124			
Internal Link Dist (ft)	21436	21436	740	740	2048	1699	1699	1699	1699			
Turn Bay Length (ft)	100	150			100	65						
Base Capacity (vph)	279	709	279	741	741	242	1667	307	1699			
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	0.49	0.52	0.46	0.54	0.36	0.13	0.41	0.46	0.49			

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 20 (33%) Referenced to phase 2-NBL and 6-SBL: Start of Green  
 Natural Cycle: 40  
 Control Type: Preliminary  
 m Volume for 95th percentile queue is metered by upstream signal.





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2009 NO BUILD: PM PEAK

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL2	EBT1	EBR1	EBR2	WBL1	WBR1	WBR2	NBL1	NBL2	NBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←
Volume (vph)	691	623	670	590	900	920	1200	1200	1200	1200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.9	5.2		5.2	5.2			5.1		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		
Fit	1.00	0.99		1.00	0.85			0.99		
Fit Protected	0.95	1.00		1.00	1.00			1.00		
Satd. Flow (prot)	1745	3439		3336	1492			1859		
Fit Permitted	1.00	1.00		1.00	1.00			0.97		
Satd. Flow (perm)	449	3439		3336	1492			1817		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.90	0.90	0.90	0.77	0.77	0.77
Adj. Flow (vph)	751	677	67	542	69	47	5	161	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	752	748	0	422	96	0	0	187	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	4%	4%
Turn Type	pm+pl	pm+pl			Perm	Perm	Perm			
Protected Phases	5	5			6	8	8			
Permitted Phases	2	2	5		6	8	8			
Actuated Green, G (s)	45.5	45.5			20.5	20.5	13.5			
Effective Green, g (s)	45.1	47.8			22.8	22.8	14.9			
Actuated g/C Ratio	0.39	0.40			0.39	0.19	0.12			
Clearance Time (s)	3.5	7.5			7.5	7.5	6.5			
Lane Grp Cap (vph)	397	1370			634	293	226			
v/s Ratio Prot	0.33	0.22			0.13		0.10			
v/s Ratio Perm	0.38				0.06					
v/c Ratio	1.89	0.55			0.67	0.34	0.83			
Uniform Delay, d1	32.0	27.8			45.1	42.1	51.3			
Progression Factor	1.00	1.00			1.00	1.00	1.00			
Incremental Delay, d2	41.8	29.3			5.5	3.2	28.9			
Delay (s)	443.8	29.3			50.5	45.3	79.6			
Level of Service	E	D			D	D	E			
Approach Delay (s)	237.0				49.4		79.6			
Approach LOS	E				D		E			
<b>Intersection Summary:</b>										
HCM Average Control Delay	42.2									
HCM Volume to Capacity ratio	1.40									
Actuated Cycle Length (s)	120.0									
Intersection Capacity Utilization	121.2%									
Analysis Period (min)	15									
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	NBR2	SBL2	SBL	SBR	SBR2	SEL2	SEL	SET	SER	SER2	NWB
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	130	169	103	125	386	39	83	178	99	165	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)			3.9	5.1	5.1			5.1	5.1		
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.98	1.00	1.00
Fit	1.00	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.98	1.00	1.00
Fit Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1829	1925	2787					1752	1871		
Fit Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Satd. Flow (perm)	453	1925	2787					536	1871		
Peak-hour factor, PHF	0.77	0.89	0.89	0.89	0.89	0.92	0.88	0.88	0.88	0.88	0.92
Adj. Flow (vph)	17	71	116	140	434	42	94	108	210	20	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	187	140	471	0	0	202	238	0	0
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%	2%	3%	3%	3%	2%
Turn Type	pm+pl	pm+pl			Perm	Perm	Perm				Perm
Protected Phases	4	4	4	4			9	9	9		13
Permitted Phases	4	4	4	4			9	9	9		13
Actuated Green, G (s)	28.5	28.5	28.5	28.5			25.5	26.5	26.5		26.5
Effective Green, g (s)	28.1	29.9	29.9	29.9			26.9	26.9	26.9		26.9
Actuated g/C Ratio	0.23	0.25	0.25	0.25			0.22	0.22	0.22		0.22
Clearance Time (s)	3.5	6.5	6.5	6.5			6.5	6.5	6.5		6.5
Lane Grp Cap (vph)	237	480	694				120	149			
v/s Ratio Prot	0.07	0.07					0.38	0.13			
v/s Ratio Perm	0.11						0.38				
v/c Ratio	0.80	0.29	0.68				1.68	0.57			
Uniform Delay, d1	40.3	36.5	40.7				66.9	11.4			
Progression Factor	1.00	1.00	1.00				1.00	1.00			
Incremental Delay, d2	24.6	17.5	6.3				340.8	15.3			
Delay (s)	64.9	38.0	46.0				387.4	46.9			
Level of Service	E	D	D				D	E			
Approach Delay (s)	49.0						202.5				
Approach LOS	D						E				
<b>Intersection Summary:</b>											

HCM Signalized Intersection Capacity Analysis  
 10: Hunting Park Ave & Henry Ave



Movements	NW	SW	SE	NE
Lane Configurations	T	T	T	T
Volume (vph)	73	102	155	97
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12
Total Lost time (s)	5.1	5.1		
Lane Util. Factor	1.00	1.00		
Frt	1.00	0.91		
Flt Protected	0.95	1.00		
Satd. Flow (prot)	1678	1652		
Flt Permitted	0.40	1.00		
Satd. Flow (perm)	708	1652		
Peak Hour Factor, PHF	0.87	0.87	0.87	0.87
Adj. Flow (vph)	84	117	178	3
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	91	298	0	0
Heavy Vehicles (%)	8%	6%	6%	8%
Turn Type	Perm			
Protected Phases	13			
Permitted Phases	13			
Actuated Green, G (s)	25.5			
Effective Green, g (s)	26.9			
Actuated g/C Ratio	0.22			
Clearance Time (s)	6.5			
Lane Grp Cap (vph)	159	370		
v/s Ratio Prot	0.18			
v/s Ratio Perm	0.13			
v/c Ratio	0.57	0.81		
Uniform Delay, d1	41.4	44.1		
Progression Factor	1.00			
Incremental Delay, d2	13.1	16.9		
Delay (s)	55.5	61.0		
Level of Service	E			
Approach Delay (s)	59.7			
Approach LOS	E			
Intersection Summary				

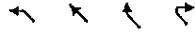
HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL2	EBB2	EBR2	EBR2	WBL2	WBR2	WBR2	NBL2	NBL2	NBR2
Lane Configurations	4T		4T		4T		4T		4T	
Volume (vph)	691	623	623	623	511	462	427	570	623	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	10	10	12	12	13
Total Lost time (s)	3.9	5.2			5.2	5.2			5.1	
Lane Util. Factor	0.91	0.91			0.95	1.00			0.99	
Fit	1.00	0.99			1.00	0.85			0.99	
Fit Protected										
Satd. Flow (prot)	1588	3261			3336	1492			1859	
Fit Permitted					1.00	1.00			0.97	
Satd. Flow (perm)	409	1506			3336	1492			1817	
Peak Hour Factor, PHF	0.92	0.92	0.92	0.92	0.90	0.90	0.90	0.92	0.77	0.77
Adj. Flow (vph)	1	751	577	67	5	422	69	47	5	6
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	437	1064	0	0	422	96	0	0	187
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	4%	4%
Turn Type	pm+pt	pm+pt			Perm	Perm	Perm			
Protected Phases	2	2	5		6	8	8			
Permitted Phases										
Actuated Green, G (s)	45.1	47.8			20.5	22.8			14.9	
Effective Green, g (s)	45.1	47.8			22.8	22.8			14.9	
Actuated G/C Ratio	0.39	0.40			0.19	0.19			0.12	
Clearance Time (s)	3.5	7.5			7.5	7.5			6.5	
Lane Grp. Cap. (vph)	1299	1299			634	293			226	
v/s Ratio Prot	0.21	0.33			0.13				0.10	
v/s Ratio Perm	0.24				0.08				0.10	
v/c Ratio	1.21	0.82			0.67	0.34			0.83	
Uniform Delay, d1	32.0	32.2			45.1	42.4			51.3	
Progression Factor	1.00	1.00			1.00	1.00			1.00	
Incremental Delay, d2	117.8	5.9			5.5	3.2			28.1	
Delay (s)	149.8	38.1			50.5	45.3			79.6	
Level of Service	D	D			D	D			D	
Approach Delay (s)		70.6			49.4				79.6	
Approach LOS		E			D				E	
Intersection Summary										
HCM Average Control Delay	77.6		HCM Level of Service		E					
HCM Volume to Capacity ratio	1.12									
Actuated Cycle Length (s)	120.0									
Intersection Capacity Utilization	110.2%		ICU Level of Service		H					
Analysis Period (min)	15									
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	NBR2	SBL2	SBL2	SBR2	SBR2	SBR2	SBR2	SBR2	SBR2	SBR2	NWL2	
Lane Configurations	4T		4T		4T		4T		4T		4T	
Volume (vph)	13	63	103	125	386	39	83	95	185	183	183	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	
Total Lost time (s)		3.9	5.1	5.1				5.1	5.1			
Lane Util. Factor		1.00	1.00	0.88				1.00	1.00			
Fit		1.00	1.00	0.85				1.00	0.98			
Fit Protected												
Satd. Flow (prot)		1829	1925	2787				1752	1871			
Fit Permitted					1.00	1.00		0.29	1.00			
Satd. Flow (perm)		453	1925	2787				536	1871			
Peak Hour Factor, PHF		0.77	0.89	0.89	0.89	0.92	0.88	0.88	0.88	0.92	0.92	
Adj. Flow (vph)		17	71	116	140	434	42	94	108	210	20	
RTOR Reduction (vph)		0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)		0	187	140	471	0	0	202	238	0	0	
Heavy Vehicles (%)		4%	2%	2%	2%	2%	2%	3%	3%	3%	2%	
Turn Type		pm+pt	pm+pt		Perm	Perm	Perm				Perm	
Protected Phases		4	4	4	4	9	9	9			13	
Permitted Phases												
Actuated Green, G (s)		26.5	28.5	28.5		25.8	25.8	25.8			33.5	
Effective Green, g (s)		26.1	29.9	29.9		26.9	26.9	26.9			33.5	
Actuated G/C Ratio		0.23	0.25	0.25		0.22	0.22	0.22			0.22	
Clearance Time (s)		3.5	6.5	6.5		6.5	6.5	6.5			6.5	
Lane Grp. Cap. (vph)		233	460	694		120	419				419	
v/s Ratio Prot		0.07	0.07					0.13				
v/s Ratio Perm		0.11			1.0	1.0		0.39				
v/c Ratio		0.80	0.29	0.68				1.68	0.57			
Uniform Delay, d1		40.3	36.5	40.7				46.6	41.3			
Progression Factor		1.00	1.00	1.00				1.00	1.00			
Incremental Delay, d2		24.6	1.5	1.5				340.8	65.5			
Delay (s)		64.9	38.0	46.0				387.4	46.9			
Level of Service		D	D	D				D	D			
Approach Delay (s)			49.0					202.5				
Approach LOS			D					E				
Intersection Summary												

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave



Movement	NW	N	NE	S
Lane Configurations	1	1	1	1
Volume (vph)	173	102	155	190
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12
Total Lost time (s)	5.1	5.1		
Lane Util. Factor	0.95	1.00		
Frt	1.00	0.91		
Flt Protected	1.00	1.00		
Satd. Flow (prot)	1678	1652		
Flt Permitted	0.40	1.00		
Satd. Flow (perm)	708	1652		
Peak-hour factor, PHF	0.87	0.87	0.87	
Adj. Flow (vph)	84	117	178	3
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	91	298	0	0
Heavy Vehicles (%)	8%	8%	8%	8%
Turn Type	Perm			
Protected Phases	13	13		
Permitted Phases	13	13		
Actuated Green, G (s)	25.5	25.5		
Effective Green, g (s)	26.9	26.9		
Actuated g/C Ratio	0.22	0.22		
Clearance Time (s)	6.5	6.5		
Lane Grp Cap (vph)	1159	1370		
v/s Ratio Prot		0.18		
v/s Ratio Perm	0.13			
v/c Ratio	0.57	0.81		
Uniform Delay (s)	11.4	14.1		
Progression Factor	1.00	1.00		
Incremental Delay (s)	0.2	0.9		
Delay (s)	55.5	61.0		
Level of Service	C	B		
Approach Delay (s)		59.7		
Approach LOS		B		
Intersection Summary				

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave



Movement	W	WR	N	NR	SBL	SB
Lane Configurations	1	1	1	1	1	1
Volume (vph)	213	170	922	173	62	497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	12	13	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95
Frt	0.94	1.00	0.85	1.00	1.00	1.00
Flt Protected	0.97	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1835	3593	1599	1770	3539	3539
Flt Permitted	0.97	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	1835	3593	1599	450	3539	3539
Peak-hour factor, PHF	0.99	0.99	0.97	0.97	0.94	0.94
Adj. Flow (vph)	215	172	951	178	66	497
RTOR Reduction (vph)	32	0	0	74	0	0
Lane Group Flow (vph)	355	0	951	104	66	497
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type			Perm	Perm		
Protected Phases	8	2			6	6
Permitted Phases			2	6		
Actuated Green, G (s)	27.0	50.4	50.4	50.4	50.4	50.4
Effective Green, g (s)	29.3	52.7	52.7	52.7	52.7	52.7
Actuated g/C Ratio	0.33	0.59	0.59	0.59	0.59	0.59
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	597	2162	936	264	2072	2072
v/s Ratio Prot	0.19	0.26			0.14	0.14
v/s Ratio Perm			0.07	0.15		
v/c Ratio	0.60	0.44	0.11	0.25	0.24	0.24
Uniform Delay (s)	25.4	10.4	8.3	9.1	9.0	9.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay (s)	4.3	0.7	0.2	2.3	0.3	0.3
Delay (s)	29.7	11.1	8.5	11.3	9.3	9.3
Level of Service	C	B	A	B	A	A
Approach Delay (s)	29.7	10.7			9.5	
Approach LOS	C	B			A	
Intersection Summary						
HCM Average Control Delay (s)	13.9					
HCM Volume to Capacity ratio	0.50					
Actuated Cycle Length (s)	90.0					
Intersection Capacity Utilization	61.1%					
Analysis Period (min)	15					
c Critical Lane Group						



HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations	↑↓		↑↓		↑↑	
Volume (vph)	1042	0	150	308	329	529
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3		6.3		6.3	
Lane Util. Factor	0.95		1.00		0.95	
Flt. Protected	1.00		1.00		1.00	
Satd. Flow (prot)	3515		1770		3539	
Flt Permitted	1.00		0.95		1.00	
Satd. Flow (perm)	3515		1770		3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	1133	0	154	318	345	545
RTOR Reduction (vph)	0	0	4	0	0	0
Lane Group Flow (vph)	0	1183	0	318	545	545
Turn Type	Prot		Prot		Prot	
Protected Phases	2		3		6	
Permitted Phases						
Actuated Green, G (s)	53.7		23.4		53.7	
Effective Green, g (s)	53.7		23.4		53.7	
Actuated g/C Ratio	0.60		0.26		0.60	
Clearance Time (s)	6.3		6.3		6.3	
Lane Grp Cap (vph)	2104		462		2119	
v/s Ratio Prot	c0.34		c0.18		0.15	
v/s Ratio Perm						
w/c Ratio	0.56		0.69		0.26	
Uniform Delay, d1 (s)	10.9		29.9		16.5	
Progression Factor	1.00		1.00		1.00	
Incremental Delay, d2 (s)	0.1		0.3		0.3	
Delay (s)	12.0		38.0		8.8	
Level of Service	B		D		A	
Approach Delay (s)	0.0		12.0		19.6	
Approach LOS	B		B		B	
Intersection Summary						
HCM Average Control Delay	15.2		HCM Level of Service		B	
HCM Volume to Capacity ratio	0.60					
Actuated Cycle Length (s)	89.7					
Intersection Capacity Utilization	58.0%		ICU Level of Service		B	
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EBL	EBS	EBR	WBL	WBS	WBR	NBL	NBS	NBR	SBL	SBS	SSR
Lane Configurations	↑↑		↑↑		↑↑		↑		↑		↑	
Volume (vph)	126	925	10	140	531	42	143	188	39	269	186	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11		12		11		12		11		12	
Total Lost time (s)	4.0		4.0		4.0		4.0		4.0		4.0	
Lane Util. Factor	1.00		0.95		1.00		0.95		1.00		1.00	
Flt. Protected	1.00		1.00		0.99		1.00		1.00		0.98	
Satd. Flow (prot)	1711		3416		1694		3351		1787		1881	
Flt Permitted	0.32		1.00		0.25		1.00		0.27		1.00	
Satd. Flow (perm)	576		3416		448		3351		506		1881	
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.96	0.92	0.92	0.92	0.80	0.80	0.80
Adj. Flow (vph)	140	1028	11	146	553	44	2	477	204	49	336	108
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	140	1038	0	146	590	0	2	477	143	49	431	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt		Perm		Perm		Perm		Perm		Perm	
Protected Phases	5		6		8		8		8		4	
Permitted Phases	2		5		6		8		8		4	
Actuated Green, G (s)	48.6		48.6		38.7		38.7		30.6		30.6	
Effective Green, g (s)	48.2		50.0		40.1		40.1		32.0		32.0	
Actuated g/C Ratio	0.54		0.56		0.45		0.45		0.36		0.36	
Clearance Time (s)	3.6		5.4		5.4		5.4		5.4		5.4	
Lane Grp Cap (vph)	383		1898		200		1493		180		669	
v/s Ratio Prot	0.02		c0.30		0.18				c0.25		0.24	
v/s Ratio Perm	0.17				c0.33				0.00		0.09	
w/c Ratio	0.37		0.55		0.73		0.40		0.01		0.71	
Uniform Delay, d1 (s)	11.3		12.8		20.5		16.8		18.8		25.0	
Progression Factor	1.00		1.00		1.20		1.16		1.00		1.00	
Incremental Delay, d2 (s)	2.7		1.1		18.9		0.7		0.1		6.4	
Delay (s)	14.0		13.9		43.4		20.1		18.9		31.4	
Level of Service	B		B		D		C		B		C	
Approach Delay (s)	13.9		24.7		28.4		29.6					
Approach LOS	B		C		C		C					
Intersection Summary												
HCM Average Control Delay	22.2		HCM Level of Service		C							
HCM Volume to Capacity ratio	0.72											
Actuated Cycle Length (s)	90.0											
Intersection Capacity Utilization	73.4%		ICU Level of Service		D							
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←		←	←		←	←		←	←	
Volume (vph)	34	201	41	139	266	101	102	351	151	7	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	0.99	1.00		1.00	1.00		1.00		1.00		1.00
Frt	1.00	0.97		1.00	0.96		0.97		0.97		0.97
Fit Protected	0.95	1.00		0.95	1.00		0.99		0.99		1.00
Satd. Flow (prot)	1770	1815		1805	1949		2023		2042		2042
Fit Permitted	0.37	1.00		0.51	1.00		0.89		0.99		0.99
Satd. Flow (perm)	698	1815		975	1949		1821		2015		2015
Peak-hour factor, PHF	0.86	0.86		0.86	0.89		0.89		0.96		0.94
Adj. Flow (vph)	40	234	48	156	299	102	106	366	157	7	216
RTOR Reduction (vph)	0	12	0	0	20	0	0	20	0	0	18
Lane Group Flow (vph)	40	270	0	156	381	0	0	609	0	0	273
Heavy Vehicles (%)	2%	2%	2%	0%	10%	0%	0%	2%	2%	2%	2%
Turn Type	Perm			Perm			Perm			Perm	
Protected Phases	4			8			2			6	
Permitted Phases	4			8			2			6	
Actuated Green, G (s)	22.0	22.0		22.0	22.0		27.0		27.0		27.0
Effective Green, g (s)	23.0	23.0		23.0	23.0		29.0		29.0		29.0
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.48		0.48		0.48
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0		6.0		6.0
Lane Grp Cap. (vph)	269	696		374	747		880		974		974
v/s Ratio Prot	0.15			0.20			0.33			0.14	
v/s Ratio Perm	0.06			0.16			0.33			0.14	
w/c Ratio	0.15	0.39		0.42	0.51		0.69		0.28		0.28
Uniform Delay, d1	12.1	13.4		13.6	14.2		12.0		9.3		9.3
Progression Factor	1.00	1.00		0.65	0.62		1.00		1.52		1.52
Incremental Delay, d2	1.2	1.6		0.2	0.3		4.5		0.7		0.7
Delay (s)	13.3	15.0		12.0	11.2		16.5		14.8		14.8
Level of Service	B			B			B			B	
Approach Delay (s)	14.8			11.4			16.5			14.8	
Approach LOS	B			B			B			B	
<b>Intersection Summary</b>											
HCM Average Control Delay	14.3			14.3			19.2			19.2	
HCM Volume to Capacity ratio	0.61			0.61			0.55			0.55	
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0	
Intersection Capacity Utilization	84.5%			84.5%			76.2%			76.2%	
Analysis Period (min)	15			15			15			15	
c - Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←		←	←		←	←		←	←	
Volume (vph)	63	360	15	0	0	0	0	0	854	273	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	13	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0		4.0		4.0
Lane Util. Factor	0.99	1.00		1.00	1.00		1.00		0.95		1.00
Frt	0.99	0.98		1.00	0.98		1.00		1.00		1.00
Fit Protected	0.99	1.00		0.95	1.00		0.99		0.95		1.00
Satd. Flow (prot)	3685	3685		3385	3685		3385		3385		3685
Fit Permitted	0.99	1.00		1.00	1.00		1.00		1.00		1.00
Satd. Flow (perm)	3685	3685		3385	3685		3385		3385		3685
Peak-hour factor, PHF	0.87	0.87		0.87	0.92		0.92		0.88		0.88
Adj. Flow (vph)	72	414	17	0	0	0	0	0	527	83	281
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	499	0	0	0	0	0	0	610	0	261
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	2%	2%	1%	1%	0%
Turn Type	Perm			Perm			Perm			pm+pl	
Protected Phases	4			8			2			6	
Permitted Phases	4			8			2			6	
Actuated Green, G (s)	21.0	21.0		19.2	19.2		28.2		28.2		28.2
Effective Green, g (s)	22.4	22.4		20.6	20.6		27.8		27.8		29.6
Actuated g/C Ratio	0.37	0.37		0.34	0.34		0.46		0.46		0.49
Clearance Time (s)	5.4	5.4		5.4	5.4		3.6		3.6		5.4
Lane Grp Cap. (vph)	1376	1376		1152	1152		1906		1906		1906
v/s Ratio Prot	0.14			0.18			0.07			0.15	
v/s Ratio Perm	0.14			0.18			0.07			0.15	
w/c Ratio	0.36	0.36		0.52	0.52		0.79		0.30		0.30
Uniform Delay, d1	13.6	13.6		15.8	15.8		11.8		9.0		9.0
Progression Factor	1.00	1.00		1.34	1.34		1.41		0.70		0.70
Incremental Delay, d2	0.7	0.7		1.5	1.5		15.6		0.7		0.7
Delay (s)	14.4	14.4		22.7	22.7		32.7		7.1		7.1
Level of Service	B			C			C			A	
Approach Delay (s)	14.4			22.7			32.7			19.7	
Approach LOS	B			C			C			B	
<b>Intersection Summary</b>											
HCM Average Control Delay	19.2			19.2			19.2			19.2	
HCM Volume to Capacity ratio	0.55			0.55			0.55			0.55	
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0	
Intersection Capacity Utilization	76.2%			76.2%			76.2%			76.2%	
Analysis Period (min)	15			15			15			15	
c - Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				4T			4T			4T		
Volume (vph)	0	0	0	199	227	567	229	299	0	0	301	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	15	12	12	12	12	12	12	12
Total Lost time (s)				4.0			4.0			4.0		
Lane Util. Factor				0.95			1.00			0.95		
Fit				0.91			1.00			0.95		
Fit Protected				0.99			0.95			1.00		
Satd. Flow (prot)				3559			1711			1801		
Fit Permitted				0.99			1.00			1.00		
Satd. Flow (perm)				3559			644			1801		
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	207	236	591	244	318	0	0	317	141
RTOR Reduction (vph)	0	0	0	298	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	736	0	0	244	318	0	0	458	0
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm			pm+pt			Perm		
Protected Phases				8			2			5		
Permitted Phases												
Actuated Green, G (s)				21.9			20.8			26.8		
Effective Green, g (s)				22.4			27.8			29.6		
Actuated g/C Ratio				0.37			0.46			0.49		
Clearance Time (s)				4.8			3.0			4.8		
Lane Grp Cap (vph)				1329			387			888		
v/s Ratio Prot							0.05			0.18		
v/s Ratio Perm				0.21			0.24			0.34		
v/c Ratio				0.55			0.63			0.36		
Uniform Delay, d1				14.9			10.6			9.4		
Progression Factor				0.75			1.43			0.28		
Incremental Delay, d2				1.7			8.7			1.0		
Delay (s)				12.8			22.2			3.6		
Level of Service				B			C			B		
Approach Delay (s)				0.0			12.8			11.6		
Approach LOS				A			B			B		
<b>Intersection Summary</b>												
HCM Average Control Delay	2.9			2.9			2.9			2.9		
HCM Volume to Capacity ratio	0.59			0.59			0.59			0.59		
Actuated Cycle Length (s)	60.0			60.0			60.0			60.0		
Sum of lost time (s)	12.8			12.8			12.8			12.8		
Intersection Capacity Utilization	76.2%			76.2%			76.2%			76.2%		
ICU Level of Service	D			D			D			D		
Analysis Period (min)	15			15			15			15		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				4T			4T			4T		
Volume (vph)	152	978	25	0	1547	154	39	284	17	332	256	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	12	12	12	11	11	11
Total Lost time (s)				4.0			4.0			4.0		
Lane Util. Factor				1.00			0.95			0.99		
Fit				1.00			0.97			0.99		
Fit Protected				0.95			1.00			1.00		
Satd. Flow (prot)				1745			3476			4037		
Fit Permitted				0.19			1.00			0.89		
Satd. Flow (perm)				355			3476			3568		
Peak-hour factor, PHF	0.94	0.94	0.94	0.86	0.86	0.86	0.79	0.79	0.79	0.86	0.86	0.86
Adj. Flow (vph)	162	1038	27	0	636	179	49	359	22	346	267	116
RTOR Reduction (vph)	0	0	0	0	29	0	0	0	0	0	0	0
Lane Group Flow (vph)	162	1083	0	0	786	0	0	430	0	346	267	45
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type				pm+pt			Perm			pm+pt		Perm
Protected Phases				2			5			8		
Permitted Phases												
Actuated Green, G (s)				45.6			45.6			34.8		
Effective Green, g (s)				45.2			47.0			36.2		
Actuated g/C Ratio				0.50			0.52			0.40		
Clearance Time (s)				3.6			5.4			5.4		
Lane Grp Cap (vph)				283			1815			1545		
v/s Ratio Prot				0.04			0.31			0.20		
v/s Ratio Perm				0.24			0.24			0.12		
v/c Ratio				0.57			0.59			0.51		
Uniform Delay, d1				14.4			14.8			20.2		
Progression Factor				1.11			0.56			1.00		
Incremental Delay, d2				1.2			1.2			1.2		
Delay (s)				23.3			9.5			21.4		
Level of Service				C			A			D		
Approach Delay (s)				11.3			21.4			37.2		
Approach LOS				B			B			D		
<b>Intersection Summary</b>												
HCM Average Control Delay	24.2			24.2			24.2			24.2		
HCM Volume to Capacity ratio	0.72			0.72			0.72			0.72		
Actuated Cycle Length (s)	90.0			90.0			90.0			90.0		
Sum of lost time (s)	12.8			12.8			12.8			12.8		
Intersection Capacity Utilization	69.7%			69.7%			69.7%			69.7%		
ICU Level of Service	C			C			C			C		
Analysis Period (min)	15			15			15			15		
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave

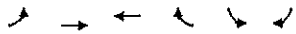


Movement	EB1	EB2	EB3	WB1	WB2	WB3	NB1	NB2	NB3	SB1	SB2	SB3
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Volume (vph)	113	285	45	21	314	240	29	265	92	123	58	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt. Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1825	1770	1863	1863	1583	1770	1583	1770	1770	1825	1863
Flt. Permitted	0.43	1.00	0.41	1.00	1.00	0.29	1.00	0.33	1.00	0.33	1.00	1.00
Satd. Flow (perm)	800	1825	768	1863	1863	539	1661	546	1661	546	1825	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.92	0.92	0.92	0.88	0.88	0.88
Adj. Flow (vph)	126	318	50	23	353	270	32	263	100	140	65	142
RTOR Reduction (vph)	0	9	0	0	0	132	0	22	0	0	32	0
Lane Group Flow (vph)	126	359	0	136	353	138	32	661	140	140	75	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	4	8	8	8	2	6	6	6	6	6	6
Permitted Phases	4	4	8	8	8	2	6	6	6	6	6	6
Actualized Green, G (s)	21.6	21.6	21.6	21.6	21.6	27.0	27.0	27.0	27.0	27.0	27.0	27.0
Effective Green, g (s)	23.0	23.0	23.0	23.0	23.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
Actualized g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Clearance Time (s)	5.4	5.4	5.4	5.4	5.4	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Grp. Cap (vph)	307	700	294	714	607	261	1674	298	1664	1664	1664	1664
w/s Ratio Prot	c0.20	c0.20	0.19	0.19	0.19	0.06	0.20	0.22	0.22	0.22	0.22	0.22
w/s Ratio Perm	0.16	0.16	0.19	0.19	0.19	0.06	0.23	0.47	0.47	0.47	0.47	0.47
w/c Ratio	0.41	0.51	0.46	0.49	0.23	0.12	0.41	0.47	0.45	0.47	0.45	0.45
Uniform Delay	13.5	14.2	13.9	14.1	12.5	10.0	10.4	10.4	10.3	10.4	10.3	10.3
Progression Factor	1.26	1.29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay	3.7	2.5	2.1	2.4	0.9	0.7	5.2	0.9	0.9	0.9	0.9	0.9
Delay (s)	20.8	20.8	19.0	16.5	13.4	9.5	10.7	15.6	11.2	15.6	11.2	11.2
Level of Service	C	C	B	B	B	A	A	B	B	B	B	B
Approach Delay (s)	20.8	20.8	15.8	15.8	15.8	10.6	11.8	11.8	11.8	11.8	11.8	11.8
Approach LOS	C	C	B	B	B	A	A	B	B	B	B	B

Intersection Summary	
HCM Average Control Delay	14.2
HCM Volume to Capacity ratio	0.49
Actuated Cycle Length (s)	60.0
Intersection Capacity Utilization	62.9%
Analysis Period (min)	15
HCM Level of Service	B
Sum of lost time (s)	8.0
ICU Level of Service	B

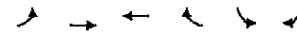
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
55: Roberts Ave & Abbottsford Home Dr



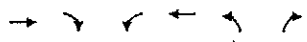
Movement	EB1	EB2	WB1	WB2	SB1	SB2
Lane Configurations						
Volume (veh/h)	10	249	1587	16	16	15
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade (%)	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.72	0.72	0.92	0.92	0.70	0.70
Hourly flow rate (vph)	14	342	421	19	23	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	1050	119				
pX, platoon unblocked	0.89			0.89	0.89	
VC, conflicting volume	470			815	445	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				731	317	
tC, single (s)				6.4	2.6	
tC, 2 stage (s)						
tF (s)	2.2			3.3	3.3	
p0 queue free %	99			93	99	
cM capacity (veh/h)	1083			342	645	
Direction Lane #	EB1	WB1	SB1			
Volume Total	14	0	23			
Volume Left	14	0	23			
Volume Right	0	0	0			
cSH	1083	1700	385			
Volume to Capacity	0.01	0.28	0.08			
Queue Length 95th (ft)	1	0	6			
Control Delay (s)	0.5	0.0	1.5			
Lane LOS	A		C			
Approach Delay (s)	0.5	0.0	1.5			
Approach LOS	A		C			
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	93.1%					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St




Movement	EB1	EB2	WB1	WB2	SB1	SB2
Lane Configurations						
Volume (veh/h)	26	325	478	26	17	7
Sign Control	Free	Free	Free	Free	Stop	Stop
Grade (%)	0%	0%	0%	0%	0%	0%
Peak Hour Factor	0.82	0.82	0.96	0.96	0.60	0.60
Hourly flow rate (vph)	32	396	499	27	8	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None	None				
Median storage (veh)						
Upstream signal (ft)	539	112				
pX, platoon unblocked				0.96		
VC, conflicting volume	526			872	512	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	526			951	512	
tC, single (s)	4.1			5.4	2.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.1	
p0 queue free %	97			97	98	
cM capacity (veh/h)	1041			269	562	
Direction Lane #	EB1	WB1	SB1			
Volume Total	26	0	8			
Volume Left	26	0	8			
Volume Right	0	0	0			
cSH	1041	1700	386			
Volume to Capacity	0.03	0.31	0.05			
Queue Length 95th (ft)	2	0	4			
Control Delay (s)	0.9	0.0	1.8			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	1.8			
Approach LOS	A		B			
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	48.6%					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
120: Abbottsford Ave & Stokley St



Movement	EB	EBRT	WB	WB	NB	NBR
Lane Configurations						
Volume (veh/h)	714	0	0	0	52	0
Sign Control	Free		Free	Yield		
Grade (%)	0%		0%	0%	0%	
Peak Hour Factor	0.94		0.92	0.92	0.56	0.56
Hourly flow rate (vph)	760		0	0	103	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)	542					
pX, platoon unblocked			0.80		0.80	0.80
vC1, conflicting volume			762		761	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			578		577	577
IC, single (s)			4.1		6.4	6.2
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			100		100	78
cM capacity (veh/h)			797		383	474
Direction Lane #						
Volume Total	762	93				
Volume Left	0	0				
Volume Right		93				
cSH	1700	414				
Volume to Capacity	0.45	0.22				
Queue Length 95th (ft)	0	21				
Control Delay (s)	0.0	16.2				
Lane LOS		C				
Approach Delay (s)	0.0	16.2				
Approach LOS		C				
Intersection Summary						
Average Delay	1.8					
Intersection Capacity Utilization	47.7%					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
180: Abbottsford Ave & Wissahickon Ave



Movement	EB	EBRT	NB	NB	SB	SB
Lane Configurations						
Volume (veh/h)	0	513	0	1000	394	0
Sign Control		Stop		Free	Free	
Grade (%)	0%		0%	0%	0%	
Peak Hour Factor		0.87		0.88	0.83	0.83
Hourly flow rate (vph)		590		1136	473	
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)				1046		
pX, platoon unblocked						
vC1, conflicting volume		1042		237	473	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol		1042		237	473	
IC, single (s)		6.8		6.9	4.1	
IC, 2 stage (s)						
IF (s)		3.5		3.3	2.2	
p0 queue free %		100		24	100	
cM capacity (veh/h)		229		771	1099	
Direction Lane #						
Volume Total		590		569	237	
Volume Left		0		0	0	
Volume Right		590		0	0	
cSH		771		1700	1700	
Volume to Capacity		0.76		0.33	0.14	
Queue Length 95th (ft)		184		0	0	
Control Delay (s)		23.1		0.0	0.0	
Lane LOS		C				
Approach Delay (s)		23.1		0.0	0.0	
Approach LOS		C				
Intersection Summary						
Average Delay	6.2					
Intersection Capacity Utilization	52.5%					
Analysis Period (min)	15					

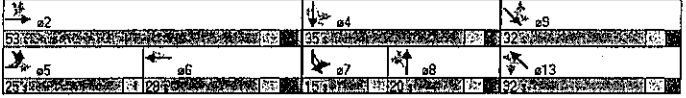
Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave



Lane Group	EBL2	EBL1	EBT	WBL2	WBL1	WBT	NBL2	NBL1	NBT	SBL2	SBL1	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	691	623	390	62	51	24	63	193	125	386			
Lane Group Flow (vph)	0	437	1064	422	116	0	0	190	0	187	140	476	
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	5	2	6			8	7	7	4			
Permitted Phases	9	9	13	13	13	13	9	9	9	13	13	13	13
Minimum Split (s)	7.6	7.6	11.5	11.5	11.5	10.5	10.5	10.5	9.4	9.4	10.5	10.5	10.5
Total Split (s)	25.0	25.0	53.0	28.0	28.0	20.0	20.0	20.0	15.0	15.0	35.0	35.0	35.0
Total Split (%)	20.8%	20.8%	44.2%	23.3%	23.3%	16.7%	16.7%	16.7%	12.5%	12.5%	29.2%	29.2%	29.2%
Yellow Time (s)	3.5	3.5	3.9	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.0	0.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	0.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.4	0.4	2.3	2.3	2.3	0.4	0.4	0.4	0.4	0.4	1.4	1.4	1.4
Total Lost Time (s)	3.9	3.9	5.2	5.2	5.2	6.5	5.1	5.1	3.9	3.9	5.1	5.1	5.1
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lag
Lead-Lag Optimize?													
v/c Ratio	1.17	0.82	0.67	0.38	0.38	0.83	0.83	0.76	0.29	0.68			
Control Delay	128.2	38.6	50.9	37.3		79.7	58.2	38.5	45.8				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.2	38.6	50.9	37.3		79.7	58.2	38.5	45.8				
Queue Length 50th (ft)	357	398	161	161	144	144	120	98	167				
Queue Length 95th (ft)	#583	493	217	120		#204	#188	145	250				
Internal Link Dist (ft)	650	1975	407			407	1653						
Turn Bay Length (ft)	450		250			150		415					
Base Capacity (vph)	1375	1299	1634	304		228	245	480	700				
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	0.77	0.82	0.67	0.38		0.83	0.76	0.29	0.68				

Intersection Summary:  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%) Referenced to Phase 2:EBT: Start of Green: Master Intersection  
 Natural Cycle: 100  
 Control Type: Preempt  
 - Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum and two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum and two cycles.

Splits and Phases: 10: Hunting Park Ave & Henry Ave



Lanes, Volumes, Timings  
10: Hunting Park Ave & Henry Ave



Lane Group	SEL2	SEL1	SET4	NWL2	NWL1	NWT
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	83	95	185	6	73	102
Lane Group Flow (vph)	0	202	240	0	91	298
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	9	9	13	13	13	13
Permitted Phases	9	9	13	13	13	13
Minimum Split (s)	10.5	10.5	10.5	10.5	10.5	10.5
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	26.7%
Yellow Time (s)	3.9	3.9	3.5	3.5	3.5	3.5
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.4	1.4	2.0	2.0	2.0	2.0
Total Lost Time (s)	5.1	5.1	5.1	6.5	5.1	5.1
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag
Lead-Lag Optimize?						
v/c Ratio	1.69	0.57	0.57	0.57	0.81	0.81
Control Delay	371.7	47.2	57.3	61.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	371.7	47.2	57.3	61.8		
Queue Length 50th (ft)	229	165	163	220		
Queue Length 95th (ft)	#370	244	119	#338		
Internal Link Dist (ft)	1387			1698		
Turn Bay Length (ft)	105		105			
Base Capacity (vph)	120	421	159	370		
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	1.68	0.57	0.57	0.81		

Intersection Summary:

Lanes, Volumes, Timings  
20: Roberts Ave & Henry Ave

Lane Group	MBL	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	213	922	173	62	497
Lane Group Flow (vph)	387	951	178	66	497
Turn Type	Thru	Perm	Perm	Thru	Thru
Protected Phases	8	2			6
Permitted Phases					
Minimum Split (s)	33.3	10.3	10.3	10.3	10.3
Total Split (s)	33.3	56.7	56.7	56.7	56.7
Total Split (%)	37.0%	63.0%	63.0%	63.0%	63.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	2.3	2.3	2.3	2.3	2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag					
Lead-Lag Optimize?					
v/c Ratio	0.62	0.44	0.18	0.25	0.24
Control Delay	27.3	11.2	1.8	12.2	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	11.2	1.8	12.2	9.4
Queue Length 50th (ft)	161	149	0	17	65
Queue Length 95th (ft)	258	190	25	43	92
Internal Link Dist (ft)	970	1653	0	767	0
Turn Bay Length (ft)		250	130		
Base Capacity (vph)	629	2162	1010	264	2072
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	0.62	0.44	0.18	0.25	0.24

Intersection Summary  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%); Referenced to phase 2: NBT and 6: SBT; Start of Green  
 Natural Cycle: 60  
 Control Type: Pre-timed

Splits and Phases: 20: Roberts Ave & Henry Ave

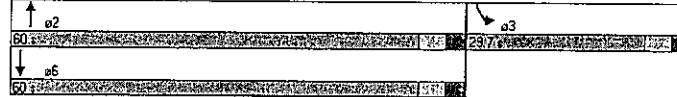


Lanes, Volumes, Timings  
30: Abbottsford Ave & Henry Ave

Lane Group	NBT	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑
Volume (vph)	1042	308	529
Lane Group Flow (vph)	1187	318	545
Turn Type	Thru	Thru	Thru
Protected Phases	2	3	6
Permitted Phases			
Minimum Split (s)	22.3	10.3	22.3
Total Split (s)	60.0	29.7	60.0
Total Split (%)	66.8%	33.1%	66.9%
Yellow Time (s)	3.6	3.6	3.6
All-Red Time (s)	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.3
Lead/Lag			
Lead-Lag Optimize?			
v/c Ratio	0.56	0.69	0.26
Control Delay	12.1	38.8	8.9
Queue Delay	0.0	0.0	0.0
Total Delay	12.1	38.8	8.9
Queue Length 50th (ft)	195	162	70
Queue Length 95th (ft)	250	256	97
Internal Link Dist (ft)	767	0	576
Turn Bay Length (ft)		200	
Base Capacity (vph)	2107	462	2119
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.69	0.26

Intersection Summary  
 Cycle Length: 89.7  
 Actuated Cycle Length: 89.7  
 Offset: 0 (0%); Referenced to phase 2: NBT and 6: SBT; Start of Green  
 Natural Cycle: 60  
 Control Type: Pre-timed

Splits and Phases: 30: Abbottsford Ave & Henry Ave



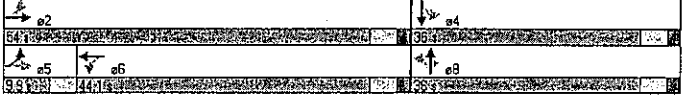


Lanes, Volumes, Timings  
60: Hunting Park Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	126	925	140	531	210	439	188	39	268
Lane Group Flow (vph)	140	1039	146	597	2	477	204	49	444
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	5	2	6	8	8	8	8	4	4
Permitted Phases	2,3	2,3	2,3	2,3,4	2,3,4	2,3,4	2,3,4	2,3	2,3
Minimum Split (s)	7.6	9.4	9.4	9.4	20.0	20.0	20.0	20.0	20.0
Total Split (s)	9.9	64.0	44.1	44.1	36.0	36.0	36.0	35.0	35.0
Total Split (%)	11.0%	60.0%	49.0%	49.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.4	0.4	0.4	0.4	1.4	1.4	1.4	1.4	1.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimizer?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.36	0.55	0.73	0.40	0.01	0.71	0.32	0.32	0.67
Control Delay	12.4	14.1	47.2	20.0	19.0	32.1	12.8	28.1	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	14.1	47.2	20.0	19.0	32.1	12.8	28.1	29.6
Queue Length 50th (ft)	36	185	84	166	231	33	20	20	20
Queue Length 95th (ft)	65	241	177	218	6	345	96	46	259
Internal Link Dist (ft)	1975	1975	1984	1899	899	899	1718	1718	1718
Turn Bay Length (ft)	100	100	100	100	100	105	105	105	105
Base Capacity (vph)	394	1898	200	1500	180	669	629	155	658
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	0.36	0.55	0.73	0.40	0.01	0.71	0.32	0.32	0.67

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%) Referenced to phase 2:EBTL and 6:WBTLL Start of Green  
 Natural Cycle: 50  
 Control Type: Prelimed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volumes for 95th percentile queue is metered by upstream signal.

Splits and Phases: 60: Hunting Park Ave & Fox St

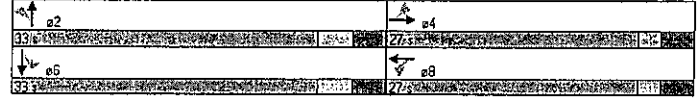


Lanes, Volumes, Timings  
80: Roberts Ave & Fox St

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	34	201	139	266	102	351	203	203	203
Lane Group Flow (vph)	40	282	156	401	0	629	0	291	291
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	8	8	8	2	6	6	6	6
Permitted Phases	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3
Minimum Split (s)	9.0	9.0	9.0	9.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	27.0	27.0	27.0	27.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	45.0%	45.0%	45.0%	45.0%	55.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimizer?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
v/c Ratio	0.15	0.40	0.42	0.52	0.70	0.70	0.29	0.29	0.29
Control Delay	14.0	14.5	12.6	10.8	16.4	16.4	13.4	13.4	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	14.5	12.6	10.8	16.4	16.4	13.4	13.4	13.4
Queue Length 50th (ft)	9	66	25	59	154	154	49	49	49
Queue Length 95th (ft)	26	114	49	92	264	264	95	95	95
Internal Link Dist (ft)	339	339	339	455	1718	1718	1718	1718	1718
Turn Bay Length (ft)	105	105	105	105	105	105	105	105	105
Base Capacity (vph)	268	708	374	768	900	991	991	991	991
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	0.15	0.40	0.42	0.52	0.70	0.70	0.29	0.29	0.29

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 0 (0%) Referenced to phase 2:NBTLL and 6:SBLTLL Start of Green  
 Natural Cycle: 40  
 Control Type: Prelimed

Splits and Phases: 80: Roberts Ave & Fox St



Lanes, Volumes, Timings  
90: Abbottsford Ave & Fox St



Lane Group	EBT	NBT	SBT	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑
Volume (vph)	360	484	245	255
Lane Group Flow (vph)	503	810	261	271
Turn Type				
Protected Phases	4	2	1	6
Permitted Phases	6	6	6	1
Minimum Split (s)	9.4	9.4	7.6	9.4
Total Split (s)	26.4	24.6	19.0	33.6
Total Split (%)	44.0%	41.0%	15.0%	56.0%
Yellow Time (s)	3.6	3.6	3.6	3.6
All-Red Time (s)	1.8	1.8	0.0	1.8
Lost Time Adjust (s)	1.4	1.4	0.4	0.9
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
v/c Ratio	0.36	0.52	0.76	0.30
Control Delay	14.4	23.1	30.0	7.3
Queue Delay	0.0	0.0	4.0	0.9
Total Delay	14.4	23.1	34.1	8.1
Queue Length 50th (ft)	66	111	98	37
Queue Length 95th (ft)	95	155	m95	m95
Internal Link Dist (ft)	1415	932	119	119
Turn Bay Length (ft)				
Base Capacity (vph)	1380	1163	343	906
Starvation Cap Reductn	0	0	36	386
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.52	0.89	0.52

**Intersection Summary**  
 Cycle Length: 60 s  
 Actuated Cycle Length: 60  
 Offset: 0 (0%): Referenced to phase 2: NBT and 6: SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 90: Abbottsford Ave & Fox St



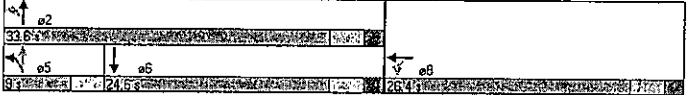
Lanes, Volumes, Timings  
100: SB Route 1 On Ramp & Fox St



Lane Group	WBT	NBT	NBT	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑
Volume (vph)	227	229	299	130
Lane Group Flow (vph)	1034	244	318	458
Turn Type				
Protected Phases	8	5	2	6
Permitted Phases	2	2	3	3
Minimum Split (s)	8.8	7.0	8.8	8.8
Total Split (s)	26.4	9.0	33.6	24.6
Total Split (%)	44.0%	15.0%	55.0%	41.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.8	0.0	1.8	1.8
Lost Time Adjust (s)	0.8	1.0	0.8	0.8
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
v/c Ratio	0.64	0.80	0.56	0.41
Control Delay	8.0	20.1	3.7	16.4
Queue Delay	0.2	1.4	0.4	0.0
Total Delay	8.1	21.5	4.0	16.4
Queue Length 50th (ft)	97	117	65	37
Queue Length 95th (ft)	51	94	28	100
Internal Link Dist (ft)	372	119	792	792
Turn Bay Length (ft)				
Base Capacity (vph)	1627	407	888	1121
Starvation Cap Reductn	0	55	215	0
Spillback Cap Reductn	109	20	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.69	0.47	0.41

**Intersection Summary**  
 Cycle Length: 60 s  
 Actuated Cycle Length: 60  
 Offset: 0 (0%): Referenced to phase 2: NBT and 6: SBT; Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed

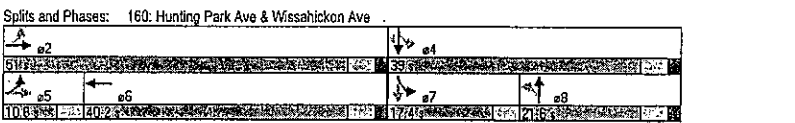
Splits and Phases: 100: SB Route 1 On Ramp & Fox St



Lanes, Volumes, Timings  
160: Hunting Park Ave & Wissahickon Ave

Lane Group	EBL	EFT	WBT	WBL	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	152	976	547	39	284	332	256	111	
Lane Group Flow (vph)	152	1065	915	0	430	346	267	116	
Turn Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	
Protected Phases	5	2	6		8	7	4		
Permitted Phases	5	2	6		8	7	4		
Minimum Spill (s)	7.6	9.4	9.4	9.4	9.4	7.6	9.4	9.4	
Total Spill (s)	10.8	51.0	42.2	21.6	21.6	17.4	39.0	39.0	
Total Spill (%)	12.0%	56.7%	44.7%	24.0%	24.0%	19.3%	43.3%	43.3%	
Yellow Time (s)	3.0	3.0	3.6	3.6	3.6	3.6	3.6	3.6	
All-Red Time (s)	0.0	1.8	1.8	1.8	1.8	0.0	1.8	1.8	
Lost Time Adjust (s)	0.4	1.4	1.4	1.4	1.4	0.4	1.4	1.4	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
v/c Ratio	0.56	0.59	0.52		0.62	0.95	0.37	0.17	
Control Delay	19.7	9.6	20.4		37.5	60.5	21.6	4.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	19.7	9.6	20.4		37.5	60.5	21.6	4.3	
Queue Length 50th (ft)	27	97	168		118	147	106	45	
Queue Length 95th (ft)	75	122	210		144	#301	170	32	
Internal Link Dist (ft)	85					275			
Turn Bay Length (ft)									
Base Capacity (vph)	290	1812	1573		699	365	714	678	
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	0.86	0.59	0.52		0.62	0.95	0.37	0.17	

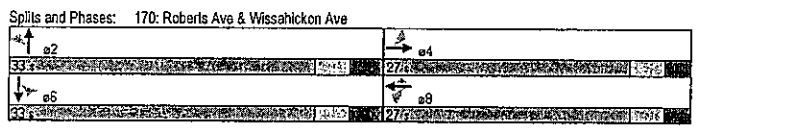
**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 16.7 (19%) Referenced to phase 2:EFT: Start of Green  
 Natural Cycle: 50  
 Control Type: Pre-timed  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
170: Roberts Ave & Wissahickon Ave

Lane Group	EBL	EFT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	113	208	121	314	240	29	555	123	569
Lane Group Flow (vph)	126	368	139	353	270	32	703	140	787
Turn Type	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	
Protected Phases		4		8			2		6
Permitted Phases		4		8			2		6
Minimum Spill (s)		9.4		9.4		9.4	10.0		10.0
Total Spill (s)		27.0		27.0		27.0	33.0		33.0
Total Spill (%)		45.0%		45.0%		45.0%	55.0%		55.0%
Yellow Time (s)		3.0		3.0		3.0	3.0		3.0
All-Red Time (s)		2.4		2.4		2.4	3.0		3.0
Lost Time Adjust (s)		1.4		1.4		1.4	2.0		2.0
Total Lost Time (s)		4.0		4.0		4.0	4.0		4.0
Lead/Lag									
Lead-Lag Optimize?		Yes		Yes		Yes	Yes		Yes
v/c Ratio		0.41		0.52		0.49	0.37		0.12
Control Delay		22.2		20.8		20.3	17.0		5.2
Queue Delay		0.0		0.0		0.0	0.0		0.0
Total Delay		22.2		20.8		20.3	17.0		5.2
Queue Length 50th (ft)		37		111		36	94		13
Queue Length 95th (ft)		m71		m174		82	158		53
Internal Link Dist (ft)				1436			740		
Turn Bay Length (ft)		100		150		100	65		65
Base Capacity (vph)		307		709		294	714		739
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		0.41		0.52		0.46	0.37		0.12

**Intersection Summary**  
 Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 20 (33%) Referenced to phase 2:NBL and 6:SBT: Start of Green  
 Natural Cycle: 40  
 Control Type: Pre-timed  
 m Volume for 95th percentile queue is metered by upstream signal.





**2009 BUILD W/ MITIGATION: PM PEAK**

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	EBL2	EBL	EBT	EBR	EBR2	WBL	WBL2	WBR	WBR2	SBL2	SBL	SBR	SBR2
Lane Configurations	↑	↑	↑	↓	↓	↑	↑	↑	↑	↓	↓	↓	↓
Volume (vph)	889	641	32	5	405	62	42	63	115	125	412		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	11	12	12	10	10	12	12	12	13	13		
Total Lost time (s)	6.9	4.2			4.2	4.2			6.9	5.1	5.1		
Lane Util. Factor	0.97	1.00			0.95	1.00			1.00	1.00	0.88		
Fit	1.00	0.99			1.00	0.85			1.00	1.00	0.85		
Fit Protected	0.95	1.00			1.00	1.00			0.95	1.00	1.00		
Satd. Flow (prot)	3046	1630			3002	1343			1646	1732	2508		
Fit Permitted	0.95	1.00			1.00	1.00			0.95	1.00	1.00		
Satd. Flow (perm)	3046	1630			3002	1343			1646	1732	2508		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	1	915	675	65	5	440	67	46	68	125	136	448	
RTOR Reduction (vph)	0	0	0	0	0	20	10	0	0	0	0	6	
Lane Group Flow (vph)	0	916	745	0	440	93	0	0	193	136	484		
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	2%	2%		
Turn Type	Prot	Prot			Perm	Perm	Perm	Perm	Perm		Perm		
Protected Phases	5	5			6				4		4		
Permitted Phases			2			6			4		4		
Actuated Green, G (s)	34.5	57.5			16.5				23.5		23.5		
Effective Green, g (s)	34.1	59.8			18.8				23.1		24.9		
Actuated g/C Ratio	0.28	0.50			0.16				0.19		0.21		
Clearance Time (s)	6.5	6.5			6.5				6.5		6.5		
Lane Grp Cap. (vph)	866	812			470				317		359		
vis Ratio Prot	0.30	0.46			0.15				0.08		0.07		
vis Ratio Perm						0.07			0.12		0.19		
w/c Ratio	1.06	0.92			0.94				0.61		0.38		
Uniform Delay, d1	43.0	27.8			50.0				44.3		40.9		
Progression Factor	1.00	1.00			1.00				1.00		1.00		
Incremental Delay, d2	47.0	16.9			28.3				6.4		3.0		
Delay (s)	90.0	44.7			78.3				52.8		43.9		
Level of Service	D	F			D				D		E		
Approach Delay (s)		69.7			73.0				63.1				
Approach LOS		E			E				E				
<b>Intersection Summary</b>													
HCM Average Control Delay (s)	73.3												
HCM Volume to Capacity ratio	0.99												
Actuated Cycle Length (s)	120.0												
Intersection Capacity Utilization	98.4%												
ICU Level of Service	F												
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
10: Hunting Park Ave & Henry Ave

Movement	6BR2	SEL2	SEL	SET	SER	SER2	NWL2	NWL	NWT	NWR	NWR2
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	39	183	95	185	18	19	6	73	102	191	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	14	12	
Total Lost time (s)					5.1	5.1			5.1	5.1	6.5
Lane Util. Factor					1.00	1.00			1.00	1.00	0.88
Fit					1.00	0.98			1.00	1.00	0.85
Fit Protected					0.95	1.00			0.95	1.00	1.00
Satd. Flow (prot)					1577	1846			1511	1689	1346
Fit Permitted					0.64	1.00			0.34	1.00	1.00
Satd. Flow (perm)					1061	1846			534	1689	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	90	103	201	20	10	7	79	111	208	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	193	229	0	0	0	86	111	210	0
Heavy Vehicles (%)	2%	3%	3%	3%	3%	2%	2%	8%	8%	8%	8%
Turn Type		Perm	Perm				Perm	Perm		Perm	
Protected Phases											
Permitted Phases		14	14				10	10		10	
Actuated Green, G (s)		19.5	19.5				19.5	19.5		19.5	
Effective Green, g (s)		20.9	20.9				20.9	20.9		19.5	
Actuated g/C Ratio		0.17	0.17				0.17	0.17		0.16	
Clearance Time (s)		6.5	6.5				6.5	6.5		6.5	
Lane Grp Cap. (vph)		185	322				193	294		219	
vis Ratio Prot			0.12					0.07			
vis Ratio Perm			0.18				0.16	0.16		0.16	
w/c Ratio		1.04	0.71				0.92	0.38		0.96	
Uniform Delay, d1		49.6	46.7				48.8	43.8		49.9	
Progression Factor		1.00	1.00				1.00	1.00		1.00	
Incremental Delay, d2		78.0	12.6				74.4	3.7		51.2	
Delay (s)		127.6	59.3				123.2	47.5		101.0	
Level of Service		D	F				D	D		D	
Approach Delay (s)			90.4					91.1			
Approach LOS			E					E			
<b>Intersection Summary</b>											

HCM Signalized Intersection Capacity Analysis  
20: Roberts Ave & Henry Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	251	247	922	263	170	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Total Lost time (s)	2.7	5.0	2.7	2.7	0.7	2.7
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Fit	1.00	0.85	1.00	0.85	1.00	1.00
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1906	1599	3693	1599	1770	3539
Fit Permitted	0.95	1.00	1.00	1.00	0.19	1.00
Satd. Flow (perm)	1906	1599	3693	1599	326	3539
Peak-hour factor, PHF	0.99	0.99	0.97	0.97	0.94	0.94
Adj. Flow (vph)	254	249	951	271	181	497
RTOR Reduction (vph)	0	166	0	150	0	0
Lane Group Flow (vph)	254	83	951	121	181	497
Heavy Vehicles (%)	1%	1%	1%	1%	2%	2%
Turn Type	Perm	Perm	pm+pt			
Protected Phases	8	2	6			
Permitted Phases	8	2	6			
Actuated Green, G (s)	30.0	30.0	38.0	30.0	50.0	50.0
Effective Green, g (s)	32.3	30.0	40.3	40.3	52.3	52.3
Actuated g/C Ratio	0.36	0.33	0.45	0.45	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	3.0	5.0
Lane Grp Cap (vph)	2684	533	1654	2716	371	2057
v/s Ratio Prot	c0.13	c0.26	c0.08	c0.22	c0.06	0.14
v/s Ratio Perm	0.37	0.16	0.57	0.17	0.49	0.24
Uniform Delay, d1	21.3	21.1	18.5	14.8	11.2	9.2
Progression Factor	1.00	1.00	1.00	1.00	2.94	2.01
Incremental Delay, d2	1.5	0.6	1.5	0.5	4.3	0.3
Delay (s)	22.9	21.7	19.9	15.4	37.4	18.7
Level of Service	C	B	B	B	D	A
Approach Delay (s)	22.3	18.9			23.7	
Approach LOS	C	B			C	
<b>Intersection Summary</b>						
HCM Average Control Delay	21.0		18.7		18.7	
HCM Volume to Capacity ratio	0.47		0.47		0.47	
Actuated Cycle Length (s)	90.0		90.0		90.0	
Intersection Capacity Utilization	65.3%		65.3%		65.3%	
Analysis Period (min)	15		15		15	
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
30: Abbottsford Ave & Henry Ave

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	0	119	50	308	637
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	1.00
Fit	0.99	1.00	1.00	1.00	0.95	1.00
Fit Protected	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3517	1770	3517	1770	3539	3539
Fit Permitted	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3517	1770	3517	1770	3539	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.97
Adj. Flow (vph)	0	0	121	54	318	657
RTOR Reduction (vph)	0	0	3	0	0	0
Lane Group Flow (vph)	0	0	126	54	318	657
Turn Type	custom					
Protected Phases	3					
Permitted Phases	3					
Actuated Green, G (s)	52.7		24.7		52.7	
Effective Green, g (s)	52.7		24.7		52.7	
Actuated g/C Ratio	0.59		0.27		0.59	
Clearance Time (s)	6.3		6.3		6.3	
Lane Grp Cap (vph)	2059		466		2072	
v/s Ratio Prot	c0.35		c0.18		0.19	
v/s Ratio Perm	0.62		0.65		0.32	
v/c Ratio	0.62		0.65		0.32	
Uniform Delay, d1	12.1		28.9		9.5	
Progression Factor	0.29		1.00		1.00	
Incremental Delay, d2	1.2		6.7		0.4	
Delay (s)	4.7		35.6		9.9	
Level of Service	A		D		A	
Approach Delay (s)	0.0		4.7		18.3	
Approach LOS	A		B		B	
<b>Intersection Summary</b>						
HCM Average Control Delay	10.6		10.6		10.6	
HCM Volume to Capacity ratio	0.63		0.63		0.63	
Actuated Cycle Length (s)	90.0		90.0		90.0	
Intersection Capacity Utilization	60.1%		60.1%		60.1%	
Analysis Period (min)	15		15		15	
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
50: Roberts Ave & North Entrance

Movement	EBL	EBR	WBL	WBR	NBL	NBR	
Lane Configurations	↑	↑	↑	↑	↑	↑	
Volume (vph)	256	60	64	585	115	169	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (vphpl)	12	12	11	12	12	12	
Total Lost time (s)	5.0	5.0	3.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	0.85	
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	1863	1583	1711	1863	1770	1583	
Flt Permitted	1.00	1.00	0.48	1.00	0.95	1.00	
Satd. Flow (perm)	1863	1583	866	1863	1770	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	278	54	70	636	125	184	
RTOR Reduction (vph)	0	33	0	0	0	132	
Lane Group Flow (vph)	278	21	70	636	125	52	
Turn Type	Perm	Perm	pm+pt	Perm	Perm	Perm	
Protected Phases	2	1	6	8			
Permitted Phases	2	6	6	8			
Actuated Green, G (s)	23.0	23.0	33.0	33.0	17.0	17.0	
Effective Green, g (s)	23.0	23.0	33.0	33.0	17.0	17.0	
Actuated g/C Ratio	0.38	0.38	0.55	0.55	0.28	0.28	
Clearance Time (s)	5.0	5.0	3.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	714	607	575	1025	502	449	
v/s Ratio Prot	0.15	0.01	0.34	0.07			
v/s Ratio Perm	0.01	0.05		0.03			
v/c Ratio	0.39	0.03	0.12	0.62	0.25	0.12	
Uniform Delay, d1	13.4	11.6	6.5	9.2	16.6	15.9	
Progression Factor	1.00	1.00	0.70	0.56	1.00	1.00	
Incremental Delay, d2	1.6	0.1	0.3	2.1	1.2	0.5	
Delay (s)	15.0	11.7	6.9	11.3	17.8	16.5	
Level of Service	B	B	A	A	B	B	
Approach Delay (s)	14.5	11.7	7.1	17.0			
Approach LOS	B		A	B			
<b>Intersection Summary</b>							
HCM Average Control Delay	11.2			HCM Level of Service			B
HCM Volume to Capacity ratio	0.49						
Actuated Cycle Length (s)	60.0			Sum of lost time (s)			10.0
Intersection Capacity Utilization	45.5%			ICU Level of Service			A
Analysis Period (min)	15						
Critical Lane Group	EBL, WBL, NBL						

HCM Signalized Intersection Capacity Analysis  
60: Hunting Park Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	144	925	10	140	531	114	474	168	89	294	124	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (vphpl)	11	11	12	11	11	11	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	2.1	4.0	4.0	4.0	4.0	4.0	4.0	1.6	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.85	1.00	0.96	1.00	0.96
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1711	3416	1694	3298	1787	2132	1599	1787	1798	1798	1798	1798
Flt Permitted	0.16	1.00	0.23	1.00	0.39	1.00	0.23	1.00	0.23	1.00	0.23	1.00
Satd. Flow (perm)	286	3416	413	3298	730	2132	1599	435	1798	1798	1798	1798
Peak-hour factor, PHF	0.90	0.90	0.90	0.96	0.96	0.92	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	160	1028	11	146	533	119	2	515	204	110	363	153
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	160	1038	0	146	652	0	2	515	140	110	499	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt	pm+pt	Perm	pm+pt	Perm	Perm	pm+pt	Perm	pm+pt	Perm	pm+pt	Perm
Protected Phases	2	5	2	6	6	6	6	6	6	6	6	6
Permitted Phases	2	5	6	6	6	6	6	6	6	6	6	6
Actuated Green, G (s)	36.6	36.6	27.1	21.6	34.6	34.6	34.6	34.6	34.6	42.6	42.6	42.6
Effective Green, g (s)	36.2	38.0	29.9	23.0	36.0	36.0	36.0	36.0	36.0	44.0	44.0	44.0
Actuated g/C Ratio	0.40	0.42	0.33	0.26	0.40	0.40	0.40	0.40	0.40	0.49	0.49	0.49
Clearance Time (s)	3.6	5.4	3.5	5.4	5.4	5.4	5.4	5.4	5.4	3.0	5.4	5.4
Lane Grp Cap (vph)	289	1442	235	843	292	853	840	840	840	979	979	979
v/s Ratio Prot	0.07	0.23	0.05	0.20	0.24	0.24	0.24	0.24	0.24	0.03	0.28	0.28
v/s Ratio Perm	0.16	0.07	0.16	0.16	0.00	0.09	0.15	0.15	0.15	0.15	0.15	0.15
v/c Ratio	0.55	0.72	0.62	0.77	0.01	0.60	0.22	0.35	0.57			
Uniform Delay, d1	19.6	22.1	31.1	31.1	16.2	21.4	7.9	16.9	16.9			
Progression Factor	1.00	1.00	1.09	1.11	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	7.4	3.3	10.3	6.0	6.0	3.2	0.8	3.2	3.2			
Delay (s)	27.0	24.7	34.3	40.4	16.3	24.5	18.5	18.1	18.1			
Level of Service	C	C	C	D	B	C	B	B	B			
Approach Delay (s)	25.0		39.3		22.8							
Approach LOS	C		D		C							
<b>Intersection Summary</b>												
HCM Average Control Delay	26.9			HCM Level of Service			C					
HCM Volume to Capacity ratio	0.64											
Actuated Cycle Length (s)	90.0			Sum of lost time (s)			10.0					
Intersection Capacity Utilization	76.9%			ICU Level of Service			D					
Analysis Period (min)	15											
! Phase conflict between lane groups.												
o Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
70: East Entrance & Fox St

Movement	EBL	EBR	NBL	NBR	SBL	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Volume (vph)	140	85	94	636	421	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Friction	1.00	0.85	1.00	1.00	1.00	0.85
Fr Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Fr Permitted	0.95	1.00	0.44	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	824	1863	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	92	102	691	458	186
RTOR Reduction (vph)	0	67	0	0	0	81
Lane Group Flow (vph)	152	25	102	691	458	105
Turn Type		Perm	Perm		Perm	
Protected Phases						6
Permitted Phases		4	2			6
Actuated Green, G (s)	16.0	16.0	34.0	34.0	34.0	34.0
Effective Green, g (s)	16.0	16.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.27	0.27	0.57	0.57	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	472	422	467	1056	1056	897
vs Ratio Prot	c0.09		c0.37	0.25		
vs Ratio Perm		0.02	0.12		0.07	
w/c Ratio	0.32	0.06	0.22	0.65	0.43	0.12
Uniform Delay, d1	17.8	16.4	16.4	9.0	7.5	8.0
Progression Factor	1.00	1.00	1.00	1.03	1.14	
Incremental Delay, d2	1.8	0.3	1.1	1.2	0.3	
Delay (s)	19.4	16.7	7.5	12.1	8.9	7.1
Level of Service	B	B	A	B	A	A
Approach Delay (s)	18.4		11.5	8.4		
Approach LOS	B		B	A		
<b>Intersection Summary</b>						
HCM Average Control Delay	11.3		HCM Level of Service			
HCM Volume to Capacity ratio	0.55					
Actuated Cycle Length (s)	60.0		Sum of lost time (s)			
Intersection Capacity Utilization	49.6%		ICU Level of Service			
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
80: Roberts Ave & Fox St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (vph)	173	202	122	69	202	455	115	133	466	176	75	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	12	12	12	12
Total Lost Time (s)	2.0	4.0	2.0	4.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.99	1.00
Friction	1.00	0.96	1.00	1.00	0.85	0.97	1.00	0.96	1.00	1.00	0.96	1.00
Fr Protected	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.99	1.00
Satd. Flow (prot)	1770	1791	1865	2027	1615	3390	1770	1770	1863	1863	1583	1583
Fr Permitted	0.22	1.00	0.50	1.00	1.00	0.76	1.00	0.76	1.00	1.00	0.94	1.00
Satd. Flow (perm)	403	1791	950	2027	1615	2613	1770	1770	1863	1863	1583	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.86	0.86	0.86	0.96	0.96	0.96	0.95	0.95	0.95
Adj. Flow (vph)	182	213	73	235	529	134	139	485	183	7	327	105
RTOR Reduction (vph)	0	20	0	0	0	76	0	46	0	0	21	0
Lane Group Flow (vph)	182	265	0	235	629	58	0	761	0	0	398	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%
Turn Type		pm-pt		pm-pt		Perm	pm-pt		Perm		Perm	
Protected Phases							6					
Permitted Phases		4		8		2			6			
Actuated Green, G (s)	27.0	21.0		27.0	21.0	21.0	20.0		20.0		20.0	
Effective Green, g (s)	29.0	22.0		29.0	22.0	21.0	22.0		22.0		22.0	
Actuated g/C Ratio	0.48	0.37		0.48	0.37	0.35	0.37		0.37		0.37	
Clearance Time (s)	3.0	5.0		3.0	5.0	5.0	5.0		5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0		3.0		3.0	
Lane Grp Cap (vph)	354	657		559	743	655	958		1178			
vs Ratio Prot	c0.06	0.15		c0.28	0.04	0.04	0.29		0.12			
vs Ratio Perm		0.19		0.15		0.04	c0.29		0.12			
w/c Ratio	0.51	0.40		0.42	0.71	0.10	0.79		0.34			
Uniform Delay, d1	10.4	14.1		9.3	16.3	13.1	17.0		13.7			
Progression Factor	2.02	1.78		0.68	0.72	0.51	0.67		1.25			
Incremental Delay, d2	1.2	1.8		0.5	5.1	0.3	3.8		0.7			
Delay (s)	22.2	26.9		16.8	16.7	7.1	15.1		17.9			
Level of Service	C	C		A	B	A	B		B			
Approach Delay (s)	25.1			12.7			15.1		17.9			
Approach LOS	C			B			B		B			
<b>Intersection Summary</b>												
HCM Average Control Delay	16.5		HCM Level of Service									
HCM Volume to Capacity ratio	0.72											
Actuated Cycle Length (s)	60.0		Sum of lost time (s)									
Intersection Capacity Utilization	81.2%		ICU Level of Service									
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
90: Abbottsford Ave & Fox St



Movement	EB	EB+WB	EB+WB+NB	WB	WB+NB	WB+NB+SB	NB	NB+SB	SB	SB+WB	SB+WB+NB	
Lane Configurations	↑↑			↑↑			↑↑			↑↑		
Volume (vph)	63	360	15	0	0	0	592	224	245	398	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	
Total Lost time (s)	3.4			3.4			3.4			3.4		
Lane Util. Factor	0.95			0.95			0.95			0.95		
Frt	0.99			0.98			1.00			0.98		
Fit Protected	1.00			1.00			1.00			1.00		
Satd. Flow (prot)	3685			3313			3424			3263		
Fit Permitted	0.99			1.00			0.98			1.00		
Satd. Flow (perm)	3685			3313			1947			3263		
Peak-hour factor, PHE	0.87	0.87	0.87	0.92	0.92	0.92	0.88	0.88	0.88	0.94	0.94	
Adj. Flow (vph)	72	414	17	0	0	0	673	255	261	423	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	499	0	0	0	0	928	0	0	684	0	
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	0%	0%	
Turn Type	Perm			pm+pt			pm+pt			pm+pt		
Protected Phases	4			2			6			8		
Permitted Phases	4			6			6			8		
Actuated Green, G (s)	12.2			22.2			36.2			19.2		
Effective Green, g (s)	13.6			23.6			39.6			14.0		
Actuated g/C Ratio	0.23			0.39			0.66			0.23		
Clearance Time (s)	4.8			4.8			4.8			4.8		
Lane Grp Cap (vph)	835			1303			1640			781		
v/s Ratio Prot	c0.14			c0.28			c0.10			c0.17		
v/s Ratio Perm	0.14			0.18			0.18			0.14		
v/c Ratio	0.60			0.71			0.42			0.61		
Uniform Delay, d1	20.8			15.3			4.8			20.6		
Progression Factor	1.00			1.03			0.82			1.00		
Incremental Delay, d2	3.1			2.9			0.6			3.9		
Delay (s)	23.9			18.7			4.5			24.2		
Level of Service	C			B			A			C		
Approach Delay (s)	23.9			0.0			18.7			24.2		
Approach LOS	C			A			B			C		

**Intersection Summary**

HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.2
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
100: SB Route 1 On Ramp & Fox St



Movement	EB	EB+WB	EB+WB+NB	WB	WB+NB	WB+NB+SB	NB	NB+SB	SB	SB+WB	SB+WB+NB	
Lane Configurations	↑↑			↑↑			↑↑			↑↑		
Volume (vph)	0	0	0	343	227	567	356	299	0	301	34	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	
Total Lost time (s)	4.0			4.0			4.8			4.0		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Frt	1.00			1.00			0.85			1.00		
Fit Protected	0.95			1.00			0.95			1.00		
Satd. Flow (prot)	1787			1881			1599			1711		
Fit Permitted	0.95			1.00			1.00			0.27		
Satd. Flow (perm)	1787			1881			1599			486		
Peak-hour factor, PHE	0.92	0.92	0.92	0.96	0.96	0.96	0.95	0.95	0.95	0.94	0.94	
Adj. Flow (vph)	0	0	0	357	236	591	375	315	0	320	143	
RTOR Reduction (vph)	0	0	0	0	0	399	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	357	235	192	375	315	0	463	0	
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases	8			8			2			2		
Permitted Phases	8			8			2			2		
Actuated Green, G (s)	16.2			16.2			34.2			19.2		
Effective Green, g (s)	17.0			17.0			33.2			35.0		
Actuated g/C Ratio	0.28			0.28			0.27			0.58		
Clearance Time (s)	4.8			4.8			3.0			4.8		
Lane Grp Cap (vph)	506			533			432			616		
v/s Ratio Prot	c0.20			c0.13			c0.17			c0.17		
v/s Ratio Perm	0.20			0.13			0.16			0.14		
v/c Ratio	0.71			0.44			0.45			0.30		
Uniform Delay, d1	19.3			17.6			18.2			8.4		
Progression Factor	1.00			0.99			1.02			0.43		
Incremental Delay, d2	8.0			2.7			3.3			0.5		
Delay (s)	27.3			20.1			21.9			6.8		
Level of Service	C			C			C			A		
Approach Delay (s)	0.0			23.2			5.0			24.2		
Approach LOS	A			C			B			A		

**Intersection Summary**

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
110: Roberts Ave & Stokley St

Movement	EBL	EBT	WBL	WBT	SBL	SBR
Lane Configurations		↑	↑		↑	↑
Volume (vph)	0	375	472	0	113	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	1.00	1.00	0.95	1.00	0.95
Flt Protected	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1863	1863	1770	1583	1583	1583
Flt Permitted	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1863	1863	1770	1583	1583	1583
Peak-hour factor, PHF	0.82	0.82	0.96	0.96	0.60	0.60
Adj. Flow (vph)	0	457	492	0	188	483
RTOR Reduction (vph)	0	0	0	0	0	191
Lane Group Flow (vph)	0	457	492	0	188	292
Turn Type					Perm	
Protected Phases	2	7	6			
Permitted Phases					4	
Actuated Green, G (s)	22.3	22.3	27.7	27.7	27.7	27.7
Effective Green, g (s)	22.3	22.3	27.7	27.7	27.7	27.7
Actuated g/C Ratio	0.37	0.37	0.46	0.46	0.46	0.46
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	692	692	817	731	731	731
vis Ratio Prot	0.26	0.26	0.11			
vis Ratio Perm					c0.18	
w/c Ratio	0.66	0.71	0.23	0.40	0.40	0.40
Uniform Delay, d1	15.7	16.1	9.7	10.7	10.7	10.7
Progression Factor	1.13	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	3.5	0.7	1.6	1.6	1.6
Delay (s)	19.9	19.6	10.4	12.3	12.3	12.3
Level of Service	B	B	B	B	B	B
Approach Delay (s)	19.9	19.6	11.8			
Approach LOS	B	B	B			
<b>Intersection Summary</b>						
HCM Average Control Delay	16.4		HCM Level of Service		B	
HCM Volume to Capacity ratio	0.54		Sum of lost time (s)		10.0	
Actuated Cycle Length (s)	60.0		ICU Level of Service		A	
Intersection Capacity Utilization	51.1%		Analysis Period (min)		15	
Analysis Period (min)	15		Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
160: Hunting Park Ave & Wissahickon Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	
Lane Configurations		↑↑		↑↑	↑↑		↑↑	↑↑		↑↑	↑↑	
Volume (vph)	152	1027	825	619	154	39	284	17	332	268	111	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	11	11	11	12	16	12	11	11	12	11	11	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	
Flt	1.00	1.00	0.97	0.95	0.95	0.95	1.00	1.00	1.00	0.85	0.85	
Flt Protected	0.95	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1745	3477	3853	3853	3444	1745	1937	1561	1561	1561	1561	
Flt Permitted	0.17	1.00	1.00	1.00	0.85	0.85	1.00	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	305	3477	3853	3853	3048	480	1837	1561	1561	1561	1561	
Peak-hour factor, PHF	0.80	0.80	0.80	0.96	0.96	0.85	0.86	0.86	0.95	0.95	0.95	
Adj. Flow (vph)	190	1284	31	645	160	45	330	20	349	289	117	
RTOR Reduction (vph)	0	0	0	24	0	0	0	0	0	0	270	
Lane Group Flow (vph)	190	1313	0	781	0	0	395	0	349	269	47	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Turn Type		pm+pt					Perm		pm+pt		Perm	
Protected Phases	6	2	6	6	6	6	8	4	4	4	4	
Permitted Phases	2	5	8	8	8	8	4	4	4	4	4	
Actuated Green, G (s)	44.6	44.6	30.6	30.6	30.6	30.6	15.6	15.6	34.6	34.6	34.6	
Effective Green, g (s)	44.2	46.0	32.0	32.0	32.0	32.0	17.0	17.0	34.2	35.0	36.0	
Actuated g/C Ratio	0.49	0.51	0.36	0.36	0.36	0.36	0.19	0.19	0.38	0.40	0.40	
Clearance Time (s)	3.6	5.4	5.4	5.4	5.4	5.4	3.6	3.6	5.4	5.4	5.4	
Lane Grp Cap (vph)	310	1777	1370	1370	1370	1370	576	576	393	335	624	
vis Ratio Prot	0.07	c0.38	0.20	0.20	0.20	0.20	c0.15	c0.15	0.15	0.15	0.15	
vis Ratio Perm	0.23						0.13	0.13	0.19	0.19	0.03	
w/c Ratio	0.61	0.74	0.57	0.57	0.57	0.57	0.69	0.69	0.89	0.37	0.08	
Uniform Delay, d1	15.6	17.3	23.4	23.4	23.4	23.4	34.0	22.4	19.0	16.7	16.7	
Progression Factor	1.81	0.66	1.00	1.00	1.00	1.00	1.00	1.31	1.02	1.69	1.69	
Incremental Delay, d2	7.4	2.4	1.7	1.7	1.7	1.7	6.5	20.2	1.1	10.2	10.2	
Delay (s)	35.6	13.8	25.2	25.2	25.2	25.2	40.5	49.6	20.5	28.4	28.4	
Level of Service	D	B	C	C	C	C	D	D	C	C	C	
Approach Delay (s)	16.6	16.6	25.2				40.5		35.6			
Approach LOS	B	B	C				D		D			
<b>Intersection Summary</b>												
HCM Average Control Delay	25.4			HCM Level of Service			C			C		
HCM Volume to Capacity ratio	0.77			Sum of lost time (s)			10.0			10.0		
Actuated Cycle Length (s)	90.0			ICU Level of Service			A			A		
Intersection Capacity Utilization	71.7%			Analysis Period (min)			15			15		
Analysis Period (min)	15			Critical Lane Group								

HCM Signalized Intersection Capacity Analysis  
 170: Roberts Ave & Wissahickon Ave



Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Lane Configurations	↔	↔	↔	↔	↔	↔	↑	↑	↑	↓	↓	↓
Volume (vph)	139	340	124	358	350	240	29	555	92	94	252	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	1.5	3.6		1.6	3.6	3.5	1.0	3.0		1.0	3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Flt	1.00	0.95		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.85	1.00		0.95	1.00	
Satd. Flow (prot)	1770	2026		1770	1863	1794	1770	3464		1770	3440	
Flt Permitted	0.36	1.00		0.22	1.00	1.00	0.42	1.00		0.18	1.00	
Satd. Flow (perm)	671	2026		401	1863	1794	788	3464		339	3440	
Peak hour factor, PHF	0.90	0.90		0.90	0.92	0.92	0.95	0.95		0.88	0.88	
Adj. Flow (vph)	154	378		138	389	380	261	584		97	286	
RTOR Reduction (vph)	0	0		0	0	161	0	15		0	22	
Lane Group Flow (vph)	154	501		0	389	380	100	666		0	107	
Turn Type	Thru	Thru		Thru	Thru	Perm	Perm	Thru		Thru	Thru	
Protected Phases	7	4		3	8	5	2	1		6	6	
Permitted Phases												
Actuated Green, G (s)	49.0	33.0		49.0	33.0	33.0	25.0	20.0		25.0	20.0	
Effective Green, g (s)	51.8	34.4		51.8	34.4	34.4	29.0	22.0		29.0	22.0	
Actuated g/C Ratio	0.58	0.38		0.58	0.38	0.38	0.32	0.24		0.32	0.24	
Clearance Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	599	774		495	712	686	330	847		221	841	
v/s Ratio Prot	0.05	0.25		0.15	0.20	0.01	0.19	0.04		0.04	0.10	
v/s Ratio Perm	0.10			0.30		0.06	0.02			0.12		
v/c Ratio	0.26	0.65		0.79	0.53	0.15	0.09	0.79		0.48	0.39	
Uniform Delay, d1	9.7	22.8		13.9	21.6	18.2	21.2	31.8		23.2	28.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.98	0.80		1.00	1.00	
Incremental Delay, d2	1.0	4.2		11.9	2.9	0.4	0.4	5.9		7.4	1.4	
Delay (s)	10.8	27.0		25.8	24.5	18.6	21.1	31.3		30.6	29.8	
Level of Service	B	C		C	C	B	C	C		C	C	
Approach Delay (s)		23.3			23.5			30.9			30.0	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM Average Control Delay	26.3			HCM Level of Service			C					
HCM Volume to Capacity Ratio	0.68			Sum of lost time (s)			9.2					
Actuated Cycle Length (s)	90.0			Intersection Capacity Utilization			82.1%					
Analysis Period (min)	15											
Critical Lane Group	EB											