4 e

Route 62 at Sudbury Road

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	555	38	254	359	10	109
Peak Hour Factor	0.90	0.90	0.85	0.85	0.81	0.81
Hourly flow rate (vph)	617	42	299	422	12	135
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1024		
pX, platoon unblocked					0.99	
vC, conflicting volume			659		1658	638
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			659		1665	638
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			68		83	71
cM capacity (veh/h)			934		72	461

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	659	721	147
Volume Left	0	299	12
Volume Right	42	0	135
cSH	1700	934	318
Volume to Capacity	0.39	0.32	0.46
Queue Length 95th (ft)	0	35	58
Control Delay (s)	0.0	7.1	25.7
Lane LOS		A	D
Approach Delay (s)	0.0	7.1	25.7
Approach LOS			D

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	542	23	122	618	33	270
Peak Hour Factor	0.94	0.94	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	577	24	131	665	37	300
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1024		
pX, platoon unblocked					0.84	
vC, conflicting volume			601		1516	589
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			601		1617	589
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		55	41
cM capacity (veh/h)			976		82	508

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	601	796	337
Volume Left	0	131	37
Volume Right	24	0	300
cSH	1700	976	324
Volume to Capacity	0.35	0.13	1.04
Queue Length 95th (ft)	0	12	301
Control Delay (s)	0.0	3.2	97.1
Lane LOS		A	F
Approach Delay (s)	0.0	3.2	97.1
Approach LOS			F

Intersection Summary			
Average Delay	20.3		
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	611	40	270	443	11	116
Peak Hour Factor	0.90	0.90	0.85	0.85	0.81	0.81
Hourly flow rate (vph)	679	44	318	521	14	143
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1024		
pX, platoon unblocked					0.90	
vC, conflicting volume			723		1858	701
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			723		1955	701
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			64		67	66
cM capacity (veh/h)			884		41	424

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	723	839	157
Volume Left	0	318	14
Volume Right	44	0	143
cSH	1700	884	234
Volume to Capacity	0.43	0.36	0.67
Queue Length 95th (ft)	0	41	106
Control Delay (s)	0.0	7.9	46.9
Lane LOS		A	E
Approach Delay (s)	0.0	7.9	46.9
Approach LOS			E

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	644	24	130	696	35	287
Peak Hour Factor	0.94	0.94	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	685	26	140	748	39	319
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1024		
pX, platoon unblocked					0.76	
vC, conflicting volume			711		1726	698
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			711		1953	698
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		14	28
cM capacity (veh/h)			889		45	441

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	711	888	358
Volume Left	0	140	39
Volume Right	26	0	319
cSH	1700	889	225
Volume to Capacity	0.42	0.16	1.59
Queue Length 95th (ft)	0	14	563
Control Delay (s)	0.0	3.9	323.7
Lane LOS		A	F
Approach Delay (s)	0.0	3.9	323.7
Approach LOS			F

Intersection Summary			
Average Delay	60.9		
Intersection Capacity Utilization	108.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	611	49	291	443	46	200
Peak Hour Factor	0.90	0.90	0.85	0.85	0.81	0.81
Hourly flow rate (vph)	679	54	342	521	57	247
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1024		
pX, platoon unblocked					0.88	
vC, conflicting volume			733		1912	706
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			733		2037	706
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			61		0	41
cM capacity (veh/h)			876		34	421

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	733	864	304
Volume Left	0	342	57
Volume Right	54	0	247
cSH	1700	876	134
Volume to Capacity	0.43	0.39	2.26
Queue Length 95th (ft)	0	47	641
Control Delay (s)	0.0	8.6	645.5
Lane LOS		A	F
Approach Delay (s)	0.0	8.6	645.5
Approach LOS			F

Intersection Summary			
Average Delay	107.1		
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	644	58	212	696	53	331
Peak Hour Factor	0.94	0.94	0.93	0.93	0.90	0.90
Hourly flow rate (vph)	685	62	228	748	59	368
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				1024		
pX, platoon unblocked					0.72	
vC, conflicting volume			747		1920	716
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			747		2273	716
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			74		0	15
cM capacity (veh/h)			861		23	430

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	747	976	427
Volume Left	0	228	59
Volume Right	62	0	368
cSH	1700	861	126
Volume to Capacity	0.44	0.26	3.38
Queue Length 95th (ft)	0	27	Err
Control Delay (s)	0.0	6.4	Err
Lane LOS		A	F
Approach Delay (s)	0.0	6.4	Err
Approach LOS			F

Intersection Summary			
Average Delay	1987.4		
Intersection Capacity Utilization	119.1%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	13	14	14	14	14
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.89	
Flt Protected	1.00			0.98	0.99	
Satd. Flow (prot)	1887			1933	1641	
Flt Permitted	1.00			0.52	0.99	
Satd. Flow (perm)	1887			1030	1641	
Volume (vph)	611	49	291	443	46	200
Peak-hour factor, PHF	0.90	0.90	0.85	0.85	0.81	0.81
Adj. Flow (vph)	679	54	342	521	57	247
RTOR Reduction (vph)	4	0	0	0	223	0
Lane Group Flow (vph)	729	0	0	863	81	0
Heavy Vehicles (%)	3%	3%	1%	4%	0%	11%
Turn Type			Perm			
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	56.0			56.0	4.0	
Effective Green, g (s)	57.0			57.0	5.0	
Actuated g/C Ratio	0.81			0.81	0.07	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1537			839	117	
v/s Ratio Prot	0.39				c0.05	
v/s Ratio Perm				c0.84		
v/c Ratio	0.47			1.03	0.69	
Uniform Delay, d1	2.0			6.5	31.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.2			38.6	16.3	
Delay (s)	2.2			45.1	48.1	
Level of Service	A			D	D	
Approach Delay (s)	2.2			45.1	48.1	
Approach LOS	A			D	D	

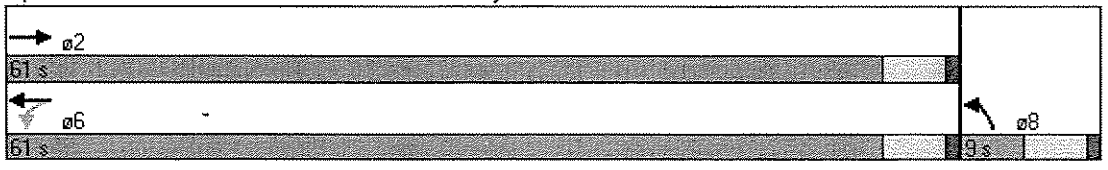
Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	611	291	443	46
Lane Group Flow (vph)	733	0	863	304
Turn Type		Perm		
Protected Phases	2		6	8
Permitted Phases		6		
Detector Phases	2	6	6	8
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0
Total Split (s)	61.0	61.0	61.0	9.0
Total Split (%)	87.1%	87.1%	87.1%	12.9%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	None	None	Min
v/c Ratio	0.48		1.03	0.89
Control Delay	3.1		49.2	39.8
Queue Delay	0.0		0.0	0.0
Total Delay	3.1		49.2	39.8
Queue Length 50th (ft)	56		~310	27
Queue Length 95th (ft)	89		#559	#117
Internal Link Dist (ft)	317		944	202
Turn Bay Length (ft)				
Base Capacity (vph)	1541		840	340
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.48		1.03	0.89

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
~ 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.

Splits and Phases: 2: Route 62 & Sudbury Road



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	13	13	14	14	14	14
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.99			1.00	0.88	
Flt Protected	1.00			0.99	0.99	
Satd. Flow (prot)	1899			1979	1741	
Flt Permitted	1.00			0.64	0.99	
Satd. Flow (perm)	1899			1284	1741	
Volume (vph)	644	58	212	696	53	331
Peak-hour factor, PHF	0.94	0.94	0.93	0.93	0.90	0.90
Adj. Flow (vph)	685	62	228	748	59	368
RTOR Reduction (vph)	5	0	0	0	317	0
Lane Group Flow (vph)	742	0	0	976	110	0
Heavy Vehicles (%)	2%	5%	2%	1%	3%	2%
Turn Type			Perm			
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	51.7			51.7	6.0	
Effective Green, g (s)	52.7			52.7	7.0	
Actuated g/C Ratio	0.78			0.78	0.10	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1478			1000	180	
v/s Ratio Prot	0.39				c0.06	
v/s Ratio Perm				c0.76		
v/c Ratio	0.50			0.98	0.61	
Uniform Delay, d1	2.7			6.9	29.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.3			22.6	6.1	
Delay (s)	3.0			29.5	35.1	
Level of Service	A			C	D	
Approach Delay (s)	3.0			29.5	35.1	
Approach LOS	A			C	D	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	119.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	644	212	696	53
Lane Group Flow (vph)	747	0	976	427
Turn Type		Perm		
Protected Phases	2		6	8
Permitted Phases		6		
Detector Phases	2	6	6	8
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0
Total Split (s)	59.0	59.0	59.0	11.0
Total Split (%)	84.3%	84.3%	84.3%	15.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	None	None	Min
v/c Ratio	0.50		0.98	0.86
Control Delay	4.0		33.1	26.4
Queue Delay	0.0		0.0	0.0
Total Delay	4.0		33.1	26.4
Queue Length 50th (ft)	74		254	31
Queue Length 95th (ft)	118		#647	#177
Internal Link Dist (ft)	317		944	225
Turn Bay Length (ft)				
Base Capacity (vph)	1497		1011	497
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.50		0.97	0.86

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 67.8
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Route 62 & Sudbury Road

High Street at Parker Street

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	16	5	163	25	4	4	304	9	5	112	20
Peak Hour Factor	0.82	0.82	0.82	0.84	0.84	0.84	0.89	0.89	0.89	0.84	0.84	0.84
Hourly flow rate (vph)	17	20	6	194	30	5	4	342	10	6	133	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	35			26			567	480	32	648	479	23
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			26			567	480	32	648	479	23
tC, single (s)	4.2			4.1			7.4	6.6	6.5	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.1	3.6	3.5	4.1	3.4
p0 queue free %	99			88			98	18	99	95	67	98
cM capacity (veh/h)	1539			1589			265	416	959	110	408	1015

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	43	229	356	163
Volume Left	17	194	4	6
Volume Right	6	5	10	24
cSH	1539	1589	422	403
Volume to Capacity	0.01	0.12	0.84	0.40
Queue Length 95th (ft)	1	10	203	48
Control Delay (s)	3.0	6.6	45.2	19.9
Lane LOS	A	A	E	C
Approach Delay (s)	3.0	6.6	45.2	19.9
Approach LOS			E	C

Intersection Summary			
Average Delay	26.5		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	28	3	63	19	5	11	176	19	10	290	136
Peak Hour Factor	0.75	0.75	0.75	0.74	0.74	0.74	0.76	0.76	0.76	0.86	0.86	0.86
Hourly flow rate (vph)	12	37	4	85	26	7	14	232	25	12	337	158
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	32			41			589	265	29	378	266	39
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	32			41			589	265	29	378	266	39
tC, single (s)	4.1			4.2			7.1	6.6	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	99			94			92	61	98	97	44	85
cM capacity (veh/h)	1593			1536			190	596	1052	367	601	1035

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	53	118	271	507
Volume Left	12	85	14	12
Volume Right	4	7	25	158
cSH	1593	1536	630	680
Volume to Capacity	0.01	0.06	0.43	0.75
Queue Length 95th (ft)	1	4	54	168
Control Delay (s)	1.7	5.5	15.3	24.1
Lane LOS	A	A	C	C
Approach Delay (s)	1.7	5.5	15.3	24.1
Approach LOS			C	C

Intersection Summary			
Average Delay	18.0		
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

2012 No Build Weekday Morning Peak Hour
3: High Street & Parker Street 12/20/2006

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	15	17	5	173	27	4	4	333	10	5	153	21
Peak Hour Factor	0.82	0.82	0.82	0.84	0.84	0.84	0.89	0.89	0.89	0.84	0.84	0.84
Hourly flow rate (vph)	18	21	6	206	32	5	4	374	11	6	182	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	37			27			623	510	35	694	509	24
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	37			27			623	510	35	694	509	24
tC, single (s)	4.2			4.1			7.4	6.6	6.5	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.1	3.6	3.5	4.1	3.4
p0 queue free %	99			87			98	6	99	89	53	98
cM capacity (veh/h)	1536			1587			204	396	956	52	388	1014

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	45	243	390	213
Volume Left	18	206	4	6
Volume Right	6	5	11	25
cSH	1536	1587	401	351
Volume to Capacity	0.01	0.13	0.97	0.61
Queue Length 95th (ft)	1	11	286	95
Control Delay (s)	3.0	6.6	71.0	29.9
Lane LOS	A	A	F	D
Approach Delay (s)	3.0	6.6	71.0	29.9
Approach LOS			F	D

Intersection Summary			
Average Delay	40.2		
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	30	3	67	20	5	12	227	20	11	329	144
Peak Hour Factor	0.75	0.75	0.75	0.74	0.74	0.74	0.76	0.76	0.76	0.86	0.86	0.86
Hourly flow rate (vph)	13	40	4	91	27	7	16	299	26	13	383	167
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	34			44			639	282	30	429	284	42
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34			44			639	282	30	429	284	42
tC, single (s)	4.1			4.2			7.1	6.6	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	99			94			89	48	97	96	35	84
cM capacity (veh/h)	1591			1533			149	580	1050	288	585	1032

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	57	124	341	563
Volume Left	13	91	16	13
Volume Right	4	7	26	167
cSH	1591	1533	579	654
Volume to Capacity	0.01	0.06	0.59	0.86
Queue Length 95th (ft)	1	5	95	248
Control Delay (s)	1.7	5.6	19.7	34.9
Lane LOS	A	A	C	D
Approach Delay (s)	1.7	5.6	19.7	34.9
Approach LOS			C	D

Intersection Summary			
Average Delay	25.0		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	15	17	26	173	27	4	4	333	10	10	153	21
Peak Hour Factor	0.82	0.82	0.82	0.84	0.84	0.84	0.89	0.89	0.89	0.84	0.84	0.84
Hourly flow rate (vph)	18	21	32	206	32	5	4	374	11	12	182	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	37			52			636	535	35	707	522	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	37			52			636	535	35	707	522	37
tC, single (s)	4.2			4.1			7.4	6.6	6.5	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.7	4.1	3.6	3.5	4.1	3.4
p0 queue free %	99			87			98	2	99	60	52	97
cM capacity (veh/h)	1536			1553			197	382	956	30	381	997

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	71	243	390	219
Volume Left	18	206	4	12
Volume Right	32	5	11	25
cSH	1536	1553	386	242
Volume to Capacity	0.01	0.13	1.01	0.90
Queue Length 95th (ft)	1	11	308	193
Control Delay (s)	2.0	6.7	81.8	79.0
Lane LOS	A	A	F	F
Approach Delay (s)	2.0	6.7	81.8	79.0
Approach LOS			F	F

Intersection Summary			
Average Delay	55.2		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

2012 Build Weekday Evening Peak Hour
3: High Street & Parker Street 12/21/2006

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	30	14	67	20	5	12	227	20	32	329	144
Peak Hour Factor	0.75	0.75	0.75	0.74	0.74	0.74	0.76	0.76	0.76	0.86	0.86	0.86
Hourly flow rate (vph)	13	40	19	91	27	7	16	299	26	37	383	167
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									2			
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	34			59			646	297	30	437	291	49
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	34			59			646	297	30	437	291	49
tC, single (s)	4.1			4.2			7.1	6.6	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	99			94			89	47	97	87	34	84
cM capacity (veh/h)	1591			1514			145	569	1050	281	579	1022

Direction, Lane #	NB 1	SB 1	NE 1	SW 1
Volume Total	72	124	341	587
Volume Left	13	91	16	37
Volume Right	19	7	26	167
cSH	1591	1514	568	614
Volume to Capacity	0.01	0.06	0.60	0.96
Queue Length 95th (ft)	1	5	99	332
Control Delay (s)	1.4	5.6	20.4	52.3
Lane LOS	A	A	C	F
Approach Delay (s)	1.4	5.6	20.4	52.3
Approach LOS			C	F

Intersection Summary			
Average Delay	34.2		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

Sudbury Road at Old Powdermill Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	21	119	127	5	30	310
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	129	138	5	33	337
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	543	141			143	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	543	141			143	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	86			98	
cM capacity (veh/h)	489	907			1439	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	143	370
Volume Left	23	0	33
Volume Right	129	5	0
cSH	804	1700	1439
Volume to Capacity	0.19	0.08	0.02
Queue Length 95th (ft)	17	0	2
Control Delay (s)	10.5	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Yield		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	11	62	322	21	116	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	67	350	23	126	167
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	781	361			373	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	781	361			373	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	90			89	
cM capacity (veh/h)	325	683			1186	

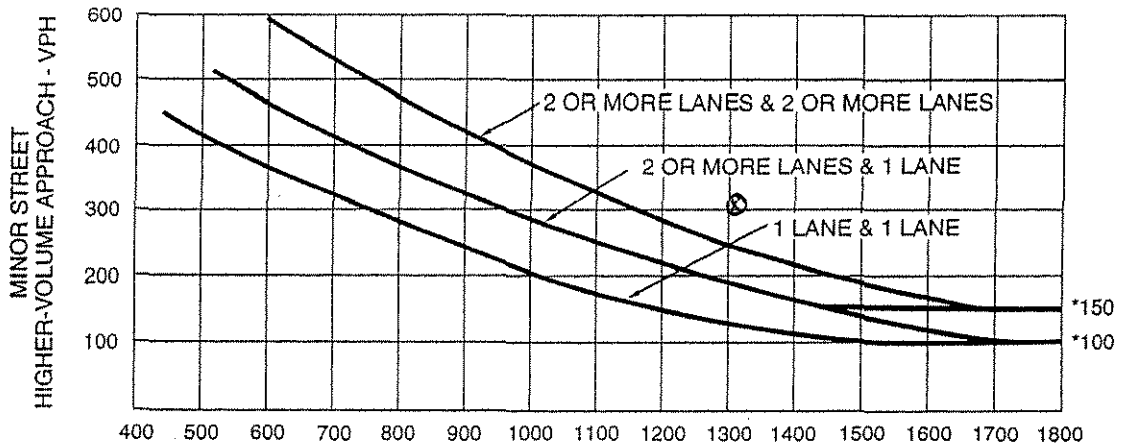
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	79	373	293
Volume Left	12	0	126
Volume Right	67	23	0
cSH	586	1700	1186
Volume to Capacity	0.14	0.22	0.11
Queue Length 95th (ft)	12	0	9
Control Delay (s)	12.1	0.0	4.2
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	4.2
Approach LOS	B		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

TRAFFIC SIGNAL WARRANT ANALYSIS

Route 62 at Sudbury Road
2006 Existing Weekday Evening Peak Hour

Figure 4C-3. Warrant 3, Peak Hour



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

V_{MAJ} 1305
V_{MIN} 303

Warrant is met