Attachments

- □ Traffic Volume Data
- □ Seasonal Data
- □ Historical Traffic Volume Data
- □ Crash Data
- □ Speed Data
- □ Stopping Sight Distance Calculations
- □ US Census Data
- □ Public Transportation Information
- □ Background Growth Calculations
- □ Trip Generation Calculations
- □ Trip Distribution Calculations
- □ Capacity Analysis Worksheets
- □ Delay Study
- □ AutoTurn® Figures

□ Traffic Volume Data

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA 01752
508-303-0370
www.mdmtrans.com

E/W: Lagrange Street
Between Rangeley Road and Broadlawn Park
Newton/Brookline, MA

Site Code: 76500001
Station ID:

765 Lagrange Street (Volume)

Start Time	07-May-14 Wed	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		19	117			6	56				
12:15		15	82			3	69				
12:30		10	73			2	102				
12:45		9	96	53	368	4	88	15	315	68	683
01:00		7	109			3	54				
01:15		4	90			2	74				
01:30		7	95			0	79				
01:45		5	87	23	381	0	75	5	282	28	663
02:00		0	87			2	75				
02:15		6	98			0	97				
02:30		2	106			2	90				
02:45		0	99	8	390	1	92	5	354	13	744
03:00		3	189			1	69				
03:15		1	143			1	76				
03:30		2	172			2	97				
03:45		2	169	8	673	6	76	10	318	18	991
04:00		0	192			5	73				
04:15		2	191			4	90				
04:30		6	176			7	77				
04:45		2	188	10	747	9	97	25	337	35	1084
05:00		1	203			12	83				
05:15		2	186			22	114				
05:30		6	157			42	94				
05:45		5	199	14	745	54	99	130	390	144	1135
06:00		10	137			60	99				
06:15		11	168			113	75				
06:30		24	152			149	68				
06:45		46	138	91	595	133	80	455	322	546	917
07:00		52	133			184	75				
07:15		54	116			163	50				
07:30		71	89			159	53				
07:45		89	87	266	425	122	42	628	220	894	645
08:00		92	95			106	52				
08:15		83	85			127	38				
08:30		82	71			148	50				
08:45		80	73	337	324	127	53	508	193	845	517
09:00		72	73			133	23				
09:15		51	45			101	22				
09:30		50	56			113	26				
09:45		52	48	225	222	107	23	454	94	679	316
10:00		69	46			86	31				
10:15		53	34			79	16				
10:30		58	37			79	23				
10:45		60	33	240	150	84	23	328	93	568	243
11:00		73	37			69	5				
11:15		78	34			67	15				
11:30		75	30			80	9				
11:45		81	20	307	121	87	0	303	29	610	150
Total		1582	5141			2866	2947			4448	8088
Percent	0.0%	23.5%	76.5%			49.3%	50.7%			35.5%	64.5%
Combined Total		6723				5813				12536	

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E/W: Lagrange Street
Between Rangeley Road and Broadlawn Park
Newton/Brookline, MA

Site Code: 76500001
Station ID:

765 Lagrange Street (Volume)

Start Time	08-May-14 Thu	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		14	93			7	93				
12:15		13	88			7	77				
12:30		6	85			5	88				
12:45		12	88	45	354	2	63	21	321	66	675
01:00		9	95			3	78				
01:15		10	95			2	84				
01:30		4	78			1	70				
01:45		3	94	26	362	0	67	6	299	32	661
02:00		2	94			3	84				
02:15		3	115			2	87				
02:30		5	104			0	88				
02:45		3	116	13	429	5	94	10	353	23	782
03:00		5	174			1	84				
03:15		1	153			3	84				
03:30		1	192			3	89				
03:45		1	181	8	700	6	81	13	338	21	1038
04:00		1	193			2	80				
04:15		3	192			5	75				
04:30		1	183			4	80				
04:45		5	182	10	750	9	90	20	325	30	1075
05:00		3	212			8	98				
05:15		6	195			23	96				
05:30		10	163			44	89				
05:45		10	189	29	759	49	100	124	383	153	1142
06:00		8	186			62	92				
06:15		24	159			105	90				
06:30		24	155			139	91				
06:45		39	143	95	643	151	85	457	358	552	1001
07:00		60	160			170	63				
07:15		63	123			178	61				
07:30		82	113			170	63				
07:45		97	90	302	486	133	52	651	239	953	725
08:00		93	83			113	70				
08:15		62	83			139	48				
08:30		63	69			128	37				
08:45		76	68	294	303	120	33	500	188	794	491
09:00		73	72			130	43				
09:15		58	63			136	35				
09:30		52	66			120	23				
09:45		62	63	245	264	79	21	465	122	710	386
10:00		60	45			87	28				
10:15		60	40			60	25				
10:30		55	33			96	21				
10:45		67	35	242	153	63	22	306	96	548	249
11:00		70	44			81	14				
11:15		67	33			85	9				
11:30		70	35			82	9				
11:45		68	23	275	135	87	11	335	43	610	178
Total		1584	5338			2908	3065			4492	8403
Percent	0.0%	22.9%	77.1%			48.7%	51.3%			34.8%	65.2%
Combined Total		6922				5973				12895	
Total		3166	10479			5774	6012			8940	16491
Percent		23.2%	76.8%			49.0%	51.0%			35.2%	64.8%
Combined Total		13645				11786				25431	
ADT		ADT 12,244		AADT 12,244							

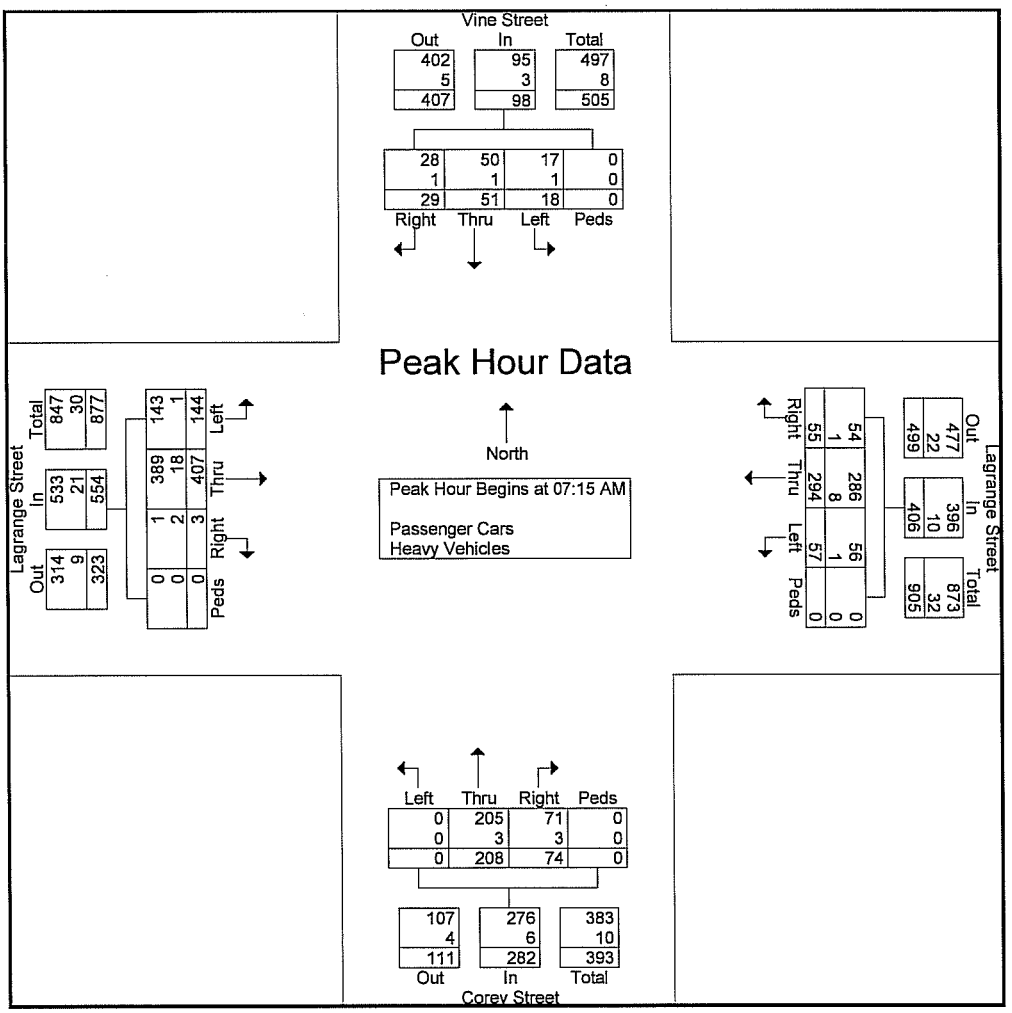
MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N: Vine Street
S: Corey Street
E/W: Lagrange Street
Newton, MA

File Name : 765 Lagrange & Vine AM
Site Code : 765
Start Date : 5/6/2014
Page No : 2

	Vine Street From North					Lagrange Street From East					Corey Street From South					Lagrange Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	4	7	2	0	13	12	56	10	0	78	**20**	**55**	0	0	**75**	**1**	**119**	32	0	**152**	318
07:30 AM	**9**	**23**	4	0	**36**	9	79	11	0	99	20	52	0	0	72	1	111	37	0	149	**356**
07:45 AM	9	8	3	0	20	**17**	77	**18**	0	112	15	50	0	0	65	0	99	32	0	131	328
08:00 AM	7	13	**9**	0	29	17	**82**	18	0	**117**	19	51	0	0	70	1	78	**43**	0	122	338
Total Volume	29	51	18	0	98	55	294	57	0	406	74	208	0	0	282	3	407	144	0	554	1340
% App. Total	29.6	52	18.4	0		13.5	72.4	14	0		26.2	73.8	0	0		0.5	73.5	26	0		
PHF	.806	.554	.500	.000	.681	.809	.896	.792	.000	.868	.925	.945	.000	.000	.940	.750	.855	.837	.000	.911	.941
Passenger Cars																					
% Passenger Cars	96.6	98.0	94.4	0	96.9	98.2	97.3	98.2	0	97.5	95.9	98.6	0	0	97.9	33.3	95.6	99.3	0	96.2	97.0
Heavy Vehicles																					
% Heavy Vehicles	3.4	2.0	5.6	0	3.1	1.8	2.7	1.8	0	2.5	4.1	1.4	0	0	2.1	66.7	4.4	0.7	0	3.8	3.0



MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N: Vine Street
S: Corey Street
E/W: Lagrange Street
Newton, MA

File Name : 765 Lagrange & Vine AM
Site Code : 765
Start Date : 5/6/2014
Page No : 1

Groups Printed- Passenger Cars - Heavy Vehicles

	Vine Street From North					Lagrange Street From East					Corey Street From South					Lagrange Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	4	4	1	0	9	12	51	7	0	70	18	25	0	0	43	0	127	6	0	133	255
07:15 AM	4	7	2	0	13	12	56	10	0	78	20	55	0	0	75	1	119	32	0	152	318
07:30 AM	9	23	4	0	36	9	79	11	0	99	20	52	0	0	72	1	111	37	0	149	356
07:45 AM	9	8	3	0	20	17	77	18	0	112	15	50	0	0	65	0	99	32	0	131	328
Total	26	42	10	0	78	50	263	46	0	359	73	182	0	0	255	2	456	107	0	565	1257
08:00 AM	7	13	9	0	29	17	82	18	0	117	19	51	0	0	70	1	78	43	0	122	338
08:15 AM	3	11	3	0	17	26	63	12	0	101	22	27	0	0	49	0	110	41	0	151	318
08:30 AM	8	21	5	0	34	10	71	12	0	93	12	20	0	0	32	0	79	26	0	105	264
08:45 AM	2	9	3	0	14	16	60	13	0	89	16	39	1	0	56	0	112	23	0	135	294
Total	20	54	20	0	94	69	276	55	0	400	69	137	1	0	207	1	379	133	0	513	1214
Grand Total	46	96	30	0	172	119	539	101	0	759	142	319	1	0	462	3	835	240	0	1078	2471
Apprch %	26.7	55.8	17.4	0		15.7	71	13.3	0		30.7	69	0.2	0		0.3	77.5	22.3	0		
Total %	1.9	3.9	1.2	0	7	4.8	21.8	4.1	0	30.7	5.7	12.9	0	0	18.7	0.1	33.8	9.7	0	43.6	
Passenger Cars																					
% Passenger Cars	97.8	99	96.7	0	98.3	97.5	96.7	94.1	0	96.4	95.8	98.4	100	0	97.6	33.3	96.3	98.8	0	96.7	96.9
Heavy Vehicles																					
% Heavy Vehicles	2.2	1	3.3	0	1.7	2.5	3.3	5.9	0	3.6	4.2	1.6	0	0	2.4	66.7	3.7	1.2	0	3.3	3.1

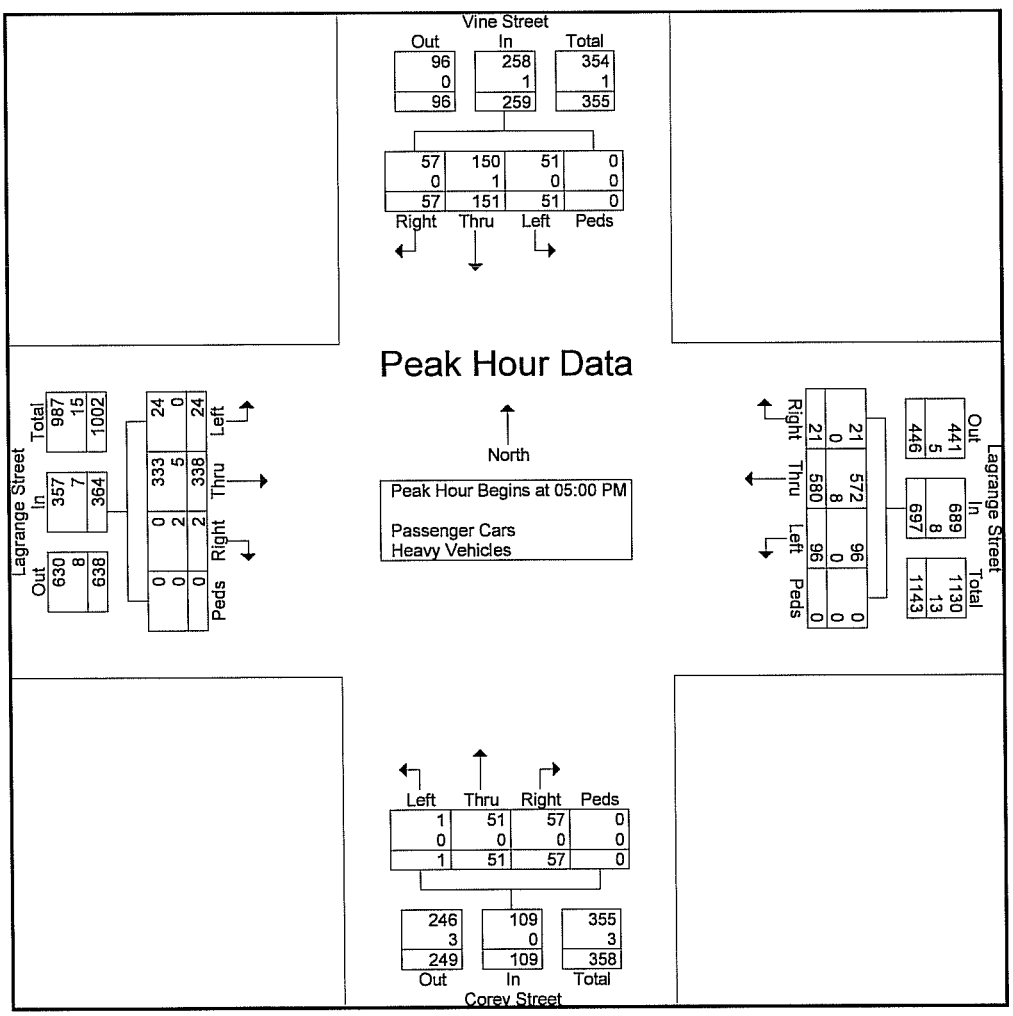
MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N: Vine Street
S: Corey Street
E/W: Lagrange Street
Newton, MA

File Name : 765 Lagrange & Vine PM
Site Code : 765
Start Date : 5/6/2014
Page No : 2

	Vine Street From North					Lagrange Street From East					Corey Street From South					Lagrange Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	13	32	5	0	50	3	**159**	24	0	**186**	15	11	**1**	0	27	0	69	**8**	0	77	340
05:15 PM	12	**43**	13	0	68	**7**	148	**31**	0	186	14	15	0	0	**29**	**1**	**91**	8	0	**100**	**383**
05:30 PM	14	38	13	0	65	4	145	27	0	176	**16**	9	0	0	25	0	90	6	0	96	362
05:45 PM	**18**	38	**20**	0	**76**	7	128	14	0	149	12	**16**	0	0	28	1	88	2	0	91	344
Total Volume	57	151	51	0	259	21	580	96	0	697	57	51	1	0	109	2	338	24	0	364	1429
% App. Total	22	58.3	19.7	0		3	83.2	13.8	0		52.3	46.8	0.9	0		0.5	92.9	6.6	0		
PHF	.792	.878	.638	.000	.852	.750	.912	.774	.000	.937	.891	.797	.250	.000	.940	.500	.929	.750	.000	.910	.933
Passenger Cars																					
% Passenger Cars	100	99.3	100	0	99.6	100	98.6	100	0	98.9	100	100	100	0	100	0	98.5	100	0	98.1	98.9
Heavy Vehicles																					
% Heavy Vehicles	0	0.7	0	0	0.4	0	1.4	0	0	1.1	0	0	0	0	0	100	1.5	0	0	1.9	1.1



MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N: Vine Street
S: Corey Street
E/W: Lagrange Street
Newton, MA

File Name : 765 Lagrange & Vine PM
Site Code : 765
Start Date : 5/6/2014
Page No : 1

Groups Printed- Passenger Cars - Heavy Vehicles

	Vine Street From North					Lagrange Street From East					Corey Street From South					Lagrange Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	7	22	4	0	33	7	151	18	0	176	18	5	1	0	24	0	58	2	0	60	293
04:15 PM	11	26	10	0	47	3	139	21	0	163	15	12	0	0	27	0	73	6	0	79	316
04:30 PM	6	22	1	0	29	5	135	10	0	150	11	13	0	0	24	1	57	9	0	67	270
04:45 PM	12	32	5	0	49	1	136	23	0	160	19	11	0	0	30	0	62	6	0	68	307
Total	36	102	20	0	158	16	561	72	0	649	63	41	1	0	105	1	250	23	0	274	1186
05:00 PM	13	32	5	0	50	3	159	24	0	186	15	11	1	0	27	0	69	8	0	77	340
05:15 PM	12	43	13	0	68	7	148	31	0	186	14	15	0	0	29	1	91	8	0	100	383
05:30 PM	14	38	13	0	65	4	145	27	0	176	16	9	0	0	25	0	90	6	0	96	362
05:45 PM	18	38	20	0	76	7	128	14	0	149	12	16	0	0	28	1	88	2	0	91	344
Total	57	151	51	0	259	21	580	96	0	697	57	51	1	0	109	2	338	24	0	364	1429
Grand Total	93	253	71	0	417	37	1141	168	0	1346	120	92	2	0	214	3	588	47	0	638	2615
Apprch %	22.3	60.7	17	0		2.7	84.8	12.5	0		56.1	43	0.9	0		0.5	92.2	7.4	0		
Total %	3.6	9.7	2.7	0	15.9	1.4	43.6	6.4	0	51.5	4.6	3.5	0.1	0	8.2	0.1	22.5	1.8	0	24.4	
Passenger Cars							1113														
% Passenger Cars	98.9	99.6	98.6	0	99.3	100	97.5	98.8	0	97.8	99.2	100	100	0	99.5	0	98.6	100	0	98.3	98.3
Heavy Vehicles																					
% Heavy Vehicles	1.1	0.4	1.4	0	0.7	0	2.5	1.2	0	2.2	0.8	0	0	0	0.5	100	1.4	0	0	1.7	1.7

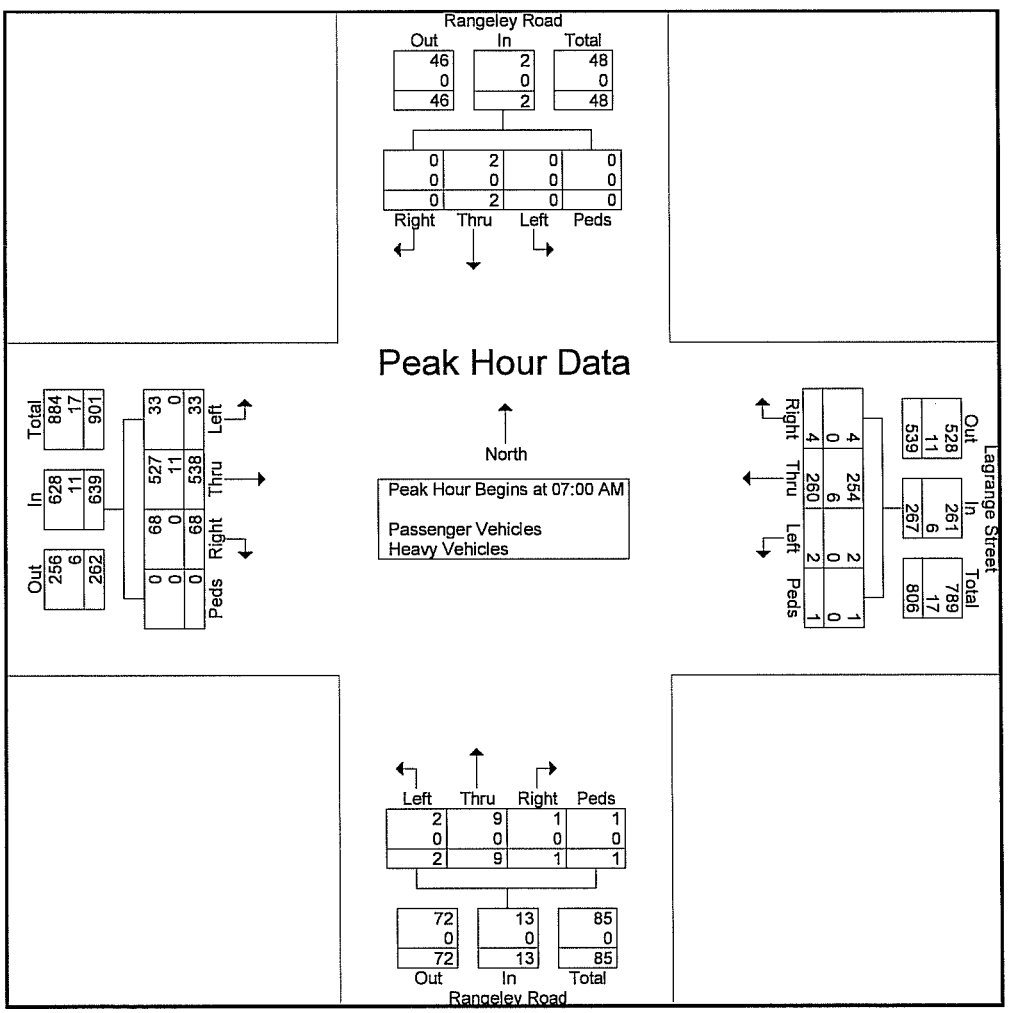
MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N/S: Rangely Road
E/W: Lagrange Street
Brookline, MA

File Name : 765 Lagrange at Rangely AM
Site Code : 76500002
Start Date : 5/9/2014
Page No : 2

	Rangeley Road From North					Lagrange Street From East					Rangeley Road From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	61	0	**1**	62	0	0	**1**	0	1	1	149	2	0	152	215
07:15 AM	0	**1**	0	0	**1**	1	53	**1**	0	55	0	1	1	0	2	8	**170**	4	0	**182**	**240**
07:30 AM	0	1	0	0	1	**2**	61	0	0	63	**1**	**7**	0	**1**	**9**	20	123	**17**	0	160	233
07:45 AM	0	0	0	0	0	1	**85**	1	0	**87**	0	1	0	0	1	**39**	96	10	0	145	233
Total Volume	0	2	0	0	2	4	260	2	1	267	1	9	2	1	13	68	538	33	0	639	921
% App. Total	0	100	0	0		1.5	97.4	0.7	0.4		7.7	69.2	15.4	7.7		10.6	84.2	5.2	0		
PHF	.000	.500	.000	.000	.500	.500	.765	.500	.250	.767	.250	.321	.500	.250	.361	.436	.791	.485	.000	.878	.959
Passenger Vehicles																					
% Passenger Vehicles	0	100	0	0	100	100	97.7	100	100	97.8	100	100	100	100	100	100	98.0	100	0	98.3	98.2
Heavy Vehicles																					
% Heavy Vehicles	0	0	0	0	0	0	2.3	0	0	2.2	0	0	0	0	0	0	2.0	0	0	1.7	1.8



MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N/S: Rangely Road
E/W: Lagrange Street
Brookline, MA

File Name : 765 Lagrange at Rangely AM
Site Code : 76500002
Start Date : 5/9/2014
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Rangeley Road From North					Lagrange Street From East					Rangeley Road From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	61	0	1	62	0	0	1	0	1	1	149	2	0	152	215
07:15 AM	0	1	0	0	1	1	53	1	0	55	0	1	1	0	2	8	170	4	0	182	240
07:30 AM	0	1	0	0	1	2	61	0	0	63	1	7	0	1	9	20	123	17	0	160	233
07:45 AM	0	0	0	0	0	1	85	1	0	87	0	1	0	0	1	39	96	10	0	145	233
Total	0	2	0	0	2	4	260	2	1	267	1	9	2	1	13	68	538	33	0	639	921
08:00 AM	2	0	0	1	3	1	83	1	0	85	0	3	1	0	4	26	83	7	1	117	209
08:15 AM	1	1	0	0	2	1	64	0	0	65	0	0	0	0	0	2	125	0	0	127	194
08:30 AM	1	2	0	0	3	0	91	0	1	92	0	0	1	0	1	7	126	0	0	133	229
08:45 AM	0	0	0	0	0	1	68	0	0	69	2	1	1	0	4	2	108	0	0	110	183
Total	4	3	0	1	8	3	306	1	1	311	2	4	3	0	9	37	442	7	1	487	815
Grand Total	4	5	0	1	10	7	566	3	2	578	3	13	5	1	22	105	980	40	1	1126	1736
Apprch %	40	50	0	10		1.2	97.9	0.5	0.3		13.6	59.1	22.7	4.5		9.3	87	3.6	0.1		
Total %	0.2	0.3	0	0.1	0.6	0.4	32.6	0.2	0.1	33.3	0.2	0.7	0.3	0.1	1.3	6	56.5	2.3	0.1	64.9	
Passenger Vehicles																					
% Passenger Vehicles	100	60	0	100	80	85.7	97	100	100	96.9	66.7	100	100	100	95.5	100	97.8	100	100	98	97.5
Heavy Vehicles																					
% Heavy Vehicles	0	40	0	0	20	14.3	3	0	0	3.1	33.3	0	0	0	4.5	0	2.2	0	0	2	2.5

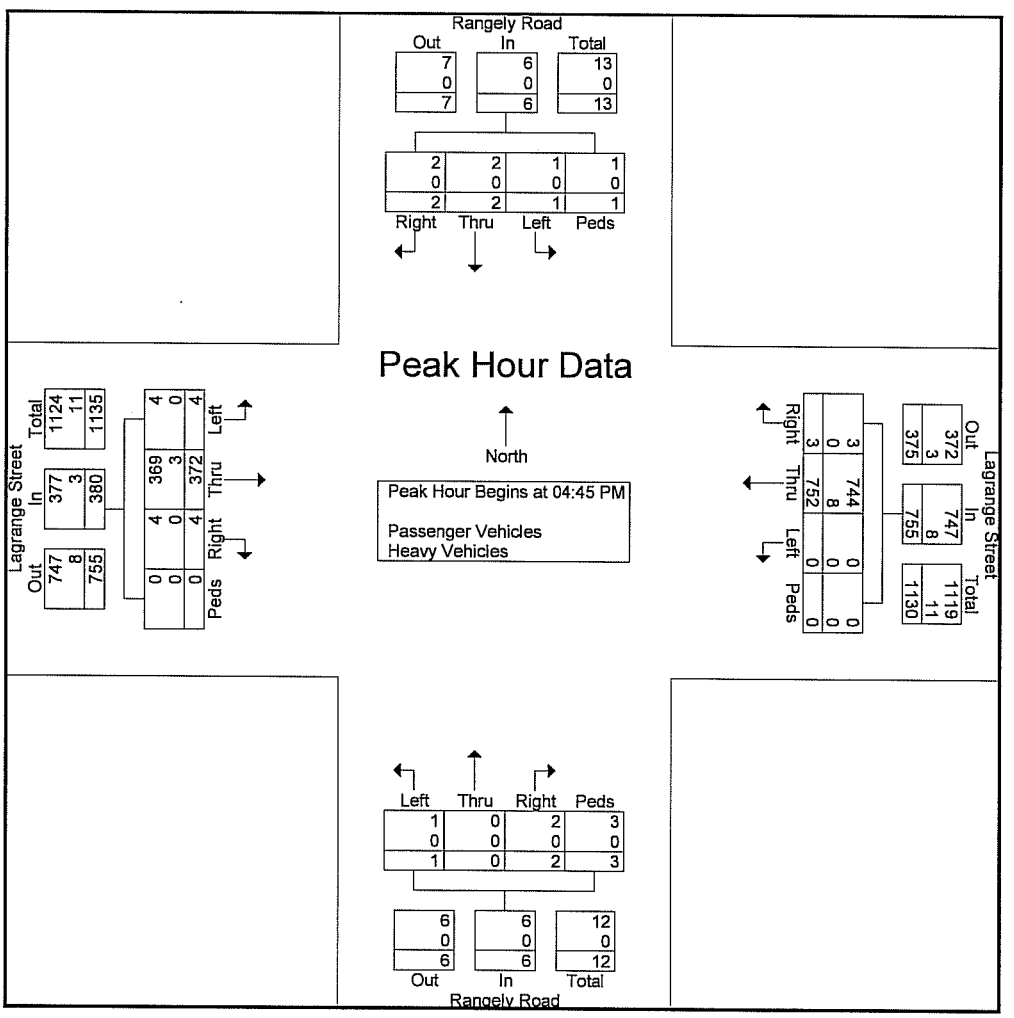
MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N/S: Rangely Road
E/W: Lagrange Street
Brookline, MA

File Name : 765 Lagrange at Rangely PM
Site Code : 76500001
Start Date : 5/6/2014
Page No : 2

	Rangely Road From North					Lagrange Street From East					Rangely Road From South					Lagrange Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	**1**	**1**	0	2	1	182	0	0	183	0	0	0	**1**	1	1	78	**2**	0	81	267
05:00 PM	0	0	0	0	0	0	**205**	0	0	**205**	0	0	0	1	1	**2**	82	0	0	84	290
05:15 PM	**1**	0	0	0	1	**2**	187	0	0	189	**2**	0	0	1	**3**	0	101	1	0	102	**295**
05:30 PM	1	1	0	**1**	**3**	0	178	0	0	178	0	0	**1**	0	1	1	**111**	1	0	**113**	295
Total Volume	2	2	1	1	6	3	752	0	0	755	2	0	1	3	6	4	372	4	0	380	1147
% App. Total	33.3	33.3	16.7	16.7		0.4	99.6	0	0		33.3	0	16.7	50		1.1	97.9	1.1	0		
PHF	.500	.500	.250	.250	.500	.375	.917	.000	.000	.921	.250	.000	.250	.750	.500	.500	.838	.500	.000	.841	.972
Passenger Vehicles																					
% Passenger Vehicles	100	100	100	100	100	100	98.9	0	0	98.9	100	0	100	100	100	100	99.2	100	0	99.2	99.0
Heavy Vehicles																					
% Heavy Vehicles	0	0	0	0	0	0	1.1	0	0	1.1	0	0	0	0	0	0	0.8	0	0	0.8	1.0



MDM TRANSPORTATION CONSULTANTS, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

N/S: Rangely Road
E/W: Lagrange Street
Brookline, MA

File Name : 765 Lagrange at Rangely PM
Site Code : 76500001
Start Date : 5/6/2014
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Rangely Road From North					Lagrange Street From East					Rangely Road From South					Lagrange Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	1	0	0	0	1	0	172	0	0	172	0	0	1	0	1	3	64	0	0	67	241
04:15 PM	0	1	0	0	1	0	162	0	0	162	1	1	3	1	6	2	81	0	0	83	252
04:30 PM	3	1	0	0	4	1	151	0	0	152	0	0	0	0	0	2	77	1	1	81	237
04:45 PM	0	1	1	0	2	1	182	0	0	183	0	0	0	1	1	1	78	2	0	81	267
Total	4	3	1	0	8	2	667	0	0	669	1	1	4	2	8	8	300	3	1	312	997
05:00 PM	0	0	0	0	0	0	205	0	0	205	0	0	0	1	1	2	82	0	0	84	290
05:15 PM	1	0	0	0	1	2	187	0	0	189	2	0	0	1	3	0	101	1	0	102	295
05:30 PM	1	1	0	1	3	0	178	0	0	178	0	0	1	0	1	1	111	1	0	113	295
05:45 PM	0	2	0	0	2	0	154	0	0	154	0	0	0	2	2	0	104	3	0	107	265
Total	2	3	0	1	6	2	724	0	0	726	2	0	1	4	7	3	398	5	0	406	1145
Grand Total	6	6	1	1	14	4	1391	0	0	1395	3	1	5	6	15	11	698	8	1	718	2142
Apprch %	42.9	42.9	7.1	7.1		0.3	99.7	0	0		20	6.7	33.3	40		1.5	97.2	1.1	0.1		
Total %	0.3	0.3	0	0	0.7	0.2	64.9	0	0	65.1	0.1	0	0.2	0.3	0.7	0.5	32.6	0.4	0	33.5	
Passenger Vehicles							1380														
% Passenger Vehicles	100	100	100	100	100	75	99.2	0	0	99.1	100	100	100	100	100	100	99.3	100	100	99.3	99.2
Heavy Vehicles																					
% Heavy Vehicles	0	0	0	0	0	25	0.8	0	0	0.9	0	0	0	0	0	0	0.7	0	0	0.7	0.8

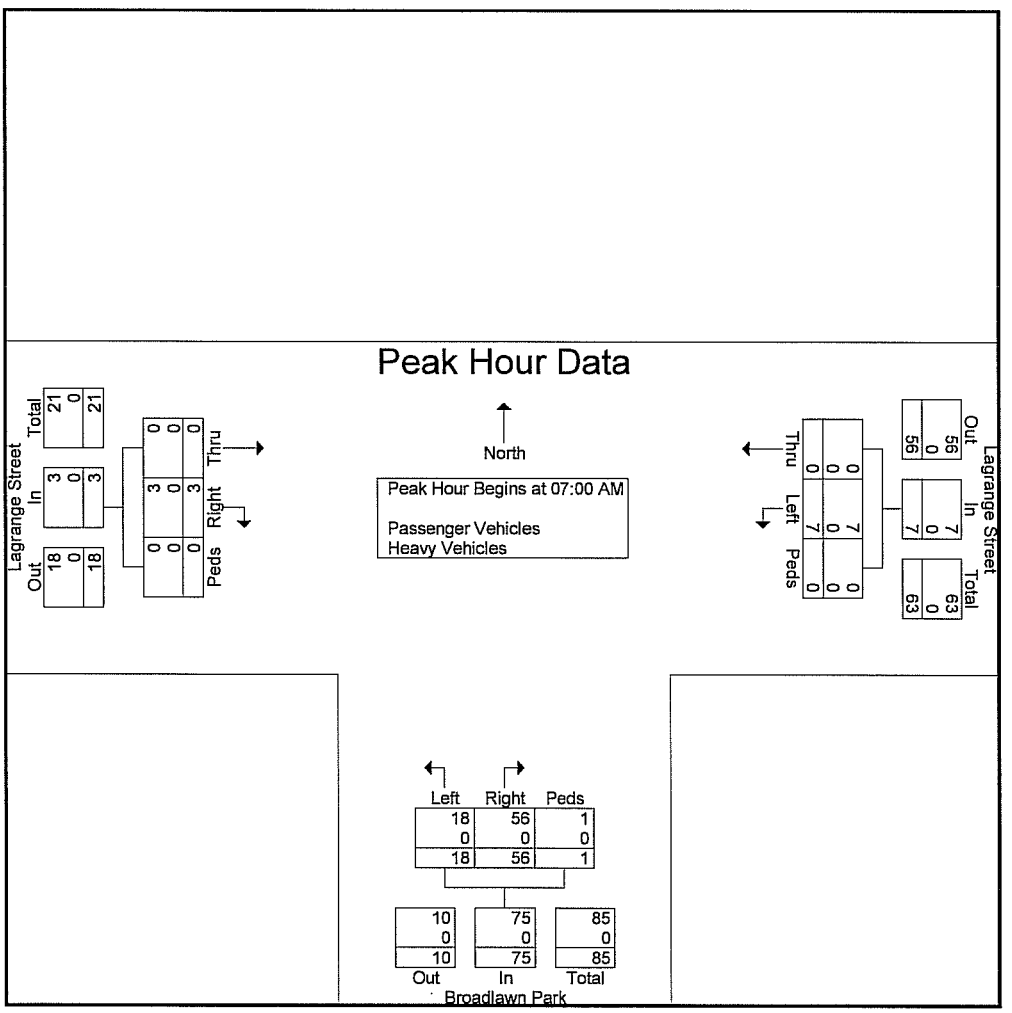
MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

S: Broadlawn Park
E/W: Lagrange Street
Newton, MA

File Name : 765 Broadlawn Park @ Lagrange Street AM
Site Code : 00765003
Start Date : 6/6/2014
Page No : 2

	Lagrange Street From East				Broadlawn Park From South				Lagrange Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	1	0	1	12	4	**1**	17	**1**	0	0	**1**	19
07:15 AM	0	1	0	1	12	5	0	17	1	0	0	1	19
07:30 AM	0	1	0	1	13	2	0	15	0	0	0	0	16
07:45 AM	0	**4**	0	**4**	**19**	**7**	0	**26**	1	0	0	1	**31**
Total Volume	0	7	0	7	56	18	1	75	3	0	0	3	85
% App. Total	0	100	0		74.7	24	1.3		100	0	0		
PHF	.000	.438	.000	.438	.737	.643	.250	.721	.750	.000	.000	.750	.685
Passenger Vehicles	0	7	0	7	56	18	1	75	3	0	0	3	85
% Passenger Vehicles	0	100	0	100	100	100	100	100	100	0	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0



MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

S: Broadlawn Park
E/W: Lagrange Street
Newton, MA

File Name : 765 Broadlawn Park @ Lagrange Street AM
Site Code : 00765003
Start Date : 6/6/2014
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Lagrange Street From East				Broadlawn Park From South				Lagrange Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	0	1	0	1	12	4	1	17	1	0	0	1	19
07:15 AM	0	1	0	1	12	5	0	17	1	0	0	1	19
07:30 AM	0	1	0	1	13	2	0	15	0	0	0	0	16
07:45 AM	0	4	0	4	19	7	0	26	1	0	0	1	31
Total	0	7	0	7	56	18	1	75	3	0	0	3	85
Grand Total	0	7	0	7	56	18	1	75	3	0	0	3	85
Apprch %	0	100	0		74.7	24	1.3		100	0	0		
Total %	0	8.2	0	8.2	65.9	21.2	1.2	88.2	3.5	0	0	3.5	
Passenger Vehicles	0	7	0	7	56	18	1	75	3	0	0	3	85
% Passenger Vehicles	0	100	0	100	100	100	100	100	100	0	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0

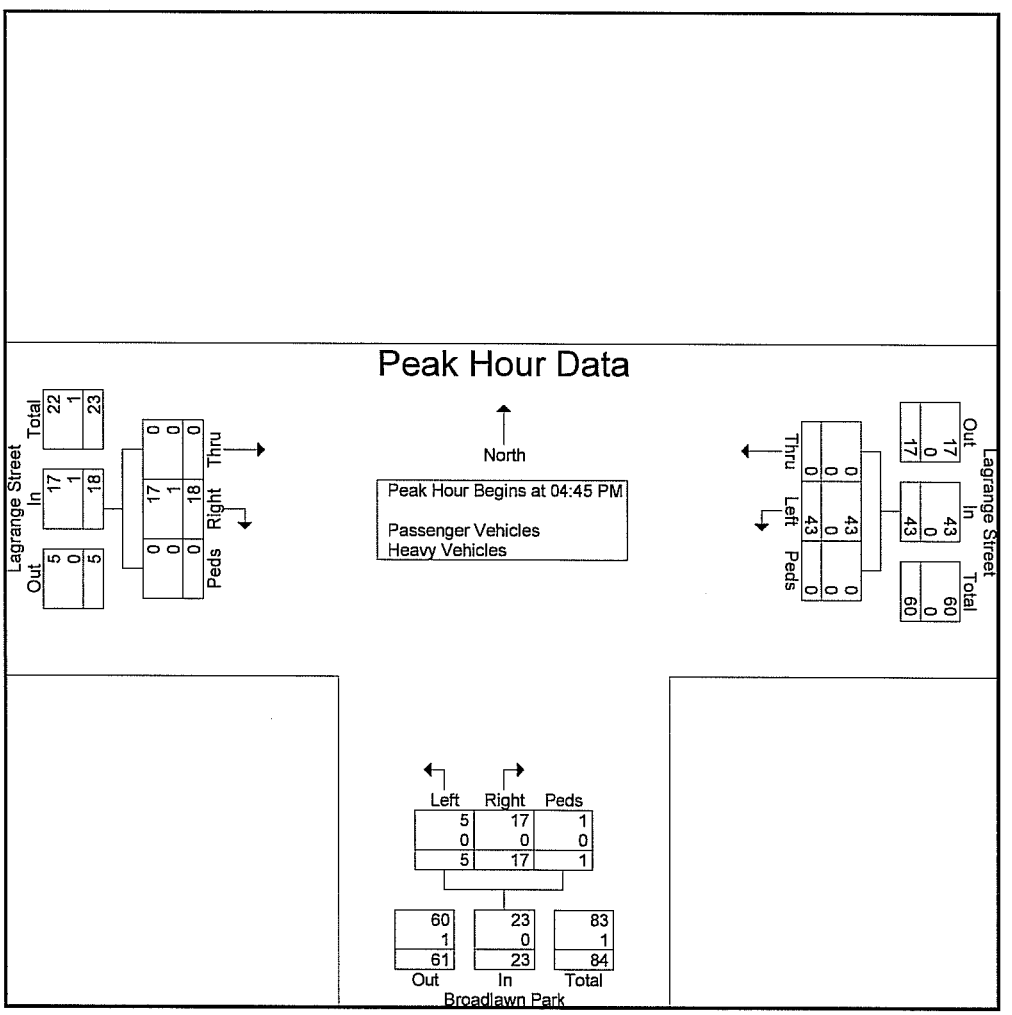
MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

S: Broadlawn Park
E/W: Lagrange Street
Newton, MA

File Name : 765 Broadlawn Park @ Lagrange Street PM
Site Code : 00765002
Start Date : 6/5/2014
Page No : 2

	Lagrange Street From East				Broadlawn Park From South				Lagrange Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	0	10	0	10	5	0	0	5	3	0	0	3	18
05:00 PM	0	8	0	8	4	0	1	5	4	0	0	4	17
05:15 PM	0	12	0	12	**7**	**4**	0	**11**	**6**	0	0	**6**	**29**
05:30 PM	0	**13**	0	**13**	1	1	0	2	5	0	0	5	20
Total Volume	0	43	0	43	17	5	1	23	18	0	0	18	84
% App. Total	0	100	0		73.9	21.7	4.3		100	0	0		
PHF	.000	.827	.000	.827	.607	.313	.250	.523	.750	.000	.000	.750	.724
Passenger Vehicles	0	43	0	43	17	5	1	23	17	0	0	17	83
% Passenger Vehicles	0	100	0	100	100	100	100	100	94.4	0	0	94.4	98.8
Heavy Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
% Heavy Vehicles	0	0	0	0	0	0	0	0	5.6	0	0	5.6	1.2



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28 Lord Road, Suite 280
Marlborough, MA 01752

S: Broadlawn Park
E/W: Lagrange Street
Newton, MA

File Name : 765 Broadlawn Park @ Lagrange Street PM
Site Code : 00765002
Start Date : 6/5/2014
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Lagrange Street From East				Broadlawn Park From South				Lagrange Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:45 PM	0	10	0	10	5	0	0	5	3	0	0	3	18
Total	0	10	0	10	5	0	0	5	3	0	0	3	18
05:00 PM	0	8	0	8	4	0	1	5	4	0	0	4	17
05:15 PM	0	12	0	12	7	4	0	11	6	0	0	6	29
05:30 PM	0	13	0	13	1	1	0	2	5	0	0	5	20
Grand Total	0	43	0	43	17	5	1	23	18	0	0	18	84
Apprch %	0	100	0		73.9	21.7	4.3		100	0	0		
Total %	0	51.2	0	51.2	20.2	6	1.2	27.4	21.4	0	0	21.4	
Passenger Vehicles	0	43	0	43	17	5	1	23	17	0	0	17	83
% Passenger Vehicles	0	100	0	100	100	100	100	100	94.4	0	0	94.4	98.8
Heavy Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
% Heavy Vehicles	0	0	0	0	0	0	0	0	5.6	0	0	5.6	1.2

□ Seasonal Data

SECTION I - CONTINUOUS COUNTING STATION MONTHLY AVERAGE DAILY TRAFFIC

STATION 691 - QUINCY - RTE.I-93 - NORTH OF RTE.28

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	May Adjustment to Year	June Adjustment to Year	
09	173,000	175,000	177,697	194,334	196,834	199,477	196,208	194,125	190,885	186,291	176,509	174,000	186,197	0.95	0.93	
	-2%	0%	4%	-1%	-1%	0%	-1%	-1%	1%	1%	3%	4%	0%			
11	166,541	175,019	190,696	192,155	193,034	197,594	193,303	191,197	193,140	188,694	187,378	187,895	188,054	0.97	0.95	
	-2%	6%	0%	0%	1%	-1%	-1%	3%	-1%	-2%	0%	-3%	0%			
12	164,007	185,226	190,193	192,337	194,846	195,145	191,419	196,457	190,548	185,609	186,469	181,669	187,827	0.96	0.96	
	9%	-1%	-5%	-3%	-1%	0%	0%	1%	0%	2%	-1%	-3%	0%			
13	179,468	182,613	180,861	187,402	193,159	194,612	192,130	197,467	191,411	*190,128*	185,233	176,163	187,554	0.97	0.96	
												Growth	**0.1%**	0.96	0.95	Sub Average

STATION 703 - ABINGTON - RTE.123 - AT THE BROCKTON C.L.

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR			
09	12,251	13,199	13,301	13,860	13,231	13,817	13,354	*13,212*	14,037	13,712	13,161	13,327	13,372	1.01	0.97	
	0%	0%	2%	1%	5%	1%	0%	1%	-1%	0%	2%	-1%	1%			
10	12,196	13,134	13,560	14,051	13,835	13,900	13,353	13,338	13,928	13,733	13,414	*13,225*	13,472	0.97	0.97	
	-5%	-4%	-1%	-4%	-3%	-2%	-3%	-2%	-1%	-2%	0%	1%	-2%			
11	11,629	12,651	13,451	13,518	13,476	13,655	12,907	*13,088*	13,778	13,495	13,434	13,377	13,205	0.98	0.97	
	5%	4%	0%	-1%	0%	-1%	-6%	0%	-2%	1%	0%	-2%	0%			
12	12,181	13,151	13,410	13,379	13,452	13,479	12,127	*13,103*	13,441	13,679	13,452	13,136	13,166	0.98	0.98	
	1%	-6%	-4%	2%	0%	-1%	7%	0%	0%	0%	-2%	0%	0%			
13	12,347	12,336	12,870	13,591	13,426	13,372	12,964	*13,064*	13,462	13,726	13,217	13,081	13,121	0.98	0.98	
												Growth	**-0.5%**	0.98	0.97	Sub Average

STATION 6255 - WEYMOUTH - RTE.3 - NORTH OF RTE.18

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR			
09	120,200	123,983	124,807	134,354	135,239	143,114	143,685	144,937	140,079	137,288	138,708	136,428	135,235	1.00	0.94	
	4%	3%	6%	-1%	0%	-1%	-1%	-2%	-3%	-3%	-1%	-7%	-1%			
10	125,304	127,637	132,301	133,124	135,880	141,633	141,706	142,327	135,767	133,473	137,526	127,100	134,482	0.99	0.95	
	-3%	-1%	-1%	-6%	0%	0%	-1%	0%	-1%	-2%	-3%	-1%	-2%			
12	118,936	125,494	129,712	116,911	136,235	140,277	139,048	142,140	132,674	128,923	129,593	125,409	130,446	0.96	0.93	
	4%	-7%	-4%	13%	0%	-1%	1%	0%	1%	4%	-1%	-1%	1%			
13	123,783	116,501	124,813	131,533	136,712	138,977	140,057	141,851	133,978	134,144	128,712	124,607	131,306	0.96	0.94	
												Growth	**-0.5%**	0.98	0.94	Sub Average

Average Adjusment Factors **0.97** **0.96**

Average Yearly Growth Calculated -0.29%

Yearly Growth Factor Used **1.0%**

ITALICS = ESTIMATED DATA

MADT

□ Historical Traffic Volume Comparison

PRECISION
DATA
INDUSTRIES, LLC
P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Toll Free 888.734.7344
Fax: 508.481.0716 Email: info@pdillc.com

LaGrange Street between
Broadlawn Park and Brookline Line
City, State: Newton, MA
Client: Conley Associates/L. Grant

40054Avolume
Site Code:

Start	NB				SB				Combined				16-Nov-04
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Tue
12:00	4		89		18		90		22		179		
12:15	2		66		16		62		18		128		
12:30	2		75		6		84		8		159		
12:45	2	10	79	309	9	49	82	318	11	59	161	627	
01:00	4		65		5		81		9		146		
01:15	2		78		4		77		6		155		
01:30	0		81		5		78		5		159		
01:45	2	8	85	309	4	18	110	346	6	26	195	655	
02:00	2		106		4		95		6		201		
02:15	2		93		7		108		9		201		
02:30	0		107		7		104		7		211		
02:45	0	4	89	395	1	19	161	468	1	23	250	863	
03:00	1		90		4		158		5		248		
03:15	0		74		2		150		2		224		
03:30	5		87		0		161		5		248		
03:45	2	8	115	366	2	8	166	635	4	16	281	1001	
04:00	3		86		1		195		4		281		
04:15	2		71		2		203		4		274		
04:30	12		86		4		177		16		263		
04:45	6	23	84	327	1	8	170	745	7	31	254	1072	
05:00	13		66		3		193		16		259		
05:15	8		95		3		201		11		296		
05:30	30		101		4		197		34		298		
05:45	42	93	114	376	4	14	153	744	46	107	267	1120	
06:00	49		88		5		164		54		252		
06:15	86		95		10		180		96		275		
06:30	110		77		27		126		137		203		
06:45	165	410	72	332	38	80	123	593	203	490	195	925	
07:00	166		61		35		102		201		163		
07:15	178		56		65		116		243		172		
07:30	159		58		88		98		247		156		
07:45	156	659	45	220	85	273	100	416	241	932	145	636	
08:00	149		39		96		66		245		105		
08:15	156		36		95		77		251		113		
08:30	163		32		77		65		240		97		
08:45	160	628	41	148	74	342	78	286	234	970	119	434	
09:00	122		25		65		94		187		119		
09:15	118		30		56		66		174		96		
09:30	132		28		53		74		185		102		
09:45	87	459	23	106	57	231	68	302	144	690	91	408	
10:00	87		24		64		55		151		79		
10:15	86		15		72		55		158		70		
10:30	104		16		56		44		160		60		
10:45	80	357	18	73	69	261	25	179	149	618	43	252	
11:00	78		8		64		34		142		42		
11:15	82		14		74		26		156		40		
11:30	89		9		61		23		150		32		
11:45	96	345	7	38	78	277	23	106	174	622	30	144	
Total	3004		2999		1580		5138		4584		8137		
Percent	65.5%		36.9%		34.5%		63.1%						
Day Total		6003				6718				12721			
Peak	06:45		05:15		07:30		04:45		07:30		05:00		
Vol.	668		398		364		761		984		1120		
P.H.F.	0.938		0.865		0.948		0.937		0.980		0.940		

SOURCE: "TRAFFIC IMPACT ASSESSMENT, PROPOSED RESIDENTIAL DEVELOPMENT, NEWTON, MASSACHUSETTS," prepared by Conley Associates, dated November 2004

1123.02 - Newton Residential
E/W: Lagrange Street
N/S: Vine Street/Corey Street
Newton, MA

11/16/2004

Weekday AM Peak Hour (7:00 - 9:00 AM)

Time	Lagrange Street EB			Lagrange Street WB			Vine Street SB			Corey Street NB			Total	Hourly Total
	L	T	R	L	T	R	L	T	R	L	T	R		
7:00 - 7:15	14	134	0	9	43	9	1	2	1	0	17	21	251	
7:15 - 7:30	15	113	0	7	67	15	3	5	4	0	31	22	282	
7:30 - 7:45	32	113	1	13	87	11	3	13	4	0	33	12	322	
7:45 - 8:00	27	103	0	10	81	20	5	12	1	0	35	15	309	1164
8:00 - 8:15	25	117	0	13	94	12	2	16	5	0	24	15	323	1236
8:15 - 8:30	17	114	1	18	85	12	3	6	8	0	21	14	299	1253
8:30 - 8:45	17	130	0	13	72	18	3	9	9	2	11	10	294	1225
8:45 - 9:00	15	116	0	6	71	10	0	11	2	0	16	14	261	1177
Totals	162	940	2	89	600	107	20	74	34	2	188	123	2341	
AM PEAK HOUR														
7:30 - 8:30 AM	101	447	2	54	347	66	13	47	18	0	118	56	1269	1253

Weekday PM Peak Hour (4:00 - 6:00 PM)

Time	Lagrange Street EB			Lagrange Street WB			Vine Street SB			Corey Street NB			Total	Hourly Total
	L	T	R	L	T	R	L	T	R	L	T	R		
4:00 - 4:15	3	76	0	18	169	0	8	20	4	0	9	13	320	
4:15 - 4:30	5	59	1	24	164	1	4	18	8	1	7	9	301	
4:30 - 4:45	6	77	2	15	153	2	4	18	9	1	18	14	319	
4:45 - 5:00	2	60	1	23	130	6	7	18	8	0	10	9	274	1214
5:00 - 5:15	5	65	0	19	162	3	8	28	6	0	15	10	321	1215
5:15 - 5:30	2	72	0	20	154	7	9	19	12	0	12	11	318	1232
5:30 - 5:45	4	86	0	23	136	4	10	24	9	1	7	15	319	1232
5:45 - 6:00	0	94	0	14	121	8	10	35	5	0	12	16	315	1273
Totals	27	589	4	156	1189	31	60	180	61	3	90	97	2487	
PM PEAK HOUR														
5:00 - 6:00 PM	11	317	0	76	573	22	37	106	32	1	46	52	1273	1273

SOURCE: "TRAFFIC IMPACT ASSESSMENT, PROPOSED RESIDENTIAL DEVELOPMENT, NEWTON, MASSACHUSETTS." prepared by Conley Associates. dated NOVEMBER 2004

CONLEY
ASSOCIATES

PRECISION DATA INDUSTRIES, LLC
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Office: 508.481.3999 Fax: 508.545.1234
E mail: data req uests@pdillc.com

Lagrange Street
south of Rangeley Road
City, State : Newton, MA
Client : CAI/ L. Grant

60685Avolume
Site Code: TBA

Start	NB				SB				Combined				23-May-06
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Tue
12:00	4		63		15		87		19		150		
12:15	4		83		16		84		20		167		
12:30	1		86		14		78		15		164		
12:45	3	12	58	290	10	55	62	311	13	67	120	601	
01:00	2		72		5		99		7		171		
01:15	0		67		4		77		4		144		
01:30	1		76		7		86		8		162		
01:45	1	4	64	279	3	19	88	350	4	23	152	629	
02:00	1		105		2		102		3		207		
02:15	1		114		5		88		6		202		
02:30	0		82		1		139		1		221		
02:45	0	2	76	377	3	11	130	459	3	13	206	836	
03:00	0		68		1		148		1		216		
03:15	1		88		3		143		4		231		
03:30	1		80		1		173		2		253		
03:45	5	7	93	329	3	8	153	617	8	15	246	946	
04:00	4		75		1		154		5		229		
04:15	3		68		0		184		3		252		
04:30	3		78		1		169		4		247		
04:45	1	11	98	319	2	4	179	686	3	15	277	1005	
05:00	11		98		1		180		12		278		
05:15	26		85		6		211		32		296		
05:30	21		90		5		194		26		284		
05:45	29	87	93	366	4	16	162	747	33	103	255	1113	
06:00	51		95		5		145		56		240		
06:15	82		105		20		158		102		263		
06:30	123		73		15		161		138		234		
06:45	125	381	86	359	33	73	112	576	158	454	198	935	
07:00	130		67		30		104		160		171		
07:15	141		74		49		93		190		167		
07:30	145		49		63		91		208		140		
07:45	143	559	51	241	95	237	106	394	238	796	157	635	
08:00	142		45		84		92		226		137		
08:15	131		51		88		85		219		136		
08:30	138		49		61		84		199		133		
08:45	127	538	29	174	62	295	77	338	189	833	106	512	
09:00	142		41		68		75		210		116		
09:15	135		33		54		51		189		84		
09:30	110		33		58		47		168		80		
09:45	117	504	25	132	59	239	56	229	176	743	81	361	
10:00	72		20		64		51		136		71		
10:15	74		17		62		47		136		64		
10:30	73		23		58		45		131		68		
10:45	73	292	30	90	57	241	41	184	130	533	71	274	
11:00	86		13		79		51		165		64		
11:15	64		14		67		36		131		50		
11:30	78		18		52		32		130		50		
11:45	67	295	9	54	73	271	20	139	140	566	29	193	
Total	2692		3010		1469		5030		4161		8040		
Percent	64.7%		37.4%		35.3%		62.6%						
Day Total		5702				6499				12201			
Peak	07:15		05:30		07:30		04:45		07:30		04:45		
Vol.	571		383		330		764		891		1135		
P.H.F.	0.984		0.840		0.868		0.905		0.936		0.959		

SOURCE: "KESSELER WOODS OUTSTANDING ISSUES," prepared by Conley Associates, dated June 2, 2006.

1376 Kesseler Woods
Newton, MA

E/W: Lagrange St
N/S: Corey St/Vine St

June 19, 2008

VEHICLES	Vine Street			Lagrange Street			Corey Street			Lagrange Street				
Time	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Total	Hourly Total
7:00 - 7:15													0	
7:15 - 7:30	1	5	4	6	54	8	0	16	13	14	92	0	213	
7:30 - 7:45	4	12	3	8	50	12	0	11	15	8	88	1	212	
7:45 - 8:00	4	4	8	11	46	7	0	25	14	24	95	1	239	664
8:00 - 8:15	1	4	7	8	40	20	0	31	12	18	66	2	209	873
8:15 - 8:30	3	7	9	6	49	9	1	16	11	12	93	2	218	878
8:30 - 8:45	5	11	4	8	54	13	2	19	14	11	111	0	252	918
8:45 - 9:00	2	10	5	9	59	10	0	18	13	10	91	0	227	906
Totals	20	53	40	56	352	79	3	136	92	97	636	6	1570	
PEAK HOUR														
7:45 - 8:45	**13**	**26**	**28**	**33**	**189**	**49**	**3**	**91**	**51**	**65**	**365**	**5**	**918**	**918**

June 18, 2008

VEHICLES	Vine Street			Lagrange Street			Corey Street			Lagrange Street				
Time	SBL	SBT	SBR	WBL	WBT	WBR	NBL	NBT	NBR	EBL	EBT	EBR	Total	Hourly Total
4:00 - 4:15	5	12	6	12	128	5	0	10	16	3	49	0	246	
4:15 - 4:30	2	14	6	14	114	2	0	12	16	5	58	1	244	
4:30 - 4:45	4	31	9	23	120	3	0	13	9	5	61	1	279	
4:45 - 5:00	5	22	8	27	128	1	0	10	20	6	52	2	281	1050
5:00 - 5:15	8	26	9	22	137	2	0	15	14	4	59	2	298	1102
5:15 - 5:30	5	31	6	31	143	2	0	13	13	6	66	2	318	1176
5:30 - 5:45	10	40	8	18	129	6	0	10	22	6	61	1	311	1208
5:45 - 6:00	16	29	7	22	116	3	0	21	19	5	69	1	308	1235
Totals	55	205	59	169	1015	24	0	104	129	40	475	10	2285	
PEAK HOUR														
5:00 - 6:00	**39**	**126**	**30**	**93**	**525**	**13**	**0**	**59**	**68**	**21**	**255**	**6**	**1235**	**1235**

SOURCE: "KESSELER WOODS CONDOMINIUM UPDATE," prepared by Conley Associates, dated June 23, 2008.

CONLEY ASSOCIATES

SECTION I - CONTINUOUS COUNTING STATION MONTHLY AVERAGE DAILY TRAFFIC

STATION 691 - QUINCY - RTE.I-93 - NORTH OF RTE.28

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	May Adjustment to Year	June Adjustment to Year	November Adjustment to Year	
09	173,000	175,000	177,697	194,334	196,834	199,477	196,208	194,125	190,885	186,291	176,509	174,000	186,197	0.95	0.93	1.05	
	-2%	0%	4%	-1%	-1%	0%	-1%	-1%	1%	1%	3%	4%	0%				
11	166,541	175,019	190,696	192,155	193,034	197,594	193,303	191,197	193,140	188,694	187,378	187,895	188,054	0.97	0.95	1.00	
	-2%	6%	0%	0%	1%	-1%	-1%	3%	-1%	-2%	0%	-3%	0%				
12	164,007	185,226	190,193	192,337	194,846	195,145	191,419	196,457	190,548	185,609	186,469	181,669	187,827	0.96	0.96	1.01	
	9%	-1%	-5%	-3%	-1%	0%	0%	1%	0%	2%	-1%	-3%	0%				
13	179,468	182,613	180,861	187,402	193,159	194,612	192,130	197,467	191,411	*190,128*	185,233	176,163	187,554	0.97	0.96	1.01	
												Growth	0.1%	0.96	0.95	1.02	Sub Average

STATION 703 - ABINGTON - RTE.123 - AT THE BROCKTON C.L.

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR				
05	11,765	13,137	13,345	13,910	13,694	14,536	13,543	13,701	13,854	13,505	13,683	*13,585*	13,522	0.99	0.93	0.99	
	7%	-1%	3%	-1%	1%	-2%	-5%	-3%	-1%	2%	0%	1%	0%				
06	12,635	13,053	13,787	13,800	13,829	14,197	12,875	13,252	13,744	13,804	13,637	*13,677*	13,524	0.98	0.95	0.99	
	1%	1%	-2%	-1%	0%	-3%	3%	2%	-1%	-1%	-3%	-7%	-1%				
07	12,725	13,219	13,457	13,626	13,808	13,831	13,234	*13,490*	13,544	13,620	13,289	12,763	13,384	0.97	0.97	1.01	
	-2%	-2%	-2%	0%	-3%	-3%	-2%	-5%	1%	1%	-2%	2%	-1%				
08	12,431	12,909	13,144	13,662	13,430	13,479	13,027	*12,806*	13,646	13,740	13,012	13,034	13,193	0.98	0.98	1.01	
	-1%	2%	1%	1%	-1%	3%	3%	3%	3%	0%	1%	2%	1%				
09	12,251	13,199	13,301	13,860	13,231	13,817	13,354	*13,212*	14,037	13,712	13,161	13,327	13,372	1.01	0.97	1.02	
	0%	0%	2%	1%	5%	1%	0%	1%	-1%	0%	2%	-1%	1%				
10	12,196	13,134	13,560	14,051	13,835	13,900	13,353	13,338	13,928	13,733	13,414	*13,225*	13,472	0.97	0.97	1.00	
	-5%	-4%	-1%	-4%	-3%	-2%	-3%	-2%	-1%	-2%	0%	1%	-2%				
11	11,629	12,651	13,451	13,518	13,476	13,655	12,907	*13,088*	13,778	13,495	13,434	13,377	13,205	0.98	0.97	0.98	
	5%	4%	0%	-1%	0%	-1%	-6%	0%	-2%	1%	0%	-2%	0%				
12	12,181	13,151	13,410	13,379	13,452	13,479	12,127	*13,103*	13,441	13,679	13,452	13,136	13,166	0.98	0.98	0.98	
	1%	-6%	-4%	2%	0%	-1%	7%	0%	0%	0%	-2%	0%	0%				
13	12,347	12,336	12,870	13,591	13,426	13,372	12,964	*13,064*	13,462	13,726	13,217	13,081	13,121	0.98	0.98	0.99	
												Growth	-0.4%	0.98	0.97	1.00	Sub Average

STATION 6255 - WEYMOUTH - RTE.3 - NORTH OF RTE.18

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR				
05	118,000	121,374	124,011	136,739	138,980	149,033	144,695	147,221	137,210	133,034	134,233	131,016	134,629	0.97	0.90	1.00	
	8%	7%	9%	-1%	-1%	-5%	-2%	-1%	0%	2%	-2%	2%	1%				
06	127,860	130,038	134,769	134,790	137,305	142,198	141,532	145,144	137,785	135,232	131,943	133,004	135,967	0.99	0.96	1.03	
	-7%	-3%	-3%	-1%	-1%	-2%	-1%	-2%	-3%	-1%	-2%	-5%	-3%				
08	108,948	123,432	127,432	131,442	134,698	137,617	138,002	139,131	130,855	132,275	125,709	119,851	129,116	0.96	0.94	1.03	
	10%	0%	-2%	2%	0%	4%	4%	4%	7%	4%	10%	14%	5%				
09	120,200	123,983	124,807	134,354	135,239	143,114	143,685	144,937	140,079	137,288	138,708	136,428	135,235	1.00	0.94	0.97	
	4%	3%	6%	-1%	0%	-1%	-1%	-2%	-3%	-3%	-1%	-7%	-1%				
10	125,304	127,637	132,301	133,124	135,880	141,633	141,706	142,327	135,767	133,473	137,526	127,100	134,482	0.99	0.95	0.98	
	-3%	-1%	-1%	-6%	0%	0%	-1%	0%	-1%	-2%	-3%	-1%	-2%				
12	118,936	125,494	129,712	116,911	136,235	140,277	139,048	142,140	132,674	128,923	129,593	125,409	130,446	0.96	0.93	1.01	
	4%	-7%	-4%	13%	0%	-1%	1%	0%	1%	4%	-1%	-1%	1%				
13	123,783	116,501	124,813	131,533	136,712	138,977	140,057	141,851	133,978	134,144	128,712	124,607	131,306	0.96	0.94	1.02	
												Growth	0.3%	0.98	0.94	1.01	Sub Average

Average Adjusment Factors 0.97 0.95 1.01

ITALICS = ESTIMATED DATA

MADT

765 - Newton (Kesseler Woods)

HISTORICAL TRAFFIC VOLUME COMPARISON

Lagrange/Vine/Corey Intersection

Time Period	Intersection Volume			Total Difference			Growth Rate (%/year)		
	2004*	2008	2014	2004 vs 2008	2004 vs 2014	2008 vs 2014	2004 vs 2008	2004 vs 2014	2008 vs 2014
AM Peak Hour	1,253	872	1,300	-381	47	428	-7.6%	0.4%	8.2%
PM Peak Hour	1,273	1,173	1,386	-100	113	213	-2.0%	0.9%	3.0%

Data Collection Dates:
Tuesday, November 16, 2004
Wednesday June 18, 2008 & Thursday, June 19, 2008
Tuesday, May 6, 2014

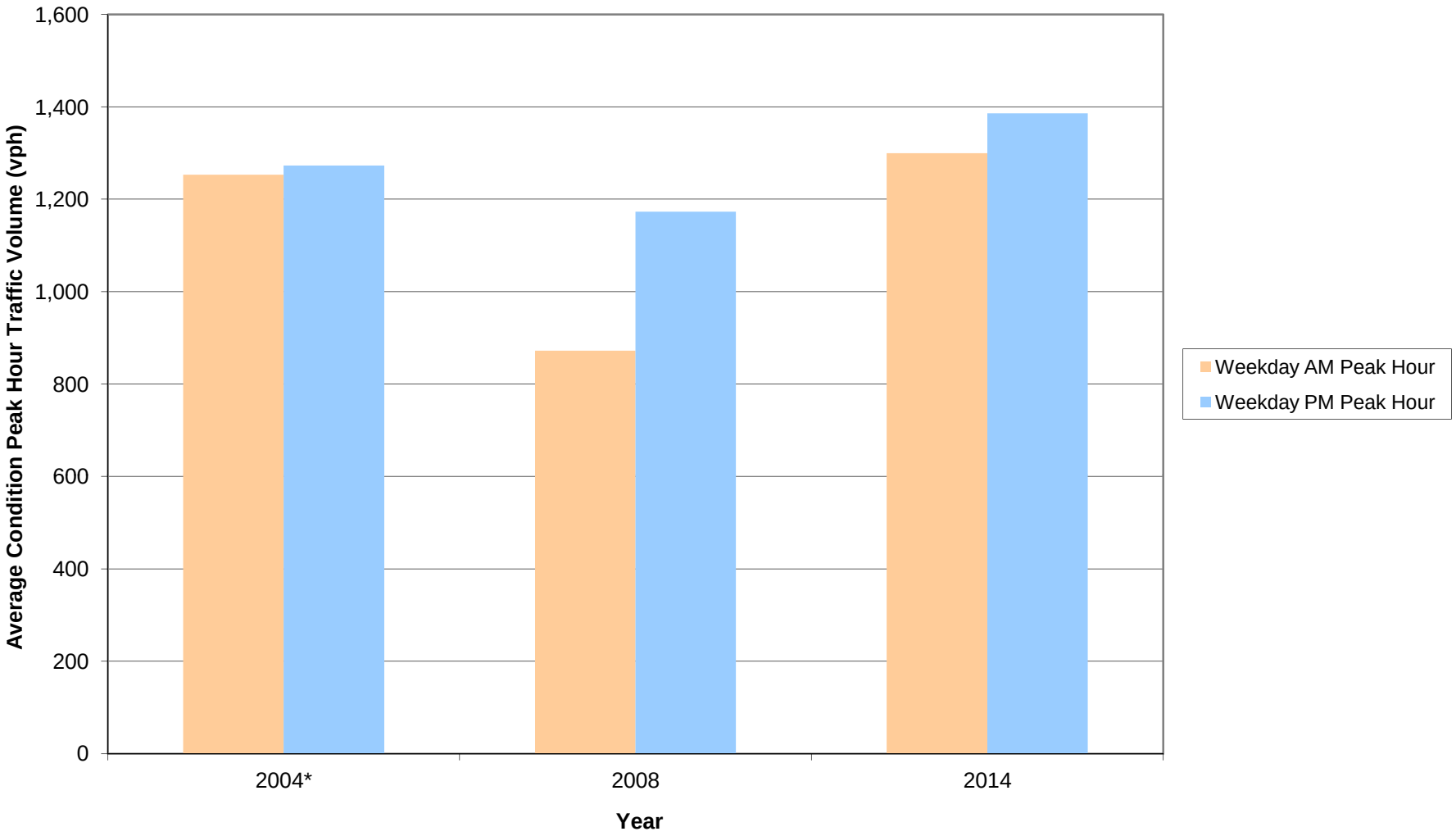
2004 Adjustment to Average Season = 1.00
2008 Adjustment to Average Season = 0.95
2014 Adjustment to Average Season = 0.97

*No adjustment is made to the 2004 Existing Condition Traffic Volume Networks which were previously adjusted by 1.2% to represent average conditions

2004 Data Source: *Kesseler Woods-Phase II, Proposed 62-Unit Condominium Development, Newton, Massachusetts,* prepared by Conley Associates, dated November 30, 2004.

2008 Data Source: *Kesseler Woods Condominium Updated,* prepared by Conley Associates, dated June 23, 2008.

Historical Traffic Volume Comparison
(Lagrange Street at Corey Street/ Vine Street)



765 - Newton (Kesseler Woods)

HISTORICAL TRAFFIC VOLUME COMPARISON

Lagrange Street at Brookline Town Line

Data Collection Dates:
Tuesday, November 4, 2014
Tuesday, May 23, 2006
Thursday, May 8, 2014

Daily Traffic Volume			Total Difference			Growth Rate (%/year)		
2004	2006	2014	2004 vs 2006	2004 vs 2014	2006 vs 2014	2004 vs 2006	2004 vs 2014	2006 vs 2014
12,848	11,835	12,508	-1,013	-340	673	-3.9%	-0.3%	0.7%

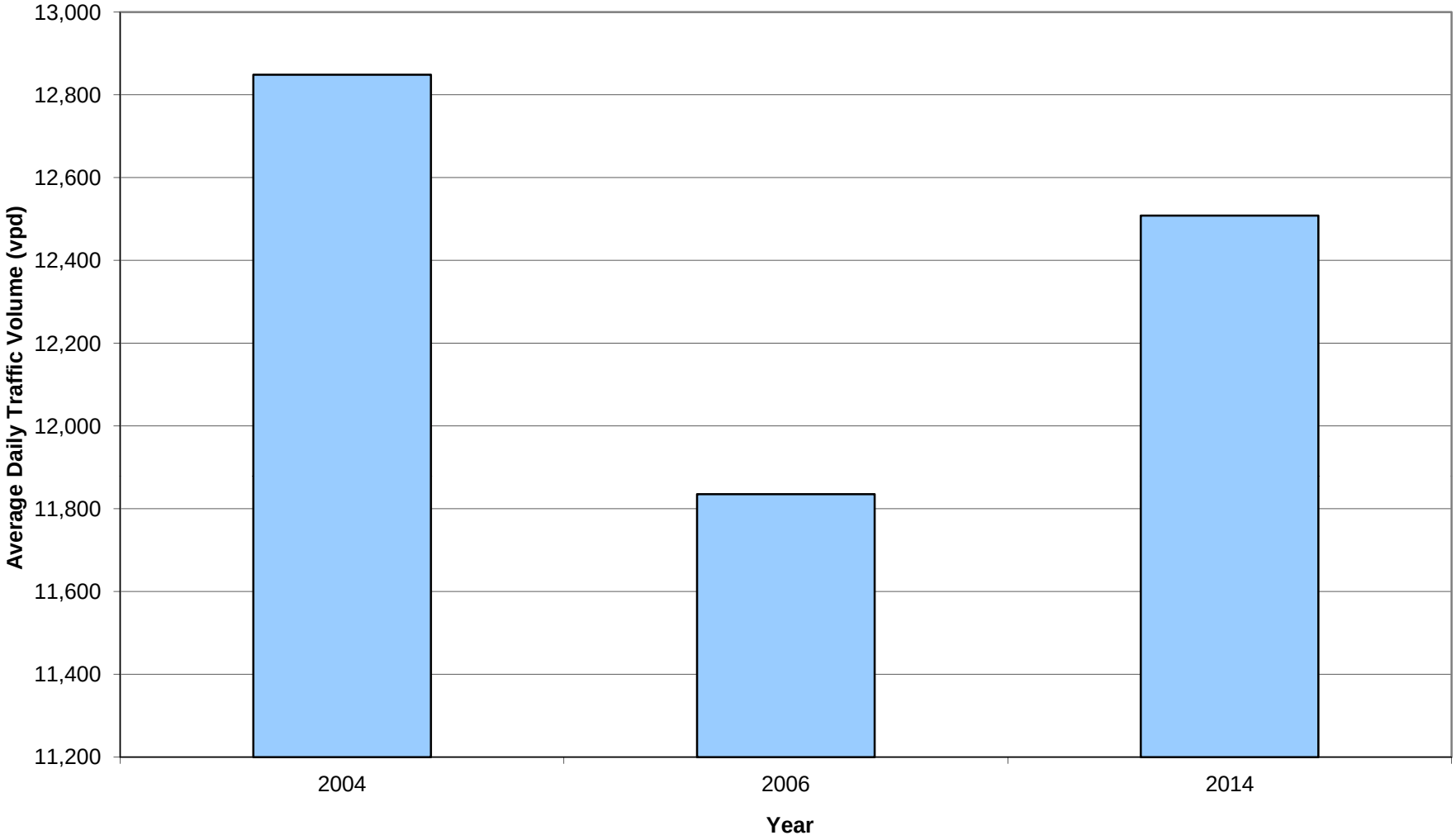
2004 Adjustment to Average Season = 1.01
2006 Adjustment to Average Season = 0.97
2014 Adjustment to Average Season = 0.97

*No adjustment is made to the 2004 Existing Condition Traffic Volume Networks which were previously adjusted by 1.2% to represent average conditions

2004 Data Source: *Kesseler Woods-Phase II, Proposed 62-Unit Condominium Development, Newton, Massachusetts,* prepared by Conley Associates, dated November 30, 2004.

2006 Data Source: *Kesseler Woods Outstanding Issues,* prepared by Conley Associates, dated June 2, 2006

Historical Traffic Volume Comparison
(Lagrange Street at Brookline Town Line)



□ Crash Data

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Brookline, MA COUNT DATE : May-14

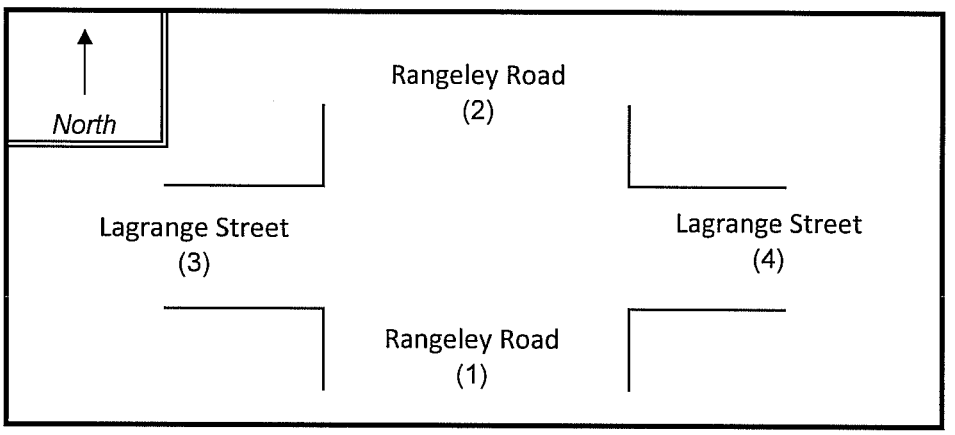
DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Lagrange Street

MINOR STREET(S) : Rangeley Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	3	5	380	755		1,143

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,700**

TOTAL # OF CRASHES : 1

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.07**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Source: MassDOT Crash Data; District 6 Avgs: Signalized = 0.76, Unsignalized = 0.58

Project Title & Date: 765 - Newton (Kesseler Woods)

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Newton, MA COUNT DATE : May-14

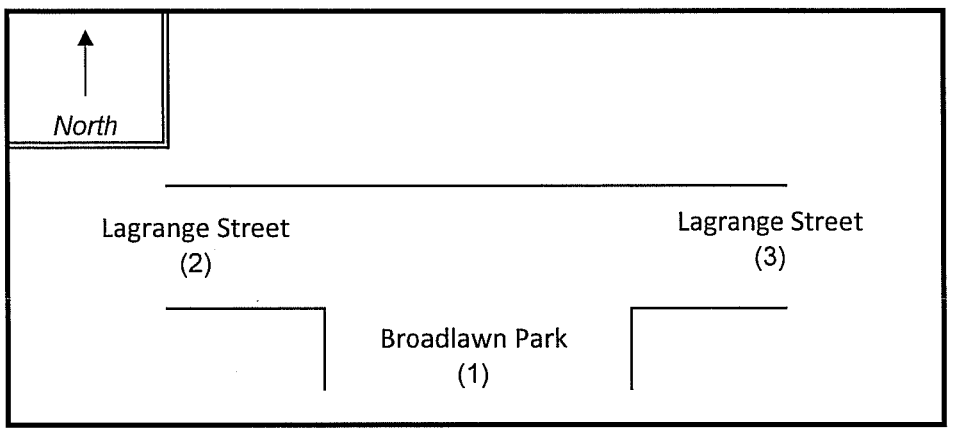
DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Lagrange Street

MINOR STREET(S) : Broadlawn Park

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	22	381	755			1,158

" K " FACTOR : 0.090

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : 12,867

TOTAL # OF CRASHES : 2

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : 0.67

CRASH RATE CALCULATION : 0.14

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Source: MassDOT Crash Data; District 6 Avgs: Signalized = 0.76, Unsignalized = 0.58

Project Title & Date: 765 - Newton (Kesseler Woods)

Source: Ne

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Newton, MA COUNT DATE : May-14

DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

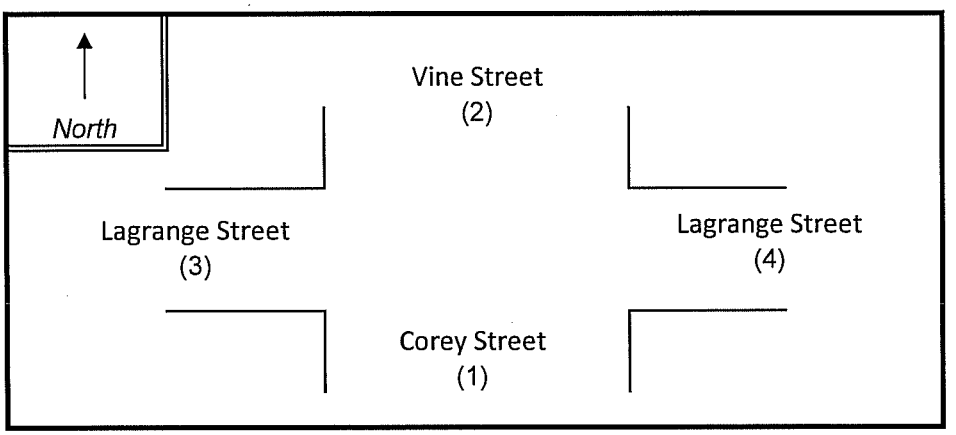
~ INTERSECTION DATA ~

MAJOR STREET : Lagrange Street

MINOR STREET(S) : Corey Street

Vine Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	109	259	364	697		1,429

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **15,878**

TOTAL # OF CRASHES : 3

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.00**

CRASH RATE CALCULATION : **0.17**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Source: Newton PD Crash Data; District 6 Avgs: Signalized = 0.76, Unsignalized = 0.58

Project Title & Date: 765 - Newton (Kesseler Woods)

Moving Massachusetts Forward. massDOT Highway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Newton, MA COUNT DATE : May-14

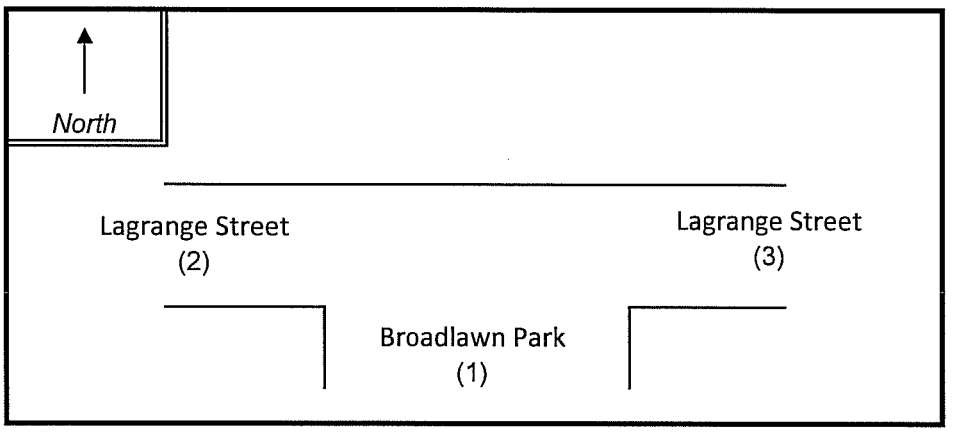
DISTRICT : 6 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Lagrange Street

MINOR STREET(S) : Broadlawn Park

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	EB	WB			
PEAK HOURLY VOLUMES (AM/PM) :	22	381	755			1,158

" K " FACTOR : **0.090**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,867**

TOTAL # OF CRASHES : 2

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.14**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : Source: Newton PD Crash Data; District 6 Avgs: Signalized = 0.76, Unsignalized = 0.58

Project Title & Date: 765 - Newton (Kesseler Woods)

massDOT

MassDOT Crash Report for NEWTON for the year 2009

Crash Number	City/Town Name	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Total Nonfatal Injuries	Total Fatal Injuries	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Direction	Most Harmful Event	Vehicle Configuration	Road Surface Condition	Ambient Light	Weather Condition	At Roadway Intersection	Distance from Nearest Roadway Intersection	Distance from Nearest Milemarker	Distance from Nearest Exit	Distance from Nearest Landmark	Non Motorist Type
7421404	NEWTON	19-Jan-2009	5:35 PM	Not Reported	1	0	0	Angle	V1: Parked	V1:Unknown	V1: Collision with unknown movable object	V1: Passenger car	Wet	Daylight	Clear/Snow		5 BROADLAWN PARK				

massDOT | MassDOT Crash Report for NEWTON for the year 2010

Crash Number	City/Town Name	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Total Nonfatal Injuries	Total Fatal Injuries	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Most Harmful Events	Vehicle Configuration	Road Surface Condition	Ambient Light	Weather Condition	At Roadway Intersection	Distance from Nearest Roadway Intersection	Distance from Nearest Milemarker	Distance from Nearest Exit	Distance from Nearest Landmark	Non Motorist Type

No crashes reported at the study intersections.

massDOT | MassDOT Crash Report for NEWTON for the year 2011

Crash Number	City/Town Name	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Total Nonfatal Injuries	Total Fatal Injuries	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Direction	Most Harmful Event	Vehicle Configuration	Road Surface Condition	Ambient Light	Weather Condition	At Roadway Intersection	Distance from Nearest Roadway Intersection	Distance from Nearest Mile marker	Distance from Nearest Exit	Distance from Nearest Landmark	Non Motorist Type
2733487	NEWTON	14-Jun-2011	4:57 AM	Non-fatal injury	1	2	0	Single vehicle crash	V1: Turning left	V1 Eastbound	V1: Collision with tree	V1: Passenger car	Dry	Dawn	Clear/Unknown	BROADLAWN PARK / LAGRANGE STREET					

massDOT **MassDOT Crash Report for BROOKLINE for the year 2009**

Crash Number	City/Town Name	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Total Non-fatal Injuries	Total Fatal Injuries	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Most Harmful Events	Vehicle Configuration	Road Surface Condition	Ambient Light	Weather Condition	At Roadway Intersection	Distance from Nearest Roadway Intersection	Distance from Nearest Mile Marker	Distance from Nearest Exit	Distance from Nearest Landmark	Non Motorist Type
2549883	BROOKLINE	09-Dec-2009	8:05 AM	Non-fatal Injury	1	1	0	Single vehicle crash	V1: Travelling straight ahead	V1: Southbound	V1: Collision with utility pole	V1: Passenger car	Snow	Daylight	Cloudy/Snow	LAGRANGE STREET / RANGELEY ROAD					

massDOT **MassDOT Crash Report for BROOKLINE for the year 2010**

Crash Number	City/Town Name	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Total Nonfatal Injuries	Total Fatal Injuries	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Most Harmful Events	Vehicle Configuration	Road Surface Condition	Ambient Light	Weather Condition	At Roadway Intersection	Distance from Nearest Roadway Intersection	Distance from Nearest Milemarker	Distance from Nearest Exit	Distance from Nearest Landmark	Non Motorist Type

No crashes reported at the study intersections.

massDOT

MassDOT Crash Report for BROOKLINE for the year 2011

Crash Number	City/Town Name	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Total Nonfatal Injuries	Total Fatal Injuries	Manner of Collision	Vehicle Action Prior to Crash	Vehicle Travel Directions	Most Harmful Events	Vehicle Configuration	Road Surface Condition	Ambient Light	Weather Condition	At Roadway Intersection	Distance from Nearest Roadway Intersection	Distance from Nearest Milemarker	Distance from Nearest Exit	Distance from Nearest Landmark	Non Motorist Type

No crashes reported at the study intersections.

□ Speed Data

MDM Transportation Consultants, Inc.
28 Lord Road, Suite 280
Marlborough, MA 01752
508-303-0370
www.mdmtrans.com

E/W: Lagrange Street
Between Rangeley Road and Broadlawn Park
Newton/Brookline, MA

Site Code: 76500001
Station ID:

765 Lagrange Street (Speed)

Eastbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent
05/07/14	0	0	0	1	9	4	1	0	0	0	0	0	0	0	15	38
01:00	0	0	0	1	3	1	0	0	0	0	0	0	0	0	5	36
02:00	0	0	1	0	1	3	0	0	0	0	0	0	0	0	5	38
03:00	0	0	0	2	2	5	1	0	0	0	0	0	0	0	10	39
04:00	0	0	0	2	5	12	4	2	0	0	0	0	0	0	25	42
05:00	0	0	1	4	55	51	19	0	0	0	0	0	0	0	130	40
06:00	1	6	5	42	247	140	11	3	0	0	0	0	0	0	455	38
07:00	48	32	73	125	251	97	2	0	0	0	0	0	0	0	628	35
08:00	0	18	41	131	246	66	6	0	0	0	0	0	0	0	508	35
09:00	0	7	13	64	253	113	4	0	0	0	0	0	0	0	454	37
10:00	2	4	8	63	187	57	7	0	0	0	0	0	0	0	328	36
11:00	5	3	12	61	159	59	4	0	0	0	0	0	0	0	303	36
12 PM	2	0	12	66	158	72	5	0	0	0	0	0	0	0	315	37
13:00	2	3	5	51	156	55	10	0	0	0	0	0	0	0	282	37
14:00	1	3	11	71	191	75	2	0	0	0	0	0	0	0	354	36
15:00	0	6	15	68	157	67	4	1	0	0	0	0	0	0	318	36
16:00	4	9	9	64	179	65	7	0	0	0	0	0	0	0	337	36
17:00	2	2	13	70	233	64	6	0	0	0	0	0	0	0	390	36
18:00	1	3	9	63	187	58	1	0	0	0	0	0	0	0	322	36
19:00	0	6	11	37	99	64	3	0	0	0	0	0	0	0	220	37
20:00	0	2	9	34	111	33	3	1	0	0	0	0	0	0	193	36
21:00	1	1	5	13	49	22	3	0	0	0	0	0	0	0	94	37
22:00	0	0	0	12	49	26	6	0	0	0	0	0	0	0	93	38
23:00	0	0	2	3	14	9	1	0	0	0	0	0	0	0	29	38
Total	69	105	255	1048	3001	1218	110	7	0	0	0	0	0	0	5813	

Percentiles

15th Percentile :	26 MPH
50th Percentile :	32 MPH
85th Percentile :	36 MPH
95th Percentile :	39 MPH

Statistics

Mean Speed(Average) :	32 MPH
10 MPH Pace Speed :	29-38 MPH
Number in Pace :	4075
Percent in Pace :	70.1%
Number of Vehicles > 30 MPH :	4336
Percent of Vehicles > 30 MPH :	74.6%

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Site Code: 76500001
Station ID:

765 Lagrange Street (Speed)

Eastbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent
05/08/14	0	0	1	4	5	11	0	0	0	0	0	0	0	0	21	38
01:00	0	0	1	1	2	2	0	0	0	0	0	0	0	0	6	37
02:00	0	0	0	1	7	2	0	0	0	0	0	0	0	0	10	36
03:00	0	0	1	2	4	5	1	0	0	0	0	0	0	0	13	39
04:00	0	0	0	2	7	7	3	1	0	0	0	0	0	0	20	41
05:00	0	3	0	5	49	49	17	0	1	0	0	0	0	0	124	40
06:00	0	2	5	47	224	165	13	1	0	0	0	0	0	0	457	38
07:00	9	27	51	142	323	93	6	0	0	0	0	0	0	0	651	35
08:00	3	21	42	162	215	54	3	0	0	0	0	0	0	0	500	34
09:00	0	4	13	93	257	91	6	0	1	0	0	0	0	0	465	36
10:00	3	4	15	53	159	66	6	0	0	0	0	0	0	0	306	36
11:00	4	4	12	77	181	54	3	0	0	0	0	0	0	0	335	36
12 PM	2	6	15	67	180	46	4	1	0	0	0	0	0	0	321	35
13:00	2	7	11	68	155	54	2	0	0	0	0	0	0	0	299	36
14:00	0	2	14	67	194	69	7	0	0	0	0	0	0	0	353	36
15:00	4	3	12	58	188	68	3	2	0	0	0	0	0	0	338	36
16:00	0	7	11	79	164	59	5	0	0	0	0	0	0	0	325	36
17:00	4	6	14	65	215	74	5	0	0	0	0	0	0	0	383	36
18:00	3	5	12	62	188	82	6	0	0	0	0	0	0	0	358	37
19:00	0	2	7	47	132	44	7	0	0	0	0	0	0	0	239	36
20:00	2	0	6	37	106	34	3	0	0	0	0	0	0	0	188	36
21:00	1	3	2	24	66	22	3	1	0	0	0	0	0	0	122	36
22:00	1	2	4	12	50	23	4	0	0	0	0	0	0	0	96	37
23:00	0	0	0	5	25	10	3	0	0	0	0	0	0	0	43	38
Total	38	108	249	1180	3096	1184	110	6	2	0	0	0	0	0	5973	

Percentiles	15th Percentile :	26 MPH
	50th Percentile :	32 MPH
	85th Percentile :	36 MPH
	95th Percentile :	39 MPH
Statistics	Mean Speed(Average) :	32 MPH
	10 MPH Pace Speed :	29-38 MPH
	Number in Pace :	4219
	Percent in Pace :	70.6%
	Number of Vehicles > 30 MPH :	4398
	Percent of Vehicles > 30 MPH :	73.6%

Summary	15th Percentile :	26 MPH
	50th Percentile :	32 MPH
	85th Percentile :	36 MPH
	95th Percentile :	39 MPH
Statistics	Mean Speed(Average) :	32 MPH

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Newton/Brookline, MA

Site Code: 76500001
Station ID:

765 Lagrange Street (Speed)

Westbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent
05/07/14	0	0	0	14	24	13	2	0	0	0	0	0	0	0	53	37
01:00	0	1	1	7	7	4	3	0	0	0	0	0	0	0	23	39
02:00	0	0	0	0	6	1	1	0	0	0	0	0	0	0	8	38
03:00	0	0	2	1	2	1	2	0	0	0	0	0	0	0	8	42
04:00	0	0	0	0	6	4	0	0	0	0	0	0	0	0	10	38
05:00	0	0	0	1	2	9	1	1	0	0	0	0	0	0	14	41
06:00	1	1	1	8	41	28	8	3	0	0	0	0	0	0	91	39
07:00	0	4	8	41	126	74	13	0	0	0	0	0	0	0	266	38
08:00	1	0	6	58	171	93	8	0	0	0	0	0	0	0	337	37
09:00	0	0	3	40	106	65	11	0	0	0	0	0	0	0	225	38
10:00	0	7	8	47	105	66	6	1	0	0	0	0	0	0	240	37
11:00	0	6	4	50	153	85	9	0	0	0	0	0	0	0	307	37
12 PM	1	19	16	44	185	89	14	0	0	0	0	0	0	0	368	37
13:00	0	1	19	63	212	79	7	0	0	0	0	0	0	0	381	36
14:00	1	5	12	79	199	92	2	0	0	0	0	0	0	0	390	36
15:00	1	4	13	115	369	163	8	0	0	0	0	0	0	0	673	37
16:00	1	11	18	137	422	154	4	0	0	0	0	0	0	0	747	36
17:00	0	4	3	111	453	166	7	1	0	0	0	0	0	0	745	36
18:00	0	1	4	97	345	135	12	1	0	0	0	0	0	0	595	37
19:00	3	3	7	81	232	92	7	0	0	0	0	0	0	0	425	36
20:00	0	0	6	82	174	60	2	0	0	0	0	0	0	0	324	36
21:00	0	2	7	82	99	30	1	1	0	0	0	0	0	0	222	35
22:00	0	1	4	30	83	30	2	0	0	0	0	0	0	0	150	36
23:00	0	1	0	15	63	35	7	0	0	0	0	0	0	0	121	38
Total	9	71	142	1203	3585	1568	137	8	0	0	0	0	0	0	6723	

Percentiles

15th Percentile :	28 MPH
50th Percentile :	32 MPH
85th Percentile :	37 MPH
95th Percentile :	39 MPH

Statistics

Mean Speed(Average) :	33 MPH
10 MPH Pace Speed :	29-38 MPH
Number in Pace :	4975
Percent in Pace :	74.0%
Number of Vehicles > 30 MPH :	5298
Percent of Vehicles > 30 MPH :	78.8%

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Newton/Brookline, MA

Site Code: 76500001
Station ID:

765 Lagrange Street (Speed)

Westbound

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76		85th
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Percent
05/08/14	0	1	1	6	27	7	3	0	0	0	0	0	0	0	45	37
01:00	0	1	0	3	15	5	2	0	0	0	0	0	0	0	26	38
02:00	0	1	1	0	8	2	1	0	0	0	0	0	0	0	13	37
03:00	0	0	3	2	0	3	0	0	0	0	0	0	0	0	8	38
04:00	0	1	0	1	5	3	0	0	0	0	0	0	0	0	10	37
05:00	0	0	1	4	10	13	1	0	0	0	0	0	0	0	29	38
06:00	0	1	5	14	34	28	10	3	0	0	0	0	0	0	95	40
07:00	1	3	7	25	139	116	10	1	0	0	0	0	0	0	302	38
08:00	0	2	6	55	128	92	10	1	0	0	0	0	0	0	294	38
09:00	0	2	8	45	124	58	7	1	0	0	0	0	0	0	245	37
10:00	0	2	8	46	124	54	8	0	0	0	0	0	0	0	242	37
11:00	3	7	10	46	131	70	7	1	0	0	0	0	0	0	275	37
12 PM	0	3	11	60	176	93	11	0	0	0	0	0	0	0	354	37
13:00	1	3	10	53	201	91	3	0	0	0	0	0	0	0	362	37
14:00	1	4	7	61	234	113	9	0	0	0	0	0	0	0	429	37
15:00	3	8	20	111	403	148	6	1	0	0	0	0	0	0	700	36
16:00	0	14	23	131	435	139	8	0	0	0	0	0	0	0	750	36
17:00	0	2	1	88	494	168	6	0	0	0	0	0	0	0	759	36
18:00	1	3	10	100	357	163	8	0	1	0	0	0	0	0	643	37
19:00	0	1	6	86	291	94	8	0	0	0	0	0	0	0	486	36
20:00	0	2	3	66	172	52	7	1	0	0	0	0	0	0	303	36
21:00	0	4	12	78	123	41	6	0	0	0	0	0	0	0	264	36
22:00	1	1	2	31	77	37	4	0	0	0	0	0	0	0	153	37
23:00	1	0	1	19	66	43	4	1	0	0	0	0	0	0	135	38
Total	12	66	156	1131	3774	1633	139	10	1	0	0	0	0	0	6922	

Percentiles	15th Percentile :	28 MPH
	50th Percentile :	32 MPH
	85th Percentile :	37 MPH
	95th Percentile :	39 MPH
Statistics	Mean Speed(Average) :	33 MPH
	10 MPH Pace Speed :	29-38 MPH
	Number in Pace :	5174
	Percent in Pace :	74.7%
	Number of Vehicles > 30 MPH :	5557
	Percent of Vehicles > 30 MPH :	80.3%

Summary	15th Percentile :	28 MPH
	50th Percentile :	32 MPH
	85th Percentile :	37 MPH
	95th Percentile :	39 MPH
Statistics	Mean Speed(Average) :	33 MPH

□ Stopping Sight Distance Calculations

Stopping Sight Distance

Posted Speed Limit

		SPEED (MPH)	BRAKE REACTION DISTANCE (FT)	BRAKING DISTANCE (FT)	CALCULATED STOPPING SIGHT DISTANCE (FT)
Direction 1	EB	30	110.25	75.4	185.7
Direction 2	WB	30	110.25	77.4	187.6

INPUTS	Direction 1	Direction 2
Travel Direction	EB	WB
Speed	30	30
Grade	0.05	0.04
t	2.5	2.5
a	11.2	11.2

Stopping Sight Distance (SSD) - Source: AASHTO

SSD = Reaction Distance + Brake Distance

Reaction Distance = 1.47 x t x V

Brake Distance = V^2 / (30 x ((a/32.2)+G))

Where:
t = reaction time (sec)
V = travel speed (mph)
G= roadway grade
a - deceleration rate (ft/sec^2)

Stopping Sight Distance

Average Observed Travel Speeds

		SPEED (MPH)	BRAKE REACTION DISTANCE (FT)	BRAKING DISTANCE (FT)	CALCULATED STOPPING SIGHT DISTANCE (FT)
Direction 1	EB	32	117.6	85.8	203.4
Direction 2	WB	33	121.275	93.6	214.9

INPUTS	Direction 1	Direction 2
Travel Direction	EB	WB
Speed	32	33
Grade	0.05	0.04
t	2.5	2.5
a	11.2	11.2

Stopping Sight Distance (SSD) - Source: AASHTO

SSD = Reaction Distance + Brake Distance

Reaction Distance = 1.47 x t x V

Brake Distance = V^2 / (30 x ((a/32.2)+G))

Where:
t = reaction time (sec)
V = travel speed (mph)
G= roadway grade
a - deceleration rate (ft/sec^2)

Stopping Sight Distance

85th Percentile Observed Travel Speeds

		SPEED (MPH)	BRAKE REACTION DISTANCE (FT)	BRAKING DISTANCE (FT)	CALCULATED STOPPING SIGHT DISTANCE (FT)
Direction 1	EB	36	132.3	108.6	240.9
Direction 2	WB	37	135.975	117.7	253.6

INPUTS	Direction 1	Direction 2
Travel Direction	EB	WB
Speed	36	37
Grade	0.05	0.04
t	2.5	2.5
a	11.2	11.2

Stopping Sight Distance (SSD) - Source: AASHTO

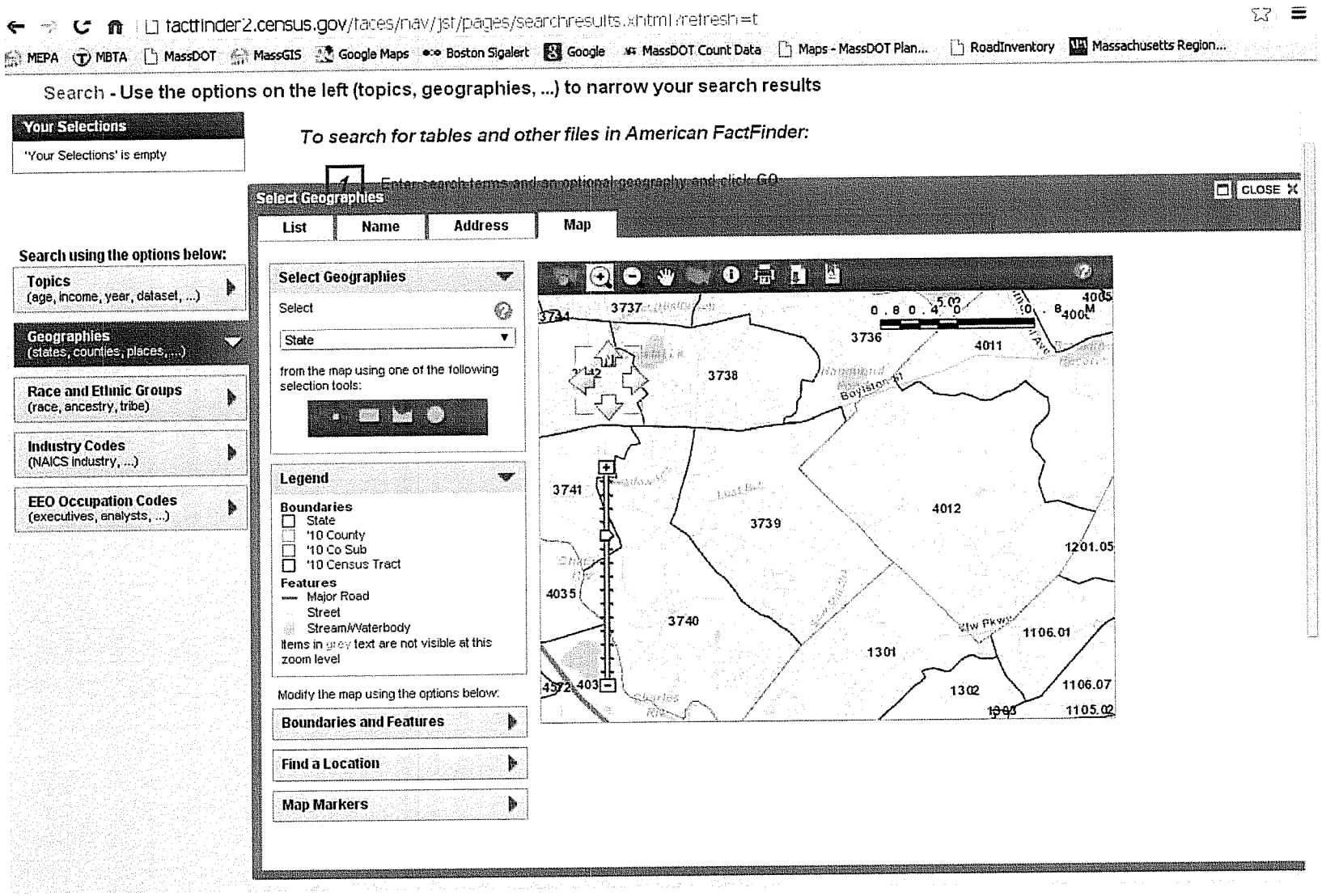
SSD = Reaction Distance + Brake Distance

Reaction Distance = 1.47 x t x V

Brake Distance = V^2 / (30 x ((a/32.2)+G))

Where:
t = reaction time (sec)
V = travel speed (mph)
G= roadway grade
a - deceleration rate (ft/sec^2)

- US Census Data


factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t
MEPA
MBTA
MassDOT
MassGIS
Google Maps
Boston Sigalert
Google
MassDOT Count Data
Maps - MassDOT Plan...
RoadInventory
Massachusetts Region...
Search - Use the options on the left (topics, geographies, ...) to narrow your search results
Your Selections
'Your Selections' is empty
To search for tables and other files in American FactFinder:
Enter search terms and an optional geography and click GO
Search using the options below:
Topics
(age, income, year, dataset, ...)
Geographies
(states, counties, places, ...)
Race and Ethnic Groups
(race, ancestry, tribe)
Industry Codes
(NAICS industry, ...)
EEO Occupation Codes
(executives, analysts, ...)
Select Geographies
CLOSE
List
Name
Address
Map
Select Geographies
Select
State
from the map using one of the following selection tools:
Legend
Boundaries
State
'10 County
'10 Co Sub
'10 Census Tract
Features
Major Road
Street
Stream/Waterbody
Items in grey text are not visible at this zoom level
Modify the map using the options below:
Boundaries and Features
Find a Location
Map Markers
3737
3736
4011
3738
3741
3739
4012
1201.05
4035
3740
1106.01
1301
1302
1106.07
1105.02
Boylston St

B08301 | MEANS OF TRANSPORTATION TO WORK

Universe: Workers 16 years and over
2006-2010 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, for 2010, the 2010 Census provides the official counts of the population and housing units for the nation, states, counties, cities and towns. For 2006 to 2009, the Population Estimates Program provides intercensal estimates of the population for the nation, states, and counties.

	Census Tract 3739, Middlesex County, Massachusetts	
	Estimate	Margin of Error
Total:	2,919	+/-307
Car, truck, or van:	2,460	+/-317
Drove alone	2,232	+/-307
Carpooled:	228	+/-157
In 2-person carpool	126	+/-82
In 3-person carpool	97	+/-133
In 4-person carpool	0	+/-127
In 5- or 6-person carpool	0	+/-127
In 7-or-more-person carpool	5	+/-12
Public transportation (excluding taxicab):	170	+/-108
Bus or trolley bus	19	+/-23
Streetcar or trolley car (carro publico in Puerto Rico)	0	+/-127
Subway or elevated	90	+/-89
Railroad	61	+/-63
Ferryboat	0	+/-127
Taxicab	0	+/-127
Motorcycle	0	+/-127
Bicycle	0	+/-127
Walked	0	+/-127
Other means	14	+/-23
Worked at home	275	+/-97

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2006-2010 American Community Survey (ACS) data generally reflect the December 2009 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2000 data. Boundaries for urban areas have not been updated since Census 2000. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

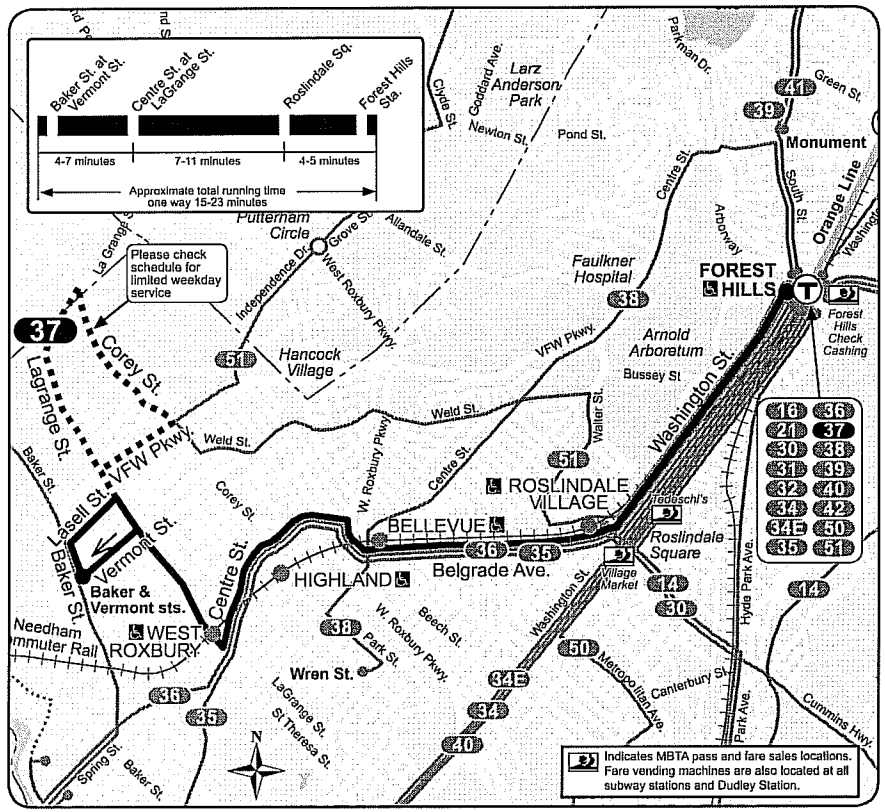
Source: U.S. Census Bureau, 2006-2010 American Community Survey

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

□ Public Transportation Information

Route 37 Baker and Vermont Streets - Forest Hills Station



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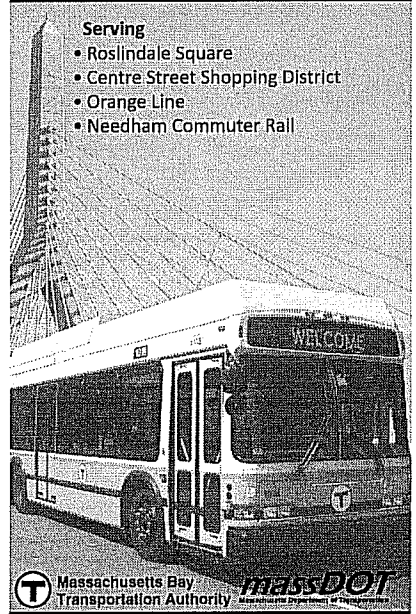
Spring March 22, 2014 - June 20, 2014

Baker & Vermont Streets- Forest Hills Station

Serving

- Roslindale Square
- Centre Street Shopping District
- Orange Line
- Needham Commuter Rail



Massachusetts Bay Transportation Authority

massDOT

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

37 Weekday

Inbound				Outbound			
Leave LaGrange & Corey	Leave Baker & Vermont	Arrive Centre & LaGrange	Arrive Forest Hills Station	Leave Forest Hills Upper Busway	Arrive Centre & LaGrange	Arrive Baker & Vermont	Arrive LaGrange & Corey
.....	5:55	5:58	6:14	5:35	5:43	5:47	.....
.....	6:12	6:15	6:31	5:53	6:02	6:06	.....
.....	6:36	6:40	6:57	6:15	6:26	6:30	.....
s 6:35	6:41	6:45	7:04	6:35	6:46	6:50	.....
.....	6:57	7:02	7:20	6:52	7:03	7:07	.....
.....	7:15	7:20	7:38	7:10	7:21	7:25	.....
.....	7:35	7:40	7:58	7:37	7:50	7:53	7:59
8:01	8:07	8:11	8:29	8:00	8:12	8:16	.....
.....	8:31	8:35	8:53	8:35	8:48	8:52	.....
.....	9:01	9:05	9:23	8:53	9:08	9:12	.....
.....	9:19	9:23	9:41	9:29	9:43	9:47	.....
.....	9:59	10:03	10:17	9:51	10:04	10:07	10:13
10:23	10:29	10:32	10:48	10:23	10:37	10:41	.....
.....	11:04	11:08	11:22	11:15	11:30	11:34	11:40
11:47	11:53	11:56	12:12P				
.....	12:35P	12:39P	12:57P	12:00N	12:15P	12:19P	.....
.....	1:24	1:28	1:46	12:40P	12:55	12:59	.....
.....	1:55	1:59	2:17	1:20	1:34	1:39	.....
.....	2:25	2:29	2:47	1:55	2:09	2:14	.....
.....	2:54	2:58	3:17	2:22	2:36	2:41	.....
.....	3:26	3:31	3:50	2:55	3:10	3:15	.....
s 3:27	3:34	3:39	3:59	gs 3:00	3:15	3:20	3:27
.....	3:53	3:58	4:14	3:23	3:40	3:45	.....
.....	4:10	4:14	4:30	3:38	3:55	4:00	.....
.....	4:28	4:32	4:48	3:57	4:14	4:19	.....
4:41	4:49	4:54	5:08	4:10	4:28	4:32	4:36
.....	4:58	5:02	5:18	4:27	4:44	4:49	.....
.....	5:05	5:09	5:25	4:40	4:57	5:02	.....
.....	5:19	5:23	5:39	4:55	5:12	5:17	.....
.....	5:35	5:39	5:55	5:10	5:27	5:32	.....
5:59	6:03	6:07	6:24	5:25	5:43	5:47	5:51
.....	6:16	6:19	6:33	5:40	5:56	6:01	.....
6:26	6:31	6:34	6:48	5:55	6:11	6:15	6:21
.....	6:35	6:38	6:51	6:10	6:24	6:29	.....
.....	6:50	6:53	7:06	6:25	6:39	6:44	.....
.....	7:07	7:10	7:23	6:40	6:54	6:59	.....
.....	7:19	7:22	7:35	6:55	7:09	7:14	.....
.....	7:45	7:48	8:01	7:15	7:29	7:34	.....

g - Originates at Avenue Louis Pasteur, leaves upon arrival at Forest Hills Station
s - Does NOT run during school vacation

37 Saturday

Inbound				Outbound			
Leave Baker & Vermont	Arrive Centre & LaGrange	Arrive JP Monument	Arrive Forest Hills Station	Leave Forest Hills Upper Busway	Arrive JP Monument	Arrive Centre & LaGrange	Arrive Baker & Vermont
5:55A	5:58A	.....	6:10A	5:30A	5:32A	5:41A	5:46A
6:25	6:29	6:37A	6:41	6:00	.....	6:09	6:13
6:55	6:58	.....	7:10	6:30	6:32	6:41	6:46
7:25	7:29	7:38	7:42	7:00	.....	7:09	7:13
7:55	7:58	.....	8:10	7:30	7:32	7:41	7:44
8:25	8:29	8:39	8:42	8:00	.....	8:11	8:14
8:55	8:58	.....	9:12	8:30	.....	8:41	8:44
9:25	9:29	.....	9:43	8:55	.....	9:06	9:09
9:50	9:54	.....	10:08	9:20	.....	9:32	9:37
10:25	10:29	.....	10:48	9:50	.....	10:04	10:09
11:00	11:04	.....	11:23	10:25	.....	10:39	10:44
11:35	11:39	.....	11:57	11:00	.....	11:15	11:19
				11:35	.....	11:50	11:54
12:10P	12:14P	.....	12:32P				
12:45	12:49	.....	1:07	12:10P	.....	12:25P	12:29P
1:20	1:24	.....	1:42	12:45	.....	1:00	1:04
1:55	1:59	.....	2:17	1:20	.....	1:35	1:39
2:30	2:34	.....	2:52	1:55	.....	2:10	2:15
3:05	3:09	.....	3:27	2:30	.....	2:46	2:51
3:40	3:44	.....	4:03	3:05	.....	3:21	3:26
4:15	4:19	.....	4:36	3:40	.....	3:56	4:01
4:50	4:54	.....	5:10	4:15	.....	4:29	4:33
5:25	5:29	.....	5:44	4:50	.....	5:04	5:08
6:00	6:04	.....	6:19	5:25	.....	5:39	5:43
6:35	6:39	.....	6:54	6:00	.....	6:14	6:18
7:10	7:14	.....	7:29	6:35	.....	6:49	6:53
7:45	7:49	.....	8:03	7:15	.....	7:28	7:32

All buses are accessible to persons with disabilities

Route 37
Baker & Vermonts Streets-Forest Hills Station

NOTE: The following Saturday trips– 6:25 am, 7:25 am 8:25 am (inbound)– 5:30 am, 6:30 am and 7:30 am (outbound) operate via Route 38 between Forest Hills Station and West Roxbury Parkway. The bus then travels via Route 37 between West Roxbury Parkway and Baker & Vermont Streets. No service to Anawan Avenue, Park or Wren Streets at these times. Bus leaves Forest Hills Station at berth #2

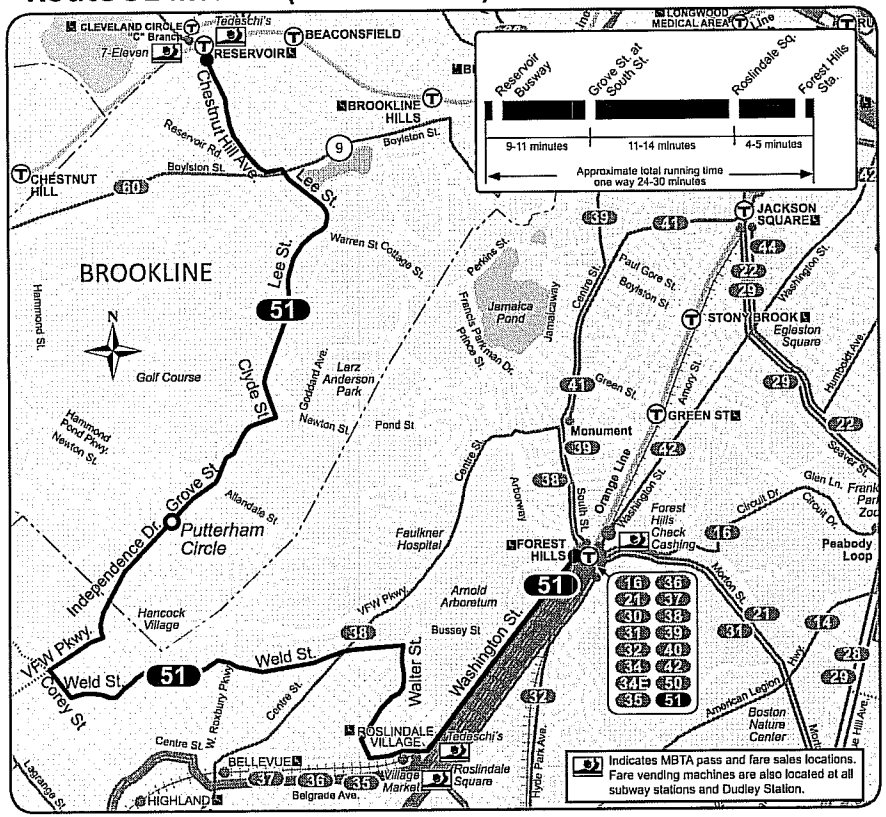
No service on Sunday

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.50	$1.50	$2.00	$2.00
CharlieTicket	$2.00	$2.00	$2.50	$4.50
Cash-on-Board	$2.00	$4.00	$2.50	$4.50
Student CharlieCard*	$0.75	$0.75	$1.00	$1.00
Senior/TAP CharlieCard**	$0.75	$0.75	$1.00	$1.00

VALID PASSES: LinkPass ($70/mo.); Monthly Local Bus ($48/mo.); *StudentPass ($25/mo. M-F only or $28 mo. 7 days); **Senior/TAP Pass($28/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children under 12 ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.
* Requires Student CharlieCard, available to students through participating middle schools and high schools.
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Spring 2014 Holidays
April 21: see Weekday **May 26: see Sunday**

Route 51 Reservoir (Cleveland Circle) - Forest Hills Station



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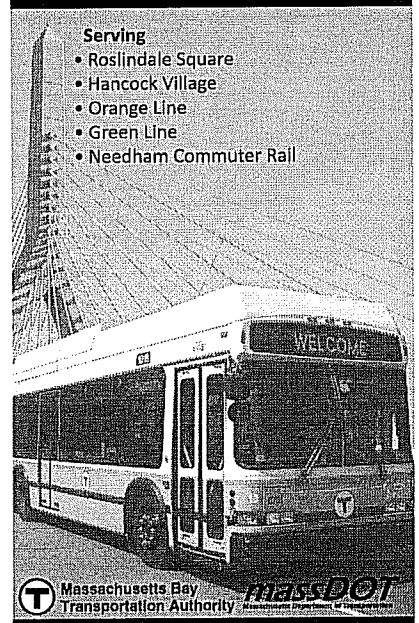
Spring March 22, 2014 - June 20, 2014

Reservoir (Cleveland Cir.)- Forest Hills Station



Massachusetts Bay Transportation Authority

massDOT

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

51 Weekday

Inbound			Outbound		
Leave Reservoir Station	Arrive Roslindale Square	Arrive Forest Hills Station	Leave Forest Hills Upper Busway	Arrive Roslindale Square	Arrive Reservoir Station
6:35A	6:58A	7:05A	5:55A	5:58A	6:19A
7:00	7:23	7:30	6:20	6:23	6:48
7:25	7:49	7:57	us 6:35	6:39	7:00
s 7:40	8:06	8:14	us 6:45	6:49	7:10
7:50	8:15	8:23	6:45	6:50	7:15
8:11	8:36	8:44	7:10	7:15	7:44
8:40	9:04	9:10	7:30	7:34	8:07
9:03	9:24	9:30	8:00	8:04	8:32
9:28	9:49	9:55	8:25	8:29	8:54
9:52	10:13	10:19	8:50	8:55	9:20
10:50	11:11	11:17	9:15	9:22	9:46
11:50	12:14P	12:20P	10:15	10:19	10:44
			11:15	11:19	11:44
12:50P	1:14P	1:20P			
1:50	2:14	2:18	12:15P	12:19P	12:44P
2:24	2:49	2:53	1:15	1:19	1:44
2:54	3:21	3:27	1:45	1:49	2:12
us 3:20	3:41	3:47	2:15	2:20	2:44
3:18	3:45	3:51	2:39	2:44	3:07
gs 3:05	3:57	4:03	3:03	3:10	3:36
3:42	4:09	4:15	3:27	3:34	4:00
4:06	4:33	4:39	3:51	3:58	4:24
4:30	4:57	5:03	4:15	4:22	4:48
4:54	5:21	5:27	4:39	4:46	5:12
5:18	5:45	5:51	5:03	5:10	5:36
5:42	6:09	6:15	5:27	5:34	6:00
6:06	6:32	6:37	5:51	5:58	6:23
6:30	6:53	6:58	6:15	6:20	6:45
6:54	7:17	7:22	6:39	6:44	7:09
7:20	7:40	7:44	7:30	7:34	7:56
8:01	8:22	8:26	8:30	8:34	8:56
9:01	9:22	9:26	9:30	9:34	9:56
10:01	10:22	10:26			

g - Leaves from Greenough Street at Tappan Steet via Putterham Circle and Newton Street at Arlington Road.
s - Does NOT run during school vacation
u - To/from Union Square, Allston

51 Saturday

Inbound			Outbound		
Leave Reservoir Station	Arrive Roslindale Square	Arrive Forest Hills Station	Leave Forest Hills Upper Busway	Arrive Roslindale Square	Arrive Reservoir Station
6:47A	7:06A	7:10A	6:15A	6:18A	6:38A
7:47	8:08	8:12	7:15	7:18	7:40
8:47	9:08	9:12	8:15	8:18	8:41
9:47	10:09	10:14	9:15	9:19	9:41
10:47	11:10	11:15	10:15	10:20	10:43
11:47	12:10P	12:15P	11:15	11:20	11:43
12:47P	1:10P	1:15P	12:15P	12:20P	12:44P
1:47	2:09	2:14	1:15	1:20	1:43
2:47	3:09	3:14	2:15	2:19	2:42
3:47	4:09	4:14	3:15	3:19	3:42
4:47	5:09	5:14	4:15	4:19	4:41
5:45	6:07	6:12	5:15	5:19	5:41
6:45	7:07	7:12	6:15	6:19	6:41
7:45	8:07	8:10	7:15	7:19	7:41
8:45	9:04	9:09	8:15	8:19	8:40
9:45	10:04	10:09	9:15	9:19	9:40

No service on Sunday

All buses are accessible to persons with disabilities

Route 51
Reservoir Station - Forest Hills Station

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.50	$1.50	$2.00	$2.00
CharlieTicket	$2.00	$2.00	$2.50	$4.50
Cash-on-Board	$2.00	$4.00	$2.50	$4.50
Student CharliCard*	$0.75	$0.75	$1.00	$1.00
Senior/TAP CharliCard**	$0.75	$0.75	$1.00	$1.00

VALID PASSES: LinkPass ($70/mo.); Monthly Local Bus ($48/mo.); *StudentPass ($25/mo. M-F only or $28 mo. 7 days); **Senior/TAP Pass($28/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children under 12 ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.
* Requires Student CharlieCard, available to students through participating middle schools and high schools.
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Spring 2014 Holidays
April 21: see Weekday **May 26: see Sunday**

□ Background Growth Calculations

SECTION I - CONTINUOUS COUNTING STATION MONTHLY AVERAGE DAILY TRAFFIC

STATION 691 - QUINCY - RTE.I-93 - NORTH OF RTE.28

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	May Adjustment to Year	June Adjustment to Year	
09	173,000	175,000	177,697	194,334	196,834	199,477	196,208	194,125	190,885	186,291	176,509	174,000	186,197	0.95	0.93	
	-2%	0%	4%	-1%	-1%	0%	-1%	-1%	1%	1%	3%	4%	0%			
11	166,541	175,019	190,696	192,155	193,034	197,594	193,303	191,197	193,140	188,694	187,378	187,895	188,054	0.97	0.95	
	-2%	6%	0%	0%	1%	-1%	-1%	3%	-1%	-2%	0%	-3%	0%			
12	164,007	185,226	190,193	192,337	194,846	195,145	191,419	196,457	190,548	185,609	186,469	181,669	187,827	0.96	0.96	
	9%	-1%	-5%	-3%	-1%	0%	0%	1%	0%	2%	-1%	-3%	0%			
13	179,468	182,613	180,861	187,402	193,159	194,612	192,130	197,467	191,411	*190,128*	185,233	176,163	187,554	0.97	0.96	
												Growth	0.1%	0.96	0.95	Sub Average

STATION 703 - ABINGTON - RTE.123 - AT THE BROCKTON C.L.

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR			
09	12,251	13,199	13,301	13,860	13,231	13,817	13,354	*13,212*	14,037	13,712	13,161	13,327	13,372	1.01	0.97	
	0%	0%	2%	1%	5%	1%	0%	1%	-1%	0%	2%	-1%	1%			
10	12,196	13,134	13,560	14,051	13,835	13,900	13,353	13,338	13,928	13,733	13,414	*13,225*	13,472	0.97	0.97	
	-5%	-4%	-1%	-4%	-3%	-2%	-3%	-2%	-1%	-2%	0%	1%	-2%			
11	11,629	12,651	13,451	13,518	13,476	13,655	12,907	*13,088*	13,778	13,495	13,434	13,377	13,205	0.98	0.97	
	5%	4%	0%	-1%	0%	-1%	-6%	0%	-2%	1%	0%	-2%	0%			
12	12,181	13,151	13,410	13,379	13,452	13,479	12,127	*13,103*	13,441	13,679	13,452	13,136	13,166	0.98	0.98	
	1%	-6%	-4%	2%	0%	-1%	7%	0%	0%	0%	-2%	0%	0%			
13	12,347	12,336	12,870	13,591	13,426	13,372	12,964	*13,064*	13,462	13,726	13,217	13,081	13,121	0.98	0.98	
												Growth	-0.5%	0.98	0.97	Sub Average

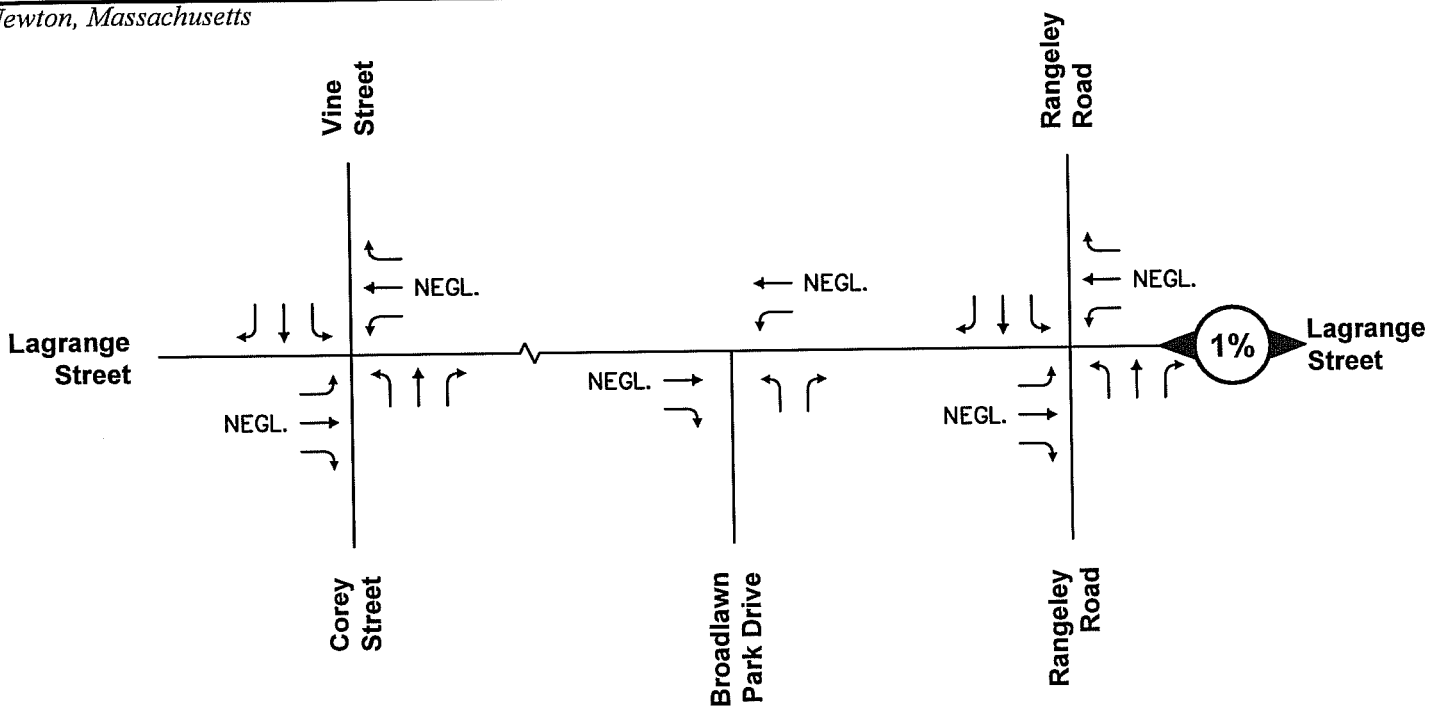
STATION 6255 - WEYMOUTH - RTE.3 - NORTH OF RTE.18

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR			
09	120,200	123,983	124,807	134,354	135,239	143,114	143,685	144,937	140,079	137,288	138,708	136,428	135,235	1.00	0.94	
	4%	3%	6%	-1%	0%	-1%	-1%	-2%	-3%	-3%	-1%	-7%	-1%			
10	125,304	127,637	132,301	133,124	135,880	141,633	141,706	142,327	135,767	133,473	137,526	127,100	134,482	0.99	0.95	
	-3%	-1%	-1%	-6%	0%	0%	-1%	0%	-1%	-2%	-3%	-1%	-2%			
12	118,936	125,494	129,712	116,911	136,235	140,277	139,048	142,140	132,674	128,923	129,593	125,409	130,446	0.96	0.93	
	4%	-7%	-4%	13%	0%	-1%	1%	0%	1%	4%	-1%	-1%	1%			
13	123,783	116,501	124,813	131,533	136,712	138,977	140,057	141,851	133,978	134,144	128,712	124,607	131,306	0.96	0.94	
												Growth	-0.5%	0.98	0.94	Sub Average

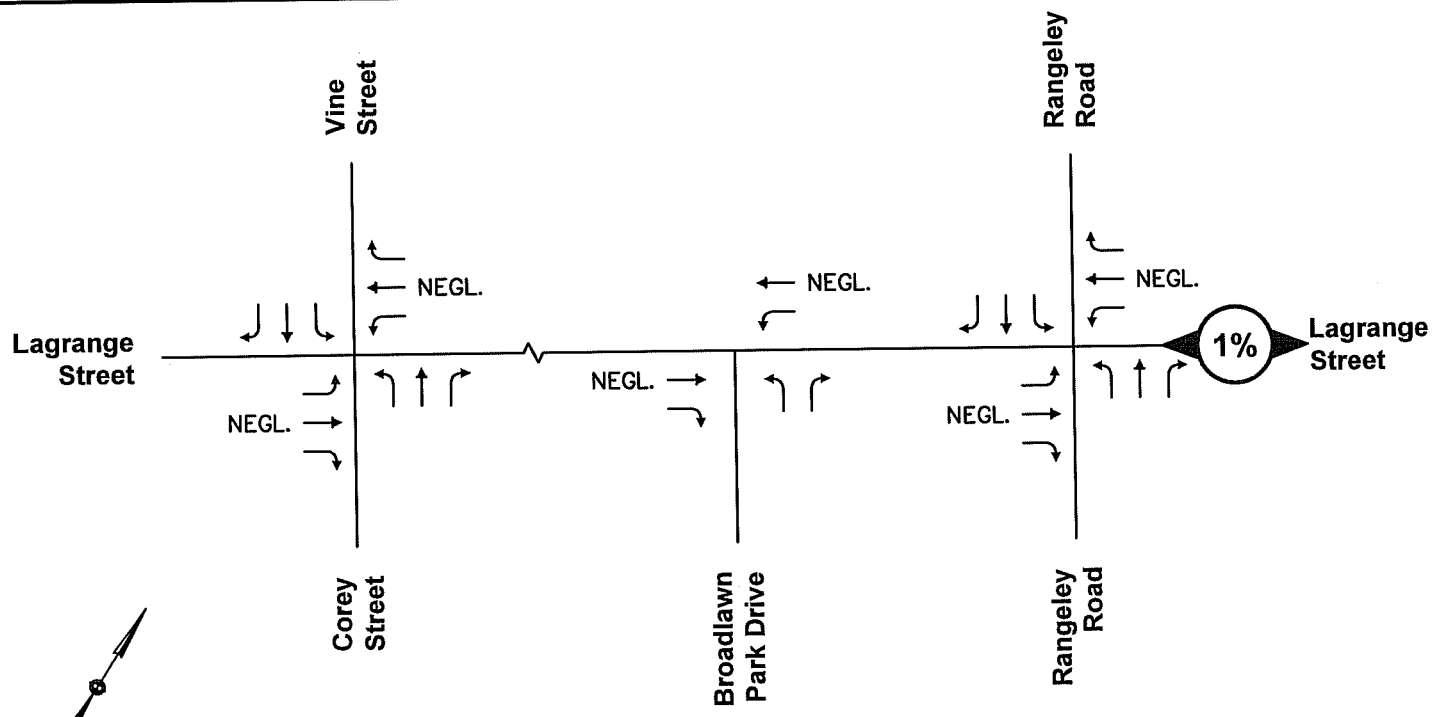
	Average Adjusment Factors	0.97	0.96
Average Yearly Growth Calculated	-0.29%	
Yearly Growth Factor Used	1.0%	

ITALICS = ESTIMATED DATA

MADT



Weekday Morning Peak Hour



North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
*** = Illegal Movements (Left-Turn Restriction 7am-9am)**

Weekday Evening Peak Hour

Attachments

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Chestnut Hill Square (100 Apartment Units)
Peak Hour Traffic Volumes

Date: June 2014
Dwg No. 765 TIAS.dwg

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Institute of Transportation Engineers (ITE) 9th Edition
Land Use Code (LUC) 220 - Apartment

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 100

AVERAGE WEEKDAY DAILY

T = 6.06 * (X) + 123.56
T = 6.06 * 100 + (123.56)
T = 729.56
T = 730 vehicle trips
with 50% (**365** vpd) entering and 50% (**365** vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.49 * (X) + 3.73
T = 0.49 * 100 + (3.73)
T = 52.73
T = 53 vehicle trips
with 20% (**11** vph) entering and 80% (**42** vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

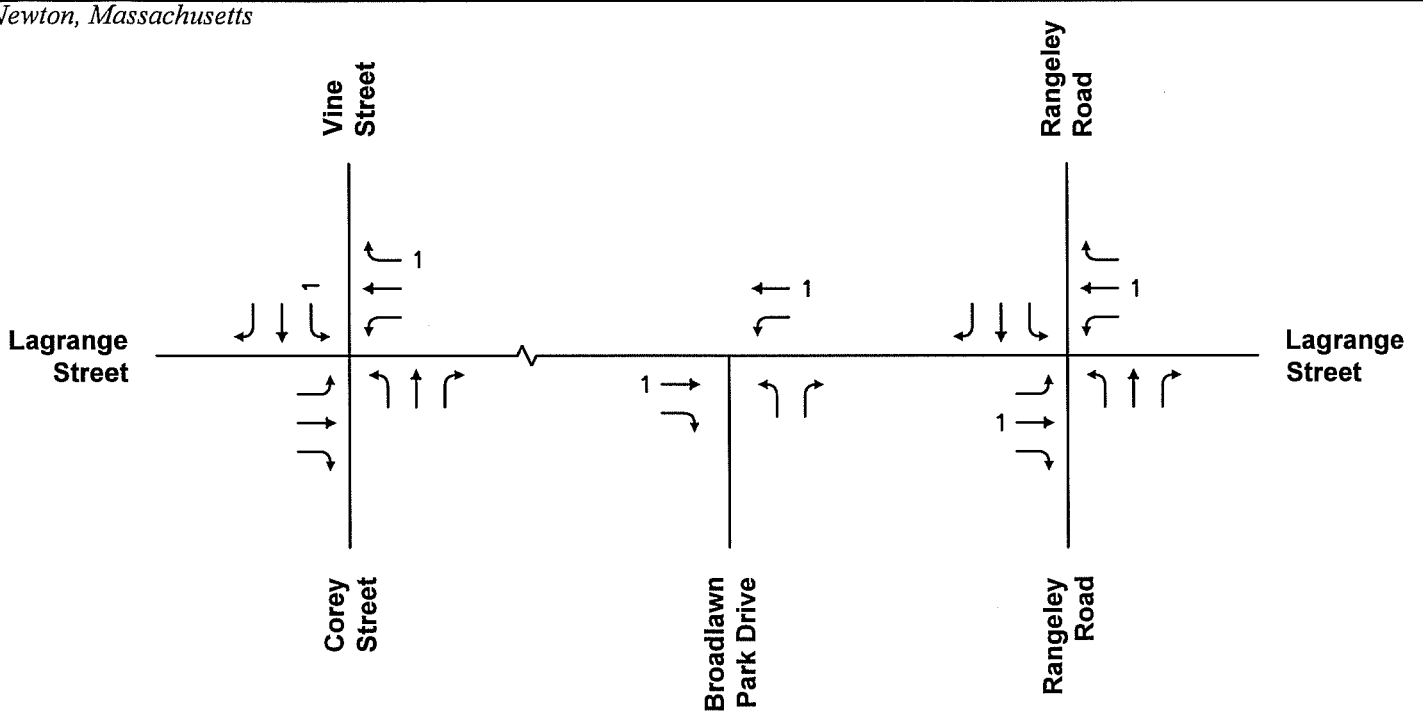
T = 0.55 * (X) + 17.65
T = 0.55 * 100 + (17.65)
T = 72.65
T = 73 vehicle trips
with 65% (**47** vph) entering and 35% (**26** vph) exiting.

SATURDAY DAILY

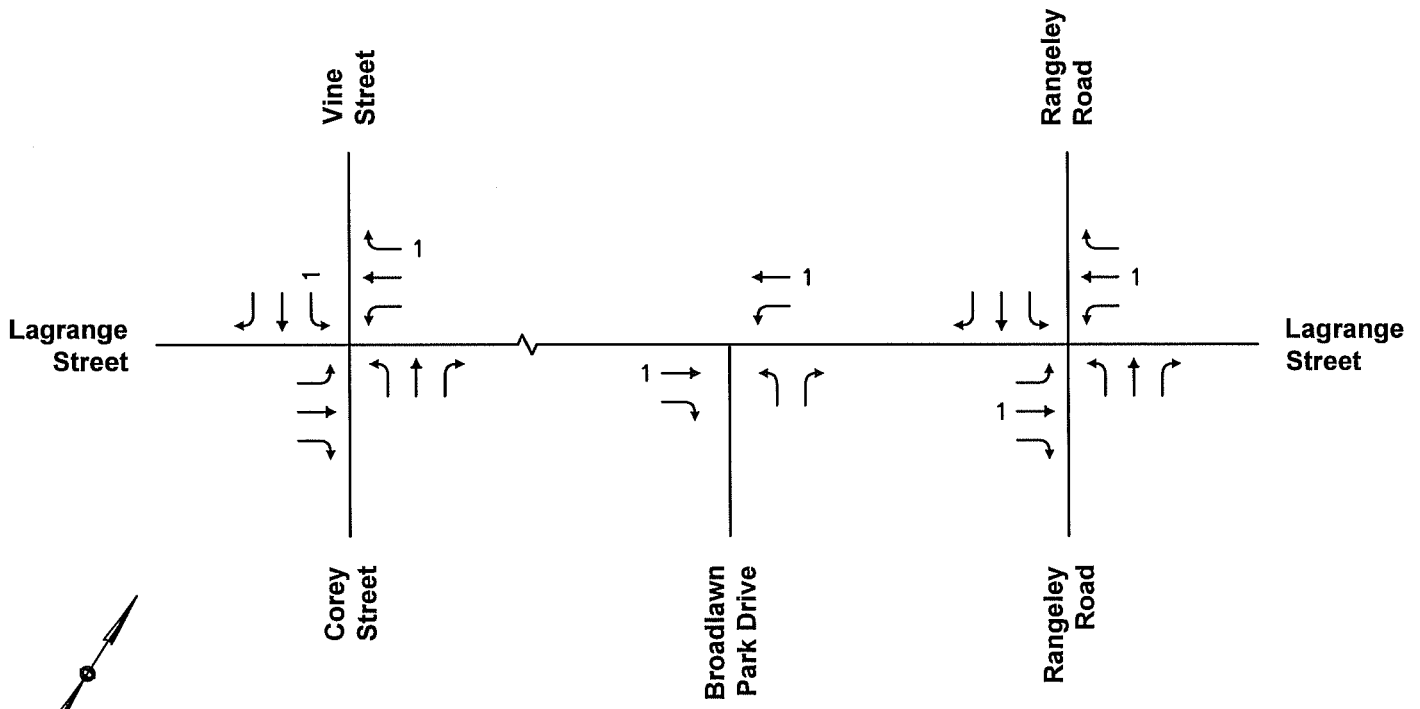
T = 7.85 * (X) - 256.19
T = 7.85 * 100 - (256.19)
T = 528.81
T = 528 vehicle trips
with 50% (**264** vpd) entering and 50% (**264** vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 0.41 * (X) + 19.23
T = 0.41 * 100 + (19.23)
T = 60.23
T = 60 vehicle trips
with 50% (**30** vph) entering and 50% (**30** vph) exiting.



Weekday Morning Peak Hour



North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
*** = Illegal Movements (Left-Turn Restriction 7am-9am)**

Weekday Evening Peak Hour

Attachments

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Residences of South Brookline
Peak Hour Traffic Volumes

Date: June 2014
Dwg No. 765 TIAS.dwg
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□ Trip Generation Calculations

Institute of Transportation Engineers (ITE) 9th Edition
Land Use Code (LUC) 220 - Apartment

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 80

AVERAGE WEEKDAY DAILY

T = 6.06 * (X) + 123.56
T = 6.06 * 80 + (123.56)
T = 608.36
T = 608 vehicle trips
with 50% (**304** vpd) entering and 50% (**304** vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.49 * (X) + 3.73
T = 0.49 * 80 + (3.73)
T = 42.93
T = 43 vehicle trips
with 20% (**9** vph) entering and 80% (**34** vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 0.55 * (X) + 17.65
T = 0.55 * 80 + (17.65)
T = 61.65
T = 62 vehicle trips
with 65% (**40** vph) entering and 35% (**22** vph) exiting.

SATURDAY DAILY

T = 7.85 * (X) - 256.19
T = 7.85 * 80 - (256.19)
T = 371.81
T = 372 vehicle trips
with 50% (**186** vpd) entering and 50% (**186** vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 0.41 * (X) + 19.23
T = 0.41 * 80 + (19.23)
T = 52.03
T = 52 vehicle trips
with 50% (**26** vph) entering and 50% (**26** vph) exiting.

□ Trip Distribution Calculations

Journey-to-Work Distribution

Residence Town Name	Workplace Town Name	All Workers	% of Total Rounded
Middleton, MA	Boston	11,814	30%
Middleton, MA	Newton	10,154	25%
Middleton, MA	Cambridge	2,473	6%
Middleton, MA	Waltham	1,752	4%
Middleton, MA	Brookline	941	2%
Middleton, MA	Watertown	822	2%
Middleton, MA	Needham	821	2%
Middleton, MA	Framingham	796	2%
Middleton, MA	Wellesley	728	2%
Middleton, MA	Burlington	434	1%
Middleton, MA	Natick	374	1%
Middleton, MA	Woburn	356	1%
Middleton, MA	Lexington	355	1%
Middleton, MA	Canton	312	1%
Middleton, MA	Quincy	269	1%
Middleton, MA	Malden	256	1%
Middleton, MA	Norwood	245	1%
Middleton, MA	Marlborough	216	0.5%
Middleton, MA	Westborough	204	0.5%
Middleton, MA	Somerville	203	0.5%
Middleton, MA	Dedham	196	0.5%
Middleton, MA	Weston	193	0.5%
Middleton, MA	Worcester	180	0.5%
Middleton, MA	Other	5,414	14%
	Total	39,508	100%

	To/From Routes														
	VFW Parkway (To West)		Hammond Street (To North)		Hammond Pond Parkway (To North)		Brookline Street (To West)		W Roxbury Parkway (To South)		Corey Street (To South)		Dudley Road (To North)		Lagrange Street (To South)		Total
Workplace																	
Boston		0.0%	50%	15.0%		0.0%		0.0%	50%	15.0%		0.0%		0.0%		0.0%	30.0%
Newton		0.0%	10%	2.5%	65%	16.3%	25%	6.3%		0.0%		0.0%		0.0%		0.0%	25.0%
Cambridge		0.0%	33%	2.0%	34%	2.0%		0.0%	33%	2.0%		0.0%		0.0%		0.0%	6.0%
Waltham		0.0%		0.0%	100%	4.0%		0.0%		0.0%		0.0%		0.0%		0.0%	4.0%
Brookline		0.0%	50%	1.0%		0.0%		0.0%	50%	1.0%		0.0%		0.0%		0.0%	2.0%
Watertown		0.0%		0.0%	100%	2.0%		0.0%		0.0%		0.0%		0.0%		0.0%	2.0%
Needham		0.0%		0.0%		0.0%	100%	2.0%		0.0%		0.0%		0.0%		0.0%	2.0%
Framingham		0.0%		0.0%	100%	2.0%		0.0%		0.0%		0.0%		0.0%		0.0%	2.0%
Wellesley		0.0%		0.0%	50%	1.0%	50%	1.0%		0.0%		0.0%		0.0%		0.0%	1.0%
Burlington		0.0%		0.0%	100%	1.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1.0%
Natick		0.0%		0.0%	100%	1.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1.0%
Woburn		0.0%		0.0%	100%	1.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1.0%
Lexington		0.0%		0.0%	100%	1.0%		0.0%		0.0%		0.0%		0.0%		0.0%	1.0%
Canton	100%	1.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%	33%	0.3%	1.0%
Quincy	33%	0.3%		0.0%		0.0%		0.0%	34%	0.3%		0.0%		0.0%		0.0%	1.0%
Malden		0.0%	33%	0.3%	34%	0.3%		0.0%	33%	0.3%		0.0%		0.0%		0.0%	1.0%
Norwood	100%	1.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%	0.5%
Marlborough		0.0%		0.0%	100%	0.5%		0.0%		0.0%		0.0%		0.0%		0.0%	0.5%
Westborough		0.0%		0.0%	100%	0.5%		0.0%		0.0%		0.0%		0.0%		0.0%	0.5%
Somerville		0.0%	33%	0.2%	34%	0.2%		0.0%	33%	0.2%		0.0%		0.0%		0.0%	0.5%
Dedham	100%	0.5%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%	0.5%
Weston		0.0%		0.0%	100%	0.5%		0.0%		0.0%		0.0%		0.0%		0.0%	0.5%
Worcester		0.0%		0.0%	100%	0.5%		0.0%		0.0%		0.0%		0.0%		0.0%	14.0%
Other	5%	0.7%	25%	3.5%	40%	5.6%	10%	1.4%	20%	2.8%		0.0%		0.0%		0.3%	100%
		3.5%		24.5%		39.4%		10.7%		21.6%		0.0%		0.0%		0.3%	

Source: 2000 US Census Journey-to-Work Data

□ Capacity Analysis Worksheets

LEVEL OF SERVICE METHODOLOGY

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the 2010 Highway Capacity Manual (HCM). The resulting analysis presents a level-of-service (LOS) designation for individual intersection movements and (for signalized intersections) for the entire intersection. The LOS is a letter designation that provides a qualitative measure of operating conditions based on several factors including roadway geometry, speeds, ambient traffic volumes, traffic controls, and driver characteristics. Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of LOS, depending on the time of day, day of week, or period of year. A range of six levels of service are defined on the basis of average delay, ranging from LOS A (the least delay) to LOS F (delays greater than 50 seconds for unsignalized movements, and greater than 80 seconds for signalized movements).

Signalized Intersection Performance Measures

The six LOS designations for signalized intersections may be described as follows:

- *LOS A* describes operations with low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than LOS A.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

The LOS for signalized intersections are calculated using the operational analysis methodology of the 2010 *Highway Capacity Manual*.[1] This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. LOS designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. **Table A1** summarizes the relationship between LOS and control delay. The tabulated control delay criterion may be applied in assigning LOS designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table A1
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS[1]

Level of Service	Control (Signal) Delay per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

[1]Source: *Highway Capacity Manual 2010;* Transportation Research Board; Washington, DC; 2010.

[1]*Highway Capacity Manual* 2010; Transportation Research Board; Washington, DC; 2010.

Unsignalized Intersection Performance Measures

The six LOS designations for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The LOS designations of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual.*[2] LOS is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for LOS at unsignalized intersections are also given in the *Highway Capacity Manual 2010*. **Table A2** summarizes the relationship between LOS and average control delay.

Table A2
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[1]

Average Control Delay (seconds per vehicle)	Level of Service	
	v/c ≤ 1	v/c > 1
≤ 10.0	A	F
10.1 to 15.0	B	F
15.1 to 25.0	C	F
25.1 to 35.0	D	F
35.1 to 50.0	E	F
>50.0	F	F

[1]Source: *Highway Capacity Manual 2010*, Transportation Research Board; Washington, DC; 2010.

[2] ibid

Intersection	
Int Delay, s/veh	72

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	144	407	3	57	294	55	0	208	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	4	67	2	3	2	0	1	4
Mvmt Flow	153	433	3	61	313	59	0	221	79

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	313	0	0	433	0	0	1216	1173	433
Stage 1	-	-	-	-	-	-	739	739	-
Stage 2	-	-	-	-	-	-	477	434	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.51	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4.009	3.336
Pot Cap-1 Maneuver	1253	-	-	1127	-	-	159	~ 193	619
Stage 1	-	-	-	-	-	-	412	425	-
Stage 2	-	-	-	-	-	-	573	583	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1253	-	-	1127	-	-	92	~ 151	619
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	~ 151	-
Stage 1	-	-	-	-	-	-	346	357	-
Stage 2	-	-	-	-	-	-	460	543	-

Approach	EB	WB	NB
HCM Control Delay, s	2.2	1.2	$ 336.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	188	1253	-	-	1127	-	-	-
HCM Lane V/C Ratio	1.596	0.122	-	-	0.054	-	-	-
HCM Control Delay (s)	$ 336.3	8.3	0	-	8.4	0	-	-
HCM Lane LOS	F	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	19.7	0.4	-	-	0.2	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	18	51	29
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	6	2	3
Mvmt Flow	19	54	31

Major/Minor	Minor2		
Conflicting Flow All	1323	1173	313
Stage 1	434	434	-
Stage 2	889	739	-
Critical Hdwy	7.16	6.52	6.23
Critical Hdwy Stg 1	6.16	5.52	-
Critical Hdwy Stg 2	6.16	5.52	-
Follow-up Hdwy	3.554	4.018	3.327
Pot Cap-1 Maneuver	131	192	725
Stage 1	593	581	-
Stage 2	332	424	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	150	725
Mov Cap-2 Maneuver	-	150	-
Stage 1	498	541	-
Stage 2	92	356	-

Approach	SB
HCM Control Delay, s	
HCM LOS	-

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	33	538	68	2	260	4	2	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0
Mvmt Flow	34	560	71	2	271	4	2	9	1

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	275	0	0	631	0	0	943	944	596
Stage 1	-	-	-	-	-	-	665	665	-
Stage 2	-	-	-	-	-	-	278	279	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1300	-	-	961	-	-	245	264	507
Stage 1	-	-	-	-	-	-	453	461	-
Stage 2	-	-	-	-	-	-	733	683	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1300	-	-	961	-	-	235	253	507
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	253	-
Stage 1	-	-	-	-	-	-	434	442	-
Stage 2	-	-	-	-	-	-	729	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.1	19.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	261	1300	-	-	961	-	-	242
HCM Lane V/C Ratio	0.048	0.026	-	-	0.002	-	-	0.009
HCM Control Delay (s)	19.5	7.8	0	-	8.8	0	-	20
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	2	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	2	0

Major/Minor	Minor2		
Conflicting Flow All	947	977	273
Stage 1	277	277	-
Stage 2	670	700	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	243	253	771
Stage 1	734	685	-
Stage 2	450	444	-
Platoon blocked, %			
Mov Cap-1 Maneuver	228	242	771
Mov Cap-2 Maneuver	228	242	-
Stage 1	704	684	-
Stage 2	422	426	-

Approach	SB
HCM Control Delay, s	20
HCM LOS	C

Minor Lane/Major Mvmt

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	583	3	7	255	18	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	607	3	7	266	19	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	610	0	889	609
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	979	-	316	499
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	979	-	313	499
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	766	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	313	499	-	-	979	-
HCM Lane V/C Ratio	0.06	0.117	-	-	0.007	-
HCM Control Delay (s)	17.2	13.2	-	-	8.7	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	90.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	24	338	2	96	580	21	1	51	57
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	100	0	1	0	0	0	0
Mvmt Flow	26	363	2	103	624	23	1	55	61

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	624	0	0	363	0	0	1357	1245	363
Stage 1	-	-	-	-	-	-	415	415	-
Stage 2	-	-	-	-	-	-	942	830	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	967	-	-	1207	-	-	127	176	686
Stage 1	-	-	-	-	-	-	619	596	-
Stage 2	-	-	-	-	-	-	318	388	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	967	-	-	1207	-	-	-	147	686
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	147	-
Stage 1	-	-	-	-	-	-	598	576	-
Stage 2	-	-	-	-	-	-	124	336	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	1.1	
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	967	-	-	1207	-	-	144
HCM Lane V/C Ratio	-	0.027	-	-	0.086	-	-	1.934
HCM Control Delay (s)	-	8.8	0	-	8.3	0	-	$ 496.9
HCM Lane LOS	-	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	0.3	-	-	21.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	51	151	57
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	93	93	93
Heavy Vehicles, %	0	1	0
Mvmt Flow	55	162	61

Major/Minor	Minor2		
Conflicting Flow All	1303	1245	624
Stage 1	830	830	-
Stage 2	473	415	-
Critical Hdwy	7.1	6.51	6.2
Critical Hdwy Stg 1	6.1	5.51	-
Critical Hdwy Stg 2	6.1	5.51	-
Follow-up Hdwy	3.5	4.009	3.3
Pot Cap-1 Maneuver	139	175	489
Stage 1	367	386	-
Stage 2	576	594	-
Platoon blocked, %			
Mov Cap-1 Maneuver	79	~ 146	489
Mov Cap-2 Maneuver	79	~ 146	-
Stage 1	355	334	-
Stage 2	458	574	-

Approach	SB
HCM Control Delay, s	$ 496.9
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	4	372	4	0	752	3	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0
Mvmt Flow	4	384	4	0	775	3	1	0	2

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	778	0	0	388	0	0	1173	1172	386
Stage 1	-	-	-	-	-	-	394	394	-
Stage 2	-	-	-	-	-	-	779	778	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	848	-	-	1182	-	-	171	194	666
Stage 1	-	-	-	-	-	-	635	609	-
Stage 2	-	-	-	-	-	-	392	410	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	848	-	-	1182	-	-	168	193	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	193	-
Stage 1	-	-	-	-	-	-	631	605	-
Stage 2	-	-	-	-	-	-	388	410	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	335	848	-	-	1182	-	-	235
HCM Lane V/C Ratio	0.009	0.005	-	-	-	-	-	0.022
HCM Control Delay (s)	15.8	9.3	0	-	0	-	-	20.7
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	2	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	2	2

Major/Minor	Minor2		
Conflicting Flow All	1172	1173	777
Stage 1	777	777	-
Stage 2	395	396	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	171	194	400
Stage 1	393	410	-
Stage 2	634	607	-
Platoon blocked, %			
Mov Cap-1 Maneuver	170	193	400
Mov Cap-2 Maneuver	170	193	-
Stage 1	391	410	-
Stage 2	628	603	-

Approach	SB
HCM Control Delay, s	20.7
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	363	18	43	712	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	6	0	1	0	0
Mvmt Flow	374	19	44	734	5	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	393	0	1207	384
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	823	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1177	-	204	668
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	435	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1177	-	191	668
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	408	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	668	-	-	1177	-
HCM Lane V/C Ratio	0.027	0.026	-	-	0.038	-
HCM Control Delay (s)	24.4	10.5	-	-	8.2	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	95.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	151	428	3	60	309	59	0	219	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	4	67	2	3	2	0	1	4
Mvmt Flow	161	455	3	64	329	63	0	233	83

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	329	0	0	455	0	0	1278	1233	455
Stage 1	-	-	-	-	-	-	777	777	-
Stage 2	-	-	-	-	-	-	501	456	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.51	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4.009	3.336
Pot Cap-1 Maneuver	1236	-	-	1106	-	-	144	~ 178	601
Stage 1	-	-	-	-	-	-	393	409	-
Stage 2	-	-	-	-	-	-	556	570	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1236	-	-	1106	-	-	76	~ 136	601
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	~ 136	-
Stage 1	-	-	-	-	-	-	324	337	-
Stage 2	-	-	-	-	-	-	437	527	-

Approach	EB	WB	NB
HCM Control Delay, s	2.2	1.2	$ 448.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	1236	-	-	1106	-	-	-
HCM Lane V/C Ratio	1.848	0.13	-	-	0.058	-	-	-
HCM Control Delay (s)	$ 448.9	8.3	0	-	8.5	0	-	-
HCM Lane LOS	F	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	23.2	0.4	-	-	0.2	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	20	54	30
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	6	2	3
Mvmt Flow	21	57	32

Major/Minor	Minor2		
Conflicting Flow All	1391	1233	329
Stage 1	456	456	-
Stage 2	935	777	-
Critical Hdwy	7.16	6.52	6.23
Critical Hdwy Stg 1	6.16	5.52	-
Critical Hdwy Stg 2	6.16	5.52	-
Follow-up Hdwy	3.554	4.018	3.327
Pot Cap-1 Maneuver	117	177	710
Stage 1	577	568	-
Stage 2	313	407	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	135	710
Mov Cap-2 Maneuver	-	135	-
Stage 1	476	525	-
Stage 2	69	336	-

Approach	SB
HCM Control Delay, s	
HCM LOS	-

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	566	71	2	274	4	2	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0
Mvmt Flow	36	590	74	2	285	4	2	9	1

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	290	0	0	664	0	0	992	993	627
Stage 1	-	-	-	-	-	-	699	699	-
Stage 2	-	-	-	-	-	-	293	294	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1283	-	-	935	-	-	227	247	487
Stage 1	-	-	-	-	-	-	434	445	-
Stage 2	-	-	-	-	-	-	719	673	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1283	-	-	935	-	-	217	235	487
Mov Cap-2 Maneuver	-	-	-	-	-	-	217	235	-
Stage 1	-	-	-	-	-	-	414	425	-
Stage 2	-	-	-	-	-	-	715	671	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.1	20.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	242	1283	-	-	935	-	-	225
HCM Lane V/C Ratio	0.052	0.028	-	-	0.002	-	-	0.009
HCM Control Delay (s)	20.7	7.9	0	-	8.9	0	-	21.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	2	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	2	0

Major/Minor	Minor2		
Conflicting Flow All	997	1028	288
Stage 1	292	292	-
Stage 2	705	736	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	225	236	756
Stage 1	720	675	-
Stage 2	430	428	-
Platoon blocked, %			
Mov Cap-1 Maneuver	210	225	756
Mov Cap-2 Maneuver	210	225	-
Stage 1	688	673	-
Stage 2	401	409	-

Approach	SB
HCM Control Delay, s	21.1
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	616	3	7	269	18	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	642	3	7	280	19	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	645	0	938	643
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	295	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	950	-	296	477
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	760	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	950	-	293	477
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	753	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	293	477	-	-	950	-
HCM Lane V/C Ratio	0.064	0.122	-	-	0.008	-
HCM Control Delay (s)	18.1	13.6	-	-	8.8	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	126.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	25	355	2	101	610	23	1	54	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	100	0	1	0	0	0	0
Mvmt Flow	27	382	2	109	656	25	1	58	65

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	656	0	0	382	0	0	1426	1308	382
Stage 1	-	-	-	-	-	-	435	435	-
Stage 2	-	-	-	-	-	-	991	873	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	941	-	-	1188	-	-	114	161	670
Stage 1	-	-	-	-	-	-	604	584	-
Stage 2	-	-	-	-	-	-	299	370	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	941	-	-	1188	-	-	-	132	670
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	132	-
Stage 1	-	-	-	-	-	-	582	563	-
Stage 2	-	-	-	-	-	-	100	315	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	1.1	
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	941	-	-	1188	-	-	125
HCM Lane V/C Ratio	-	0.029	-	-	0.091	-	-	2.357
HCM Control Delay (s)	-	8.9	0	-	8.3	0	-	$ 690.9
HCM Lane LOS	-	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	0.3	-	-	25.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	55	159	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	93	93	93
Heavy Vehicles, %	0	1	0
Mvmt Flow	59	171	65

Major/Minor	Minor2		
Conflicting Flow All	1370	1308	656
Stage 1	873	873	-
Stage 2	497	435	-
Critical Hdwy	7.1	6.51	6.2
Critical Hdwy Stg 1	6.1	5.51	-
Critical Hdwy Stg 2	6.1	5.51	-
Follow-up Hdwy	3.5	4.009	3.3
Pot Cap-1 Maneuver	125	~ 160	469
Stage 1	348	369	-
Stage 2	559	582	-
Platoon blocked, %			
Mov Cap-1 Maneuver	65	~ 131	469
Mov Cap-2 Maneuver	65	~ 131	-
Stage 1	335	314	-
Stage 2	437	561	-

Approach	SB
HCM Control Delay, s	$ 690.9
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	4	392	4	0	791	3	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0
Mvmt Flow	4	404	4	0	815	3	1	0	2

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	819	0	0	408	0	0	1233	1233	406
Stage 1	-	-	-	-	-	-	414	414	-
Stage 2	-	-	-	-	-	-	819	819	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	818	-	-	1162	-	-	155	178	649
Stage 1	-	-	-	-	-	-	620	597	-
Stage 2	-	-	-	-	-	-	372	392	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	818	-	-	1162	-	-	152	177	649
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	177	-
Stage 1	-	-	-	-	-	-	616	593	-
Stage 2	-	-	-	-	-	-	368	392	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	818	-	-	1162	-	-	217
HCM Lane V/C Ratio	0.01	0.005	-	-	-	-	-	0.024
HCM Control Delay (s)	16.7	9.4	0	-	0	-	-	22
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	2	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	2	2

Major/Minor	Minor2		
Conflicting Flow All	1232	1233	817
Stage 1	817	817	-
Stage 2	415	416	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	155	178	380
Stage 1	373	393	-
Stage 2	619	595	-
Platoon blocked, %			
Mov Cap-1 Maneuver	154	177	380
Mov Cap-2 Maneuver	154	177	-
Stage 1	371	393	-
Stage 2	613	591	-

Approach	SB
HCM Control Delay, s	22
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	383	18	43	751	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	6	0	1	0	0
Mvmt Flow	395	19	44	774	5	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	413	0	1267	404
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	863	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1157	-	188	651
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	416	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1157	-	175	651
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	388	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	175	651	-	-	1157	-
HCM Lane V/C Ratio	0.029	0.027	-	-	0.038	-
HCM Control Delay (s)	26.2	10.7	-	-	8.2	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	96.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	151	428	3	60	311	62	0	219	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	4	67	2	3	2	0	1	4
Mvmt Flow	161	455	3	64	331	66	0	233	83

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	331	0	0	455	0	0	1280	1236	455
Stage 1	-	-	-	-	-	-	777	777	-
Stage 2	-	-	-	-	-	-	503	459	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.51	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.51	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4.009	3.336
Pot Cap-1 Maneuver	1234	-	-	1106	-	-	144	~ 177	601
Stage 1	-	-	-	-	-	-	393	409	-
Stage 2	-	-	-	-	-	-	555	568	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1234	-	-	1106	-	-	76	~ 135	601
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	~ 135	-
Stage 1	-	-	-	-	-	-	324	337	-
Stage 2	-	-	-	-	-	-	436	525	-

Approach	EB	WB	NB
HCM Control Delay, s	2.2	1.2	$ 453.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	170	1234	-	-	1106	-	-	-
HCM Lane V/C Ratio	1.859	0.13	-	-	0.058	-	-	-
HCM Control Delay (s)	$ 453.9	8.4	0	-	8.5	0	-	-
HCM Lane LOS	F	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	23.3	0.4	-	-	0.2	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	21	54	30
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	6	2	3
Mvmt Flow	22	57	32

Major/Minor	Minor2		
Conflicting Flow All	1394	1236	331
Stage 1	459	459	-
Stage 2	935	777	-
Critical Hdwy	7.16	6.52	6.23
Critical Hdwy Stg 1	6.16	5.52	-
Critical Hdwy Stg 2	6.16	5.52	-
Follow-up Hdwy	3.554	4.018	3.327
Pot Cap-1 Maneuver	117	176	708
Stage 1	574	566	-
Stage 2	313	407	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	134	708
Mov Cap-2 Maneuver	-	134	-
Stage 1	474	524	-
Stage 2	69	336	-

Approach	SB
HCM Control Delay, s	
HCM LOS	-

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	595	71	2	282	4	2	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0
Mvmt Flow	36	620	74	2	294	4	2	9	1

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	298	0	0	694	0	0	1031	1032	657
Stage 1	-	-	-	-	-	-	730	730	-
Stage 2	-	-	-	-	-	-	301	302	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1275	-	-	911	-	-	213	235	468
Stage 1	-	-	-	-	-	-	417	431	-
Stage 2	-	-	-	-	-	-	712	668	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1275	-	-	911	-	-	203	223	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	223	-
Stage 1	-	-	-	-	-	-	397	411	-
Stage 2	-	-	-	-	-	-	708	666	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.1	21.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	229	1275	-	-	911	-	-	213
HCM Lane V/C Ratio	0.055	0.029	-	-	0.002	-	-	0.01
HCM Control Delay (s)	21.6	7.9	0	-	9	0	-	22.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	0	2	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	2	0

Major/Minor	Minor2		
Conflicting Flow All	1035	1067	296
Stage 1	300	300	-
Stage 2	735	767	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	212	224	748
Stage 1	713	669	-
Stage 2	414	414	-
Platoon blocked, %			
Mov Cap-1 Maneuver	197	213	748
Mov Cap-2 Maneuver	197	213	-
Stage 1	679	667	-
Stage 2	385	395	-

Approach	SB
HCM Control Delay, s	22.1
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	617	3	7	274	18	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	643	3	7	285	19	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	646	0	944	644
Stage 1	-	-	-	-	644	-
Stage 2	-	-	-	-	300	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	949	-	293	476
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	756	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	949	-	290	476
Mov Cap-2 Maneuver	-	-	-	-	290	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	749	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	476	-	-	949	-
HCM Lane V/C Ratio	0.065	0.123	-	-	0.008	-
HCM Control Delay (s)	18.3	13.6	-	-	8.8	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	672	276	8	29	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	2	2	0	0	2
Mvmt Flow	1	700	288	8	30	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	296	0	-	0	994	292
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	702	-
Critical Hdwy	4.1	-	-	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.318
Pot Cap-1 Maneuver	1277	-	-	-	274	747
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1277	-	-	-	274	747
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	495	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1277	-	-	-	302
HCM Lane V/C Ratio	0.001	-	-	-	0.117
HCM Control Delay (s)	7.8	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	135.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	25	357	2	101	611	25	1	54	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	2	100	0	1	0	0	0	0
Mvmt Flow	27	384	2	109	657	27	1	58	65

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	657	0	0	384	0	0	1430	1312	384
Stage 1	-	-	-	-	-	-	438	438	-
Stage 2	-	-	-	-	-	-	992	874	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	940	-	-	1186	-	-	113	160	668
Stage 1	-	-	-	-	-	-	601	582	-
Stage 2	-	-	-	-	-	-	299	370	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	940	-	-	1186	-	-	-	131	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	131	-
Stage 1	-	-	-	-	-	-	579	560	-
Stage 2	-	-	-	-	-	-	100	315	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	1.1	
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	940	-	-	1186	-	-	122
HCM Lane V/C Ratio	-	0.029	-	-	0.092	-	-	2.45
HCM Control Delay (s)	-	8.9	0	-	8.3	0	-	$ 733.6
HCM Lane LOS	-	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	0.3	-	-	26.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	59	159	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	93	93	93
Heavy Vehicles, %	0	1	0
Mvmt Flow	63	171	65

Major/Minor	Minor2		
Conflicting Flow All	1373	1312	657
Stage 1	874	874	-
Stage 2	499	438	-
Critical Hdwy	7.1	6.51	6.2
Critical Hdwy Stg 1	6.1	5.51	-
Critical Hdwy Stg 2	6.1	5.51	-
Follow-up Hdwy	3.5	4.009	3.3
Pot Cap-1 Maneuver	124	~ 159	468
Stage 1	347	369	-
Stage 2	557	580	-
Platoon blocked, %			
Mov Cap-1 Maneuver	64	~ 130	468
Mov Cap-2 Maneuver	64	~ 130	-
Stage 1	334	314	-
Stage 2	434	559	-

Approach	SB
HCM Control Delay, s	$ 733.6
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	4	411	4	0	825	3	1	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0
Mvmt Flow	4	424	4	0	851	3	1	0	2

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	854	0	0	428	0	0	1288	1288	426
Stage 1	-	-	-	-	-	-	434	434	-
Stage 2	-	-	-	-	-	-	854	854	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	794	-	-	1142	-	-	142	165	633
Stage 1	-	-	-	-	-	-	604	585	-
Stage 2	-	-	-	-	-	-	356	378	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	794	-	-	1142	-	-	139	164	633
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	164	-
Stage 1	-	-	-	-	-	-	600	581	-
Stage 2	-	-	-	-	-	-	352	378	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	290	794	-	-	1142	-	-	202
HCM Lane V/C Ratio	0.011	0.005	-	-	-	-	-	0.026
HCM Control Delay (s)	17.5	9.6	0	-	0	-	-	23.3
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh

Movement	SBL	SBT	SBR
Vol, veh/h	1	2	2
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	97	97	97
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	2	2

Major/Minor	Minor2		
Conflicting Flow All	1287	1288	852
Stage 1	852	852	-
Stage 2	435	436	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	142	165	362
Stage 1	357	379	-
Stage 2	604	583	-
Platoon blocked, %			
Mov Cap-1 Maneuver	141	164	362
Mov Cap-2 Maneuver	141	164	-
Stage 1	355	379	-
Stage 2	598	579	-

Approach	SB
HCM Control Delay, s	23.3
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	389	18	43	754	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	6	0	1	0	0
Mvmt Flow	401	19	44	777	5	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	420	0	1276	410
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	866	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1150	-	186	646
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	415	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	174	646
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	387	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	174	646	-	-	1150	-
HCM Lane V/C Ratio	0.03	0.027	-	-	0.039	-
HCM Control Delay (s)	26.3	10.7	-	-	8.3	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	400	794	34	19	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	6	412	819	35	20	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	854	0	-	0	1261	836
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	794	-	-	-	190	370
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	794	-	-	-	188	370
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	657	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	25.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	794	-	-	-	202
HCM Lane V/C Ratio	0.008	-	-	-	0.112
HCM Control Delay (s)	9.6	0	-	-	25.1
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.4

□ Delay Study

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Corey st Approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Corey Street NB AM
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Ln.	No.	Joined Queue	Released From Queue	Delay
1	1	7:15:01 AM	7:15:04 AM	3
1	2	7:15:04 AM	7:15:09 AM	5
1	3	7:15:06 AM	7:15:12 AM	6
1	4	7:15:09 AM	7:15:15 AM	6
1	5	7:15:11 AM	7:15:23 AM	12
1	6	7:15:19 AM	7:15:24 AM	5
1	7	7:15:21 AM	7:15:27 AM	6
1	8	7:16:08 AM	7:16:11 AM	3
1	9	7:16:14 AM	7:16:20 AM	6
1	10	7:16:48 AM	7:16:51 AM	3
1	11	7:16:50 AM	7:17:27 AM	37
1	12	7:16:51 AM	7:17:32 AM	41
1	13	7:16:59 AM	7:17:34 AM	35
1	14	7:17:08 AM	7:17:37 AM	29
1	15	7:17:10 AM	7:17:39 AM	29
1	16	7:17:29 AM	7:17:45 AM	16
1	17	7:17:36 AM	7:17:47 AM	11
1	18	7:17:41 AM	7:17:52 AM	11
1	19	7:18:42 AM	7:18:46 AM	4
1	20	7:19:33 AM	7:19:34 AM	1
1	21	7:19:36 AM	7:19:39 AM	3
1	22	7:19:46 AM	7:19:48 AM	2
1	23	7:19:49 AM	7:19:54 AM	5
1	24	7:19:51 AM	7:19:56 AM	5
1	25	7:19:55 AM	7:19:59 AM	4
1	26	7:20:21 AM	7:20:23 AM	2
1	27	7:21:05 AM	7:21:09 AM	4
1	28	7:21:10 AM	7:21:12 AM	2
1	29	7:21:23 AM	7:21:28 AM	5
1	30	7:21:48 AM	7:21:49 AM	1
1	31	7:22:18 AM	7:22:29 AM	11
1	32	7:22:21 AM	7:22:48 AM	27
1	33	7:22:50 AM	7:22:52 AM	2
1	34	7:22:50 AM	7:22:57 AM	7
1	35	7:23:06 AM	7:23:08 AM	2
1	36	7:24:29 AM	7:24:44 AM	15
1	37	7:24:31 AM	7:25:13 AM	42
1	38	7:24:34 AM	7:25:16 AM	42
1	39	7:24:37 AM	7:25:18 AM	41
1	40	7:24:42 AM	7:25:21 AM	39
1	41	7:24:54 AM	7:25:23 AM	29
1	42	7:25:19 AM	7:25:33 AM	14
1	43	7:25:25 AM	7:25:36 AM	11
1	44	7:25:29 AM	7:25:39 AM	10
1	45	7:25:30 AM	7:25:41 AM	11
1	46	7:25:40 AM	7:25:45 AM	5
1	47	7:25:43 AM	7:25:46 AM	3
1	48	7:25:47 AM	7:25:49 AM	2
1	49	7:25:50 AM	7:25:51 AM	1
1	50	7:25:51 AM	7:25:55 AM	4
1	51	7:25:54 AM	7:25:58 AM	4
1	52	7:25:55 AM	7:25:59 AM	4
1	53	7:26:02 AM	7:26:04 AM	2
1	54	7:26:08 AM	7:26:30 AM	22
1	55	7:27:10 AM	7:27:15 AM	5
1	56	7:27:11 AM	7:27:22 AM	11
1	57	7:27:13 AM	7:27:24 AM	11
1	58	7:27:14 AM	7:27:29 AM	15

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Ln.	No.	Joined Queue	Released From Queue	Delay
1	59	7:27:20 AM	7:27:32 AM	12
1	60	7:27:23 AM	7:27:33 AM	10
1	61	7:27:29 AM	7:27:36 AM	7
1	62	7:27:33 AM	7:27:38 AM	5
1	63	7:27:35 AM	7:27:40 AM	5
1	64	7:27:41 AM	7:27:46 AM	5
1	65	7:27:47 AM	7:27:51 AM	4
1	66	7:27:51 AM	7:27:53 AM	2
1	67	7:27:54 AM	7:27:56 AM	2
1	68	7:27:59 AM	7:28:00 AM	1
1	69	7:28:00 AM	7:28:06 AM	6
1	70	7:28:24 AM	7:28:39 AM	15
1	71	7:28:44 AM	7:28:47 AM	3
1	72	7:28:57 AM	7:29:05 AM	8
1	73	7:29:00 AM	7:29:12 AM	12
1	74	7:29:04 AM	7:29:17 AM	13
1	75	7:29:28 AM	7:29:30 AM	2
1	76	7:30:11 AM	7:30:13 AM	2
1	77	7:30:20 AM	7:30:28 AM	8
1	78	7:30:25 AM	7:30:34 AM	9
1	79	7:30:27 AM	7:30:37 AM	10
1	80	7:30:39 AM	7:31:11 AM	32
1	81	7:30:41 AM	7:31:14 AM	33
1	82	7:31:13 AM	7:31:23 AM	10
1	83	7:31:17 AM	7:31:25 AM	8
1	84	7:31:56 AM	7:31:57 AM	1
1	85	7:32:04 AM	7:32:08 AM	4
1	86	7:32:15 AM	7:32:35 AM	20
1	87	7:32:17 AM	7:32:39 AM	22
1	88	7:32:21 AM	7:32:47 AM	26
1	89	7:32:27 AM	7:32:49 AM	22
1	90	7:32:41 AM	7:32:53 AM	12
1	91	7:32:46 AM	7:32:56 AM	10
1	92	7:32:52 AM	7:33:18 AM	26
1	93	7:32:53 AM	7:33:19 AM	26
1	94	7:32:58 AM	7:33:26 AM	28
1	95	7:33:01 AM	7:33:28 AM	27
1	96	7:33:11 AM	7:33:31 AM	20
1	97	7:33:30 AM	7:33:35 AM	5
1	98	7:33:32 AM	7:33:37 AM	5
1	99	7:33:40 AM	7:33:45 AM	5
1	100	7:33:42 AM	7:33:47 AM	5
1	101	7:33:44 AM	7:33:50 AM	6
1	102	7:33:49 AM	7:33:53 AM	4
1	103	7:33:54 AM	7:33:56 AM	2
1	104	7:33:56 AM	7:33:59 AM	3
1	105	7:34:11 AM	7:34:13 AM	2
1	106	7:34:18 AM	7:34:22 AM	4
1	107	7:35:29 AM	7:35:32 AM	3
1	108	7:35:37 AM	7:35:41 AM	4
1	109	7:35:43 AM	7:35:45 AM	2
1	110	7:35:44 AM	7:35:48 AM	4
1	111	7:35:54 AM	7:35:58 AM	4
1	112	7:35:58 AM	7:36:01 AM	3
1	113	7:35:59 AM	7:36:04 AM	5
1	114	7:36:52 AM	7:36:56 AM	4
1	115	7:36:54 AM	7:37:01 AM	7
1	116	7:37:18 AM	7:37:22 AM	4

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Ln.	No.	Joined Queue	Released From Queue	Delay
1	117	7:37:21 AM	7:37:25 AM	4
1	118	7:37:29 AM	7:37:33 AM	4
1	119	7:37:35 AM	7:37:38 AM	3
1	120	7:37:37 AM	7:37:41 AM	4
1	121	7:37:44 AM	7:37:49 AM	5
1	122	7:38:36 AM	7:38:47 AM	11
1	123	7:39:35 AM	7:39:38 AM	3
1	124	7:39:37 AM	7:39:44 AM	7
1	125	7:39:38 AM	7:39:48 AM	10
1	126	7:39:41 AM	7:39:52 AM	11
1	127	7:39:49 AM	7:39:54 AM	5
1	128	7:39:49 AM	7:39:56 AM	7
1	129	7:39:54 AM	7:40:04 AM	10
1	130	7:40:23 AM	7:40:42 AM	19
1	131	7:41:26 AM	7:41:30 AM	4
1	132	7:41:40 AM	7:41:43 AM	3
1	133	7:41:46 AM	7:41:48 AM	2
1	134	7:41:49 AM	7:41:52 AM	3
1	135	7:41:54 AM	7:41:57 AM	3
1	136	7:41:58 AM	7:42:00 AM	2
1	137	7:42:23 AM	7:42:28 AM	5
1	138	7:42:25 AM	7:42:30 AM	5
1	139	7:42:26 AM	7:42:33 AM	7
1	140	7:43:24 AM	7:43:26 AM	2
1	141	7:43:30 AM	7:43:35 AM	5
1	142	7:43:31 AM	7:43:39 AM	8
1	143	7:43:50 AM	7:43:57 AM	7
1	144	7:43:51 AM	7:43:59 AM	8
1	145	7:43:52 AM	7:44:09 AM	17
1	146	7:43:54 AM	7:44:11 AM	17
1	147	7:44:01 AM	7:44:20 AM	19
1	148	7:44:11 AM	7:44:22 AM	11
1	149	7:45:32 AM	7:45:43 AM	11
1	150	7:45:40 AM	7:45:47 AM	7
1	151	7:45:42 AM	7:45:50 AM	8
1	152	7:45:47 AM	7:45:55 AM	8
1	153	7:45:49 AM	7:45:58 AM	9
1	154	7:45:52 AM	7:46:02 AM	10
1	155	7:45:53 AM	7:46:04 AM	11
1	156	7:46:01 AM	7:46:10 AM	9
1	157	7:46:03 AM	7:46:12 AM	9
1	158	7:46:27 AM	7:46:31 AM	4
1	159	7:46:52 AM	7:47:04 AM	12
1	160	7:46:55 AM	7:47:35 AM	40
1	161	7:47:29 AM	7:47:44 AM	15
1	162	7:47:34 AM	7:47:55 AM	21
1	163	7:47:36 AM	7:47:58 AM	22
1	164	7:47:45 AM	7:48:04 AM	19
1	165	7:47:46 AM	7:48:07 AM	21
1	166	7:48:08 AM	7:48:12 AM	4
1	167	7:48:30 AM	7:48:39 AM	9
1	168	7:48:42 AM	7:49:16 AM	34
1	169	7:49:23 AM	7:49:39 AM	16
1	170	7:49:24 AM	7:49:43 AM	19
1	171	7:49:27 AM	7:49:47 AM	20
1	172	7:49:30 AM	7:49:49 AM	19
1	173	7:50:13 AM	7:50:19 AM	6
1	174	7:50:19 AM	7:50:24 AM	5

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Ln.	No.	Joined Queue	Released From Queue	Delay
1	175	7:50:52 AM	7:50:54 AM	2
1	176	7:50:56 AM	7:51:01 AM	5
1	177	7:51:00 AM	7:51:04 AM	4
1	178	7:51:10 AM	7:51:37 AM	27
1	179	7:51:54 AM	7:51:57 AM	3
1	180	7:51:58 AM	7:52:00 AM	2
1	181	7:52:01 AM	7:52:07 AM	6
1	182	7:52:36 AM	7:52:43 AM	7
1	183	7:52:37 AM	7:52:47 AM	10
1	184	7:52:39 AM	7:52:51 AM	12
1	185	7:52:43 AM	7:52:57 AM	14
1	186	7:52:47 AM	7:53:00 AM	13
1	187	7:52:54 AM	7:53:02 AM	8
1	188	7:52:57 AM	7:53:05 AM	8
1	189	7:53:05 AM	7:53:08 AM	3
1	190	7:54:10 AM	7:54:12 AM	2
1	191	7:54:22 AM	7:54:25 AM	3
1	192	7:54:26 AM	7:54:36 AM	10
1	193	7:56:08 AM	7:56:14 AM	6
1	194	7:56:12 AM	7:56:18 AM	6
1	195	7:56:16 AM	7:56:21 AM	5
1	196	7:56:21 AM	7:56:24 AM	3
1	197	7:56:22 AM	7:56:26 AM	4
1	198	7:56:28 AM	7:56:31 AM	3
1	199	7:57:01 AM	7:57:25 AM	24
1	200	7:57:06 AM	7:57:29 AM	23
1	201	7:57:08 AM	7:57:32 AM	24
1	202	7:57:24 AM	7:57:35 AM	11
1	203	7:57:46 AM	7:57:50 AM	4
1	204	7:58:15 AM	7:58:18 AM	3
1	205	7:58:16 AM	7:58:21 AM	5
1	206	7:58:25 AM	7:58:39 AM	14
1	207	7:58:26 AM	7:58:57 AM	31
1	208	7:58:30 AM	7:59:07 AM	37
1	209	7:58:36 AM	7:59:10 AM	34
1	210	7:58:43 AM	7:59:26 AM	43
1	211	7:59:00 AM	7:59:30 AM	30
1	212	7:59:04 AM	7:59:43 AM	39
1	213	7:59:51 AM	7:59:56 AM	5
1	214	7:59:58 AM	8:00:02 AM	4
1	215	7:59:59 AM	8:00:04 AM	5
1	216	8:00:01 AM	8:00:08 AM	7
1	217	8:00:19 AM	8:00:34 AM	15
1	218	8:00:20 AM	8:00:38 AM	18
1	219	8:00:21 AM	8:00:42 AM	21
1	220	8:00:45 AM	8:00:49 AM	4
1	221	8:00:46 AM	8:00:53 AM	7
1	222	8:00:47 AM	8:00:57 AM	10
1	223	8:01:44 AM	8:01:46 AM	2
1	224	8:01:48 AM	8:01:51 AM	3
1	225	8:01:53 AM	8:02:21 AM	28
1	226	8:02:00 AM	8:02:25 AM	25
1	227	8:02:00 AM	8:02:46 AM	46
1	228	8:02:30 AM	8:02:56 AM	26
1	229	8:02:34 AM	8:02:58 AM	24
1	230	8:02:51 AM	8:03:30 AM	39
1	231	8:03:34 AM	8:03:37 AM	3
1	232	8:03:39 AM	8:03:42 AM	3

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Ln.	No.	Joined Queue	Released From Queue	Delay
1	233	8:03:42 AM	8:03:45 AM	3
1	234	8:03:46 AM	8:03:48 AM	2
1	235	8:03:50 AM	8:03:52 AM	2
1	236	8:03:53 AM	8:03:59 AM	6
1	237	8:03:54 AM	8:04:01 AM	7
1	238	8:03:56 AM	8:04:06 AM	10
1	239	8:05:20 AM	8:05:26 AM	6
1	240	8:05:52 AM	8:05:55 AM	3
1	241	8:05:55 AM	8:05:58 AM	3
1	242	8:05:59 AM	8:06:01 AM	2
1	243	8:06:02 AM	8:06:07 AM	5
1	244	8:06:05 AM	8:06:11 AM	6
1	245	8:06:10 AM	8:06:15 AM	5
1	246	8:06:13 AM	8:06:17 AM	4
1	247	8:06:16 AM	8:06:20 AM	4
1	248	8:06:20 AM	8:06:22 AM	2
1	249	8:06:21 AM	8:06:26 AM	5
1	250	8:06:28 AM	8:06:31 AM	3
1	251	8:07:16 AM	8:07:19 AM	3
1	252	8:07:23 AM	8:07:31 AM	8
1	253	8:07:28 AM	8:07:38 AM	10
1	254	8:07:31 AM	8:07:40 AM	9
1	255	8:07:41 AM	8:07:46 AM	5
1	256	8:07:45 AM	8:07:51 AM	6
1	257	8:07:48 AM	8:07:55 AM	7
1	258	8:07:50 AM	8:07:58 AM	8
1	259	8:07:54 AM	8:08:01 AM	7
1	260	8:08:03 AM	8:08:05 AM	2
1	261	8:08:06 AM	8:08:09 AM	3
1	262	8:08:08 AM	8:08:10 AM	2
1	263	8:08:12 AM	8:08:16 AM	4
1	264	8:08:14 AM	8:08:18 AM	4
1	265	8:08:19 AM	8:08:20 AM	1
1	266	8:08:33 AM	8:08:38 AM	5
1	267	8:09:22 AM	8:09:50 AM	28
1	268	8:09:33 AM	8:09:53 AM	20
1	269	8:09:36 AM	8:09:55 AM	19
1	270	8:09:38 AM	8:09:57 AM	19
1	271	8:09:58 AM	8:10:01 AM	3
1	272	8:10:31 AM	8:10:33 AM	2
1	273	8:11:15 AM	8:11:17 AM	2
1	274	8:11:43 AM	8:11:51 AM	8
1	275	8:11:47 AM	8:11:55 AM	8
1	276	8:11:49 AM	8:11:58 AM	9
1	277	8:11:50 AM	8:12:00 AM	10
1	278	8:11:56 AM	8:12:01 AM	5
1	279	8:12:03 AM	8:12:07 AM	4
1	280	8:12:09 AM	8:12:15 AM	6
1	281	8:12:16 AM	8:12:21 AM	5
1	282	8:13:01 AM	8:13:08 AM	7
1	283	8:13:11 AM	8:13:13 AM	2
1	284	8:13:23 AM	8:13:25 AM	2
1	285	8:13:27 AM	8:13:35 AM	8

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28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Corey st Approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Corey Street NB AM
Site Code : 00765004
Start Date : 5/6/2014

Summary Information:

7:15:00 AM - 8:14:00 AM	Stop Sign Delay Study-Corey Street NB AM
Total Vehicle Count:	285
Delayed Vehicle Count:	285
Through Vehicle Count:	0
Average Stopped Time:	10.36
Maximum Stopped Time:	46
Min. Secs. for Delay:	0
Average Queue:	0.84
Queue Density:	1.91
Maximum Queue:	5
Delay in Vehicle Hour:	0.84
Total Delay:	2954

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28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Corey st Approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Corey Street NB PM
Site Code : 00765003
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	1	5:00:01 PM	5:00:08 PM	7
1	2	5:00:41 PM	5:00:53 PM	12
1	3	5:00:44 PM	5:00:57 PM	13
1	4	5:01:04 PM	5:01:09 PM	5
1	5	5:01:06 PM	5:01:10 PM	4
1	6	5:01:22 PM	5:01:25 PM	3
1	7	5:02:30 PM	5:02:31 PM	1
1	8	5:02:32 PM	5:02:35 PM	3
1	9	5:02:41 PM	5:02:44 PM	3
1	10	5:03:18 PM	5:03:20 PM	2
1	11	5:04:22 PM	5:04:25 PM	3
1	12	5:04:43 PM	5:05:11 PM	28
1	13	5:04:45 PM	5:05:14 PM	29
1	14	5:04:53 PM	5:05:17 PM	24
1	15	5:05:32 PM	5:05:36 PM	4
1	16	5:06:08 PM	5:06:13 PM	5
1	17	5:06:55 PM	5:07:04 PM	9
1	18	5:07:43 PM	5:07:47 PM	4
1	19	5:07:56 PM	5:07:57 PM	1
1	20	5:08:04 PM	5:08:08 PM	4
1	21	5:08:50 PM	5:09:01 PM	11
1	22	5:09:47 PM	5:09:55 PM	8
1	23	5:09:50 PM	5:09:57 PM	7
1	24	5:09:54 PM	5:10:00 PM	6
1	25	5:11:29 PM	5:11:33 PM	4
1	26	5:12:07 PM	5:12:09 PM	2
1	27	5:12:56 PM	5:12:59 PM	3
1	28	5:14:30 PM	5:14:32 PM	2
1	29	5:14:41 PM	5:15:04 PM	23
1	30	5:14:46 PM	5:15:11 PM	25
1	31	5:14:51 PM	5:15:14 PM	23
1	32	5:15:08 PM	5:15:18 PM	10
1	33	5:15:41 PM	5:15:43 PM	2
1	34	5:16:40 PM	5:16:46 PM	6
1	35	5:17:00 PM	5:17:02 PM	2
1	36	5:17:03 PM	5:17:05 PM	2
1	37	5:17:44 PM	5:17:47 PM	3
1	38	5:17:54 PM	5:17:59 PM	5
1	39	5:19:34 PM	5:19:39 PM	5
1	40	5:19:46 PM	5:19:48 PM	2
1	41	5:20:24 PM	5:20:28 PM	4
1	42	5:21:33 PM	5:21:35 PM	2
1	43	5:22:08 PM	5:22:12 PM	4
1	44	5:22:35 PM	5:22:53 PM	18
1	45	5:23:31 PM	5:23:38 PM	7
1	46	5:23:35 PM	5:23:41 PM	6
1	47	5:23:38 PM	5:23:44 PM	6
1	48	5:23:41 PM	5:23:48 PM	7
1	49	5:24:58 PM	5:25:04 PM	6
1	50	5:25:00 PM	5:25:07 PM	7
1	51	5:25:43 PM	5:25:47 PM	4
1	52	5:26:44 PM	5:26:47 PM	3
1	53	5:27:23 PM	5:27:25 PM	2
1	54	5:27:26 PM	5:27:29 PM	3
1	55	5:27:31 PM	5:27:33 PM	2
1	56	5:28:35 PM	5:28:44 PM	9
1	57	5:28:56 PM	5:29:42 PM	46
1	58	5:31:21 PM	5:31:34 PM	13

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Corey st Approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Corey Street NB PM
Site Code : 00765003
Start Date : 5/6/2014
Page No : 2

Ln.	No.	Joined Queue	Released From Queue	Delay
1	59	5:31:47 PM	5:31:49 PM	2
1	60	5:32:07 PM	5:32:09 PM	2
1	61	5:32:54 PM	5:32:55 PM	1
1	62	5:33:05 PM	5:33:12 PM	7
1	63	5:34:05 PM	5:34:07 PM	2
1	64	5:34:13 PM	5:34:16 PM	3
1	65	5:34:46 PM	5:34:54 PM	8
1	66	5:35:21 PM	5:35:23 PM	2
1	67	5:35:32 PM	5:35:35 PM	3
1	68	5:35:54 PM	5:35:56 PM	2
1	69	5:36:15 PM	5:36:17 PM	2
1	70	5:37:50 PM	5:37:53 PM	3
1	71	5:37:54 PM	5:37:56 PM	2
1	72	5:37:59 PM	5:38:01 PM	2
1	73	5:38:02 PM	5:38:17 PM	15
1	74	5:38:04 PM	5:38:26 PM	22
1	75	5:38:08 PM	5:38:31 PM	23
1	76	5:39:37 PM	5:39:41 PM	4
1	77	5:39:43 PM	5:39:46 PM	3
1	78	5:39:48 PM	5:39:53 PM	5
1	79	5:40:30 PM	5:40:31 PM	1
1	80	5:41:17 PM	5:41:19 PM	2
1	81	5:41:23 PM	5:41:25 PM	2
1	82	5:41:27 PM	5:41:33 PM	6
1	83	5:42:56 PM	5:42:58 PM	2
1	84	5:44:39 PM	5:44:42 PM	3
1	85	5:46:56 PM	5:47:01 PM	5
1	86	5:47:23 PM	5:47:24 PM	1
1	87	5:48:36 PM	5:48:39 PM	3
1	88	5:49:54 PM	5:49:56 PM	2
1	89	5:51:32 PM	5:51:36 PM	4
1	90	5:52:06 PM	5:52:12 PM	6
1	91	5:52:35 PM	5:52:49 PM	14
1	92	5:52:37 PM	5:52:52 PM	15
1	93	5:53:33 PM	5:53:36 PM	3
1	94	5:53:43 PM	5:53:45 PM	2
1	95	5:54:29 PM	5:54:59 PM	30
1	96	5:54:31 PM	5:55:02 PM	31
1	97	5:54:45 PM	5:55:06 PM	21
1	98	5:55:21 PM	5:55:23 PM	2
1	99	5:55:25 PM	5:55:28 PM	3
1	100	5:55:30 PM	5:55:32 PM	2
1	101	5:55:39 PM	5:55:43 PM	4
1	102	5:55:51 PM	5:55:53 PM	2
1	103	5:56:48 PM	5:56:52 PM	4
1	104	5:57:41 PM	5:57:45 PM	4
1	105	5:57:43 PM	5:57:49 PM	6
1	106	5:57:46 PM	5:57:53 PM	7
1	107	5:57:52 PM	5:58:02 PM	10
1	108	5:57:58 PM	5:58:14 PM	16
1	109	5:58:06 PM	5:58:20 PM	14
1	110	5:58:06 PM	5:58:25 PM	19

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28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Corey st Approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Corey Street NB PM
Site Code : 00765003
Start Date : 5/6/2014
Page No : 3

Summary Information:

5:00:00 PM - 5:59:00 PM	Stop Sign Delay Study-Corey Street NB PM
Total Vehicle Count:	110
Delayed Vehicle Count:	110
Through Vehicle Count:	0
Average Stopped Time:	7.48
Maximum Stopped Time:	46
Min. Secs. for Delay:	0
Average Queue:	0.23
Queue Density:	1.42
Maximum Queue:	3
Delay in Vehicle Hour:	0.23
Total Delay:	823

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28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Vine Street approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Vine street SB AM
Site Code : 00765002
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	1	7:16:00 AM	7:16:04 AM	4
1	2	7:16:31 AM	7:16:34 AM	3
1	3	7:16:34 AM	7:16:37 AM	3
1	4	7:17:50 AM	7:17:53 AM	3
1	5	7:18:05 AM	7:18:09 AM	4
1	6	7:18:24 AM	7:18:26 AM	2
1	7	7:21:06 AM	7:21:11 AM	5
1	8	7:22:43 AM	7:22:46 AM	3
1	9	7:24:26 AM	7:24:29 AM	3
1	10	7:26:11 AM	7:26:18 AM	7
1	11	7:26:33 AM	7:26:36 AM	3
1	12	7:26:41 AM	7:26:55 AM	14
1	13	7:27:08 AM	7:27:18 AM	10
1	14	7:27:34 AM	7:27:36 AM	2
1	15	7:29:07 AM	7:29:13 AM	6
1	16	7:29:30 AM	7:29:34 AM	4
1	17	7:29:50 AM	7:29:54 AM	4
1	18	7:29:52 AM	7:29:57 AM	5
1	19	7:30:42 AM	7:30:45 AM	3
1	20	7:30:49 AM	7:31:00 AM	11
1	21	7:30:57 AM	7:31:01 AM	4
1	22	7:31:52 AM	7:31:54 AM	2
1	23	7:33:13 AM	7:33:15 AM	2
1	24	7:33:32 AM	7:33:35 AM	3
1	25	7:33:34 AM	7:33:38 AM	4
1	26	7:35:15 AM	7:35:17 AM	2
1	27	7:35:19 AM	7:35:22 AM	3
1	28	7:36:01 AM	7:36:04 AM	3
1	29	7:37:32 AM	7:37:36 AM	4
1	30	7:38:14 AM	7:38:24 AM	10
1	31	7:38:34 AM	7:38:37 AM	3
1	32	7:39:01 AM	7:39:05 AM	4
1	33	7:39:11 AM	7:39:18 AM	7
1	34	7:39:21 AM	7:39:23 AM	2
1	35	7:39:42 AM	7:39:53 AM	11
1	36	7:40:19 AM	7:40:24 AM	5
1	37	7:40:21 AM	7:40:30 AM	9
1	38	7:40:33 AM	7:40:35 AM	2
1	39	7:40:36 AM	7:40:39 AM	3
1	40	7:40:43 AM	7:40:46 AM	3
1	41	7:40:59 AM	7:41:04 AM	5
1	42	7:41:32 AM	7:41:36 AM	4
1	43	7:41:48 AM	7:42:22 AM	34
1	44	7:42:25 AM	7:42:27 AM	2
1	45	7:42:41 AM	7:42:43 AM	2
1	46	7:42:51 AM	7:43:00 AM	9
1	47	7:43:08 AM	7:43:18 AM	10
1	48	7:43:38 AM	7:43:40 AM	2
1	49	7:43:52 AM	7:43:54 AM	2
1	50	7:43:59 AM	7:44:07 AM	8
1	51	7:44:14 AM	7:44:25 AM	11
1	52	7:45:51 AM	7:45:53 AM	2
1	53	7:46:09 AM	7:46:12 AM	3
1	54	7:47:37 AM	7:47:38 AM	1
1	55	7:49:20 AM	7:49:23 AM	3
1	56	7:49:36 AM	7:49:41 AM	5
1	57	7:50:40 AM	7:50:48 AM	8
1	58	7:50:43 AM	7:50:51 AM	8

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Vine Street approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study- Vine street SB AM
Site Code : 00765002
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	59	7:50:52 AM	7:50:54 AM	2
1	60	7:50:59 AM	7:51:02 AM	3
1	61	7:51:16 AM	7:51:19 AM	3
1	62	7:51:56 AM	7:51:58 AM	2
1	63	7:52:01 AM	7:52:06 AM	5
1	64	7:52:03 AM	7:52:09 AM	6
1	65	7:53:13 AM	7:53:25 AM	12
1	66	7:53:42 AM	7:53:45 AM	3
1	67	7:53:58 AM	7:54:00 AM	2
1	68	7:54:08 AM	7:54:18 AM	10
1	69	7:54:50 AM	7:54:53 AM	3
1	70	7:57:27 AM	7:57:29 AM	2
1	71	7:59:57 AM	7:59:59 AM	2
1	72	8:00:09 AM	8:00:14 AM	5
1	73	8:00:12 AM	8:00:59 AM	47
1	74	8:00:20 AM	8:01:00 AM	40
1	75	8:00:23 AM	8:01:12 AM	49
1	76	8:01:22 AM	8:01:24 AM	2
1	77	8:01:33 AM	8:01:37 AM	4
1	78	8:02:22 AM	8:02:25 AM	3
1	79	8:03:02 AM	8:03:15 AM	13
1	80	8:04:02 AM	8:04:05 AM	3
1	81	8:05:05 AM	8:05:19 AM	14
1	82	8:05:13 AM	8:05:23 AM	10
1	83	8:05:16 AM	8:05:38 AM	22
1	84	8:05:28 AM	8:05:41 AM	13
1	85	8:05:58 AM	8:06:15 AM	17
1	86	8:06:01 AM	8:06:17 AM	16
1	87	8:06:39 AM	8:06:41 AM	2
1	88	8:06:47 AM	8:06:53 AM	6
1	89	8:07:13 AM	8:07:38 AM	25
1	90	8:08:00 AM	8:08:03 AM	3
1	91	8:08:36 AM	8:08:44 AM	8
1	92	8:09:45 AM	8:09:50 AM	5
1	93	8:10:05 AM	8:10:07 AM	2
1	94	8:10:24 AM	8:10:28 AM	4
1	95	8:11:09 AM	8:11:11 AM	2
1	96	8:11:30 AM	8:11:32 AM	2
1	97	8:12:26 AM	8:12:30 AM	4
1	98	8:13:01 AM	8:13:04 AM	3
1	99	8:13:09 AM	8:13:13 AM	4
1	100	8:14:08 AM	8:14:33 AM	25
1	101	8:14:15 AM	8:14:43 AM	28

Summary Information:

7:16:00 AM - 8:15:00 AM	Southbound
Total Vehicle Count:	101
Delayed Vehicle Count:	101
Through Vehicle Count:	0
Average Stopped Time:	7.33
Maximum Stopped Time:	49
Min. Secs. for Delay:	0
Average Queue:	0.21
Queue Density:	1.25
Maximum Queue:	3
Delay in Vehicle Hour:	0.21
Total Delay:	740

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
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Stop Sign Delay Study
Vine st approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study - Vine Street SB PM
Site Code : 00765001
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	1	4:59:00 PM	4:59:02 PM	2
1	2	4:59:03 PM	4:59:05 PM	2
1	3	4:59:06 PM	4:59:08 PM	2
1	4	4:59:44 PM	4:59:46 PM	2
1	5	4:59:48 PM	4:59:55 PM	7
1	6	4:59:50 PM	4:59:59 PM	9
1	7	5:00:16 PM	5:00:20 PM	4
1	8	5:00:18 PM	5:00:22 PM	4
1	9	5:00:48 PM	5:00:51 PM	3
1	10	5:00:50 PM	5:00:57 PM	7
1	11	5:01:05 PM	5:01:09 PM	4
1	12	5:01:45 PM	5:01:48 PM	3
1	13	5:01:52 PM	5:01:53 PM	1
1	14	5:02:19 PM	5:02:21 PM	2
1	15	5:02:26 PM	5:02:44 PM	18
1	16	5:02:58 PM	5:03:00 PM	2
1	17	5:03:15 PM	5:03:27 PM	12
1	18	5:04:07 PM	5:04:09 PM	2
1	19	5:04:17 PM	5:04:31 PM	14
1	20	5:04:53 PM	5:04:57 PM	4
1	21	5:06:42 PM	5:07:00 PM	18
1	22	5:06:50 PM	5:07:07 PM	17
1	23	5:07:05 PM	5:07:12 PM	7
1	24	5:07:10 PM	5:07:15 PM	5
1	25	5:07:10 PM	5:07:17 PM	7
1	26	5:07:54 PM	5:07:58 PM	4
1	27	5:07:59 PM	5:08:02 PM	3
1	28	5:08:01 PM	5:08:14 PM	13
1	29	5:08:03 PM	5:08:17 PM	14
1	30	5:08:20 PM	5:08:55 PM	35
1	31	5:08:36 PM	5:08:59 PM	23
1	32	5:08:58 PM	5:09:09 PM	11
1	33	5:09:22 PM	5:09:35 PM	13
1	34	5:09:23 PM	5:09:39 PM	16
1	35	5:09:37 PM	5:09:43 PM	6
1	36	5:09:38 PM	5:09:46 PM	8
1	37	5:09:41 PM	5:09:51 PM	10
1	38	5:10:04 PM	5:10:07 PM	3
1	39	5:10:30 PM	5:10:31 PM	1
1	40	5:11:03 PM	5:11:06 PM	3
1	41	5:11:19 PM	5:11:37 PM	18
1	42	5:11:22 PM	5:11:50 PM	28
1	43	5:11:30 PM	5:11:53 PM	23
1	44	5:11:36 PM	5:12:03 PM	27
1	45	5:12:23 PM	5:12:26 PM	3
1	46	5:12:25 PM	5:12:33 PM	8
1	47	5:13:08 PM	5:13:14 PM	6
1	48	5:13:11 PM	5:13:16 PM	5
1	49	5:13:33 PM	5:14:00 PM	27
1	50	5:13:36 PM	5:14:32 PM	56
1	51	5:14:13 PM	5:14:35 PM	22
1	52	5:14:17 PM	5:14:49 PM	32
1	53	5:14:38 PM	5:15:00 PM	22
1	54	5:14:41 PM	5:15:02 PM	21
1	55	5:14:45 PM	5:15:04 PM	19
1	56	5:14:48 PM	5:15:22 PM	34
1	57	5:14:59 PM	5:15:25 PM	26
1	58	5:15:12 PM	5:16:09 PM	57

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Vine st approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study - Vine Street SB PM
Site Code : 00765001
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	59	5:15:15 PM	5:16:10 PM	55
1	60	5:15:20 PM	5:16:14 PM	54
1	61	5:15:36 PM	5:16:18 PM	42
1	62	5:15:53 PM	5:16:34 PM	41
1	63	5:16:35 PM	5:16:42 PM	7
1	64	5:16:37 PM	5:16:45 PM	8
1	65	5:17:01 PM	5:17:06 PM	5
1	66	5:17:03 PM	5:17:08 PM	5
1	67	5:17:19 PM	5:17:26 PM	7
1	68	5:17:53 PM	5:17:56 PM	3
1	69	5:18:09 PM	5:18:41 PM	32
1	70	5:18:12 PM	5:18:42 PM	30
1	71	5:18:33 PM	5:18:44 PM	11
1	72	5:18:34 PM	5:18:58 PM	24
1	73	5:18:47 PM	5:19:27 PM	40
1	74	5:18:50 PM	5:19:30 PM	40
1	75	5:19:00 PM	5:19:56 PM	56
1	76	5:19:08 PM	5:19:57 PM	49
1	77	5:19:37 PM	5:20:05 PM	28
1	78	5:19:43 PM	5:20:07 PM	24
1	79	5:19:52 PM	5:20:13 PM	21
1	80	5:20:12 PM	5:20:19 PM	7
1	81	5:21:03 PM	5:21:04 PM	1
1	82	5:21:16 PM	5:21:17 PM	1
1	83	5:21:19 PM	5:21:24 PM	5
1	84	5:21:20 PM	5:21:26 PM	6
1	85	5:21:47 PM	5:21:49 PM	2
1	86	5:21:50 PM	5:21:53 PM	3
1	87	5:22:23 PM	5:22:45 PM	22
1	88	5:22:43 PM	5:22:53 PM	10
1	89	5:22:46 PM	5:23:02 PM	16
1	90	5:23:11 PM	5:23:15 PM	4
1	91	5:23:47 PM	5:24:09 PM	22
1	92	5:23:50 PM	5:24:11 PM	21
1	93	5:23:53 PM	5:24:20 PM	27
1	94	5:24:05 PM	5:24:26 PM	21
1	95	5:24:08 PM	5:24:29 PM	21
1	96	5:24:24 PM	5:24:36 PM	12
1	97	5:24:28 PM	5:24:38 PM	10
1	98	5:24:45 PM	5:24:54 PM	9
1	99	5:24:48 PM	5:25:01 PM	13
1	100	5:25:06 PM	5:25:08 PM	2
1	101	5:25:11 PM	5:25:14 PM	3
1	102	5:25:23 PM	5:25:30 PM	7
1	103	5:25:29 PM	5:25:37 PM	8
1	104	5:25:34 PM	5:25:39 PM	5
1	105	5:26:11 PM	5:26:25 PM	14
1	106	5:26:14 PM	5:26:26 PM	12
1	107	5:26:32 PM	5:26:33 PM	1
1	108	5:26:35 PM	5:26:44 PM	9
1	109	5:26:48 PM	5:26:50 PM	2
1	110	5:27:00 PM	5:27:07 PM	7
1	111	5:27:05 PM	5:27:13 PM	8
1	112	5:27:08 PM	5:27:17 PM	9
1	113	5:27:22 PM	5:27:29 PM	7
1	114	5:27:23 PM	5:27:35 PM	12
1	115	5:27:27 PM	5:27:47 PM	20
1	116	5:27:43 PM	5:28:04 PM	21

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Vine st approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study - Vine Street SB PM
Site Code : 00765001
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	117	5:27:45 PM	5:28:31 PM	46
1	118	5:27:47 PM	5:28:34 PM	47
1	119	5:28:00 PM	5:28:37 PM	37
1	120	5:28:18 PM	5:28:43 PM	25
1	121	5:28:57 PM	5:29:05 PM	8
1	122	5:29:00 PM	5:29:07 PM	7
1	123	5:29:22 PM	5:30:13 PM	51
1	124	5:29:47 PM	5:30:17 PM	30
1	125	5:29:51 PM	5:30:21 PM	30
1	126	5:29:57 PM	5:30:23 PM	26
1	127	5:30:43 PM	5:30:52 PM	9
1	128	5:30:47 PM	5:30:56 PM	9
1	129	5:31:43 PM	5:31:45 PM	2
1	130	5:32:01 PM	5:32:02 PM	1
1	131	5:32:39 PM	5:32:43 PM	4
1	132	5:32:48 PM	5:32:52 PM	4
1	133	5:32:58 PM	5:33:07 PM	9
1	134	5:33:12 PM	5:33:19 PM	7
1	135	5:33:14 PM	5:33:22 PM	8
1	136	5:33:16 PM	5:33:28 PM	12
1	137	5:33:20 PM	5:33:33 PM	13
1	138	5:33:27 PM	5:33:38 PM	11
1	139	5:33:58 PM	5:34:14 PM	16
1	140	5:34:02 PM	5:34:15 PM	13
1	141	5:34:03 PM	5:34:26 PM	23
1	142	5:34:19 PM	5:34:27 PM	8
1	143	5:34:36 PM	5:34:38 PM	2
1	144	5:34:49 PM	5:34:59 PM	10
1	145	5:34:56 PM	5:35:10 PM	14
1	146	5:35:47 PM	5:35:55 PM	8
1	147	5:35:58 PM	5:36:00 PM	2
1	148	5:36:02 PM	5:36:05 PM	3
1	149	5:36:16 PM	5:36:23 PM	7
1	150	5:36:25 PM	5:36:29 PM	4
1	151	5:36:38 PM	5:36:40 PM	2
1	152	5:36:43 PM	5:36:47 PM	4
1	153	5:36:51 PM	5:36:55 PM	4
1	154	5:37:11 PM	5:37:14 PM	3
1	155	5:37:22 PM	5:37:48 PM	26
1	156	5:38:27 PM	5:38:29 PM	2
1	157	5:38:28 PM	5:38:36 PM	8
1	158	5:38:30 PM	5:38:38 PM	8
1	159	5:39:05 PM	5:39:08 PM	3
1	160	5:39:15 PM	5:39:29 PM	14
1	161	5:39:20 PM	5:39:33 PM	13
1	162	5:39:31 PM	5:39:37 PM	6
1	163	5:40:06 PM	5:40:30 PM	24
1	164	5:40:17 PM	5:40:34 PM	17
1	165	5:40:43 PM	5:40:45 PM	2
1	166	5:40:53 PM	5:40:57 PM	4
1	167	5:40:56 PM	5:41:02 PM	6
1	168	5:41:00 PM	5:41:07 PM	7
1	169	5:41:03 PM	5:41:10 PM	7
1	170	5:41:05 PM	5:41:24 PM	19
1	171	5:41:31 PM	5:41:44 PM	13
1	172	5:41:51 PM	5:42:08 PM	17
1	173	5:41:54 PM	5:42:11 PM	17
1	174	5:41:56 PM	5:42:24 PM	28

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Vine st approach to Lagrange st
Newton, MA

File Name : Stop Sign Delay Study - Vine Street SB PM
Site Code : 00765001
Start Date : 5/6/2014

Ln.	No.	Joined Queue	Released From Queue	Delay
1	175	5:42:16 PM	5:42:27 PM	11
1	176	5:42:22 PM	5:42:30 PM	8
1	177	5:42:28 PM	5:42:39 PM	11
1	178	5:42:32 PM	5:42:45 PM	13
1	179	5:42:40 PM	5:42:48 PM	8
1	180	5:42:51 PM	5:42:54 PM	3
1	181	5:42:53 PM	5:43:00 PM	7
1	182	5:43:13 PM	5:43:21 PM	8
1	183	5:43:14 PM	5:43:27 PM	13
1	184	5:43:15 PM	5:43:38 PM	23
1	185	5:43:16 PM	5:43:42 PM	26
1	186	5:43:47 PM	5:44:37 PM	50
1	187	5:43:57 PM	5:44:38 PM	41
1	188	5:44:45 PM	5:44:47 PM	2
1	189	5:44:47 PM	5:44:50 PM	3
1	190	5:44:48 PM	5:44:53 PM	5
1	191	5:45:01 PM	5:45:04 PM	3
1	192	5:45:07 PM	5:45:10 PM	3
1	193	5:45:10 PM	5:45:14 PM	4
1	194	5:45:35 PM	5:45:39 PM	4
1	195	5:46:02 PM	5:46:08 PM	6
1	196	5:46:18 PM	5:46:22 PM	4
1	197	5:46:51 PM	5:46:53 PM	2
1	198	5:47:01 PM	5:47:14 PM	13
1	199	5:47:16 PM	5:47:19 PM	3
1	200	5:47:20 PM	5:47:22 PM	2
1	201	5:47:42 PM	5:47:44 PM	2
1	202	5:47:48 PM	5:47:56 PM	8
1	203	5:48:04 PM	5:48:19 PM	15
1	204	5:48:07 PM	5:48:21 PM	14
1	205	5:48:28 PM	5:48:38 PM	10
1	206	5:48:39 PM	5:48:50 PM	11
1	207	5:48:47 PM	5:48:55 PM	8
1	208	5:49:17 PM	5:49:19 PM	2
1	209	5:49:20 PM	5:49:25 PM	5
1	210	5:49:28 PM	5:49:31 PM	3
1	211	5:50:10 PM	5:50:15 PM	5
1	212	5:50:14 PM	5:50:20 PM	6
1	213	5:50:24 PM	5:50:45 PM	21
1	214	5:50:26 PM	5:50:45 PM	19
1	215	5:50:35 PM	5:50:46 PM	11
1	216	5:50:43 PM	5:50:51 PM	8
1	217	5:51:00 PM	5:51:01 PM	1
1	218	5:51:02 PM	5:51:03 PM	1
1	219	5:51:04 PM	5:51:12 PM	8
1	220	5:51:25 PM	5:51:33 PM	8
1	221	5:51:27 PM	5:51:35 PM	8
1	222	5:52:06 PM	5:52:12 PM	6
1	223	5:52:10 PM	5:52:20 PM	10
1	224	5:52:17 PM	5:52:25 PM	8
1	225	5:52:19 PM	5:52:27 PM	8
1	226	5:52:21 PM	5:52:31 PM	10
1	227	5:52:35 PM	5:52:48 PM	13
1	228	5:52:39 PM	5:53:22 PM	43
1	229	5:52:57 PM	5:53:45 PM	48
1	230	5:53:00 PM	5:53:45 PM	45
1	231	5:53:02 PM	5:53:45 PM	43
1	232	5:53:04 PM	5:53:46 PM	42

MDM Transportation Consultants, INC.

28 Lord Road, Suite 280
Marlborough, MA 01752

Stop Sign Delay Study
Vine st approach to Lagrange st
Newton, MA

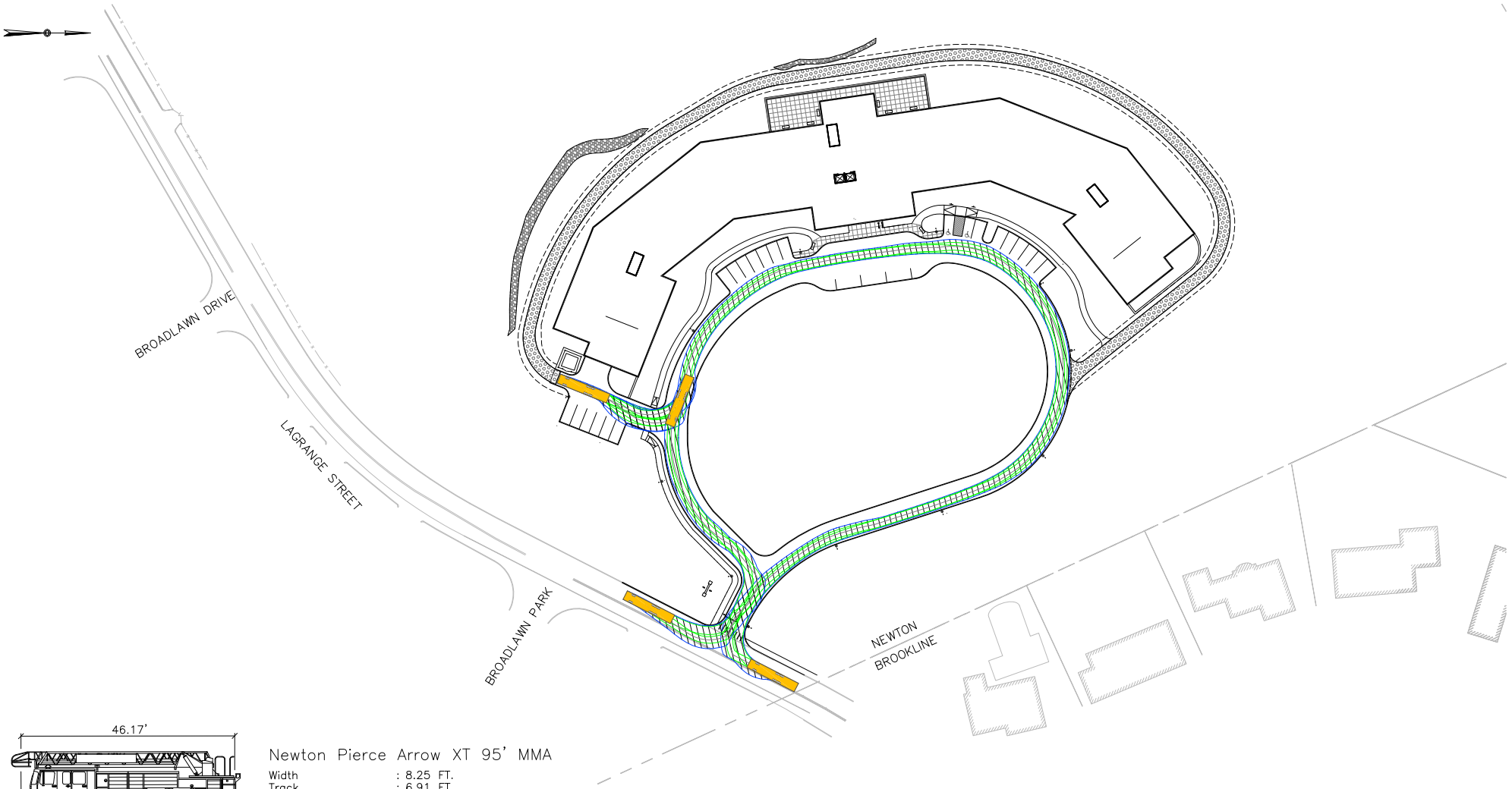
File Name : Stop Sign Delay Study - Vine Street SB PM
Site Code : 00765001
Start Date : 5/6/2014
Page No : 5

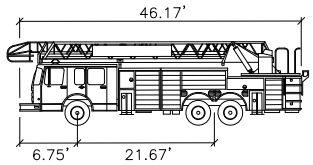
Ln.	No.	Joined Queue	Released From Queue	Delay
1	233	5:53:34 PM	5:53:49 PM	15
1	234	5:53:44 PM	5:54:20 PM	36
1	235	5:53:44 PM	5:54:25 PM	41
1	236	5:53:53 PM	5:54:30 PM	37
1	237	5:53:56 PM	5:54:34 PM	38
1	238	5:53:59 PM	5:54:39 PM	40
1	239	5:54:32 PM	5:54:44 PM	12
1	240	5:54:34 PM	5:54:53 PM	19
1	241	5:54:39 PM	5:54:57 PM	18
1	242	5:55:03 PM	5:55:05 PM	2
1	243	5:55:32 PM	5:55:34 PM	2
1	244	5:56:01 PM	5:56:06 PM	5
1	245	5:56:02 PM	5:56:08 PM	6
1	246	5:56:05 PM	5:56:11 PM	6
1	247	5:56:16 PM	5:56:19 PM	3
1	248	5:56:37 PM	5:56:40 PM	3
1	249	5:57:05 PM	5:57:10 PM	5
1	250	5:57:13 PM	5:57:17 PM	4
1	251	5:57:16 PM	5:57:43 PM	27
1	252	5:57:17 PM	5:57:46 PM	29
1	253	5:57:19 PM	5:57:47 PM	28
1	254	5:57:23 PM	5:57:54 PM	31
1	255	5:57:50 PM	5:58:12 PM	22
1	256	5:57:53 PM	5:58:17 PM	24
1	257	5:57:55 PM	5:58:24 PM	29
1	258	5:57:56 PM	5:58:26 PM	30
1	259	5:58:16 PM	5:58:28 PM	12
1	260	5:58:22 PM	5:58:35 PM	13
1	261	5:58:30 PM	5:58:41 PM	11
1	262	5:58:35 PM	5:58:43 PM	8
1	263	5:58:38 PM	5:58:46 PM	8
1	264	5:58:42 PM	5:58:49 PM	7
1	265	5:58:45 PM	5:58:53 PM	8
1	266	5:58:48 PM	5:58:58 PM	10

Summary Information:

4:59:00 PM - 5:59:00 PM	Southbound
Total Vehicle Count:	266
Delayed Vehicle Count:	266
Through Vehicle Count:	0
Average Stopped Time:	14.26
Maximum Stopped Time:	57
Min. Secs. for Delay:	0
Average Queue:	1.05
Queue Density:	2.02
Maximum Queue:	7
Delay in Vehicle Hour:	1.05
Total Delay:	3792

- AutoTurn® Figures





Newton Pierce Arrow XT 95' MMA

Width	: 8.25 FT.
Track	: 6.91 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 40.7°

Site Plan Source: Stantec

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers
28 Lord Road, Suite 280
Marlborough, MA 01752

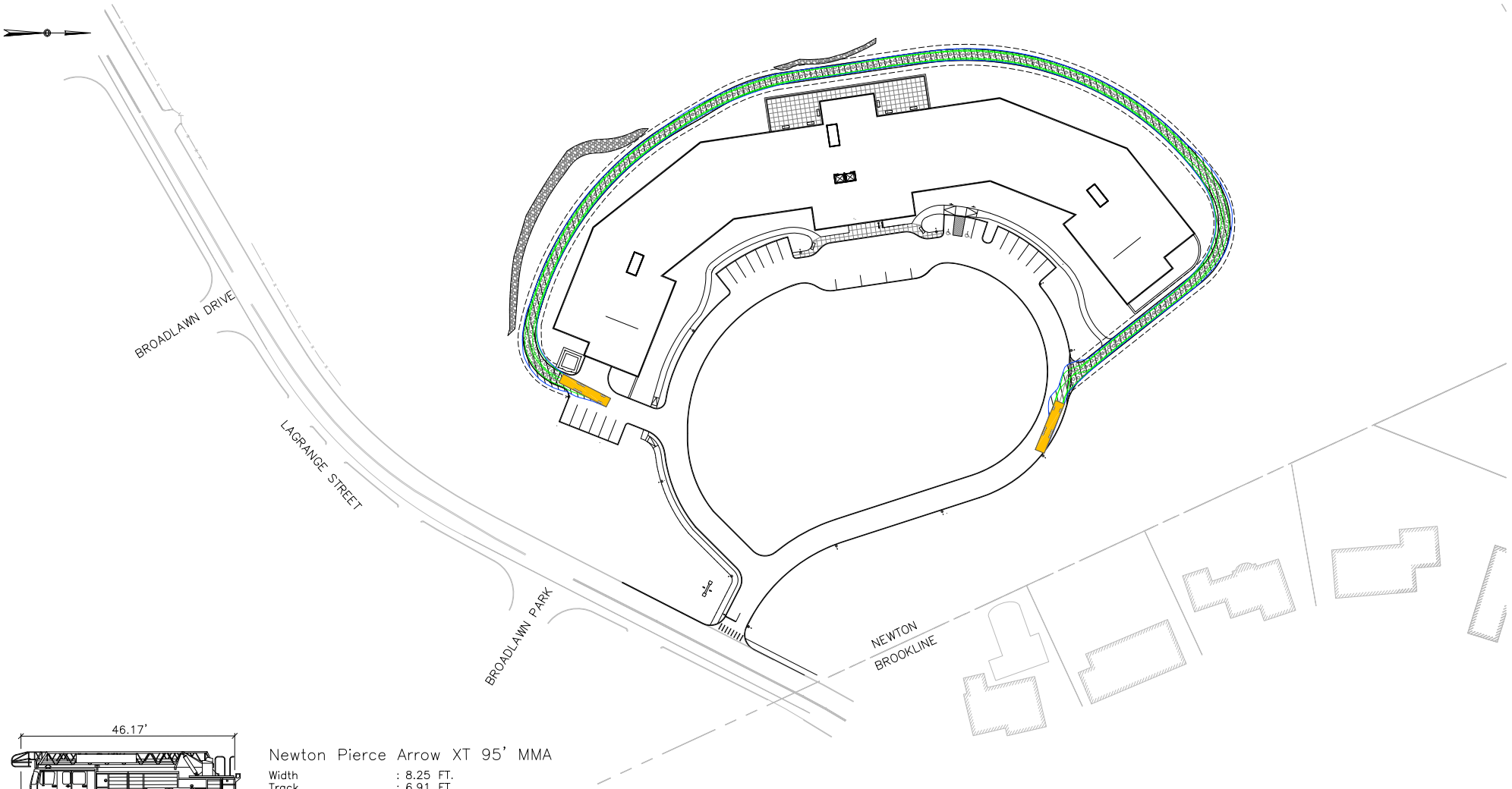
Scale: As Noted
DWG No. 765 Autoturn.dwg

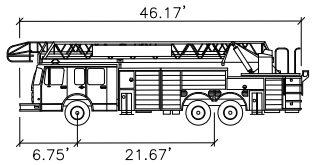
Date: June 2014
Project No. 765

Proposed Development
Newton, Massachusetts

SCALE
0 20 40 80 120 FEET

Exhibit 1
Fire Truck AutoTurn Analysis
Newton Ladder





Newton Pierce Arrow XT 95' MMA

Width	: 8.25 FT.
Track	: 6.91 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 40.7°

Site Plan Source: Stantec

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Planners & Engineers
28 Lord Road, Suite 280
Marlborough, MA 01752

Scale: As Noted
DWG No. 765 Autoturn.dwg

Date: June 2014
Project No. 765

Proposed Development
Newton, Massachusetts

SCALE
0 20 40 80 120 FEET

Exhibit 2
Fire Truck AutoTurn Analysis
Newton Ladder