



FUSS & O'NEILL

MEMORANDUM

TO: Chris Stoddard, PE; Director of Public Works, Town of Littleton

FROM: Nick Lapointe, PE, Project Manager, Fuss & O'Neill
Aaron Keegan, EIT, Transportation Engineer, Fuss & O'Neill

DATE: 11/4/2019

RE: Operational and Safety Analysis of the Beaver Brook Rd and Great Rd/Route 119 Intersection in Littleton, MA

ATTACHMENTS: 1) Observed Traffic Count Data
2) Existing Traffic Volume Figures
3) Crash History Summary Table
4) Intersection Crash Worksheet
5) Warrant Analysis Worksheets
6) Alternative Concept Renderings

Fuss & O'Neill has completed traffic data collection and a preliminary traffic operations and crash safety analysis at the isolated intersection of Beaver Brook Rd and Great Rd/Route 119 in Littleton, MA. The results are summarized in the key findings described below.

Key findings show that:

- Automatic Traffic Recorder (ATR) counts found weekday annual average daily traffic (AADT) of 22,122 vehicles on Great Rd and 4,310 vehicles on Beaver Brook Rd. Turning movement counts (TMCs) revealed an AM peak hour of 7:00am-8:00am and a PM peak hour of 4:30pm-5:30pm.
- The number of crashes at the intersection showed an upward trend in frequency during the 3-year period spanning 2015 through 2017. The increasing frequency of crashes is an indication that improvements are a pressing need at the intersection.

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- Existing 2019 traffic operation conditions at the intersection show a level of service (LOS) F for the stop sign controlled Beaver Brook Rd approach to the intersection during the AM and PM peak hours. Vehicles turning onto Great Rd from Beaver Brook Rd are experiencing severe delay.
- A signal warrant analysis of existing traffic conditions found that the intersection meets five industry standard signal warrants: Warrant 1 for 8-hour traffic conditions, Warrant 2 for 4-hour traffic conditions, Warrant 3 for peak hour traffic conditions, and Warrant 7 for crash experience, and Warrant 8 for roadway network. Because the Warrants are met, signalization of the intersection could be justified based on existing traffic conditions alone.
- Year 2039 traffic operations for a no-build condition at the intersection was compared with three 2039 build alternatives: two signalized alternatives and one roundabout alternative. Results show that the two-lane roundabout alternative had the least vehicular delay and provided the highest level of service.
- Based on this preliminary analysis, Fuss & O'Neill recommends that improvements to the Beaver Brook Rd and Great Rd intersection are needed to improve safety and operational performance. It is also recommended that further advancement of design alternatives for the intersection be carried out, with thorough consideration given to a two-lane roundabout alternative and a two-lane signalized alternative as described in the traffic operations operations section of this memo.

More details on the findings summarized above are included in the sections below.

Traffic Count Data Collection

Traffic counts were collected on Tuesday, July 16 and Wednesday, July 17, 2019. Forty-Eight hour ATR data was collected in three locations: Beaver Brook Rd north of Great Rd, Great Rd west of Beaver Brook Rd, and Great Rd east of Beaver Brook Rd.

The daily traffic count results are:

- 22,122 AADT on Great Rd east of Beaver Brook Rd
- 19,358 AADT on Great Rd west of Beaver Brook Rd
- 4,310 AADT on Beaver Brook Rd north of Great Rd

The observed traffic volumes on Great Rd are commensurate with what would be expected on an urban principal arterial, yet quite high for a road with one lane in each direction.

Heavy vehicle percentages were found to be 6.3 percent and 4.6 percent of daily traffic on Great Rd and Beaver Brook Rd respectively.

TMCs were conducted at Beaver Brook Rd and Great Rd on Tuesday, July 16, 2019 between 7:00am and 9:00am and again between 4:00pm and 6:00pm. The AM peak hour was observed as occurring between 7:00am and 8:00am, while the PM peak hour was observed as occurring between 4:30pm and 5:30pm.

Pedestrian and bicycle volumes were observed to be very low at the intersection, with fewer than 4 total pedestrians and bicyclists passing through the intersection during each of the observed AM and PM periods respectively.

The posted speed limit on Great River Rd in the area of the intersection is 45mph. The observed 85th percentile speed on Great River Rd was 46mph overall considering both directions of travel. The posted speed on Beaver Brook Rd is 25mph. The observed 85th percentile speed on Beaver Brook Rd was 33mph overall considering both directions of travel.

The observed traffic count raw data, including speed and vehicle class data are attached to this memo.

Crash History Analysis

State published vehicle crash history for the Town of Littleton between 2011 and 2017, the most recent 7 years available, were analyzed at the intersection of Great Rd and Beaver Brook Rd.

Between 2015 and 2017 the crash rate at the intersection was found to be 0.56 MEVs, crashes per million entering vehicles. This rate is just below the statewide average of 0.57 MEVs for an unsignalized intersection and also below the MassDOT District 3 average of 0.61 MEVs for an unsignalized intersection. A completed MassDOT Intersection Crash Analysis Worksheet is attached to this memo.

The intersection crash history shows an upward trend in the annual number of crashes when looking at the most recent 3-year crash average in the context of the full 7-years of crash data. Between 2011 and 2014, the average annual number of crashes at the intersection was 3 per year, while the average number of crashes between 2015 and 2017

was 5.3 per year. The higher number of crashes in the most recent 3 years is likely attributable to growing traffic volume, as new mixed use development along Great Rd to the southeast of the intersection has occurred during the same timeframe.

The most common type of crash recorded at the intersection is an angled crash, which is a type of crash indicative of intersection turning movements.

There were no recorded fatalities at the intersection during between 2011 and 2017. Property damage only accounted for 83 percent of crashes with 18 percent of crashes resulting in a non-fatal injury.

A tabular summary of the crash data analysis is attached to this memo.

Traffic Signal Warrants

A traffic signal warrant analysis was conducted based on guidelines from the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and using the 2019 observed traffic count data.

The analysis concludes that the intersection of Beaver Brook Rd and Great Rd meets traffic signal Warrants 1,2,3,7 and 8.

Warrant 1, eight-hour vehicular volume, is met. Condition B for interruption of continuous traffic was met at the 100 percent analysis level. Condition A for minimum vehicular volumes and Condition B were met also at the 80 percent analysis level.

Warrant 2, four-hour volume, is met. Four individual hours of observed traffic volume plotted above the requisite threshold curves to meet this warrant.

Warrant 3, peak-hour volume, was met. The observed daily peak hour, in fact both AM and PM peak hours, plotted above the requisite threshold curve to meet this warrant.

Warrant 4, pedestrian volume, was not met, due to the very low observed pedestrian volumes.

Warrant 5, school crossing, was not applicable as the intersection is not near a school.

Warrant 6, coordinated signal system was not applicable given the distance of the intersection to the nearest signalized intersection.

Warrant 7, crash experience, was met for crash data years 2015 and 2017. Both of those respective years had the required threshold of 5 crashes of a nature that could be mitigated by signalization, for example, angled, head-on, and rear-end crashes. The accompanying volume thresholds for Warrant 7 are also met, as is the requirement that stop control already exist at the intersection for Beaver Brook Rd.

Warrant 8, roadway network, was met. The intersection is located on a principal arterial in the Town of Littleton and the intersection meets one or more of Warrants 1 through 3.

Warrant 9, intersection near a rail crossing at grade was not applicable because the intersection is not near a rail crossing.

Traffic warrant analysis Warrant worksheets are attached to this memo.

Traffic Operations Analysis

Traffic operations analysis of the intersection was conducted using SIDRA version 8 software for the 2019 existing conditions, a 2039 no build condition, and three 2039 build alternatives. The signal timings for the 2039 signalized alternatives were obtained using Synchro version 10.

The future year 2039 traffic volumes were obtained by calculating the historical traffic volume growth observed at the intersection between 2006 and 2019. The historic compound growth factor was determined to be 1.2 percent annually. This same rate of compound annual growth was applied to obtain the estimated 2039 volumes at the intersection.

The build alternatives consisted of:

- 1) A signalized intersection with single lane approaches in keeping with the existing intersection lane geometry. This alternative retained the existing 45mph speed limit on Great Rd and a 25mph speed limit on Beaver Brook Rd.
- 2) A signalized intersection with two-lane approaches on Great Rd retaining the 45mph speed limit. This alternative had 525ft of full two-lanes on Great Rd on each side of the intersection, and a 500ft tapering length back to one lane. Beaver Brook Rd remained one lane in each direction and retained a speed limit of 25mph. The signalized two-lane alternative required a greater length of two-lane approach to the intersection to ensure that vehicles will utilize the additional lane upstream of the signal. The 45mph speed requires a longer lane taper length compared to the 30mph speed of the roundabout approach.

3) A two-lane roundabout with two-lane approaches and a 30mph speed limit on Great Rd. This alternative had 325 ft of two-lane length on Great Rd on each side of the intersection, and a 250ft taper length transition back to one lane in each direction. Beaver Brook Rd remained one lane in each direction and retained a speed limit of 25mph.

Full-two lane widening of Great Rd from Beaver Brook Rd to the nearest upstream and downstream arterials was not analyzed, as a project of that magnitude would be beyond the scope of this isolated intersection analysis. It may be worthwhile to consider this larger corridor project but would require a larger commitment from both MassDOT and the Town to pursue design and construction funding for this project.

Tables 1 and 2 summarize comparisons of levels of service for existing and future alternatives at the intersection. Table 1 shows the results for the AM peak period, 7:00am to 8:00am, and Table 2 shows the results for the PM peak period, 4:30pm to 5:30pm.

		2019 Existing Unsignalized		2039 Background Unsignalized		2039 Signal- One Lane Approach		2039 Signal- Two Lane Approach		2039 Two Lane Roundabout	
Intersection	Movement	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Great Rd (Rte 119) & Beaver Brook Rd											
Great Rd (Rte 119)	EB L/T	13.1	B	28.4	D	370.0	F	39.7	D	31.3	D
Great Rd (Rte 119)	EB T	9.2	A	24.0	C	370.0	F	30.7	C	23.1	C
Great Rd (Rte 119)	WB R/T	0.0	N/A	0.0	N/A	13.6	B	6.0	A	4.5	A
Great Rd (Rte 119)	WB T	0.0	N/A	0.0	N/A	13.6	B	9.0	A	4.8	A
Beaver Brook Rd	SB	823.0	F	2734.0	F	25.5	C	25.0	C	6.9	A
Overall:		98.0	N/A	321.6	N/A	253.0	F	25.5	C	17.3	C

*Delay is in seconds per vehicle

TABLE 2 WEEKDAY AFTERNOON PEAK HOUR (4:30-5:30p m) INTERSECTION CAPACITY ANALYSIS: LEVEL OF SERVICE SUMMARY											
Intersection Movement		2019 Existing Unsignalized		2039 Background Unsignalized		2039 Signal: One Lane Approach		2039 Signal: Two Lane Approach		2039 Two Lane Roundabout: Two Lane	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Great Rd (Rte 119) & Beaver Brook Rd											
Great Rd (Rte 119)	EB L/T	9.6	A	13.3	B	26.6	C	20.9	C	6.5	A
Great Rd (Rte 119)	EB T	3.0	A	4.5	A	26.6	C	14.7	B	6.1	A
Great Rd (Rte 119)	WB R/T	0.0	N/A	0.0	N/A	337.2	F	17.1	B	8.5	A
Great Rd (Rte 119)	WB T	0.0	N/A	0.0	N/A	337.2	F	29.3	C	13.3	B
Beaver Brook Rd	SB	397.4	F	1538.4	F	26.8	C	27.0	C	21.8	C
Overall:		33.1	N/A	125.6	N/A	229.1	F	23.8	C	11.5	B
*Delay is in seconds per vehicle											

Existing 2019 traffic operation conditions at the intersection show a level of service (LOS) F for the stop sign controlled Beaver Brook Rd approach during the AM and PM peak hours. Vehicles turning onto Great Rd from Beaver Brook Rd are experiencing severe delay.

No-Build background conditions in 2039 show significant worsening in the amount of delay for the Beaver Brook Rd approach. Also in the no-build condition, the AM eastbound left turn from Great Rd to Beaver Brook Rd degrades from LOS B to LOS D.

The 2039 one-lane signalized alternative reduced the delay of the Beaver Brook Rd approach from F to C in both peak hour periods. However, the added control delay on Great Rd causes LOS F on the eastbound during the AM peak hour and LOS F on the westbound during the PM peak hour. A signalized alternative with single lane approaches is not recommended.

The 2039 signalized alternative with two-lane approaches is able to improve upon the failing movements observed in the single lane signalized alternative. As analyzed, the signalized two-lane alternative improved the overall performance of the intersection to from LOS F to LOS C in the AM and PM peak periods. The lowest performing movement was the AM peak period eastbound shared left-turn and through lane, which is projected to have a LOS of D.

The performance of the signalized two-lane alternative is dependent upon the length of two-lane approach and departure lanes added on Great Rd. If the two-lane segments on each side of the intersection are undersized, vehicles will not utilize the additional lane upstream of the intersection because the merge distance downstream is too close. The alternative was analyzed as having a 525ft length of two-lane road on each side of the

intersection. The transition from one-lane to two-lanes occurred in 500ft tapers. A longer full-two lane road length on both sides of the intersection will improve the signalized intersection capacity, but will also increase the scope of the project impacts away from the intersection.

The roundabout alternative consisted of a two-lane circulation design because of the high approach speeds at the intersection (which would need to be reduced to 30mph) and also due to the observed volumes of greater than 20,000 AADT. According to in AASHTO's A Policy on Geometric Design of Highways and Streets, 7th edition, Table 9-3, a multilane roundabout is fitting of the existing conditions at the Beaver Brook Rd and Great Rd. The minimum inscribed circle (outside diameter) of a multilane roundabout is 150 ft. The concept design evaluated in SIDRA had an inscribed circle of 150ft and a center island diameter of 90 ft, however a truck turning analysis and right-of-way considerations would need to be considered should this concept move forward further in design.

The two-lane roundabout showed acceptable levels of delay for all approaches given the context of an urbanized area. The overall LOS for the roundabout was C in the AM peak hour and B for the PM peak hour. The lowest performing movement was the AM peak hour eastbound shared left-turn and through lane, which is projected to have a LOS of D, which was comparable to the no-build.

Given the better performance of the two-lane roundabout alternative for projected 2039 peak hour conditions, the potential for a reduction in the severity of turning movement crashes that a roundabout design is likely to provide, and availability of Right-of-Way, we recommend further study and conceptual design advancement of a two-lane roundabout alternative for the intersection of Beaver Brook Rd and Great Rd.

The signalized alternative with a two-lane approach is also viable, but will require a greater length of two-lane road with a longer transition taper when compared with the two-lane roundabout alternative. The signalized two-lane alternative would be expected to provide less of a safety improvement than the roundabout, but still some safety improvement over the unsignalized case. The property impacts of the two-lane signalized alternative are expected to be fewer. The construction cost of the signalized alternative is expected to be higher due to the length of project resulting from taper lengths as well as signal equipment

Two renderings are attached to this memo that show the two-lane roundabout concept and the two-lane approach signalized concept at Great Rd and Beaver Brook Rd. It is important to note these renderings depict initial design considerations which attempt to comply with MassDOT design criteria. A more detailed analysis will be required once an alternative is selected in order to determine actual design features (ie. Locations and number of sidewalks, lane / shoulder widths, etc).

Attachment 1
Traffic Count Data

Accurate Counts
978-664-2565

Page 1

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044VOL1

Start Time	7/16/2019 Tue	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	141			21	141				
12:15		5	132			18	150				
12:30		4	128			9	134				
12:45		1	130	17	531	10	107	58	532	75	1063
01:00		2	135			7	164				
01:15		4	129			5	147				
01:30		3	127			3	132				
01:45		3	117	12	508	5	149	20	592	32	1100
02:00		1	131			2	140				
02:15		1	132			2	200				
02:30		9	136			5	159				
02:45		1	112	12	511	2	185	11	684	23	1195
03:00		7	146			2	206				
03:15		3	126			1	212				
03:30		10	150			2	232				
03:45		9	113	29	535	1	225	6	875	35	1410
04:00		12	128			3	259				
04:15		29	123			9	238				
04:30		32	131			11	278				
04:45		58	127	131	509	10	274	33	1049	164	1558
05:00		99	121			12	245				
05:15		113	126			13	267				
05:30		159	103			23	256				
05:45		204	100	575	450	38	238	86	1006	661	1456
06:00		245	91			39	200				
06:15		236	138			41	235				
06:30		264	87			46	229				
06:45		271	92	1016	408	60	236	186	900	1202	1308
07:00		313	94			77	178				
07:15		292	70			70	209				
07:30		322	81			75	167				
07:45		252	75	1179	320	91	143	313	697	1492	1017
08:00		231	58			66	150				
08:15		253	56			62	134				
08:30		245	66			68	104				
08:45		239	73	968	253	68	124	264	512	1232	765
09:00		205	64			63	98				
09:15		182	56			94	86				
09:30		167	47			82	98				
09:45		165	54	719	221	94	85	333	367	1052	588
10:00		137	33			106	61				
10:15		159	34			85	50				
10:30		121	25			83	45				
10:45		128	17	545	109	115	41	389	197	934	306
11:00		127	19			108	23				
11:15		143	13			117	41				
11:30		145	10			107	35				
11:45		139	8	554	50	116	21	448	120	1002	170
Total		5757	4405			2147	7531			7904	11936
Percent		56.7%	43.3%			22.2%	77.8%			39.8%	60.2%

Accurate Counts
978-664-2565

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044VOL1

Start Time	7/17/2019 Wed	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	138			39	133				
12:15		8	117			14	145				
12:30		3	127			13	146				
12:45		3	123	18	505	7	130	73	554	91	1059
01:00		6	130			6	127				
01:15		4	126			7	158				
01:30		3	144			5	131				
01:45		6	112	19	512	3	143	21	559	40	1071
02:00		2	131			7	155				
02:15		2	119			3	140				
02:30		4	135			4	182				
02:45		5	125	13	510	3	154	17	631	30	1141
03:00		8	137			4	179				
03:15		6	125			1	232				
03:30		11	160			2	213				
03:45		14	123	39	545	1	232	8	856	47	1401
04:00		16	117			4	167				
04:15		25	106			8	197				
04:30		40	126			19	239				
04:45		54	113	135	462	16	262	47	865	182	1327
05:00		100	115			12	262				
05:15		128	117			16	241				
05:30		138	104			21	277				
05:45		194	80	560	416	42	230	91	1010	651	1426
06:00		256	98			40	238				
06:15		240	73			41	279				
06:30		292	82			47	227				
06:45		254	86	1042	339	63	231	191	975	1233	1314
07:00		303	66			75	154				
07:15		253	73			46	170				
07:30		201	69			56	139				
07:45		299	58	1056	266	85	106	262	569	1318	835
08:00		226	47			58	108				
08:15		284	44			83	95				
08:30		246	48			80	83				
08:45		269	38	1025	177	78	84	299	370	1324	547
09:00		163	40			86	71				
09:15		180	34			82	96				
09:30		165	29			82	74				
09:45		176	33	684	136	94	60	344	301	1028	437
10:00		146	27			96	55				
10:15		143	23			98	43				
10:30		165	21			96	33				
10:45		104	21	558	92	97	25	387	156	945	248
11:00		139	15			109	33				
11:15		129	10			110	23				
11:30		122	9			124	34				
11:45		160	8	550	42	139	18	482	108	1032	150
Total		5699	4002			2222	6954			7921	10956
Percent		58.7%	41.3%			24.2%	75.8%			42.0%	58.0%
Grand Total		11456	8407			4369	14485			15825	22892
Percent		57.7%	42.3%			23.2%	76.8%			40.9%	59.1%
ADT		ADT 19,358		AADT 19,358							

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044VOL1

Start Time	7/15/2019		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	17	58	18	73	*	*	*	*	*	*	*	*	18	66
01:00	*	*	12	20	19	21	*	*	*	*	*	*	*	*	16	20
02:00	*	*	12	11	13	17	*	*	*	*	*	*	*	*	12	14
03:00	*	*	29	6	39	8	*	*	*	*	*	*	*	*	34	7
04:00	*	*	131	33	135	47	*	*	*	*	*	*	*	*	133	40
05:00	*	*	575	86	560	91	*	*	*	*	*	*	*	*	568	88
06:00	*	*	1016	186	1042	191	*	*	*	*	*	*	*	*	1029	188
07:00	*	*	1179	313	1056	262	*	*	*	*	*	*	*	*	1118	288
08:00	*	*	968	264	1025	299	*	*	*	*	*	*	*	*	996	282
09:00	*	*	719	333	684	344	*	*	*	*	*	*	*	*	702	338
10:00	*	*	545	389	558	387	*	*	*	*	*	*	*	*	552	388
11:00	*	*	554	448	550	482	*	*	*	*	*	*	*	*	552	465
12:00 PM	*	*	531	532	505	554	*	*	*	*	*	*	*	*	518	543
01:00	*	*	508	592	512	559	*	*	*	*	*	*	*	*	510	576
02:00	*	*	511	684	510	631	*	*	*	*	*	*	*	*	510	658
03:00	*	*	535	875	545	856	*	*	*	*	*	*	*	*	540	866
04:00	*	*	509	1049	462	865	*	*	*	*	*	*	*	*	486	957
05:00	*	*	450	1006	416	1010	*	*	*	*	*	*	*	*	433	1008
06:00	*	*	408	900	339	975	*	*	*	*	*	*	*	*	374	938
07:00	*	*	320	697	266	569	*	*	*	*	*	*	*	*	293	633
08:00	*	*	253	512	177	370	*	*	*	*	*	*	*	*	215	441
09:00	*	*	221	367	136	301	*	*	*	*	*	*	*	*	178	334
10:00	*	*	109	197	92	156	*	*	*	*	*	*	*	*	100	176
11:00	*	*	50	120	42	108	*	*	*	*	*	*	*	*	46	114
Lane	0	0	10162	9678	9701	9176	0	0	0	0	0	0	0	0	9933	9428
Day	0		19840		18877		0		0		0		0		19361	
AM Peak	-	-	07:00	11:00	07:00	11:00	-	-	-	-	-	-	-	-	07:00	11:00
Vol.	-	-	1179	448	1056	482	-	-	-	-	-	-	-	-	1118	465
PM Peak	-	-	15:00	16:00	15:00	17:00	-	-	-	-	-	-	-	-	15:00	17:00
Vol.	-	-	535	1049	545	1010	-	-	-	-	-	-	-	-	540	1008

Comb. Total	0	19840	18877	0	0	0	0	19361
ADT	ADT 19,358	AADT 19,358						

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044CLS1

EB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	0	12	4	0	1	0	0	0	0	0	0	0	0	17
01:00	0	3	6	1	0	0	0	2	0	0	0	0	0	12
02:00	1	7	2	0	2	0	0	0	0	0	0	0	0	12
03:00	0	19	5	0	2	0	0	0	2	1	0	0	0	29
04:00	0	88	31	0	8	0	0	2	2	0	0	0	0	131
05:00	9	351	154	4	44	2	0	1	8	2	0	0	0	575
06:00	14	692	236	3	50	4	0	11	3	1	0	0	0	1014
07:00	8	892	210	5	47	4	5	3	0	3	0	0	0	1177
08:00	14	749	156	2	30	5	2	3	3	1	0	0	1	966
09:00	4	561	113	2	19	2	3	4	8	1	0	0	0	717
10:00	5	400	98	1	20	5	2	7	4	1	0	0	0	543
11:00	7	418	89	4	18	5	0	7	5	0	0	0	0	553
12 PM	7	388	92	4	22	1	3	2	7	3	0	0	0	529
13:00	4	369	90	4	26	3	2	4	2	2	0	0	0	506
14:00	9	371	93	9	12	4	0	4	5	1	0	0	0	508
15:00	9	419	79	2	19	1	2	1	1	1	0	0	0	534
16:00	10	386	87	0	16	2	0	5	1	0	0	0	0	507
17:00	9	348	75	2	11	2	0	2	0	0	0	0	0	449
18:00	10	328	52	1	9	3	0	3	1	0	0	0	0	407
19:00	3	265	39	0	8	2	0	2	0	0	0	0	0	319
20:00	3	209	31	0	7	0	0	2	1	0	0	0	0	253
21:00	4	184	23	0	3	0	0	5	1	0	0	0	0	220
22:00	0	92	6	2	4	0	0	2	3	0	0	0	0	109
23:00	0	42	5	0	0	0	0	2	1	0	0	0	0	50
Day Total	130	7593	1776	46	378	45	19	74	58	17	0	0	1	10137
Percent	1.3%	74.9%	17.5%	0.5%	3.7%	0.4%	0.2%	0.7%	0.6%	0.2%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	06:00	07:00	06:00	08:00	07:00	06:00	05:00	07:00			08:00	07:00
Vol.	14	892	236	5	50	5	5	11	8	3			1	1177
PM Peak	16:00	15:00	14:00	14:00	13:00	14:00	12:00	16:00	12:00	12:00				15:00
Vol.	10	419	93	9	26	4	3	5	7	3				534

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044CLS1

EB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	13	3	0	1	0	0	0	1	0	0	0	0	18
01:00	0	12	3	1	1	0	0	1	1	0	0	0	0	19
02:00	0	7	2	0	2	1	0	0	0	1	0	0	0	13
03:00	0	25	9	0	1	0	0	1	2	1	0	0	0	39
04:00	1	89	31	2	8	0	0	2	2	0	0	0	0	135
05:00	0	330	166	8	45	1	0	4	4	2	0	0	0	560
06:00	4	697	256	2	63	3	3	7	6	0	0	0	0	1041
07:00	3	801	189	6	41	3	1	5	2	3	0	0	0	1054
08:00	5	805	166	4	32	7	0	1	4	0	0	0	0	1024
09:00	2	517	121	4	31	2	2	3	1	0	0	0	0	683
10:00	5	428	89	5	16	6	0	4	4	0	0	0	0	557
11:00	1	417	102	2	17	3	0	3	3	0	0	0	0	548
12 PM	7	370	102	1	13	2	1	2	3	1	0	0	0	502
13:00	5	377	93	9	18	5	0	1	1	1	0	0	0	510
14:00	6	375	89	3	19	4	2	3	5	2	0	0	0	508
15:00	6	415	88	1	21	1	0	6	5	1	0	0	0	544
16:00	8	360	72	1	12	4	0	1	2	0	0	0	0	460
17:00	10	320	65	1	10	3	0	2	1	0	0	0	0	412
18:00	3	264	58	1	7	1	0	1	2	0	0	0	0	337
19:00	1	213	38	3	9	1	0	0	0	0	0	0	0	265
20:00	0	139	33	0	3	1	0	0	1	0	0	0	0	177
21:00	0	106	23	0	6	0	0	0	1	0	0	0	0	136
22:00	0	83	7	0	1	0	0	1	0	0	0	0	0	92
23:00	0	36	5	0	0	0	0	0	1	0	0	0	0	42
Day Total	67	7199	1810	54	377	48	9	48	52	12	0	0	0	9676
Percent	0.7%	74.4%	18.7%	0.6%	3.9%	0.5%	0.1%	0.5%	0.5%	0.1%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	06:00	05:00	06:00	08:00	06:00	06:00	06:00	07:00				07:00
Vol.	5	805	256	8	63	7	3	7	6	3				1054
PM Peak	17:00	15:00	12:00	13:00	15:00	13:00	14:00	15:00	14:00	14:00				15:00
Vol.	10	415	102	9	21	5	2	6	5	2				544
Grand Total	197	14792	3586	100	755	93	28	122	110	29	0	0	1	19813
Percent	1.0%	74.7%	18.1%	0.5%	3.8%	0.5%	0.1%	0.6%	0.6%	0.1%	0.0%	0.0%	0.0%	

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044CLS1

WB														
Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	1	45	10	0	0	1	0	1	0	0	0	0	0	58
01:00	0	11	4	0	3	1	0	0	1	0	0	0	0	20
02:00	0	6	2	0	2	0	0	0	1	0	0	0	0	11
03:00	0	5	0	0	1	0	0	0	0	0	0	0	0	6
04:00	0	21	8	3	0	0	0	1	0	0	0	0	0	33
05:00	1	60	18	0	2	2	0	0	2	0	0	0	0	85
06:00	5	113	45	2	7	5	0	6	2	0	0	0	0	185
07:00	4	214	52	3	27	7	1	1	3	1	0	0	0	313
08:00	4	181	46	3	17	6	0	1	5	0	0	0	0	263
09:00	2	224	69	5	18	3	3	2	6	0	0	0	0	332
10:00	4	258	88	5	18	1	1	7	6	0	0	0	0	388
11:00	4	320	72	4	28	3	2	4	10	0	0	0	0	447
12 PM	6	390	90	5	26	5	0	6	2	0	0	0	0	530
13:00	2	440	107	5	21	4	1	4	5	1	0	0	0	590
14:00	7	505	113	7	37	4	1	2	4	0	0	0	0	680
15:00	6	647	171	5	35	4	0	3	1	0	0	0	0	872
16:00	5	829	157	1	42	5	1	5	4	0	0	0	1	1050
17:00	12	805	145	1	31	6	0	3	1	0	0	0	0	1004
18:00	8	749	115	2	19	3	0	0	0	0	0	0	0	896
19:00	13	574	85	1	22	1	0	0	0	0	0	0	0	696
20:00	4	424	76	0	6	0	0	0	0	0	0	0	0	510
21:00	9	300	49	1	5	1	0	0	2	0	0	0	0	367
22:00	2	166	23	0	3	0	0	0	2	0	0	0	0	196
23:00	0	99	18	0	2	0	0	0	1	0	0	0	0	120
Day Total	99	7386	1563	53	372	62	10	46	58	2	0	0	1	9652
Percent	1.0%	76.5%	16.2%	0.5%	3.9%	0.6%	0.1%	0.5%	0.6%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	11:00	10:00	09:00	11:00	07:00	09:00	10:00	11:00	07:00				11:00
Vol.	5	320	88	5	28	7	3	7	10	1				447
PM Peak	19:00	16:00	15:00	14:00	16:00	17:00	13:00	12:00	13:00	13:00			16:00	16:00
Vol.	13	829	171	7	42	6	1	6	5	1			1	1050

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044CLS1

WB														
Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	65	8	0	0	0	0	0	0	0	0	0	0	73
01:00	0	20	1	0	0	0	0	0	0	0	0	0	0	21
02:00	0	11	3	1	2	0	0	0	0	0	0	0	0	17
03:00	0	4	0	0	2	0	0	0	2	0	0	0	0	8
04:00	0	29	9	3	2	2	0	0	2	0	0	0	0	47
05:00	1	70	13	1	2	2	0	1	1	0	0	0	0	91
06:00	1	132	39	3	4	3	1	2	3	0	0	0	0	188
07:00	5	176	57	1	14	6	0	0	1	0	0	0	0	260
08:00	3	202	63	4	17	4	0	0	3	0	0	0	0	296
09:00	0	248	60	3	17	5	0	2	8	1	0	0	0	344
10:00	4	268	77	3	18	6	1	2	4	1	0	0	0	384
11:00	0	355	94	3	18	4	1	2	3	1	0	0	0	481
12 PM	3	404	100	2	22	10	1	2	6	2	0	0	0	552
13:00	1	417	101	3	18	9	1	3	5	0	0	0	0	558
14:00	4	458	120	1	26	9	1	5	4	1	0	0	0	629
15:00	5	609	177	2	46	5	0	4	8	0	0	0	0	856
16:00	2	656	154	2	39	6	0	2	1	0	0	0	0	862
17:00	6	812	149	0	26	7	0	3	3	0	0	0	0	1006
18:00	3	823	114	3	24	1	0	4	0	0	0	0	0	972
19:00	1	483	72	0	9	1	0	0	0	0	0	0	0	566
20:00	2	310	48	0	7	0	0	1	2	0	0	0	0	370
21:00	2	261	34	0	3	0	0	0	1	0	0	0	0	301
22:00	1	126	28	0	0	0	0	1	0	0	0	0	0	156
23:00	0	92	16	0	0	0	0	0	0	0	0	0	0	108
Day Total	44	7031	1537	35	316	80	6	34	57	6	0	0	0	9146
Percent	0.5%	76.9%	16.8%	0.4%	3.5%	0.9%	0.1%	0.4%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	11:00	08:00	10:00	07:00	06:00	06:00	09:00	09:00				11:00
Vol.	5	355	94	4	18	6	1	2	8	1				481
PM Peak	17:00	18:00	15:00	13:00	15:00	12:00	12:00	14:00	15:00	12:00				17:00
Vol.	6	823	177	3	46	10	1	5	8	2				1006
Grand Total	143	14417	3100	88	688	142	16	80	115	8	0	0	1	18798
Percent	0.8%	76.7%	16.5%	0.5%	3.7%	0.8%	0.1%	0.4%	0.6%	0.0%	0.0%	0.0%	0.0%	

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044CLS1

EB, WB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	1	57	14	0	1	1	0	1	0	0	0	0	0	75
01:00	0	14	10	1	3	1	0	2	1	0	0	0	0	32
02:00	1	13	4	0	4	0	0	0	1	0	0	0	0	23
03:00	0	24	5	0	3	0	0	0	2	1	0	0	0	35
04:00	0	109	39	3	8	0	0	3	2	0	0	0	0	164
05:00	10	411	172	4	46	4	0	1	10	2	0	0	0	660
06:00	19	805	281	5	57	9	0	17	5	1	0	0	0	1199
07:00	12	1106	262	8	74	11	6	4	3	4	0	0	0	1490
08:00	18	930	202	5	47	11	2	4	8	1	0	0	1	1229
09:00	6	785	182	7	37	5	6	6	14	1	0	0	0	1049
10:00	9	658	186	6	38	6	3	14	10	1	0	0	0	931
11:00	11	738	161	8	46	8	2	11	15	0	0	0	0	1000
12 PM	13	778	182	9	48	6	3	8	9	3	0	0	0	1059
13:00	6	809	197	9	47	7	3	8	7	3	0	0	0	1096
14:00	16	876	206	16	49	8	1	6	9	1	0	0	0	1188
15:00	15	1066	250	7	54	5	2	4	2	1	0	0	0	1406
16:00	15	1215	244	1	58	7	1	10	5	0	0	0	1	1557
17:00	21	1153	220	3	42	8	0	5	1	0	0	0	0	1453
18:00	18	1077	167	3	28	6	0	3	1	0	0	0	0	1303
19:00	16	839	124	1	30	3	0	2	0	0	0	0	0	1015
20:00	7	633	107	0	13	0	0	2	1	0	0	0	0	763
21:00	13	484	72	1	8	1	0	5	3	0	0	0	0	587
22:00	2	258	29	2	7	0	0	2	5	0	0	0	0	305
23:00	0	141	23	0	2	0	0	2	2	0	0	0	0	170
Day Total	229	14979	3339	99	750	107	29	120	116	19	0	0	2	19789
Percent	1.2%	75.7%	16.9%	0.5%	3.8%	0.5%	0.1%	0.6%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	06:00	07:00	07:00	07:00	07:00	06:00	11:00	07:00			08:00	07:00
Vol.	19	1106	281	8	74	11	6	17	15	4			1	1490
PM Peak	17:00	16:00	15:00	14:00	16:00	14:00	12:00	16:00	12:00	12:00			16:00	16:00
Vol.	21	1215	250	16	58	8	3	10	9	3			1	1557

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044CLS1

EB, WB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	78	11	0	1	0	0	0	1	0	0	0	0	91
01:00	0	32	4	1	1	0	0	1	1	0	0	0	0	40
02:00	0	18	5	1	4	1	0	0	0	1	0	0	0	30
03:00	0	29	9	0	3	0	0	1	4	1	0	0	0	47
04:00	1	118	40	5	10	2	0	2	4	0	0	0	0	182
05:00	1	400	179	9	47	3	0	5	5	2	0	0	0	651
06:00	5	829	295	5	67	6	4	9	9	0	0	0	0	1229
07:00	8	977	246	7	55	9	1	5	3	3	0	0	0	1314
08:00	8	1007	229	8	49	11	0	1	7	0	0	0	0	1320
09:00	2	765	181	7	48	7	2	5	9	1	0	0	0	1027
10:00	9	696	166	8	34	12	1	6	8	1	0	0	0	941
11:00	1	772	196	5	35	7	1	5	6	1	0	0	0	1029
12 PM	10	774	202	3	35	12	2	4	9	3	0	0	0	1054
13:00	6	794	194	12	36	14	1	4	6	1	0	0	0	1068
14:00	10	833	209	4	45	13	3	8	9	3	0	0	0	1137
15:00	11	1024	265	3	67	6	0	10	13	1	0	0	0	1400
16:00	10	1016	226	3	51	10	0	3	3	0	0	0	0	1322
17:00	16	1132	214	1	36	10	0	5	4	0	0	0	0	1418
18:00	6	1087	172	4	31	2	0	5	2	0	0	0	0	1309
19:00	2	696	110	3	18	2	0	0	0	0	0	0	0	831
20:00	2	449	81	0	10	1	0	1	3	0	0	0	0	547
21:00	2	367	57	0	9	0	0	0	2	0	0	0	0	437
22:00	1	209	35	0	1	0	0	2	0	0	0	0	0	248
23:00	0	128	21	0	0	0	0	0	1	0	0	0	0	150
Day Total	111	14230	3347	89	693	128	15	82	109	18	0	0	0	18822
Percent	0.6%	75.6%	17.8%	0.5%	3.7%	0.7%	0.1%	0.4%	0.6%	0.1%	0.0%	0.0%	0.0%	
AM Peak	10:00	08:00	06:00	05:00	06:00	10:00	06:00	06:00	06:00	07:00				08:00
Vol.	9	1007	295	9	67	12	4	9	9	3				1320
PM Peak	17:00	17:00	15:00	13:00	15:00	13:00	14:00	15:00	15:00	12:00				17:00
Vol.	16	1132	265	12	67	14	3	10	13	3				1418
Grand Total	340	29209	6686	188	1443	235	44	202	225	37	0	0	2	38611
Percent	0.9%	75.6%	17.3%	0.5%	3.7%	0.6%	0.1%	0.5%	0.6%	0.1%	0.0%	0.0%	0.0%	

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044SPD1

EB

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
07/16/19	0	0	0	0	1	1	7	4	3	1	0	0	0	0	17
01:00	0	0	0	0	0	2	7	2	1	0	0	0	0	0	12
02:00	0	0	0	0	0	2	4	6	0	0	0	0	0	0	12
03:00	0	0	0	0	2	2	7	9	8	1	0	0	0	0	29
04:00	1	0	0	0	0	8	36	71	14	1	0	0	0	0	131
05:00	11	0	1	1	3	26	252	248	33	0	0	0	0	0	575
06:00	28	1	0	0	11	92	507	346	28	3	0	0	0	0	1016
07:00	40	9	30	38	64	320	544	131	3	0	0	0	0	0	1179
08:00	64	19	30	40	75	193	412	128	6	1	0	0	0	0	968
09:00	34	3	6	10	40	142	362	112	10	0	0	0	0	0	719
10:00	42	1	6	7	25	100	227	129	8	0	0	0	0	0	545
11:00	24	0	2	4	10	138	247	124	5	0	0	0	0	0	554
12 PM	41	3	2	14	29	88	238	99	17	0	0	0	0	0	531
13:00	40	8	4	10	26	118	212	82	6	2	0	0	0	0	508
14:00	46	0	0	11	35	96	199	107	16	1	0	0	0	0	511
15:00	50	0	0	13	27	88	239	107	11	0	0	0	0	0	535
16:00	54	1	0	18	27	89	228	85	7	0	0	0	0	0	509
17:00	60	1	3	7	13	105	168	85	8	0	0	0	0	0	450
18:00	42	2	3	3	29	67	159	97	5	1	0	0	0	0	408
19:00	26	0	1	4	4	43	139	90	12	1	0	0	0	0	320
20:00	10	0	1	4	15	42	120	53	7	1	0	0	0	0	253
21:00	5	0	0	7	9	30	89	72	8	1	0	0	0	0	221
22:00	3	0	1	3	9	18	39	25	11	0	0	0	0	0	109
23:00	1	0	0	0	2	8	15	17	5	2	0	0	0	0	50
Total	622	48	90	194	456	1818	4457	2229	232	16	0	0	0	0	10162

Daily

15th Percentile : 35 MPH
50th Percentile : 42 MPH
85th Percentile : 47 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 41-50 MPH
Number in Pace : 6686
Percent in Pace : 65.8%
Number of Vehicles > 40 MPH : 6934
Percent of Vehicles > 40 MPH : 68.2%

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044SPD1

EB

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
07/17/19	0	0	0	2	0	1	9	5	1	0	0	0	0	0	18
01:00	0	0	0	0	1	3	4	8	2	1	0	0	0	0	19
02:00	0	0	0	0	1	0	7	3	2	0	0	0	0	0	13
03:00	0	0	0	0	1	3	11	20	4	0	0	0	0	0	39
04:00	1	0	0	0	0	2	51	56	24	1	0	0	0	0	135
05:00	4	1	0	0	5	32	194	292	29	3	0	0	0	0	560
06:00	19	0	0	4	38	158	520	278	25	0	0	0	0	0	1042
07:00	101	72	28	29	46	278	429	69	3	0	0	0	1	0	1056
08:00	57	14	37	25	65	282	442	98	5	0	0	0	0	0	1025
09:00	25	0	2	6	21	131	359	136	4	0	0	0	0	0	684
10:00	36	0	0	0	7	72	279	158	6	0	0	0	0	0	558
11:00	25	0	0	5	21	93	277	123	6	0	0	0	0	0	550
12 PM	39	2	2	10	32	88	223	101	6	2	0	0	0	0	505
13:00	27	1	1	5	23	92	224	127	12	0	0	0	0	0	512
14:00	44	0	0	4	27	79	247	100	8	1	0	0	0	0	510
15:00	45	0	2	9	19	90	235	135	10	0	0	0	0	0	545
16:00	49	0	8	14	23	79	191	89	9	0	0	0	0	0	462
17:00	38	1	11	14	38	111	156	44	3	0	0	0	0	0	416
18:00	32	0	1	4	6	67	158	63	8	0	0	0	0	0	339
19:00	12	0	0	4	5	36	135	59	15	0	0	0	0	0	266
20:00	9	0	0	1	12	34	76	40	4	1	0	0	0	0	177
21:00	6	0	0	2	5	22	65	33	3	0	0	0	0	0	136
22:00	2	0	0	1	0	14	43	24	6	1	1	0	0	0	92
23:00	2	0	0	2	0	5	12	14	5	2	0	0	0	0	42
Total	573	91	92	141	396	1772	4347	2075	200	12	1	0	1	0	9701

Daily

15th Percentile : 35 MPH
50th Percentile : 42 MPH
85th Percentile : 47 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 41-50 MPH
Number in Pace : 6422
Percent in Pace : 66.2%
Number of Vehicles > 40 MPH : 6636
Percent of Vehicles > 40 MPH : 68.4%

Grand Total	1195	139	182	335	852	3590	8804	4304	432	28	1	0	1	0	19863
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Overall

15th Percentile : 35 MPH
50th Percentile : 42 MPH
85th Percentile : 47 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 41-50 MPH
Number in Pace : 13108
Percent in Pace : 66.0%
Number of Vehicles > 40 MPH : 13570
Percent of Vehicles > 40 MPH : 68.3%

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044SPD1

WB

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
07/16/19	0	0	0	0	4	15	17	17	5	0	0	0	0	0	58
01:00	1	1	0	0	1	5	7	5	0	0	0	0	0	0	20
02:00	0	0	0	0	1	2	4	4	0	0	0	0	0	0	11
03:00	0	0	0	0	0	2	3	1	0	0	0	0	0	0	6
04:00	0	0	0	0	0	7	17	8	1	0	0	0	0	0	33
05:00	7	0	0	2	1	6	39	24	6	1	0	0	0	0	86
06:00	18	1	0	2	6	17	68	67	7	0	0	0	0	0	186
07:00	39	0	0	4	25	63	122	53	6	1	0	0	0	0	313
08:00	37	0	1	4	8	65	109	35	4	1	0	0	0	0	264
09:00	24	0	0	3	12	100	132	56	4	2	0	0	0	0	333
10:00	28	0	0	6	30	102	153	64	6	0	0	0	0	0	389
11:00	20	0	0	10	24	124	185	81	3	1	0	0	0	0	448
12 PM	36	0	1	3	27	141	225	91	8	0	0	0	0	0	532
13:00	33	0	2	14	32	153	248	94	15	1	0	0	0	0	592
14:00	43	0	1	18	89	244	220	62	6	1	0	0	0	0	684
15:00	39	0	0	11	106	356	298	59	6	0	0	0	0	0	875
16:00	51	0	2	41	181	426	303	42	3	0	0	0	0	0	1049
17:00	45	0	2	19	164	469	266	38	2	1	0	0	0	0	1006
18:00	37	0	4	46	156	334	268	48	6	0	1	0	0	0	900
19:00	21	2	22	37	115	219	219	53	8	0	1	0	0	0	697
20:00	9	0	0	6	29	175	217	68	6	2	0	0	0	0	512
21:00	9	0	0	2	18	103	175	53	5	2	0	0	0	0	367
22:00	4	0	0	0	2	29	104	48	9	1	0	0	0	0	197
23:00	0	0	0	2	2	27	45	35	8	1	0	0	0	0	120
Total	501	4	35	230	1033	3184	3444	1106	124	15	2	0	0	0	9678

Daily

15th Percentile : 33 MPH
50th Percentile : 39 MPH
85th Percentile : 44 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 6628
Percent in Pace : 68.5%
Number of Vehicles > 40 MPH : 4691
Percent of Vehicles > 40 MPH : 48.5%

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044SPD1

WB

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
07/17/19	0	0	0	0	0	12	40	18	3	0	0	0	0	0	73
01:00	0	0	0	0	1	3	11	4	1	1	0	0	0	0	21
02:00	0	0	0	0	1	3	6	6	0	1	0	0	0	0	17
03:00	0	0	0	0	0	3	3	0	2	0	0	0	0	0	8
04:00	2	0	0	0	2	9	24	9	1	0	0	0	0	0	47
05:00	4	0	0	0	2	9	47	25	3	1	0	0	0	0	91
06:00	14	0	3	2	4	23	88	52	5	0	0	0	0	0	191
07:00	58	0	1	5	16	67	82	28	4	1	0	0	0	0	262
08:00	30	0	1	6	25	110	90	34	2	1	0	0	0	0	299
09:00	23	0	0	3	25	87	133	63	9	1	0	0	0	0	344
10:00	20	1	0	8	16	110	165	56	11	0	0	0	0	0	387
11:00	19	0	2	8	26	146	216	61	4	0	0	0	0	0	482
12 PM	28	0	2	18	54	185	186	75	5	1	0	0	0	0	554
13:00	26	0	1	18	57	133	228	90	6	0	0	0	0	0	559
14:00	29	0	3	15	84	210	222	56	11	1	0	0	0	0	631
15:00	49	1	1	10	106	362	261	59	5	1	1	0	0	0	856
16:00	44	0	2	13	168	409	192	34	3	0	0	0	0	0	865
17:00	45	0	6	40	353	447	101	17	1	0	0	0	0	0	1010
18:00	23	0	1	9	166	455	273	46	2	0	0	0	0	0	975
19:00	9	0	0	5	52	180	258	62	3	0	0	0	0	0	569
20:00	7	0	0	2	17	133	163	46	2	0	0	0	0	0	370
21:00	5	0	0	4	16	92	128	51	3	2	0	0	0	0	301
22:00	3	0	0	1	9	32	62	44	5	0	0	0	0	0	156
23:00	0	0	0	1	2	28	46	26	5	0	0	0	0	0	108
Total	438	2	23	168	1202	3248	3025	962	96	11	1	0	0	0	9176

Daily

15th Percentile : 33 MPH
50th Percentile : 39 MPH
85th Percentile : 44 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 6273
Percent in Pace : 68.4%
Number of Vehicles > 40 MPH : 4095
Percent of Vehicles > 40 MPH : 44.6%

Grand Total	939	6	58	398	2235	6432	6469	2068	220	26	3	0	0	0	18854
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Overall

15th Percentile : 33 MPH
50th Percentile : 39 MPH
85th Percentile : 44 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 12901
Percent in Pace : 68.4%
Number of Vehicles > 40 MPH : 8786
Percent of Vehicles > 40 MPH : 46.6%

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044SPD1

EB, WB

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
07/16/19	0	0	0	0	5	16	24	21	8	1	0	0	0	0	75
01:00	1	1	0	0	1	7	14	7	1	0	0	0	0	0	32
02:00	0	0	0	0	1	4	8	10	0	0	0	0	0	0	23
03:00	0	0	0	0	2	4	10	10	8	1	0	0	0	0	35
04:00	1	0	0	0	0	15	53	79	15	1	0	0	0	0	164
05:00	18	0	1	3	4	32	291	272	39	1	0	0	0	0	661
06:00	46	2	0	2	17	109	575	413	35	3	0	0	0	0	1202
07:00	79	9	30	42	89	383	666	184	9	1	0	0	0	0	1492
08:00	101	19	31	44	83	258	521	163	10	2	0	0	0	0	1232
09:00	58	3	6	13	52	242	494	168	14	2	0	0	0	0	1052
10:00	70	1	6	13	55	202	380	193	14	0	0	0	0	0	934
11:00	44	0	2	14	34	262	432	205	8	1	0	0	0	0	1002
12 PM	77	3	3	17	56	229	463	190	25	0	0	0	0	0	1063
13:00	73	8	6	24	58	271	460	176	21	3	0	0	0	0	1100
14:00	89	0	1	29	124	340	419	169	22	2	0	0	0	0	1195
15:00	89	0	0	24	133	444	537	166	17	0	0	0	0	0	1410
16:00	105	1	2	59	208	515	531	127	10	0	0	0	0	0	1558
17:00	105	1	5	26	177	574	434	123	10	1	0	0	0	0	1456
18:00	79	2	7	49	185	401	427	145	11	1	1	0	0	0	1308
19:00	47	2	23	41	119	262	358	143	20	1	1	0	0	0	1017
20:00	19	0	1	10	44	217	337	121	13	3	0	0	0	0	765
21:00	14	0	0	9	27	133	264	125	13	3	0	0	0	0	588
22:00	7	0	1	3	11	47	143	73	20	1	0	0	0	0	306
23:00	1	0	0	2	4	35	60	52	13	3	0	0	0	0	170
Total	1123	52	125	424	1489	5002	7901	3335	356	31	2	0	0	0	19840

Daily

15th Percentile : 34 MPH
50th Percentile : 41 MPH
85th Percentile : 46 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 12903
Percent in Pace : 65.0%
Number of Vehicles > 40 MPH : 11625
Percent of Vehicles > 40 MPH : 58.6%

Location : Route 119
Location : West of Beaver Brook Road
City/State: Littleton, MA

0044SPD1

EB, WB

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
07/17/19	0	0	0	2	0	13	49	23	4	0	0	0	0	0	91
01:00	0	0	0	0	2	6	15	12	3	2	0	0	0	0	40
02:00	0	0	0	0	2	3	13	9	2	1	0	0	0	0	30
03:00	0	0	0	0	1	6	14	20	6	0	0	0	0	0	47
04:00	3	0	0	0	2	11	75	65	25	1	0	0	0	0	182
05:00	8	1	0	0	7	41	241	317	32	4	0	0	0	0	651
06:00	33	0	3	6	42	181	608	330	30	0	0	0	0	0	1233
07:00	159	72	29	34	62	345	511	97	7	1	0	0	1	0	1318
08:00	87	14	38	31	90	392	532	132	7	1	0	0	0	0	1324
09:00	48	0	2	9	46	218	492	199	13	1	0	0	0	0	1028
10:00	56	1	0	8	23	182	444	214	17	0	0	0	0	0	945
11:00	44	0	2	13	47	239	493	184	10	0	0	0	0	0	1032
12 PM	67	2	4	28	86	273	409	176	11	3	0	0	0	0	1059
13:00	53	1	2	23	80	225	452	217	18	0	0	0	0	0	1071
14:00	73	0	3	19	111	289	469	156	19	2	0	0	0	0	1141
15:00	94	1	3	19	125	452	496	194	15	1	1	0	0	0	1401
16:00	93	0	10	27	191	488	383	123	12	0	0	0	0	0	1327
17:00	83	1	17	54	391	558	257	61	4	0	0	0	0	0	1426
18:00	55	0	2	13	172	522	431	109	10	0	0	0	0	0	1314
19:00	21	0	0	9	57	216	393	121	18	0	0	0	0	0	835
20:00	16	0	0	3	29	167	239	86	6	1	0	0	0	0	547
21:00	11	0	0	6	21	114	193	84	6	2	0	0	0	0	437
22:00	5	0	0	2	9	46	105	68	11	1	1	0	0	0	248
23:00	2	0	0	3	2	33	58	40	10	2	0	0	0	0	150
Total	1011	93	115	309	1598	5020	7372	3037	296	23	2	0	1	0	18877

Daily

15th Percentile : 34 MPH
50th Percentile : 40 MPH
85th Percentile : 45 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 12392
Percent in Pace : 65.6%
Number of Vehicles > 40 MPH : 10731
Percent of Vehicles > 40 MPH : 56.8%

Grand Total	2134	145	240	733	3087	10022	15273	6372	652	54	4	0	1	0	38717
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Overall

15th Percentile : 34 MPH
50th Percentile : 40 MPH
85th Percentile : 46 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 25295
Percent in Pace : 65.3%
Number of Vehicles > 40 MPH : 22356
Percent of Vehicles > 40 MPH : 57.7%

Accurate Counts
978-664-2565

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044VOL2

Start Time	7/16/2019 Tue	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	147			26	134				
12:15		5	159			16	168				
12:30		4	162			11	149				
12:45		1	148	17	616	11	125	64	576	81	1192
01:00		3	161			7	189				
01:15		4	168			5	143				
01:30		4	125			4	141				
01:45		2	160	13	614	3	160	19	633	32	1247
02:00		1	166			2	173				
02:15		1	154			2	218				
02:30		9	142			5	171				
02:45		1	164	12	626	3	208	12	770	24	1396
03:00		7	163			2	222				
03:15		3	148			1	224				
03:30		10	163			2	225				
03:45		9	168	29	642	2	268	7	939	36	1581
04:00		16	135			6	310				
04:15		33	162			8	279				
04:30		34	170			11	288				
04:45		63	157	146	624	12	292	37	1169	183	1793
05:00		111	148			13	328				
05:15		127	129			16	281				
05:30		172	103			26	303				
05:45		234	132	644	512	38	285	93	1197	737	1709
06:00		267	119			49	271				
06:15		257	154			43	260				
06:30		302	119			61	265				
06:45		310	106	1136	498	61	232	214	1028	1350	1526
07:00		337	106			94	203				
07:15		347	75			76	215				
07:30		364	98			89	175				
07:45		315	90	1363	369	129	150	388	743	1751	1112
08:00		257	78			78	179				
08:15		308	77			79	156				
08:30		262	82			78	123				
08:45		262	79	1089	316	103	144	338	602	1427	918
09:00		263	72			89	124				
09:15		219	65			103	99				
09:30		204	57			90	130				
09:45		205	59	891	253	117	93	399	446	1290	699
10:00		161	41			119	64				
10:15		179	36			106	60				
10:30		169	25			113	55				
10:45		178	19	687	121	133	48	471	227	1158	348
11:00		159	19			133	35				
11:15		174	16			131	46				
11:30		173	8			120	45				
11:45		170	10	676	53	130	32	514	158	1190	211
Total		6703	5244			2556	8488			9259	13732
Percent		56.1%	43.9%			23.1%	76.9%			40.3%	59.7%

Accurate Counts
978-664-2565

Page 2

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044VOL2

Start Time	7/17/2019 Wed	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	179			44	160				
12:15		9	154			20	165				
12:30		3	132			16	158				
12:45		4	134	22	599	11	149	91	632	113	1231
01:00		5	149			9	143				
01:15		5	147			7	160				
01:30		3	147			7	154				
01:45		7	135	20	578	3	156	26	613	46	1191
02:00		2	142			6	160				
02:15		2	142			4	181				
02:30		4	149			4	191				
02:45		5	139	13	572	3	170	17	702	30	1274
03:00		9	160			5	207				
03:15		6	142			1	217				
03:30		11	167			4	229				
03:45		13	141	39	610	0	234	10	887	49	1497
04:00		19	153			4	217				
04:15		34	129			11	250				
04:30		37	143			20	276				
04:45		62	122	152	547	16	304	51	1047	203	1594
05:00		96	103			12	259				
05:15		137	141			17	302				
05:30		151	117			25	328				
05:45		201	96	585	457	49	257	103	1146	688	1603
06:00		265	110			45	242				
06:15		273	84			52	254				
06:30		322	95			61	268				
06:45		270	82	1130	371	63	199	221	963	1351	1334
07:00		338	83			76	210				
07:15		277	89			66	192				
07:30		276	83			62	172				
07:45		308	63	1199	318	108	119	312	693	1511	1011
08:00		266	45			54	145				
08:15		297	57			94	104				
08:30		288	54			101	105				
08:45		253	52	1104	208	84	94	333	448	1437	656
09:00		220	47			105	96				
09:15		206	44			116	86				
09:30		186	35			92	94				
09:45		201	65	813	191	99	68	412	344	1225	535
10:00		185	28			113	67				
10:15		175	25			116	49				
10:30		133	25			101	35				
10:45		136	21	629	99	111	32	441	183	1070	282
11:00		177	14			132	36				
11:15		139	10			118	30				
11:30		158	11			156	32				
11:45		149	9	623	44	128	22	534	120	1157	164
Total		6329	4594			2551	7778			8880	12372
Percent		57.9%	42.1%			24.7%	75.3%			41.8%	58.2%
Grand Total		13032	9838			5107	16266			18139	26104
Percent		57.0%	43.0%			23.9%	76.1%			41.0%	59.0%
ADT	ADT 22,122		AADT 22,122								

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044VOL2

Start Time	7/15/2019		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	17	64	22	91	*	*	*	*	*	*	*	*	20	78
01:00	*	*	13	19	20	26	*	*	*	*	*	*	*	*	16	22
02:00	*	*	12	12	13	17	*	*	*	*	*	*	*	*	12	14
03:00	*	*	29	7	39	10	*	*	*	*	*	*	*	*	34	8
04:00	*	*	146	37	152	51	*	*	*	*	*	*	*	*	149	44
05:00	*	*	644	93	585	103	*	*	*	*	*	*	*	*	614	98
06:00	*	*	1136	214	1130	221	*	*	*	*	*	*	*	*	1133	218
07:00	*	*	1363	388	1199	312	*	*	*	*	*	*	*	*	1281	350
08:00	*	*	1089	338	1104	333	*	*	*	*	*	*	*	*	1096	336
09:00	*	*	891	399	813	412	*	*	*	*	*	*	*	*	852	406
10:00	*	*	687	471	629	441	*	*	*	*	*	*	*	*	658	456
11:00	*	*	676	514	623	534	*	*	*	*	*	*	*	*	650	524
12:00 PM	*	*	616	576	599	632	*	*	*	*	*	*	*	*	608	604
01:00	*	*	614	633	578	613	*	*	*	*	*	*	*	*	596	623
02:00	*	*	626	770	572	702	*	*	*	*	*	*	*	*	599	736
03:00	*	*	642	939	610	887	*	*	*	*	*	*	*	*	626	913
04:00	*	*	624	1169	547	1047	*	*	*	*	*	*	*	*	586	1108
05:00	*	*	512	1197	457	1146	*	*	*	*	*	*	*	*	484	1172
06:00	*	*	498	1028	371	963	*	*	*	*	*	*	*	*	434	996
07:00	*	*	369	743	318	693	*	*	*	*	*	*	*	*	344	718
08:00	*	*	316	602	208	448	*	*	*	*	*	*	*	*	262	525
09:00	*	*	253	446	191	344	*	*	*	*	*	*	*	*	222	395
10:00	*	*	121	227	99	183	*	*	*	*	*	*	*	*	110	205
11:00	*	*	53	158	44	120	*	*	*	*	*	*	*	*	48	139
Lane	0	0	11947	11044	10923	10329	0	0	0	0	0	0	0	0	11434	10688
Day	0		22991		21252		0		0		0		0		22122	
AM Peak	-	-	07:00	11:00	07:00	11:00	-	-	-	-	-	-	-	-	07:00	11:00
Vol.	-	-	1363	514	1199	534	-	-	-	-	-	-	-	-	1281	524
PM Peak	-	-	15:00	17:00	15:00	17:00	-	-	-	-	-	-	-	-	15:00	17:00
Vol.	-	-	642	1197	610	1146	-	-	-	-	-	-	-	-	626	1172

Comb. Total	0	22991	21252	0	0	0	0	22122
ADT	ADT 22,122	AADT 22,122						

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044CLS2

EB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	0	10	6	0	1	0	0	0	0	0	0	0	0	17
01:00	0	4	6	1	0	0	0	2	0	0	0	0	0	13
02:00	1	5	4	0	2	0	0	0	0	0	0	0	0	12
03:00	0	19	4	0	3	0	0	0	2	1	0	0	0	29
04:00	0	97	29	0	16	0	0	2	2	0	0	0	0	146
05:00	9	397	147	5	72	1	0	3	9	1	0	0	0	644
06:00	20	767	248	5	76	4	0	11	3	1	0	0	0	1135
07:00	12	1031	238	5	68	3	1	1	2	2	0	0	0	1363
08:00	11	857	171	3	38	2	1	2	3	0	0	0	0	1088
09:00	7	688	143	8	25	2	0	6	7	2	0	0	0	888
10:00	5	508	126	6	25	1	1	5	5	3	0	0	0	685
11:00	13	501	115	4	23	5	0	7	6	0	0	0	0	674
12 PM	8	456	112	3	22	3	1	2	6	2	0	0	0	615
13:00	9	457	106	6	24	2	0	3	4	1	0	0	0	612
14:00	16	469	108	8	16	3	0	1	4	0	0	0	0	625
15:00	10	490	101	4	28	1	2	4	1	1	0	0	0	642
16:00	11	484	96	1	17	4	0	6	2	0	0	0	0	621
17:00	8	392	86	3	19	1	1	2	0	0	0	0	0	512
18:00	11	410	59	1	10	2	0	2	1	0	0	0	0	496
19:00	6	312	42	1	6	0	0	1	0	0	0	0	0	368
20:00	3	269	33	0	7	0	0	2	1	1	0	0	0	316
21:00	3	220	21	0	4	1	0	3	1	0	0	0	0	253
22:00	0	104	7	2	4	0	0	1	3	0	0	0	0	121
23:00	1	44	5	0	0	1	0	2	0	0	0	0	0	53
Day Total	164	8991	2013	66	506	36	7	68	62	15	0	0	0	11928
Percent	1.4%	75.4%	16.9%	0.6%	4.2%	0.3%	0.1%	0.6%	0.5%	0.1%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	06:00	09:00	06:00	11:00	07:00	06:00	05:00	10:00				07:00
Vol.	20	1031	248	8	76	5	1	11	9	3				1363
PM Peak	14:00	15:00	12:00	14:00	15:00	16:00	15:00	16:00	12:00	12:00				15:00
Vol.	16	490	112	8	28	4	2	6	6	2				642

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044CLS2

EB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	18	3	0	0	0	0	0	1	0	0	0	0	22
01:00	0	13	3	1	1	0	0	1	1	0	0	0	0	20
02:00	0	7	2	0	2	1	0	0	0	1	0	0	0	13
03:00	0	25	9	0	1	0	0	1	3	0	0	0	0	39
04:00	2	101	33	2	11	0	0	1	2	0	0	0	0	152
05:00	2	361	165	8	39	1	0	4	4	1	0	0	0	585
06:00	6	775	270	4	57	2	2	8	4	1	0	0	0	1129
07:00	13	939	192	4	40	2	0	2	2	4	0	1	0	1199
08:00	6	871	166	5	38	7	0	4	6	0	0	1	0	1104
09:00	5	628	136	4	31	2	1	3	2	0	0	0	0	812
10:00	4	497	86	7	20	4	0	4	6	0	0	0	0	628
11:00	7	457	114	1	26	9	2	2	4	0	0	0	0	622
12 PM	6	463	101	5	16	3	1	1	2	1	0	0	0	599
13:00	9	433	91	10	26	4	0	1	1	1	0	0	0	576
14:00	6	433	90	5	24	5	1	2	4	2	0	0	0	572
15:00	11	478	80	1	26	3	0	7	4	0	0	0	0	610
16:00	7	437	80	1	16	5	0	1	1	0	0	0	0	548
17:00	8	355	74	0	15	2	0	3	0	0	0	0	0	457
18:00	12	300	48	1	7	0	0	1	2	0	0	0	0	371
19:00	1	263	43	3	4	0	0	1	0	0	0	0	0	315
20:00	3	165	35	0	4	0	0	0	1	0	0	0	0	208
21:00	1	159	24	0	6	0	0	0	1	0	0	0	0	191
22:00	0	89	8	0	1	0	0	0	1	0	0	0	0	99
23:00	0	38	5	0	0	0	0	0	1	0	0	0	0	44
Day Total	109	8305	1858	62	411	50	7	47	53	11	0	2	0	10915
Percent	1.0%	76.1%	17.0%	0.6%	3.8%	0.5%	0.1%	0.4%	0.5%	0.1%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	06:00	05:00	06:00	11:00	06:00	06:00	08:00	07:00		07:00		07:00
Vol.	13	939	270	8	57	9	2	8	6	4		1		1199
PM Peak	18:00	15:00	12:00	13:00	13:00	14:00	12:00	15:00	14:00	14:00				15:00
Vol.	12	478	101	10	26	5	1	7	4	2				610
Grand Total	273	17296	3871	128	917	86	14	115	115	26	0	2	0	22843
Percent	1.2%	75.7%	16.9%	0.6%	4.0%	0.4%	0.1%	0.5%	0.5%	0.1%	0.0%	0.0%	0.0%	

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044CLS2

WB															
Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total	
07/16/19	0	51	11	0	0	1	0	1	0	0	0	0	0	64	
01:00	0	14	2	0	2	0	0	0	1	0	0	0	0	19	
02:00	0	8	1	0	2	0	0	0	1	0	0	0	0	12	
03:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7	
04:00	0	25	8	3	0	0	0	1	0	0	0	0	0	37	
05:00	1	70	16	1	1	2	0	1	1	0	0	0	0	93	
06:00	4	136	48	2	7	5	2	4	3	1	0	0	0	212	
07:00	8	260	73	2	27	7	5	1	3	1	0	0	0	387	
08:00	3	256	51	4	14	3	0	1	5	0	0	0	0	337	
09:00	4	281	73	3	19	3	4	6	3	0	0	0	0	396	
10:00	2	338	93	6	14	5	1	8	3	0	0	0	0	470	
11:00	5	368	81	6	28	10	4	2	5	2	0	0	0	511	
12 PM	4	432	89	4	24	5	1	9	5	1	0	0	0	574	
13:00	5	477	109	3	20	5	4	3	4	1	0	0	0	631	
14:00	8	588	116	6	39	3	3	2	4	0	0	0	0	769	
15:00	5	694	184	6	43	3	0	3	2	0	0	0	0	940	
16:00	14	926	175	0	44	3	1	3	1	1	0	0	0	1168	
17:00	11	985	161	2	28	4	1	4	0	0	0	0	0	1196	
18:00	11	871	117	1	21	6	0	0	0	0	0	0	0	1027	
19:00	9	632	78	0	19	3	0	1	1	0	0	0	0	743	
20:00	5	521	69	0	6	0	0	1	0	0	0	0	0	602	
21:00	7	380	47	1	7	3	0	0	1	0	0	0	0	446	
22:00	6	193	23	0	3	0	0	0	2	0	0	0	0	227	
23:00	0	134	20	0	2	0	1	0	1	0	0	0	0	158	
Day Total	112	8646	1646	50	370	71	27	51	46	7	0	0	0	11026	
Percent	1.0%	78.4%	14.9%	0.5%	3.4%	0.6%	0.2%	0.5%	0.4%	0.1%	0.0%	0.0%	0.0%		
AM Peak	07:00	11:00	10:00	10:00	11:00	11:00	07:00	10:00	08:00	11:00				11:00	
Vol.	8	368	93	6	28	10	5	8	5	2				511	
PM Peak	16:00	17:00	15:00	14:00	16:00	18:00	13:00	12:00	12:00	12:00				17:00	
Vol.	14	985	184	6	44	6	4	9	5	1				1196	

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044CLS2

WB														
Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	82	8	0	1	0	0	0	0	0	0	0	0	91
01:00	0	24	2	0	0	0	0	0	0	0	0	0	0	26
02:00	0	11	3	1	2	0	0	0	0	0	0	0	0	17
03:00	0	5	1	0	2	0	0	0	2	0	0	0	0	10
04:00	0	31	10	4	2	2	0	0	2	0	0	0	0	51
05:00	2	80	14	1	1	3	0	2	0	0	0	0	0	103
06:00	4	147	45	5	10	5	0	2	1	0	0	0	0	219
07:00	8	204	58	0	21	12	1	6	1	0	0	0	1	312
08:00	13	221	66	5	24	2	0	0	3	0	0	0	0	334
09:00	2	294	68	3	30	7	0	2	2	1	0	0	0	409
10:00	3	312	88	5	21	6	0	1	3	0	0	0	0	439
11:00	4	399	93	3	20	5	0	5	4	0	0	0	0	533
12 PM	4	462	114	5	30	10	1	1	4	1	0	0	0	632
13:00	5	461	103	4	28	4	1	1	5	0	0	0	0	612
14:00	7	509	134	4	26	11	1	7	1	2	0	0	0	702
15:00	8	649	171	1	42	9	0	2	3	0	0	0	0	885
16:00	8	807	188	3	35	0	0	2	2	1	0	0	0	1046
17:00	9	940	152	0	31	7	0	6	1	0	0	0	0	1146
18:00	12	810	108	3	20	7	0	0	0	0	0	0	0	960
19:00	2	600	79	0	9	1	0	0	0	0	0	0	0	691
20:00	1	392	44	0	9	0	0	1	1	0	0	0	0	448
21:00	1	306	32	0	3	1	0	0	1	0	0	0	0	344
22:00	0	157	25	0	0	0	0	1	0	0	0	0	0	183
23:00	0	106	14	0	0	0	0	0	0	0	0	0	0	120
Day Total	93	8009	1620	47	367	92	4	39	36	5	0	0	1	10313
Percent	0.9%	77.7%	15.7%	0.5%	3.6%	0.9%	0.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	11:00	06:00	09:00	07:00	07:00	07:00	11:00	09:00			07:00	11:00
Vol.	13	399	93	5	30	12	1	6	4	1			1	533
PM Peak	18:00	17:00	16:00	12:00	15:00	14:00	12:00	14:00	13:00	14:00				17:00
Vol.	12	940	188	5	42	11	1	7	5	2				1146
Grand Total	205	16655	3266	97	737	163	31	90	82	12	0	0	1	21339
Percent	1.0%	78.0%	15.3%	0.5%	3.5%	0.8%	0.1%	0.4%	0.4%	0.1%	0.0%	0.0%	0.0%	

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044CLS2

EB, WB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	0	61	17	0	1	1	0	1	0	0	0	0	0	81
01:00	0	18	8	1	2	0	0	2	1	0	0	0	0	32
02:00	1	13	5	0	4	0	0	0	1	0	0	0	0	24
03:00	0	25	5	0	3	0	0	0	2	1	0	0	0	36
04:00	0	122	37	3	16	0	0	3	2	0	0	0	0	183
05:00	10	467	163	6	73	3	0	4	10	1	0	0	0	737
06:00	24	903	296	7	83	9	2	15	6	2	0	0	0	1347
07:00	20	1291	311	7	95	10	6	2	5	3	0	0	0	1750
08:00	14	1113	222	7	52	5	1	3	8	0	0	0	0	1425
09:00	11	969	216	11	44	5	4	12	10	2	0	0	0	1284
10:00	7	846	219	12	39	6	2	13	8	3	0	0	0	1155
11:00	18	869	196	10	51	15	4	9	11	2	0	0	0	1185
12 PM	12	888	201	7	46	8	2	11	11	3	0	0	0	1189
13:00	14	934	215	9	44	7	4	6	8	2	0	0	0	1243
14:00	24	1057	224	14	55	6	3	3	8	0	0	0	0	1394
15:00	15	1184	285	10	71	4	2	7	3	1	0	0	0	1582
16:00	25	1410	271	1	61	7	1	9	3	1	0	0	0	1789
17:00	19	1377	247	5	47	5	2	6	0	0	0	0	0	1708
18:00	22	1281	176	2	31	8	0	2	1	0	0	0	0	1523
19:00	15	944	120	1	25	3	0	2	1	0	0	0	0	1111
20:00	8	790	102	0	13	0	0	3	1	1	0	0	0	918
21:00	10	600	68	1	11	4	0	3	2	0	0	0	0	699
22:00	6	297	30	2	7	0	0	1	5	0	0	0	0	348
23:00	1	178	25	0	2	1	1	2	1	0	0	0	0	211
Day Total	276	17637	3659	116	876	107	34	119	108	22	0	0	0	22954
Percent	1.2%	76.8%	15.9%	0.5%	3.8%	0.5%	0.1%	0.5%	0.5%	0.1%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	07:00	10:00	07:00	11:00	07:00	06:00	11:00	07:00				07:00
Vol.	24	1291	311	12	95	15	6	15	11	3				1750
PM Peak	16:00	16:00	15:00	14:00	15:00	12:00	13:00	12:00	12:00	12:00				16:00
Vol.	25	1410	285	14	71	8	4	11	11	3				1789

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044CLS2

EB, WB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	100	11	0	1	0	0	0	1	0	0	0	0	113
01:00	0	37	5	1	1	0	0	1	1	0	0	0	0	46
02:00	0	18	5	1	4	1	0	0	0	1	0	0	0	30
03:00	0	30	10	0	3	0	0	1	5	0	0	0	0	49
04:00	2	132	43	6	13	2	0	1	4	0	0	0	0	203
05:00	4	441	179	9	40	4	0	6	4	1	0	0	0	688
06:00	10	922	315	9	67	7	2	10	5	1	0	0	0	1348
07:00	21	1143	250	4	61	14	1	8	3	4	0	1	1	1511
08:00	19	1092	232	10	62	9	0	4	9	0	0	1	0	1438
09:00	7	922	204	7	61	9	1	5	4	1	0	0	0	1221
10:00	7	809	174	12	41	10	0	5	9	0	0	0	0	1067
11:00	11	856	207	4	46	14	2	7	8	0	0	0	0	1155
12 PM	10	925	215	10	46	13	2	2	6	2	0	0	0	1231
13:00	14	894	194	14	54	8	1	2	6	1	0	0	0	1188
14:00	13	942	224	9	50	16	2	9	5	4	0	0	0	1274
15:00	19	1127	251	2	68	12	0	9	7	0	0	0	0	1495
16:00	15	1244	268	4	51	5	0	3	3	1	0	0	0	1594
17:00	17	1295	226	0	46	9	0	9	1	0	0	0	0	1603
18:00	24	1110	156	4	27	7	0	1	2	0	0	0	0	1331
19:00	3	863	122	3	13	1	0	1	0	0	0	0	0	1006
20:00	4	557	79	0	13	0	0	1	2	0	0	0	0	656
21:00	2	465	56	0	9	1	0	0	2	0	0	0	0	535
22:00	0	246	33	0	1	0	0	1	1	0	0	0	0	282
23:00	0	144	19	0	0	0	0	0	1	0	0	0	0	164
Day Total	202	16314	3478	109	778	142	11	86	89	16	0	2	1	21228
Percent	1.0%	76.9%	16.4%	0.5%	3.7%	0.7%	0.1%	0.4%	0.4%	0.1%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	06:00	10:00	06:00	07:00	06:00	06:00	08:00	07:00		07:00	07:00	07:00
Vol.	21	1143	315	12	67	14	2	10	9	4		1	1	1511
PM Peak	18:00	17:00	16:00	13:00	15:00	14:00	12:00	14:00	15:00	14:00				17:00
Vol.	24	1295	268	14	68	16	2	9	7	4				1603
Grand Total	478	33951	7137	225	1654	249	45	205	197	38	0	2	1	44182
Percent	1.1%	76.8%	16.2%	0.5%	3.7%	0.6%	0.1%	0.5%	0.4%	0.1%	0.0%	0.0%	0.0%	

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044SPD2

EB

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
07/16/19	2	0	0	0	0	2	5	6	2	0	0	0	0	0	17
01:00	0	0	0	0	1	1	8	0	3	0	0	0	0	0	13
02:00	0	0	0	0	0	1	4	6	0	1	0	0	0	0	12
03:00	0	0	0	0	0	1	9	8	8	3	0	0	0	0	29
04:00	0	0	0	0	1	10	31	76	26	2	0	0	0	0	146
05:00	7	0	0	1	1	24	206	316	88	1	0	0	0	0	644
06:00	34	0	1	5	9	130	490	427	35	5	0	0	0	0	1136
07:00	67	0	1	11	121	404	612	140	7	0	0	0	0	0	1363
08:00	54	9	5	30	94	296	422	169	10	0	0	0	0	0	1089
09:00	39	0	0	2	17	197	432	190	12	1	1	0	0	0	891
10:00	34	0	0	1	45	132	289	172	14	0	0	0	0	0	687
11:00	61	1	0	1	15	180	279	127	10	1	0	0	0	1	676
12 PM	69	1	0	2	13	117	272	128	14	0	0	0	0	0	616
13:00	63	0	0	0	15	155	254	111	14	2	0	0	0	0	614
14:00	67	0	0	3	35	135	249	124	11	0	0	0	0	2	626
15:00	80	0	1	1	25	115	276	130	14	0	0	0	0	0	642
16:00	90	0	1	1	14	122	274	107	14	0	0	0	0	1	624
17:00	82	0	1	1	22	92	206	96	11	1	0	0	0	0	512
18:00	88	0	0	2	9	79	197	111	11	1	0	0	0	0	498
19:00	27	0	0	0	5	54	153	112	18	0	0	0	0	0	369
20:00	24	1	0	3	13	48	138	80	8	1	0	0	0	0	316
21:00	8	0	0	0	8	51	109	68	9	0	0	0	0	0	253
22:00	7	0	0	1	3	22	42	34	9	3	0	0	0	0	121
23:00	5	0	0	0	2	10	11	14	10	0	1	0	0	0	53
Total	908	12	10	65	468	2378	4968	2752	358	22	2	0	0	4	11947

Daily

15th Percentile : 35 MPH
50th Percentile : 42 MPH
85th Percentile : 47 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 41-50 MPH
Number in Pace : 7720
Percent in Pace : 64.6%
Number of Vehicles > 40 MPH : 8106
Percent of Vehicles > 40 MPH : 67.8%

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044SPD2

EB

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
07/17/19	0	0	0	0	0	5	8	7	2	0	0	0	0	0	22
01:00	0	0	0	0	0	4	5	7	4	0	0	0	0	0	20
02:00	0	0	0	0	2	0	5	5	1	0	0	0	0	0	13
03:00	0	0	0	0	0	1	15	19	4	0	0	0	0	0	39
04:00	1	0	0	0	3	8	37	73	27	3	0	0	0	0	152
05:00	12	0	0	0	1	41	203	279	48	0	1	0	0	0	585
06:00	23	1	4	6	53	233	549	239	21	0	0	0	0	1	1130
07:00	105	28	47	123	94	361	393	47	1	0	0	0	0	0	1199
08:00	105	24	60	77	154	281	338	65	0	0	0	0	0	0	1104
09:00	55	0	1	3	32	191	389	134	8	0	0	0	0	0	813
10:00	56	0	1	3	9	91	313	144	10	0	0	0	1	1	629
11:00	56	0	0	4	31	131	268	124	8	1	0	0	0	0	623
12 PM	54	0	0	2	21	144	263	105	10	0	0	0	0	0	599
13:00	47	0	1	2	6	123	257	132	10	0	0	0	0	0	578
14:00	48	1	1	4	29	104	275	105	4	1	0	0	0	0	572
15:00	75	0	0	2	15	120	264	128	6	0	0	0	0	0	610
16:00	57	0	1	10	22	116	231	98	10	1	0	0	0	1	547
17:00	75	1	0	1	14	91	205	64	6	0	0	0	0	0	457
18:00	62	1	0	0	3	79	157	56	11	2	0	0	0	0	371
19:00	26	0	0	0	8	52	143	79	10	0	0	0	0	0	318
20:00	16	0	0	0	2	36	100	46	6	2	0	0	0	0	208
21:00	9	0	0	0	9	55	78	35	5	0	0	0	0	0	191
22:00	3	0	0	1	1	14	37	33	8	1	1	0	0	0	99
23:00	0	0	0	0	3	4	13	17	6	1	0	0	0	0	44
Total	885	56	116	238	512	2285	4546	2041	226	12	2	0	1	3	10923

Daily

15th Percentile : 33 MPH
50th Percentile : 41 MPH
85th Percentile : 46 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 6831
Percent in Pace : 62.5%
Number of Vehicles > 40 MPH : 6831
Percent of Vehicles > 40 MPH : 62.5%

Grand Total	1793	68	126	303	980	4663	9514	4793	584	34	4	0	1	7	22870
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Overall

15th Percentile : 35 MPH
50th Percentile : 41 MPH
85th Percentile : 47 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 41-50 MPH
Number in Pace : 14307
Percent in Pace : 62.6%
Number of Vehicles > 40 MPH : 14937
Percent of Vehicles > 40 MPH : 65.3%

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044SPD2

WB

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
07/16/19	0	0	0	1	3	14	31	15	0	0	0	0	0	0	64
01:00	0	0	0	0	2	6	7	4	0	0	0	0	0	0	19
02:00	0	0	0	1	0	4	4	3	0	0	0	0	0	0	12
03:00	0	0	0	0	0	4	2	0	1	0	0	0	0	0	7
04:00	0	0	0	0	1	10	21	4	1	0	0	0	0	0	37
05:00	7	0	0	0	1	9	43	26	7	0	0	0	0	0	93
06:00	25	0	1	1	6	33	105	41	2	0	0	0	0	0	214
07:00	59	1	4	14	16	94	157	38	5	0	0	0	0	0	388
08:00	46	0	0	2	12	102	141	31	3	1	0	0	0	0	338
09:00	35	0	0	1	17	127	182	34	2	1	0	0	0	0	399
10:00	31	0	0	2	8	133	223	66	8	0	0	0	0	0	471
11:00	31	1	2	13	6	130	235	85	10	1	0	0	0	0	514
12 PM	33	0	0	0	16	151	267	102	7	0	0	0	0	0	576
13:00	43	2	1	5	22	179	272	99	9	1	0	0	0	0	633
14:00	50	2	0	14	74	293	254	79	3	0	1	0	0	0	770
15:00	72	0	1	9	68	367	356	62	4	0	0	0	0	0	939
16:00	73	4	2	16	86	537	393	54	4	0	0	0	0	0	1169
17:00	85	6	5	17	150	581	307	44	2	0	0	0	0	0	1197
18:00	62	2	6	19	107	400	370	56	5	0	1	0	0	0	1028
19:00	17	6	21	9	33	236	316	97	8	0	0	0	0	0	743
20:00	11	0	0	0	26	206	290	65	4	0	0	0	0	0	602
21:00	5	0	0	0	29	164	205	42	1	0	0	0	0	0	446
22:00	4	0	0	1	4	48	118	43	8	1	0	0	0	0	227
23:00	0	0	0	0	10	45	66	33	3	1	0	0	0	0	158
Total	689	24	43	125	697	3873	4365	1123	97	6	2	0	0	0	11044

Daily

15th Percentile : 35 MPH
50th Percentile : 40 MPH
85th Percentile : 44 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 8238
Percent in Pace : 74.6%
Number of Vehicles > 40 MPH : 5593
Percent of Vehicles > 40 MPH : 50.6%

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044SPD2

WB

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
07/17/19	0	0	0	0	1	24	46	19	1	0	0	0	0	0	91
01:00	1	0	0	0	2	6	7	9	1	0	0	0	0	0	26
02:00	0	0	0	0	1	3	8	3	1	1	0	0	0	0	17
03:00	0	0	0	0	1	5	2	0	2	0	0	0	0	0	10
04:00	1	0	1	0	2	12	28	6	1	0	0	0	0	0	51
05:00	10	0	0	1	0	8	61	19	4	0	0	0	0	0	103
06:00	31	0	0	1	3	36	99	45	6	0	0	0	0	0	221
07:00	70	0	0	2	14	79	105	38	3	1	0	0	0	0	312
08:00	70	1	0	4	19	109	114	15	1	0	0	0	0	0	333
09:00	43	0	1	1	6	115	174	61	11	0	0	0	0	0	412
10:00	28	0	2	1	15	119	198	70	6	2	0	0	0	0	441
11:00	45	0	2	0	15	172	225	70	4	1	0	0	0	0	534
12 PM	46	0	2	8	29	201	261	83	0	2	0	0	0	0	632
13:00	31	1	0	4	34	145	276	113	9	0	0	0	0	0	613
14:00	33	0	3	7	58	240	289	67	4	1	0	0	0	0	702
15:00	61	0	3	2	51	354	335	77	4	0	0	0	0	0	887
16:00	43	1	3	5	171	459	321	41	3	0	0	0	0	0	1047
17:00	78	3	12	87	441	417	97	11	0	0	0	0	0	0	1146
18:00	63	1	7	10	145	455	238	43	1	0	0	0	0	0	963
19:00	22	0	0	2	39	249	311	67	3	0	0	0	0	0	693
20:00	8	1	0	0	41	154	201	40	3	0	0	0	0	0	448
21:00	5	0	0	1	25	121	136	52	4	0	0	0	0	0	344
22:00	3	0	0	0	9	37	92	38	4	0	0	0	0	0	183
23:00	0	0	0	1	3	27	59	25	5	0	0	0	0	0	120
Total	692	8	36	137	1125	3547	3683	1012	81	8	0	0	0	0	10329

Daily

15th Percentile : 33 MPH
50th Percentile : 39 MPH
85th Percentile : 44 MPH
95th Percentile : 47 MPH

Mean Speed(Average) : 38 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 7230
Percent in Pace : 70.0%
Number of Vehicles > 40 MPH : 4784
Percent of Vehicles > 40 MPH : 46.3%

Grand Total	1381	32	79	262	1822	7420	8048	2135	178	14	2	0	0	0	21373
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Overall

15th Percentile : 33 MPH
50th Percentile : 39 MPH
85th Percentile : 44 MPH
95th Percentile : 47 MPH

Mean Speed(Average) : 38 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 15468
Percent in Pace : 72.4%
Number of Vehicles > 40 MPH : 10377
Percent of Vehicles > 40 MPH : 48.6%

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044SPD2

EB, WB

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
07/16/19	2	0	0	1	3	16	36	21	2	0	0	0	0	0	81
01:00	0	0	0	0	3	7	15	4	3	0	0	0	0	0	32
02:00	0	0	0	1	0	5	8	9	0	1	0	0	0	0	24
03:00	0	0	0	0	0	5	11	8	9	3	0	0	0	0	36
04:00	0	0	0	0	2	20	52	80	27	2	0	0	0	0	183
05:00	14	0	0	1	2	33	249	342	95	1	0	0	0	0	737
06:00	59	0	2	6	15	163	595	468	37	5	0	0	0	0	1350
07:00	126	1	5	25	137	498	769	178	12	0	0	0	0	0	1751
08:00	100	9	5	32	106	398	563	200	13	1	0	0	0	0	1427
09:00	74	0	0	3	34	324	614	224	14	2	1	0	0	0	1290
10:00	65	0	0	3	53	265	512	238	22	0	0	0	0	0	1158
11:00	92	2	2	14	21	310	514	212	20	2	0	0	0	1	1190
12 PM	102	1	0	2	29	268	539	230	21	0	0	0	0	0	1192
13:00	106	2	1	5	37	334	526	210	23	3	0	0	0	0	1247
14:00	117	2	0	17	109	428	503	203	14	0	1	0	0	2	1396
15:00	152	0	2	10	93	482	632	192	18	0	0	0	0	0	1581
16:00	163	4	3	17	100	659	667	161	18	0	0	0	0	1	1793
17:00	167	6	6	18	172	673	513	140	13	1	0	0	0	0	1709
18:00	150	2	6	21	116	479	567	167	16	1	1	0	0	0	1526
19:00	44	6	21	9	38	290	469	209	26	0	0	0	0	0	1112
20:00	35	1	0	3	39	254	428	145	12	1	0	0	0	0	918
21:00	13	0	0	0	37	215	314	110	10	0	0	0	0	0	699
22:00	11	0	0	2	7	70	160	77	17	4	0	0	0	0	348
23:00	5	0	0	0	12	55	77	47	13	1	1	0	0	0	211
Total	1597	36	53	190	1165	6251	9333	3875	455	28	4	0	0	4	22991

Daily

15th Percentile : 35 MPH
50th Percentile : 41 MPH
85th Percentile : 46 MPH
95th Percentile : 49 MPH

Mean Speed(Average) : 40 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 15584
Percent in Pace : 67.8%
Number of Vehicles > 40 MPH : 13699
Percent of Vehicles > 40 MPH : 59.6%

Location : Route 119
Location : East of Beaver Brook Road
City/State: Littleton, MA

0044SPD2

EB, WB

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
07/17/19	0	0	0	0	1	29	54	26	3	0	0	0	0	0	113
01:00	1	0	0	0	2	10	12	16	5	0	0	0	0	0	46
02:00	0	0	0	0	3	3	13	8	2	1	0	0	0	0	30
03:00	0	0	0	0	1	6	17	19	6	0	0	0	0	0	49
04:00	2	0	1	0	5	20	65	79	28	3	0	0	0	0	203
05:00	22	0	0	1	1	49	264	298	52	0	1	0	0	0	688
06:00	54	1	4	7	56	269	648	284	27	0	0	0	0	1	1351
07:00	175	28	47	125	108	440	498	85	4	1	0	0	0	0	1511
08:00	175	25	60	81	173	390	452	80	1	0	0	0	0	0	1437
09:00	98	0	2	4	38	306	563	195	19	0	0	0	0	0	1225
10:00	84	0	3	4	24	210	511	214	16	2	0	0	1	1	1070
11:00	101	0	2	4	46	303	493	194	12	2	0	0	0	0	1157
12 PM	100	0	2	10	50	345	524	188	10	2	0	0	0	0	1231
13:00	78	1	1	6	40	268	533	245	19	0	0	0	0	0	1191
14:00	81	1	4	11	87	344	564	172	8	2	0	0	0	0	1274
15:00	136	0	3	4	66	474	599	205	10	0	0	0	0	0	1497
16:00	100	1	4	15	193	575	552	139	13	1	0	0	0	1	1594
17:00	153	4	12	88	455	508	302	75	6	0	0	0	0	0	1603
18:00	125	2	7	10	148	534	395	99	12	2	0	0	0	0	1334
19:00	48	0	0	2	47	301	454	146	13	0	0	0	0	0	1011
20:00	24	1	0	0	43	190	301	86	9	2	0	0	0	0	656
21:00	14	0	0	1	34	176	214	87	9	0	0	0	0	0	535
22:00	6	0	0	1	10	51	129	71	12	1	1	0	0	0	282
23:00	0	0	0	1	6	31	72	42	11	1	0	0	0	0	164
Total	1577	64	152	375	1637	5832	8229	3053	307	20	2	0	1	3	21252

Daily

15th Percentile : 33 MPH
50th Percentile : 40 MPH
85th Percentile : 45 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 14061
Percent in Pace : 66.2%
Number of Vehicles > 40 MPH : 11615
Percent of Vehicles > 40 MPH : 54.7%

Grand Total	3174	100	205	565	2802	12083	17562	6928	762	48	6	0	1	7	44243
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Overall

15th Percentile : 34 MPH
50th Percentile : 40 MPH
85th Percentile : 45 MPH
95th Percentile : 48 MPH

Mean Speed(Average) : 39 MPH
10 MPH Pace Speed : 36-45 MPH
Number in Pace : 29645
Percent in Pace : 67.0%
Number of Vehicles > 40 MPH : 25314
Percent of Vehicles > 40 MPH : 57.2%

Accurate Counts
978-664-2565

Page 1

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044VOL3

Start Time	7/16/2019 Tue	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	45			3	28				
12:15		0	30			0	33				
12:30		0	41			3	26				
12:45		0	34	0	150	1	36	7	123	7	273
01:00		1	45			0	30				
01:15		0	44			0	21				
01:30		0	25			1	17				
01:45		1	29	2	143	0	26	1	94	3	237
02:00		0	34			0	30				
02:15		0	28			0	35				
02:30		0	39			0	35				
02:45		0	45	0	146	1	38	1	138	1	284
03:00		0	38			0	24				
03:15		0	36			0	44				
03:30		0	40			0	47				
03:45		2	31	2	145	2	46	2	161	4	306
04:00		2	38			1	65				
04:15		3	45			1	56				
04:30		4	42			0	46				
04:45		5	39	14	164	2	52	4	219	18	383
05:00		12	35			2	73				
05:15		11	22			0	76				
05:30		17	27			2	80				
05:45		14	32	54	116	5	66	9	295	63	411
06:00		31	25			8	54				
06:15		22	36			6	54				
06:30		37	34			9	52				
06:45		26	25	116	120	12	39	35	199	151	319
07:00		52	16			26	32				
07:15		49	25			20	47				
07:30		53	30			22	30				
07:45		48	28	202	99	32	25	100	134	302	233
08:00		51	17			30	27				
08:15		42	24			24	28				
08:30		50	15			34	26				
08:45		52	9	195	65	45	24	133	105	328	170
09:00		42	12			30	29				
09:15		62	13			24	17				
09:30		56	4			18	21				
09:45		41	4	201	33	25	16	97	83	298	116
10:00		35	8			23	12				
10:15		45	5			30	14				
10:30		29	1			17	9				
10:45		51	3	160	17	24	10	94	45	254	62
11:00		30	2			25	12				
11:15		40	2			28	9				
11:30		37	0			18	11				
11:45		33	1	140	5	23	9	94	41	234	46
Total		1086	1203			577	1637			1663	2840
Percent		47.4%	52.6%			26.1%	73.9%			36.9%	63.1%

Accurate Counts
978-664-2565

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044VOL3

Start Time	7/17/2019 Wed	SB		Hour Totals		NB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	42			8	36				
12:15		1	36			7	23				
12:30		0	33			2	30				
12:45		1	21	6	132	6	30	23	119	29	251
01:00		0	33			4	25				
01:15		1	23			0	37				
01:30		0	27			1	35				
01:45		1	26	2	109	0	23	5	120	7	229
02:00		0	26			0	35				
02:15		0	21			1	36				
02:30		0	36			0	40				
02:45		0	27	0	110	0	43	1	154	1	264
03:00		1	36			0	37				
03:15		0	26			1	40				
03:30		0	26			1	51				
03:45		0	29	1	117	1	40	3	168	4	285
04:00		3	35			1	45				
04:15		5	33			2	59				
04:30		1	34			0	65				
04:45		7	23	16	125	1	53	4	222	20	347
05:00		6	29			2	59				
05:15		10	33			1	64				
05:30		14	31			3	60				
05:45		21	21	51	114	6	62	12	245	63	359
06:00		12	29			3	60				
06:15		33	19			9	48				
06:30		24	29			10	54				
06:45		34	19	103	96	9	31	31	193	134	289
07:00		52	24			20	43				
07:15		52	18			29	36				
07:30		45	17			17	36				
07:45		59	19	208	78	25	30	91	145	299	223
08:00		47	6			19	43				
08:15		49	13			29	21				
08:30		52	8			39	18				
08:45		58	16	206	43	38	20	125	102	331	145
09:00		48	5			18	21				
09:15		32	15			30	16				
09:30		33	6			21	16				
09:45		27	35	140	61	20	12	89	65	229	126
10:00		33	1			18	12				
10:15		28	3			22	8				
10:30		19	5			18	5				
10:45		15	1	95	10	22	5	80	30	175	40
11:00		33	2			23	7				
11:15		20	1			22	4				
11:30		30	3			34	2				
11:45		43	1	126	7	40	3	119	16	245	23
Total		954	1002			583	1579			1537	2581
Percent		48.8%	51.2%			27.0%	73.0%			37.3%	62.7%
Grand Total		2040	2205			1160	3216			3200	5421
Percent		48.1%	51.9%			26.5%	73.5%			37.1%	62.9%
ADT		ADT 4,310		AADT 4,310							

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044VOL3

Start Time	7/15/2019		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
12:00 AM	*	*	0	7	6	23	*	*	*	*	*	*	*	*	3	15
01:00	*	*	2	1	2	5	*	*	*	*	*	*	*	*	2	3
02:00	*	*	0	1	0	1	*	*	*	*	*	*	*	*	0	1
03:00	*	*	2	2	1	3	*	*	*	*	*	*	*	*	2	2
04:00	*	*	14	4	16	4	*	*	*	*	*	*	*	*	15	4
05:00	*	*	54	9	51	12	*	*	*	*	*	*	*	*	52	10
06:00	*	*	116	35	103	31	*	*	*	*	*	*	*	*	110	33
07:00	*	*	202	100	208	91	*	*	*	*	*	*	*	*	205	96
08:00	*	*	195	133	206	125	*	*	*	*	*	*	*	*	200	129
09:00	*	*	201	97	140	89	*	*	*	*	*	*	*	*	170	93
10:00	*	*	160	94	95	80	*	*	*	*	*	*	*	*	128	87
11:00	*	*	140	94	126	119	*	*	*	*	*	*	*	*	133	106
12:00 PM	*	*	150	123	132	119	*	*	*	*	*	*	*	*	141	121
01:00	*	*	143	94	109	120	*	*	*	*	*	*	*	*	126	107
02:00	*	*	146	138	110	154	*	*	*	*	*	*	*	*	128	146
03:00	*	*	145	161	117	168	*	*	*	*	*	*	*	*	131	164
04:00	*	*	164	219	125	222	*	*	*	*	*	*	*	*	144	220
05:00	*	*	116	295	114	245	*	*	*	*	*	*	*	*	115	270
06:00	*	*	120	199	96	193	*	*	*	*	*	*	*	*	108	196
07:00	*	*	99	134	78	145	*	*	*	*	*	*	*	*	88	140
08:00	*	*	65	105	43	102	*	*	*	*	*	*	*	*	54	104
09:00	*	*	33	83	61	65	*	*	*	*	*	*	*	*	47	74
10:00	*	*	17	45	10	30	*	*	*	*	*	*	*	*	14	38
11:00	*	*	5	41	7	16	*	*	*	*	*	*	*	*	6	28
Lane	0	0	2289	2214	1956	2162	0	0	0	0	0	0	0	0	2122	2187
Day	0		4503		4118		0		0		0		0		4309	
AM Peak	-	-	07:00	08:00	07:00	08:00	-	-	-	-	-	-	-	-	07:00	08:00
Vol.	-	-	202	133	208	125	-	-	-	-	-	-	-	-	205	129
PM Peak	-	-	16:00	17:00	12:00	17:00	-	-	-	-	-	-	-	-	16:00	17:00
Vol.	-	-	164	295	132	245	-	-	-	-	-	-	-	-	144	270

Comb. Total	0	4503	4118	0	0	0	0	4309
ADT	ADT 4,310	AADT 4,310						

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044CLS3

SB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	1	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	11	2	0	1	0	0	0	0	0	0	0	0	14
05:00	0	44	8	0	2	0	0	0	0	0	0	0	0	54
06:00	2	91	21	1	1	0	0	0	0	0	0	0	0	116
07:00	2	165	21	1	7	2	0	0	1	1	1	0	0	201
08:00	0	166	21	0	6	0	0	0	1	0	1	0	0	195
09:00	0	171	17	5	6	0	0	0	0	0	0	0	0	199
10:00	2	130	20	1	5	0	0	0	0	1	0	0	0	159
11:00	0	112	22	0	6	0	0	0	0	0	0	0	0	140
12 PM	2	120	21	0	4	2	0	0	0	0	0	0	0	149
13:00	2	107	26	1	6	0	0	1	0	0	0	0	0	143
14:00	3	124	13	1	3	1	0	0	1	0	0	0	0	146
15:00	0	120	19	0	4	0	0	2	0	0	0	0	0	145
16:00	2	140	15	2	1	0	0	3	0	0	0	0	0	163
17:00	0	99	12	0	4	0	0	1	0	0	0	0	0	116
18:00	2	108	7	0	1	0	0	0	0	0	0	0	0	118
19:00	1	85	10	0	1	0	0	0	0	1	0	0	0	98
20:00	1	55	7	0	2	0	0	0	0	0	0	0	0	65
21:00	0	30	2	0	1	0	0	0	0	0	0	0	0	33
22:00	0	16	1	0	0	0	0	0	0	0	0	0	0	17
23:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
Day Total	19	1901	266	12	61	5	0	8	3	3	2	0	0	2280
Percent	0.8%	83.4%	11.7%	0.5%	2.7%	0.2%	0.0%	0.4%	0.1%	0.1%	0.1%	0.0%	0.0%	
AM Peak	06:00	09:00	11:00	09:00	07:00	07:00		01:00	07:00	07:00	07:00			07:00
Vol.	2	171	22	5	7	2		1	1	1	1			201
PM Peak	14:00	16:00	13:00	16:00	13:00	12:00		16:00	14:00	19:00				16:00
Vol.	3	140	26	2	6	2		3	1	1				163

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044CLS3

SB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	6	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	12	3	0	1	0	0	0	0	0	0	0	0	16
05:00	0	45	6	0	0	0	0	0	0	0	0	0	0	51
06:00	0	80	19	2	1	1	0	0	0	0	0	0	0	103
07:00	0	178	23	2	4	1	0	0	0	0	0	0	0	208
08:00	2	177	21	0	4	1	0	0	0	0	0	0	0	205
09:00	0	120	14	1	2	1	1	1	0	0	0	0	0	140
10:00	0	79	12	1	3	0	0	0	0	0	0	0	0	95
11:00	2	92	20	0	9	1	0	2	0	0	0	0	0	126
12 PM	0	102	20	3	7	0	0	0	0	0	0	0	0	132
13:00	0	82	19	2	4	0	0	0	1	0	0	0	0	108
14:00	0	82	14	0	10	0	0	3	0	0	0	0	0	109
15:00	0	87	18	0	9	0	0	3	0	0	0	0	0	117
16:00	1	103	16	1	4	0	0	0	0	0	0	0	0	125
17:00	0	95	15	0	3	0	0	0	0	0	0	0	0	113
18:00	0	87	9	0	0	0	0	0	0	0	0	0	0	96
19:00	0	70	6	0	2	0	0	0	0	0	0	0	0	78
20:00	0	38	4	0	1	0	0	0	0	0	0	0	0	43
21:00	0	58	1	0	2	0	0	0	0	0	0	0	0	61
22:00	0	10	0	0	0	0	0	0	0	0	0	0	0	10
23:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
Day Total	5	1612	241	12	66	5	1	9	1	0	0	0	0	1952
Percent	0.3%	82.6%	12.3%	0.6%	3.4%	0.3%	0.1%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	07:00	07:00	06:00	11:00	06:00	09:00	11:00						07:00
Vol.	2	178	23	2	9	1	1	2						208
PM Peak	16:00	16:00	12:00	12:00	14:00			14:00	13:00					12:00
Vol.	1	103	20	3	10			3	1					132
Grand Total	24	3513	507	24	127	10	1	17	4	3	2	0	0	4232
Percent	0.6%	83.0%	12.0%	0.6%	3.0%	0.2%	0.0%	0.4%	0.1%	0.1%	0.0%	0.0%	0.0%	

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044CLS3

NB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	0	5	1	0	1	0	0	0	0	0	0	0	0	7
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
05:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
06:00	0	20	6	1	5	2	1	0	0	0	0	0	0	35
07:00	1	56	21	1	6	3	10	0	1	0	0	0	0	99
08:00	0	90	27	1	8	4	1	1	0	1	0	0	0	133
09:00	0	74	8	2	6	1	3	2	0	0	0	0	0	96
10:00	0	66	16	1	6	0	3	1	1	0	0	0	0	94
11:00	0	63	24	0	2	2	2	0	0	1	0	0	0	94
12 PM	1	88	18	2	7	1	4	2	0	0	0	0	0	123
13:00	2	72	10	0	4	2	3	1	0	0	0	0	0	94
14:00	0	101	26	2	6	1	2	0	0	0	0	0	0	138
15:00	0	115	36	0	9	0	1	0	0	0	0	0	0	161
16:00	4	168	37	0	8	0	0	1	0	0	0	0	0	218
17:00	0	253	32	2	6	0	0	1	0	0	0	0	0	294
18:00	0	167	23	0	5	2	0	1	0	0	0	0	0	198
19:00	2	102	25	0	5	0	0	0	0	0	0	0	0	134
20:00	1	89	14	0	1	0	0	0	0	0	0	0	0	105
21:00	0	70	10	0	3	0	0	0	0	0	0	0	0	83
22:00	3	35	7	0	0	0	0	0	0	0	0	0	0	45
23:00	0	33	7	0	1	0	0	0	0	0	0	0	0	41
Day Total	14	1681	350	12	90	18	30	10	2	2	0	0	0	2209
Percent	0.6%	76.1%	15.8%	0.5%	4.1%	0.8%	1.4%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	09:00	08:00	08:00	07:00	09:00	07:00	08:00				08:00
Vol.	1	90	27	2	8	4	10	2	1	1				133
PM Peak	16:00	17:00	16:00	12:00	15:00	13:00	12:00	12:00						17:00
Vol.	4	253	37	2	9	2	4	2						294

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044CLS3

NB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	17	4	0	2	0	0	0	0	0	0	0	0	23
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
04:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
05:00	0	11	1	0	0	0	0	0	0	0	0	0	0	12
06:00	0	17	6	1	5	2	0	0	0	0	0	0	0	31
07:00	0	55	18	2	13	1	0	2	0	0	0	0	0	91
08:00	0	89	23	3	7	2	0	1	0	0	0	0	0	125
09:00	0	63	17	1	8	0	0	0	0	0	0	0	0	89
10:00	0	57	17	1	5	0	0	0	0	0	0	0	0	80
11:00	2	80	27	2	5	0	0	3	0	0	0	0	0	119
12 PM	0	83	22	1	12	0	0	1	0	0	0	0	0	119
13:00	0	90	23	0	5	0	0	2	0	0	0	0	0	120
14:00	0	115	26	2	8	0	0	3	0	0	0	0	0	154
15:00	0	128	31	0	9	0	0	0	0	0	0	0	0	168
16:00	0	172	38	0	12	0	0	0	0	0	0	0	0	222
17:00	0	210	27	1	7	0	0	0	0	0	0	0	0	245
18:00	0	166	22	0	5	0	0	0	0	0	0	0	0	193
19:00	0	122	19	0	4	0	0	0	0	0	0	0	0	145
20:00	0	89	12	0	1	0	0	0	0	0	0	0	0	102
21:00	0	55	8	0	1	1	0	0	0	0	0	0	0	65
22:00	0	24	6	0	0	0	0	0	0	0	0	0	0	30
23:00	0	12	4	0	0	0	0	0	0	0	0	0	0	16
Day Total	2	1666	353	14	109	6	0	12	0	0	0	0	0	2162
Percent	0.1%	77.1%	16.3%	0.6%	5.0%	0.3%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	08:00	11:00	08:00	07:00	06:00		11:00						08:00
Vol.	2	89	27	3	13	2		3						125
PM Peak		17:00	16:00	14:00	12:00	21:00		14:00						17:00
Vol.		210	38	2	12	1		3						245
Grand Total	16	3347	703	26	199	24	30	22	2	2	0	0	0	4371
Percent	0.4%	76.6%	16.1%	0.6%	4.6%	0.5%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044CLS3

SB, NB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/16/19	0	5	1	0	1	0	0	0	0	0	0	0	0	7
01:00	0	2	0	0	0	0	0	1	0	0	0	0	0	3
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
04:00	0	14	3	0	1	0	0	0	0	0	0	0	0	18
05:00	0	51	9	0	3	0	0	0	0	0	0	0	0	63
06:00	2	111	27	2	6	2	1	0	0	0	0	0	0	151
07:00	3	221	42	2	13	5	10	0	2	1	1	0	0	300
08:00	0	256	48	1	14	4	1	1	1	1	1	0	0	328
09:00	0	245	25	7	12	1	3	2	0	0	0	0	0	295
10:00	2	196	36	2	11	0	3	1	1	1	0	0	0	253
11:00	0	175	46	0	8	2	2	0	0	1	0	0	0	234
12 PM	3	208	39	2	11	3	4	2	0	0	0	0	0	272
13:00	4	179	36	1	10	2	3	2	0	0	0	0	0	237
14:00	3	225	39	3	9	2	2	0	1	0	0	0	0	284
15:00	0	235	55	0	13	0	1	2	0	0	0	0	0	306
16:00	6	308	52	2	9	0	0	4	0	0	0	0	0	381
17:00	0	352	44	2	10	0	0	2	0	0	0	0	0	410
18:00	2	275	30	0	6	2	0	1	0	0	0	0	0	316
19:00	3	187	35	0	6	0	0	0	0	1	0	0	0	232
20:00	2	144	21	0	3	0	0	0	0	0	0	0	0	170
21:00	0	100	12	0	4	0	0	0	0	0	0	0	0	116
22:00	3	51	8	0	0	0	0	0	0	0	0	0	0	62
23:00	0	37	8	0	1	0	0	0	0	0	0	0	0	46
Day Total	33	3582	616	24	151	23	30	18	5	5	2	0	0	4489
Percent	0.7%	79.8%	13.7%	0.5%	3.4%	0.5%	0.7%	0.4%	0.1%	0.1%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	09:00	08:00	07:00	07:00	09:00	07:00	07:00	07:00			08:00
Vol.	3	256	48	7	14	5	10	2	2	1	1			328
PM Peak	16:00	17:00	15:00	14:00	15:00	12:00	12:00	16:00	14:00	19:00				17:00
Vol.	6	352	55	3	13	3	4	4	1	1				410

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044CLS3

SB, NB

Start Time	MtrCyc	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/17/19	0	23	4	0	2	0	0	0	0	0	0	0	0	29
01:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
04:00	0	15	4	0	1	0	0	0	0	0	0	0	0	20
05:00	0	56	7	0	0	0	0	0	0	0	0	0	0	63
06:00	0	97	25	3	6	3	0	0	0	0	0	0	0	134
07:00	0	233	41	4	17	2	0	2	0	0	0	0	0	299
08:00	2	266	44	3	11	3	0	1	0	0	0	0	0	330
09:00	0	183	31	2	10	1	1	1	0	0	0	0	0	229
10:00	0	136	29	2	8	0	0	0	0	0	0	0	0	175
11:00	4	172	47	2	14	1	0	5	0	0	0	0	0	245
12 PM	0	185	42	4	19	0	0	1	0	0	0	0	0	251
13:00	0	172	42	2	9	0	0	2	1	0	0	0	0	228
14:00	0	197	40	2	18	0	0	6	0	0	0	0	0	263
15:00	0	215	49	0	18	0	0	3	0	0	0	0	0	285
16:00	1	275	54	1	16	0	0	0	0	0	0	0	0	347
17:00	0	305	42	1	10	0	0	0	0	0	0	0	0	358
18:00	0	253	31	0	5	0	0	0	0	0	0	0	0	289
19:00	0	192	25	0	6	0	0	0	0	0	0	0	0	223
20:00	0	127	16	0	2	0	0	0	0	0	0	0	0	145
21:00	0	113	9	0	3	1	0	0	0	0	0	0	0	126
22:00	0	34	6	0	0	0	0	0	0	0	0	0	0	40
23:00	0	18	5	0	0	0	0	0	0	0	0	0	0	23
Day Total	7	3278	594	26	175	11	1	21	1	0	0	0	0	4114
Percent	0.2%	79.7%	14.4%	0.6%	4.3%	0.3%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	08:00	11:00	07:00	07:00	06:00	09:00	11:00						08:00
Vol.	4	266	47	4	17	3	1	5						330
PM Peak	16:00	17:00	16:00	12:00	12:00	21:00		14:00	13:00					17:00
Vol.	1	305	54	4	19	1		6	1					358
Grand Total	40	6860	1210	50	326	34	31	39	6	5	2	0	0	8603
Percent	0.5%	79.7%	14.1%	0.6%	3.8%	0.4%	0.4%	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	

Accurate Counts
978-664-2565

Page 1

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044SPD3

SB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
07/16/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2
04:00	0	0	0	0	0	0	0	0	1	6	4	2	0	1	14
05:00	0	0	0	0	0	0	1	0	3	15	16	15	4	0	54
06:00	0	0	0	0	0	1	0	2	10	30	50	20	3	0	116
07:00	6	5	4	4	9	8	12	32	30	40	29	19	4	0	202
08:00	2	1	3	2	2	2	7	20	29	54	44	22	7	0	195
09:00	4	2	0	4	1	8	17	20	28	51	36	22	7	1	201
10:00	4	0	0	0	0	0	4	13	15	47	45	27	4	1	160
11:00	4	0	0	0	0	2	6	6	16	27	34	38	6	1	140
12 PM	5	2	0	0	0	0	2	5	22	37	48	22	5	2	150
13:00	6	0	0	0	0	3	2	9	16	34	41	25	7	0	143
14:00	3	0	0	1	3	2	7	7	20	47	39	14	3	0	146
15:00	12	1	2	4	3	9	4	11	13	31	31	16	7	1	145
16:00	15	4	5	7	7	12	14	18	17	25	31	6	2	1	164
17:00	6	0	0	2	1	3	3	12	14	25	26	15	7	2	116
18:00	9	1	0	0	0	0	2	3	12	28	40	22	3	0	120
19:00	7	0	0	0	0	0	0	1	9	28	26	22	4	2	99
20:00	0	0	0	0	0	0	1	2	8	16	17	14	6	1	65
21:00	0	0	0	0	0	0	0	1	2	8	13	6	2	1	33
22:00	0	0	0	0	0	0	0	0	3	3	7	1	3	0	17
23:00	0	0	0	0	0	0	0	0	1	2	2	0	0	0	5
Total	83	16	14	24	26	50	83	162	271	554	580	328	84	14	2289

Daily

15th Percentile : 21 MPH
50th Percentile : 29 MPH
85th Percentile : 33 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 28 MPH
10 MPH Pace Speed : 27-36 MPH
Number in Pace : 1552
Percent in Pace : 67.8%
Number of Vehicles > 30 MPH : 1006
Percent of Vehicles > 30 MPH : 43.9%

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044SPD3

SB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
07/17/19	0	0	0	0	0	0	0	0	1	0	3	1	1	0	6
01:00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
04:00	0	0	0	0	0	0	0	0	2	6	4	2	1	1	16
05:00	0	0	0	0	0	0	1	0	2	11	18	14	4	1	51
06:00	1	0	0	0	0	3	4	3	10	21	31	23	5	2	103
07:00	6	2	3	0	5	9	14	22	35	51	35	21	4	1	208
08:00	8	0	0	1	1	5	14	26	33	51	44	18	5	0	206
09:00	3	0	0	0	0	1	4	3	13	42	35	25	12	2	140
10:00	6	0	0	0	1	0	0	1	9	27	31	13	4	3	95
11:00	1	0	2	0	0	0	1	5	13	28	50	19	7	0	126
12 PM	5	0	0	0	1	0	4	9	17	41	31	21	2	1	132
13:00	3	0	0	0	0	0	2	6	10	28	41	17	2	0	109
14:00	3	0	0	0	0	0	2	8	11	24	29	25	6	2	110
15:00	1	0	0	0	0	0	1	3	18	26	44	17	7	0	117
16:00	1	0	0	0	0	0	0	8	14	37	34	21	9	1	125
17:00	4	0	1	1	4	0	5	6	19	18	34	15	5	2	114
18:00	0	0	0	0	1	1	2	5	7	18	33	18	9	2	96
19:00	2	0	0	0	0	0	2	3	8	22	20	15	6	0	78
20:00	0	0	0	0	0	0	0	1	2	10	17	8	4	1	43
21:00	1	0	0	0	0	1	3	5	10	13	13	10	5	0	61
22:00	0	0	0	0	0	0	0	0	0	1	2	6	1	0	10
23:00	0	0	0	0	0	0	0	1	1	0	2	2	1	0	7
Total	45	2	6	2	13	20	59	115	235	475	552	311	102	19	1956

Daily

15th Percentile : 24 MPH
50th Percentile : 29 MPH
85th Percentile : 34 MPH
95th Percentile : 36 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 27-36 MPH
Number in Pace : 1416
Percent in Pace : 72.4%
Number of Vehicles > 30 MPH : 984
Percent of Vehicles > 30 MPH : 50.3%

Grand Total	128	18	20	26	39	70	142	277	506	1029	1132	639	186	33	4245
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Overall

15th Percentile : 23 MPH
50th Percentile : 29 MPH
85th Percentile : 33 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 27-36 MPH
Number in Pace : 2969
Percent in Pace : 69.9%
Number of Vehicles > 30 MPH : 1990
Percent of Vehicles > 30 MPH : 46.9%

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044SPD3

NB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
07/16/19	0	0	0	0	0	0	0	0	0	3	4	0	0	0	7
01:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
02:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
04:00	0	0	0	0	0	0	0	0	2	1	1	0	0	0	4
05:00	0	0	0	0	0	0	0	1	0	5	2	1	0	0	9
06:00	0	0	0	0	0	3	1	3	6	11	3	6	2	0	35
07:00	4	0	0	1	3	10	4	8	14	17	23	13	2	1	100
08:00	3	0	0	0	2	6	2	4	20	37	42	12	5	0	133
09:00	5	0	0	0	0	2	4	6	14	30	19	11	5	1	97
10:00	1	0	0	0	1	1	4	5	25	19	23	11	3	1	94
11:00	4	0	0	1	3	2	3	5	9	33	22	11	1	0	94
12 PM	4	0	0	0	2	3	4	4	16	31	37	20	1	1	123
13:00	4	0	0	0	4	2	5	5	9	29	24	5	5	2	94
14:00	1	0	0	0	0	4	4	9	17	44	43	10	5	1	138
15:00	8	0	0	0	0	1	2	10	27	43	48	17	4	1	161
16:00	11	0	0	0	0	0	0	5	33	72	59	33	0	6	219
17:00	6	0	0	0	0	1	5	10	43	93	77	50	7	3	295
18:00	3	0	0	0	0	0	0	3	26	60	64	34	8	1	199
19:00	3	0	0	6	0	0	1	3	25	45	36	13	2	0	134
20:00	0	0	0	0	1	0	0	6	16	30	32	18	1	1	105
21:00	0	0	0	1	1	1	2	3	13	33	20	8	0	1	83
22:00	0	0	0	0	0	0	1	4	9	17	8	5	1	0	45
23:00	0	0	0	0	0	0	0	3	9	16	7	4	1	1	41
Total	57	0	0	10	17	36	42	97	334	670	594	282	54	21	2214

Daily

15th Percentile : 24 MPH
50th Percentile : 29 MPH
85th Percentile : 33 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 1692
Percent in Pace : 76.4%
Number of Vehicles > 30 MPH : 951
Percent of Vehicles > 30 MPH : 43.0%

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044SPD3

NB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
07/17/19	0	0	0	0	0	1	0	4	4	4	8	1	0	1	23
01:00	0	0	0	0	0	0	0	1	0	1	2	1	0	0	5
02:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:00	0	0	0	0	0	0	0	1	0	2	0	0	0	0	3
04:00	0	0	0	0	0	0	0	0	1	1	2	0	0	0	4
05:00	0	0	0	0	0	0	0	0	1	5	5	0	1	0	12
06:00	1	0	0	0	0	0	0	4	2	11	9	3	0	1	31
07:00	2	0	0	0	0	0	0	9	21	24	22	11	1	1	91
08:00	3	0	0	0	0	0	4	4	25	43	22	17	6	1	125
09:00	3	0	0	0	0	1	1	4	20	24	28	5	2	1	89
10:00	4	0	0	0	0	0	0	4	12	29	18	10	3	0	80
11:00	3	0	0	0	3	2	3	8	22	35	28	11	4	0	119
12 PM	2	0	0	0	0	1	2	7	22	39	26	13	4	3	119
13:00	1	0	1	0	1	0	0	11	20	47	24	13	2	0	120
14:00	1	0	0	0	0	1	3	10	32	51	36	17	3	0	154
15:00	2	0	0	0	0	1	1	6	24	42	65	18	8	1	168
16:00	3	0	0	0	1	0	1	4	24	70	75	33	8	3	222
17:00	4	0	0	0	0	0	0	10	30	83	83	29	6	0	245
18:00	0	0	0	0	0	1	0	9	22	62	67	25	6	1	193
19:00	3	0	0	0	0	0	1	5	15	42	50	21	6	2	145
20:00	1	0	0	0	0	0	0	1	24	32	26	13	3	2	102
21:00	0	0	0	0	0	0	1	2	15	22	21	2	2	0	65
22:00	0	0	0	0	0	0	0	3	2	15	7	3	0	0	30
23:00	0	0	0	0	0	0	0	0	4	4	6	0	2	0	16
Total	33	0	1	0	5	8	17	107	342	689	630	246	67	17	2162

Daily

15th Percentile : 25 MPH
50th Percentile : 29 MPH
85th Percentile : 32 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 1743
Percent in Pace : 80.6%
Number of Vehicles > 30 MPH : 960
Percent of Vehicles > 30 MPH : 44.4%

Grand Total	90	0	1	10	22	44	59	204	676	1359	1224	528	121	38	4376
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Overall

15th Percentile : 24 MPH
50th Percentile : 29 MPH
85th Percentile : 32 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 3435
Percent in Pace : 78.5%
Number of Vehicles > 30 MPH : 1911
Percent of Vehicles > 30 MPH : 43.7%

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044SPD3

SB, NB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
07/16/19	0	0	0	0	0	0	0	0	0	3	4	0	0	0	7
01:00	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3
02:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	2	0	1	0	1	0	4
04:00	0	0	0	0	0	0	0	0	3	7	5	2	0	1	18
05:00	0	0	0	0	0	0	1	1	3	20	18	16	4	0	63
06:00	0	0	0	0	0	4	1	5	16	41	53	26	5	0	151
07:00	10	5	4	5	12	18	16	40	44	57	52	32	6	1	302
08:00	5	1	3	2	4	8	9	24	49	91	86	34	12	0	328
09:00	9	2	0	4	1	10	21	26	42	81	55	33	12	2	298
10:00	5	0	0	0	1	1	8	18	40	66	68	38	7	2	254
11:00	8	0	0	1	3	4	9	11	25	60	56	49	7	1	234
12 PM	9	2	0	0	2	3	6	9	38	68	85	42	6	3	273
13:00	10	0	0	0	4	5	7	14	25	63	65	30	12	2	237
14:00	4	0	0	1	3	6	11	16	37	91	82	24	8	1	284
15:00	20	1	2	4	3	10	6	21	40	74	79	33	11	2	306
16:00	26	4	5	7	7	12	14	23	50	97	90	39	2	7	383
17:00	12	0	0	2	1	4	8	22	57	118	103	65	14	5	411
18:00	12	1	0	0	0	0	2	6	38	88	104	56	11	1	319
19:00	10	0	0	6	0	0	1	4	34	73	62	35	6	2	233
20:00	0	0	0	0	1	0	1	8	24	46	49	32	7	2	170
21:00	0	0	0	1	1	1	2	4	15	41	33	14	2	2	116
22:00	0	0	0	0	0	0	1	4	12	20	15	6	4	0	62
23:00	0	0	0	0	0	0	0	3	10	18	9	4	1	1	46
Total	140	16	14	34	43	86	125	259	605	1224	1174	610	138	35	4503

Daily

15th Percentile : 23 MPH
50th Percentile : 29 MPH
85th Percentile : 33 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 28 MPH
10 MPH Pace Speed : 27-36 MPH
Number in Pace : 3210
Percent in Pace : 71.3%
Number of Vehicles > 30 MPH : 1957
Percent of Vehicles > 30 MPH : 43.5%

Location : Beaver Brook Road
Location : North of Route 119
City/State: Littleton, MA

0044SPD3

SB, NB

Start Time	1 3	4 6	7 9	10 12	13 15	16 18	19 21	22 24	25 27	28 30	31 33	34 36	37 39	40 999	Total
07/17/19	0	0	0	0	0	1	0	4	5	4	11	2	1	1	29
01:00	0	0	0	0	0	0	0	1	0	1	2	1	2	0	7
02:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:00	0	0	0	0	0	0	0	1	0	2	1	0	0	0	4
04:00	0	0	0	0	0	0	0	0	3	7	6	2	1	1	20
05:00	0	0	0	0	0	0	1	0	3	16	23	14	5	1	63
06:00	2	0	0	0	0	3	4	7	12	32	40	26	5	3	134
07:00	8	2	3	0	5	9	14	31	56	75	57	32	5	2	299
08:00	11	0	0	1	1	5	18	30	58	94	66	35	11	1	331
09:00	6	0	0	0	0	2	5	7	33	66	63	30	14	3	229
10:00	10	0	0	0	1	0	0	5	21	56	49	23	7	3	175
11:00	4	0	2	0	3	2	4	13	35	63	78	30	11	0	245
12 PM	7	0	0	0	1	1	6	16	39	80	57	34	6	4	251
13:00	4	0	1	0	1	0	2	17	30	75	65	30	4	0	229
14:00	4	0	0	0	0	1	5	18	43	75	65	42	9	2	264
15:00	3	0	0	0	0	1	2	9	42	68	109	35	15	1	285
16:00	4	0	0	0	1	0	1	12	38	107	109	54	17	4	347
17:00	8	0	1	1	4	0	5	16	49	101	117	44	11	2	359
18:00	0	0	0	0	1	2	2	14	29	80	100	43	15	3	289
19:00	5	0	0	0	0	0	3	8	23	64	70	36	12	2	223
20:00	1	0	0	0	0	0	0	2	26	42	43	21	7	3	145
21:00	1	0	0	0	0	1	4	7	25	35	34	12	7	0	126
22:00	0	0	0	0	0	0	0	3	2	16	9	9	1	0	40
23:00	0	0	0	0	0	0	0	1	5	4	8	2	3	0	23
Total	78	2	7	2	18	28	76	222	577	1164	1182	557	169	36	4118

Daily

15th Percentile : 24 MPH
50th Percentile : 29 MPH
85th Percentile : 33 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 3109
Percent in Pace : 75.5%
Number of Vehicles > 30 MPH : 1944
Percent of Vehicles > 30 MPH : 47.2%

Grand Total	218	18	21	36	61	114	201	481	1182	2388	2356	1167	307	71	8621
-------------	-----	----	----	----	----	-----	-----	-----	------	------	------	------	-----	----	------

Overall

15th Percentile : 24 MPH
50th Percentile : 29 MPH
85th Percentile : 33 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 25-34 MPH
Number in Pace : 6315
Percent in Pace : 73.3%
Number of Vehicles > 30 MPH : 3901
Percent of Vehicles > 30 MPH : 45.2%

Accurate Counts

978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 1

Groups Printed- Cars - Trucks

	Beaver Brook Rd From North		Route 119 From East		Route 119 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	45	2	79	20	5	314	465
07:15 AM	52	1	68	15	5	301	442
07:30 AM	53	5	76	20	0	341	495
07:45 AM	45	7	110	26	8	283	479
Total	195	15	333	81	18	1239	1881
08:00 AM	47	5	72	24	4	249	401
08:15 AM	47	0	63	21	4	277	412
08:30 AM	44	7	57	26	6	254	394
08:45 AM	43	6	72	42	5	236	404
Total	181	18	264	113	19	1016	1611
Grand Total	376	33	597	194	37	2255	3492
Apprch %	91.9	8.1	75.5	24.5	1.6	98.4	
Total %	10.8	0.9	17.1	5.6	1.1	64.6	
Cars	373	32	576	183	26	2243	3433
% Cars	99.2	97	96.5	94.3	70.3	99.5	98.3
Trucks	3	1	21	11	11	12	59
% Trucks	0.8	3	3.5	5.7	29.7	0.5	1.7

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

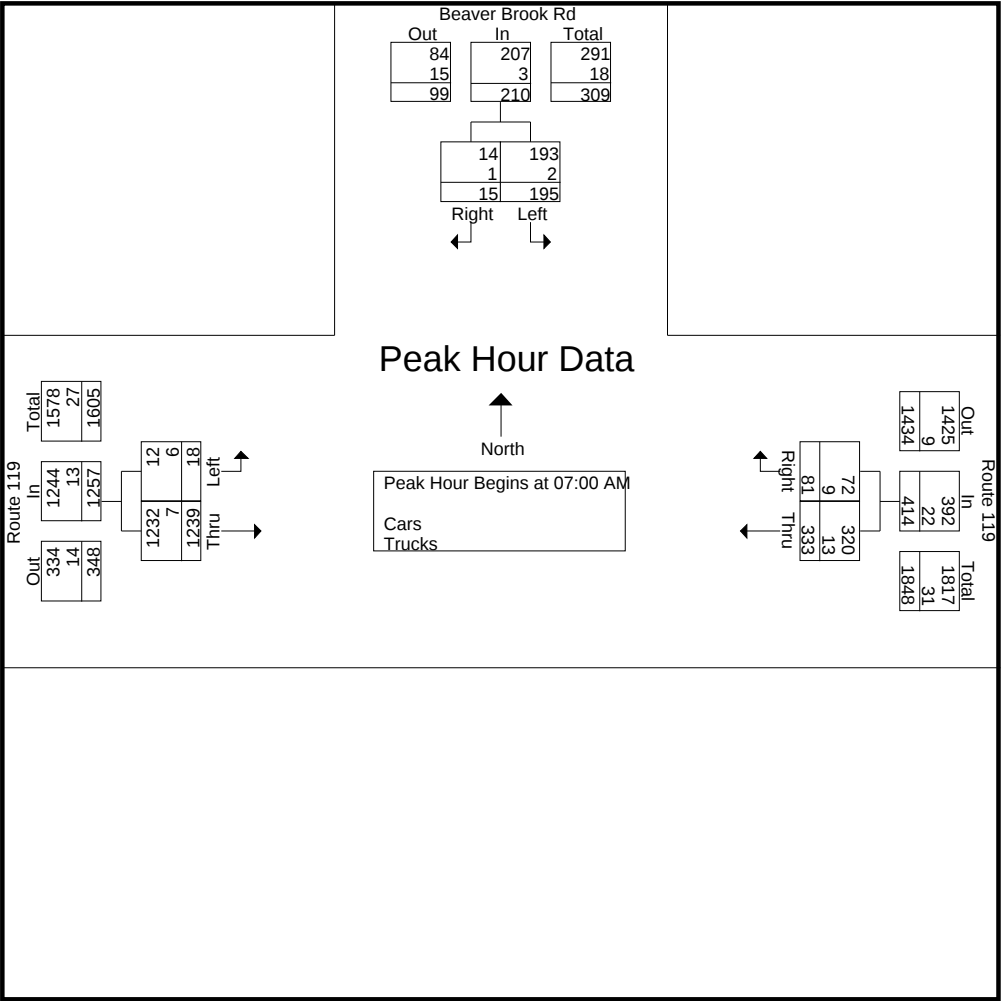
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 2

	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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	45	2	47	79	20	99	5	314	319	465
07:15 AM	52	1	53	68	15	83	5	301	306	442
07:30 AM	53	5	58	76	20	96	0	341	341	495
07:45 AM	45	7	52	110	26	136	8	283	291	479
Total Volume	195	15	210	333	81	414	18	1239	1257	1881
% App. Total	92.9	7.1		80.4	19.6		1.4	98.6		
PHF	.920	.536	.905	.757	.779	.761	.563	.908	.922	.950
Cars	193	14	207	320	72	392	12	1232	1244	1843
% Cars	99.0	93.3	98.6	96.1	88.9	94.7	66.7	99.4	99.0	98.0
Trucks	2	1	3	13	9	22	6	7	13	38
% Trucks	1.0	6.7	1.4	3.9	11.1	5.3	33.3	0.6	1.0	2.0

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
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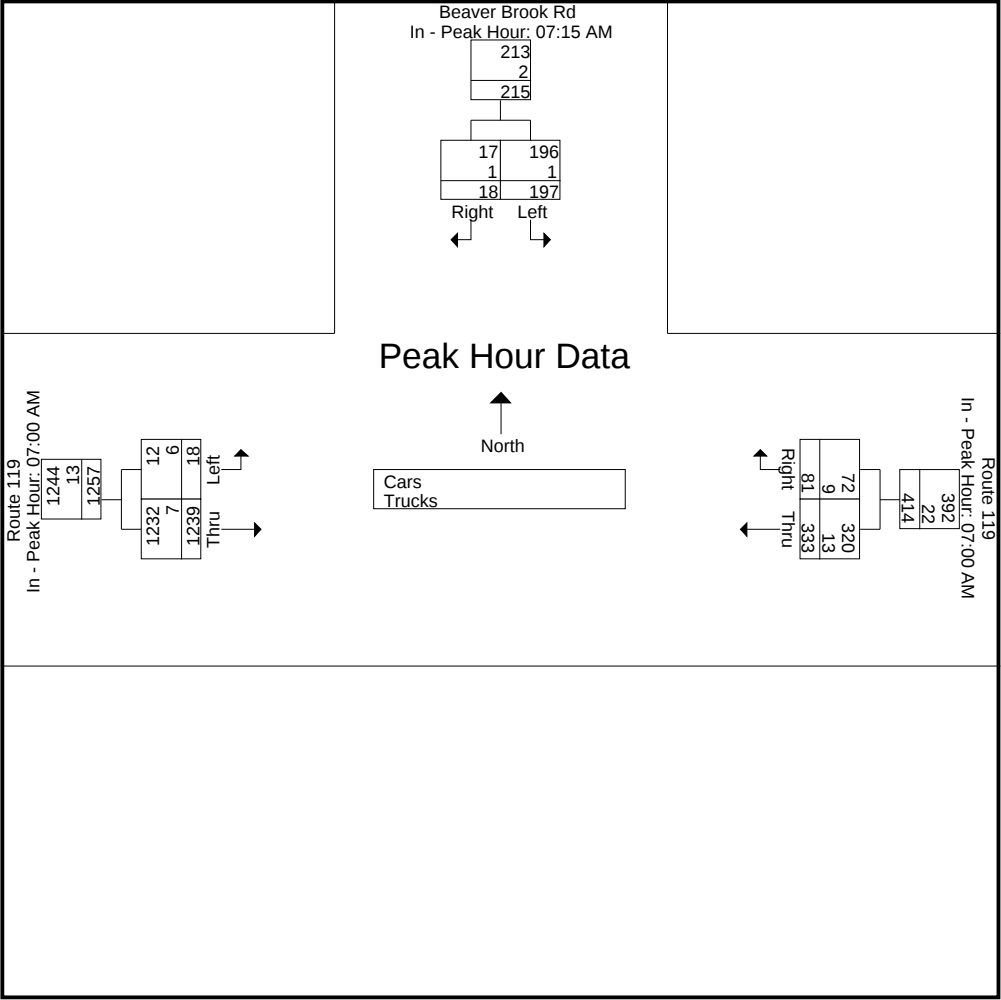
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:00 AM		
+0 mins.	52	1	53	79	20	99	5	314	319
+15 mins.	53	5	58	68	15	83	5	301	306
+30 mins.	45	7	52	76	20	96	0	341	341
+45 mins.	47	5	52	110	26	136	8	283	291
Total Volume	197	18	215	333	81	414	18	1239	1257
% App. Total	91.6	8.4		80.4	19.6		1.4	98.6	

Accurate Counts
978-664-2565

PHF	.929	.643	.927	.757	.779	.761	.563	.908	.922
Cars	196	17	213	320	72	392	12	1232	1244
% Cars	99.5	94.4	99.1	96.1	88.9	94.7	66.7	99.4	99
Trucks	1	1	2	13	9	22	6	7	13
% Trucks	0.5	5.6	0.9	3.9	11.1	5.3	33.3	0.6	1



Accurate Counts

978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 5

Groups Printed- Cars

	Beaver Brook Rd From North		Route 119 From East		Route 119 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	44	2	77	17	5	311	456
07:15 AM	52	1	66	12	3	298	432
07:30 AM	52	5	70	18	0	341	486
07:45 AM	45	6	107	25	4	282	469
Total	193	14	320	72	12	1232	1843
08:00 AM	47	5	71	24	0	247	394
08:15 AM	47	0	60	21	4	276	408
08:30 AM	43	7	55	26	6	253	390
08:45 AM	43	6	70	40	4	235	398
Total	180	18	256	111	14	1011	1590
Grand Total	373	32	576	183	26	2243	3433
Apprch %	92.1	7.9	75.9	24.1	1.1	98.9	
Total %	10.9	0.9	16.8	5.3	0.8	65.3	

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

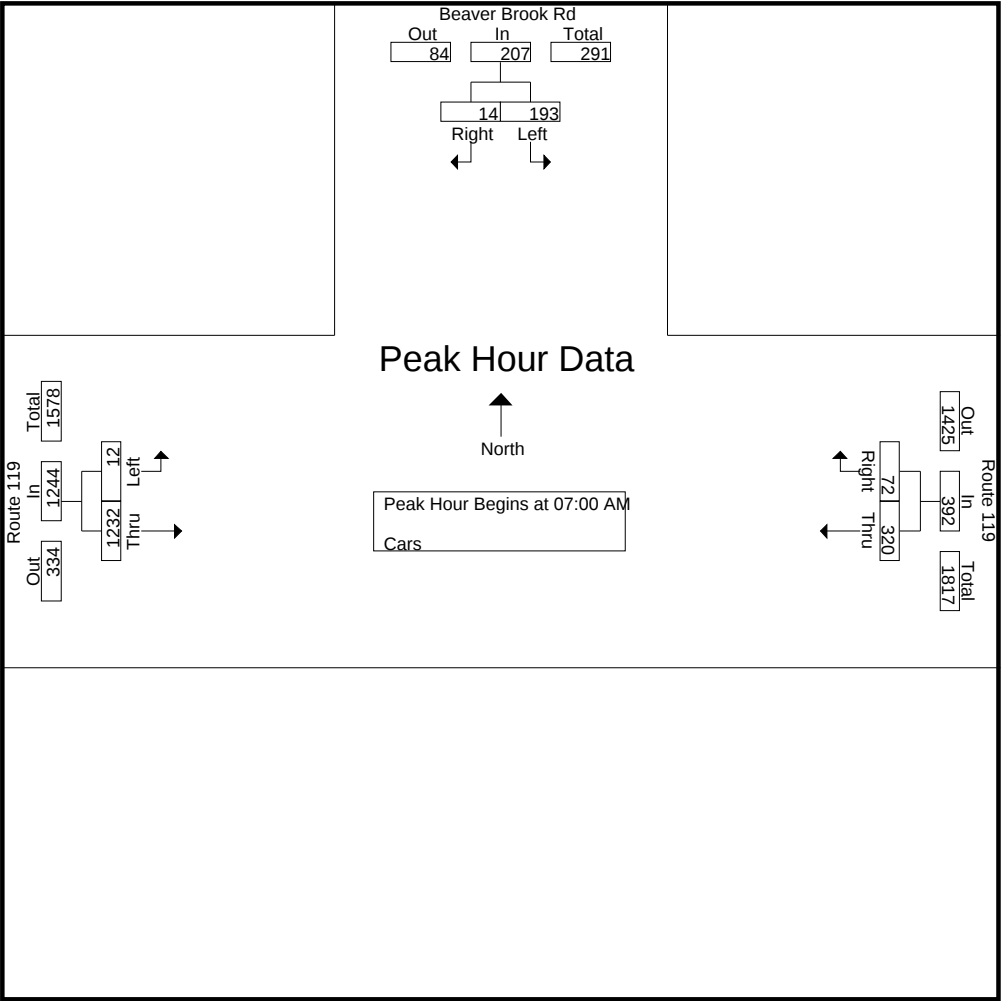
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 6

	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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	44	2	46	77	17	94	5	311	316	456
07:15 AM	52	1	53	66	12	78	3	298	301	432
07:30 AM	52	5	57	70	18	88	0	341	341	486
07:45 AM	45	6	51	107	25	132	4	282	286	469
Total Volume	193	14	207	320	72	392	12	1232	1244	1843
% App. Total	93.2	6.8		81.6	18.4		1	99		
PHF	.928	.583	.908	.748	.720	.742	.600	.903	.912	.948

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 7



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			07:30 AM			07:00 AM		
+0 mins.	52	1	53	70	18	88	5	311	316
+15 mins.	52	5	57	107	25	132	3	298	301
+30 mins.	45	6	51	71	24	95	0	341	341
+45 mins.	47	5	52	60	21	81	4	282	286
Total Volume	196	17	213	308	88	396	12	1232	1244
% App. Total	92	8		77.8	22.2		1	99	

Accurate Counts
978-664-2565

PHF

.942

.708

.934

.720

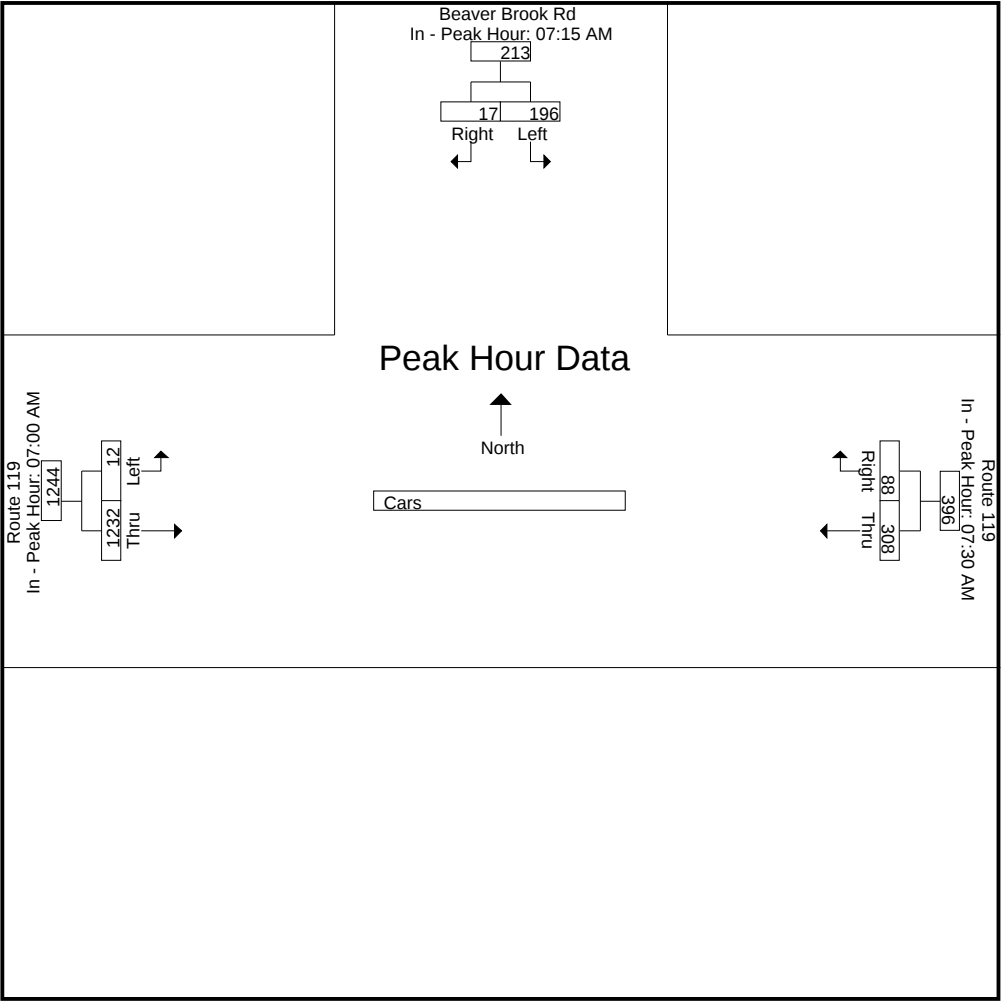
.880

.750

.600

.903

.912



Accurate Counts

978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 9

Groups Printed- Trucks

	Beaver Brook Rd From North		Route 119 From East		Route 119 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	1	0	2	3	0	3	9
07:15 AM	0	0	2	3	2	3	10
07:30 AM	1	0	6	2	0	0	9
07:45 AM	0	1	3	1	4	1	10
Total	2	1	13	9	6	7	38
08:00 AM	0	0	1	0	4	2	7
08:15 AM	0	0	3	0	0	1	4
08:30 AM	1	0	2	0	0	1	4
08:45 AM	0	0	2	2	1	1	6
Total	1	0	8	2	5	5	21
Grand Total	3	1	21	11	11	12	59
Apprch %	75	25	65.6	34.4	47.8	52.2	
Total %	5.1	1.7	35.6	18.6	18.6	20.3	

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

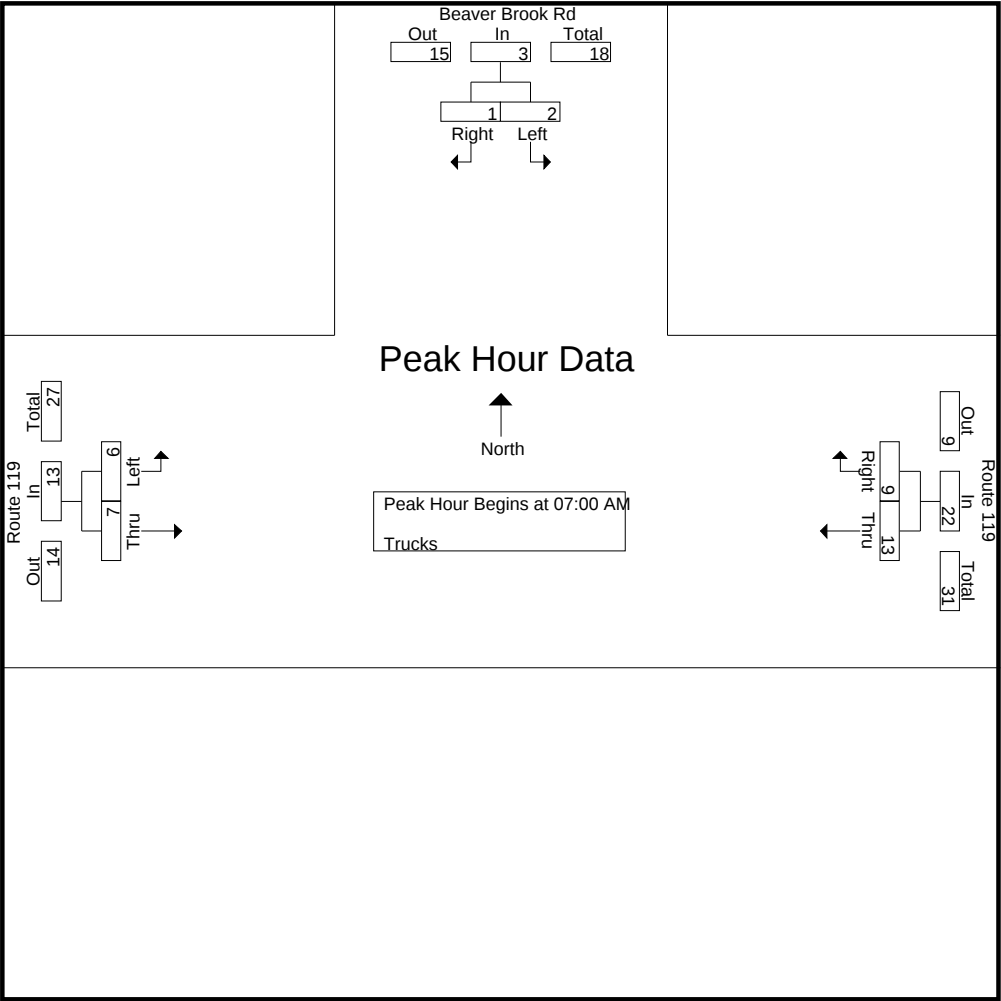
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
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	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis 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	1	0	1	2	3	5	0	3	3	9
07:15 AM	0	0	0	2	3	5	2	3	5	10
07:30 AM	1	0	1	6	2	8	0	0	0	9
07:45 AM	0	1	1	3	1	4	4	1	5	10
Total Volume	2	1	3	13	9	22	6	7	13	38
% App. Total	66.7	33.3		59.1	40.9		46.2	53.8		
PHF	.500	.250	.750	.542	.750	.688	.375	.583	.650	.950

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:15 AM		
+0 mins.	1	0	1	2	3	5	2	3	5
+15 mins.	0	0	0	2	3	5	0	0	0
+30 mins.	1	0	1	6	2	8	4	1	5
+45 mins.	0	1	1	3	1	4	4	2	6
Total Volume	2	1	3	13	9	22	10	6	16
% App. Total	66.7	33.3		59.1	40.9		62.5	37.5	

Accurate Counts
978-664-2565

PHF

.500

.250

.750

.542

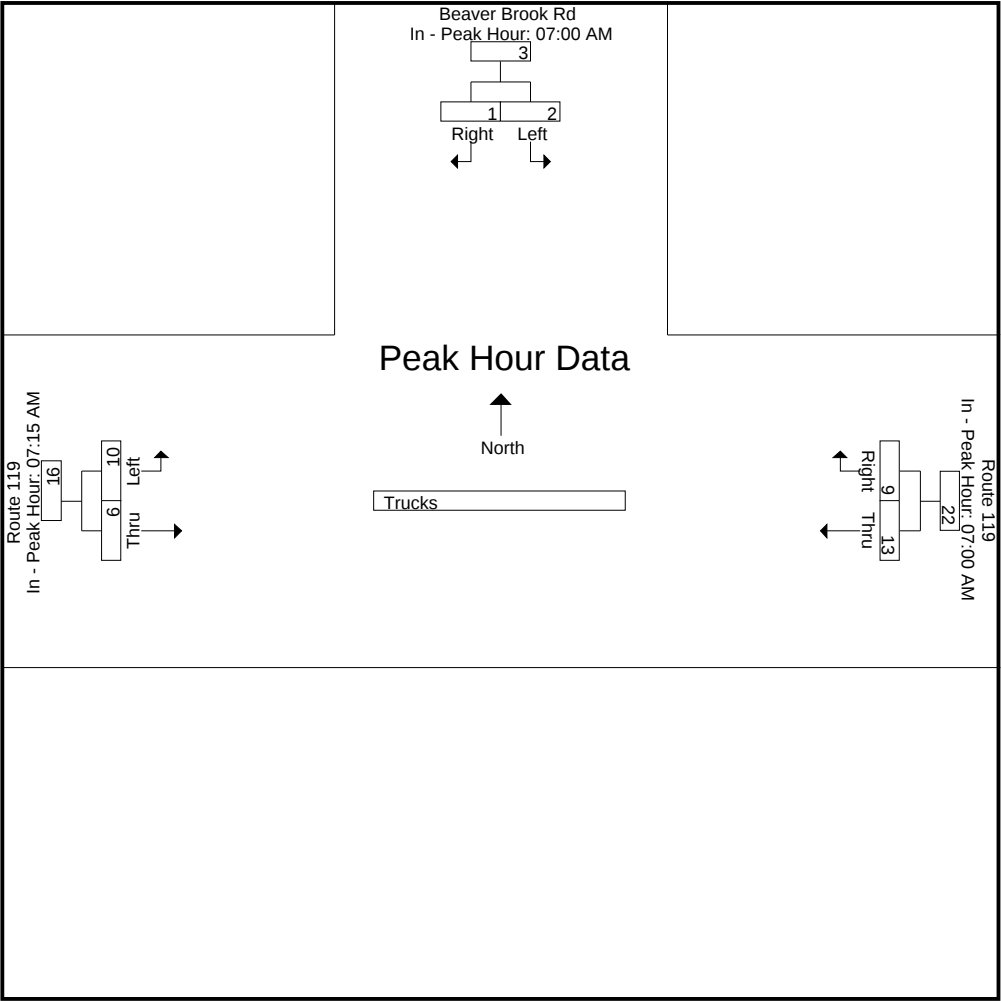
.750

.688

.625

.500

.667



Accurate Counts

978-664-2565

File Name : 00440003

Site Code : 00440003

Start Date : 7/16/2019

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N/S Street : Beaver Brook Road

E/W Street : North of Route 119

City/State : Littleton, MA

Weather : Clear

Groups Printed- Bikes Peds

	Beaver Brook Rd From North			Route 119 From East			Route 119 From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	1	0	0	0	0	0	0	1	1
08:45 AM	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	1	0	0	0	1	0	0	2	2
Grand Total	0	0	0	1	0	0	0	1	0	0	2	2
Apprch %	0	0		100	0		0	100				
Total %	0	0		50	0		0	50		0	100	

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

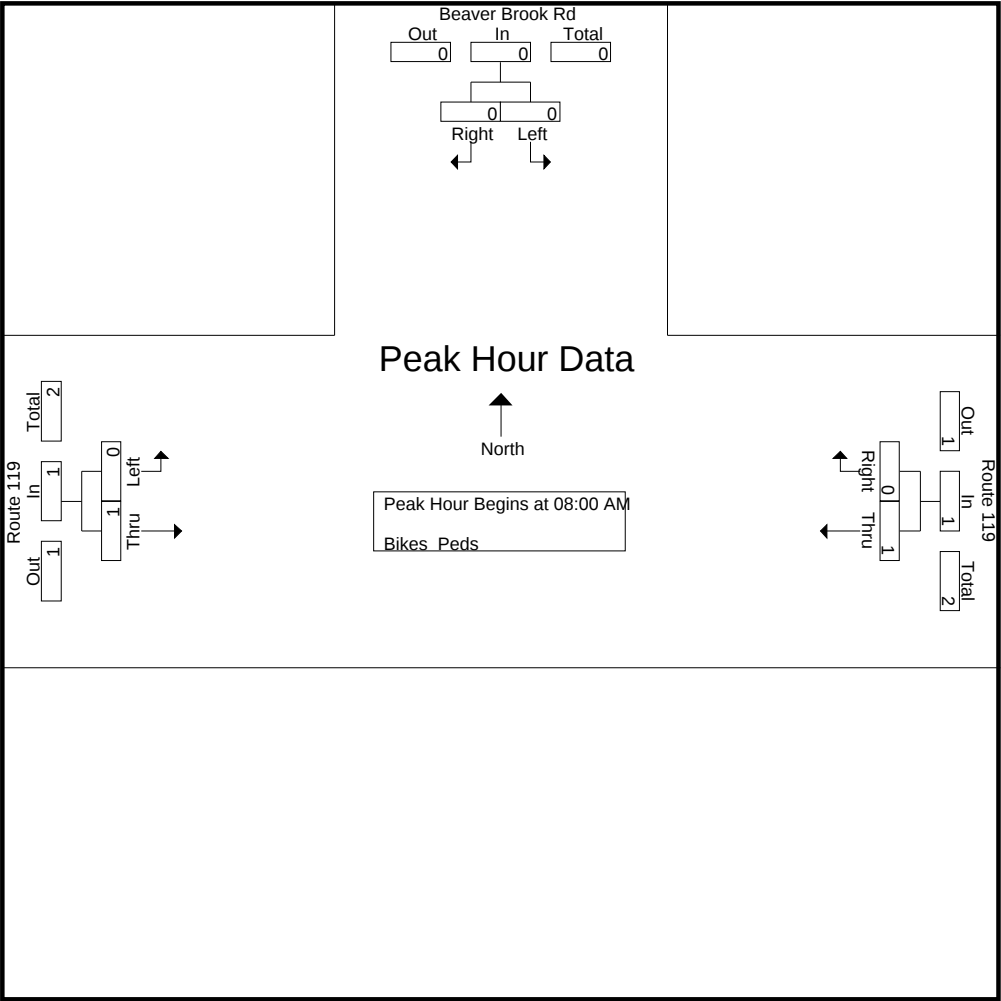
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
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	Beaver Brook Rd From North			Route 119 From East			Route 119 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	1	0	1	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	1	0	1	0	1	1	2
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.250	.000	.250	.000	.250	.250	.500

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
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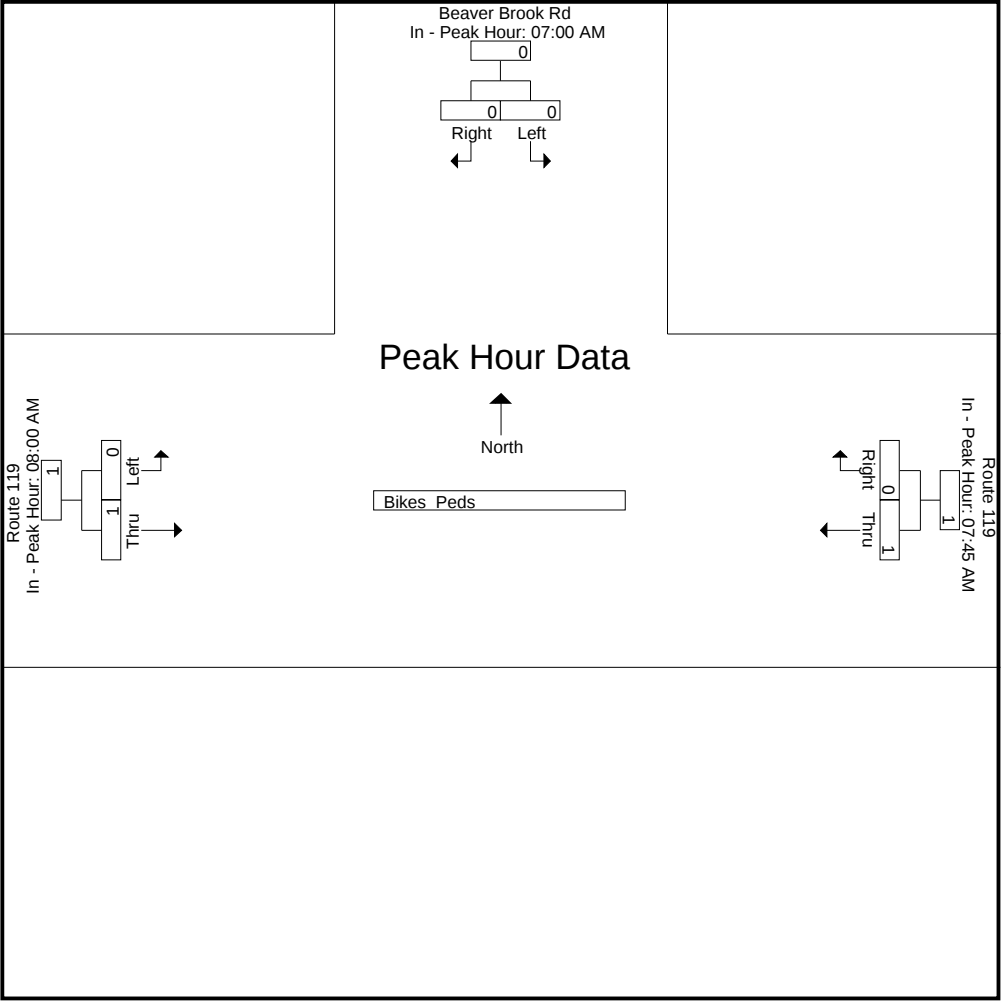
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			08:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	1	0	1	0	1	1
Total Volume	0	0	0	1	0	1	0	1	1

Accurate Counts
978-664-2565

% App. Total	0	0	100	0	0	100
PHF	.000	.000	.250	.000	.250	.250



Accurate Counts

978-664-2565

File Name : 00440003

Site Code : 00440003

Start Date : 7/16/2019

Page No : 1

N/S Street : Beaver Brook Road

E/W Street : North of Route 119

City/State : Littleton, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Beaver Brook Rd From North		Route 119 From East		Route 119 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	20	12	256	61	5	127	481
04:15 PM	43	7	238	56	3	129	476
04:30 PM	44	8	284	47	2	135	520
04:45 PM	33	14	267	61	7	133	515
Total	140	41	1045	225	17	524	1992
05:00 PM	28	7	254	68	3	126	486
05:15 PM	23	8	274	72	3	135	515
05:30 PM	18	9	276	72	8	95	478
05:45 PM	30	6	251	61	1	106	455
Total	99	30	1055	273	15	462	1934
Grand Total	239	71	2100	498	32	986	3926
Apprch %	77.1	22.9	80.8	19.2	3.1	96.9	
Total %	6.1	1.8	53.5	12.7	0.8	25.1	
Cars	235	70	2085	494	32	978	3894
% Cars	98.3	98.6	99.3	99.2	100	99.2	99.2
Trucks	4	1	15	4	0	8	32
% Trucks	1.7	1.4	0.7	0.8	0	0.8	0.8

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

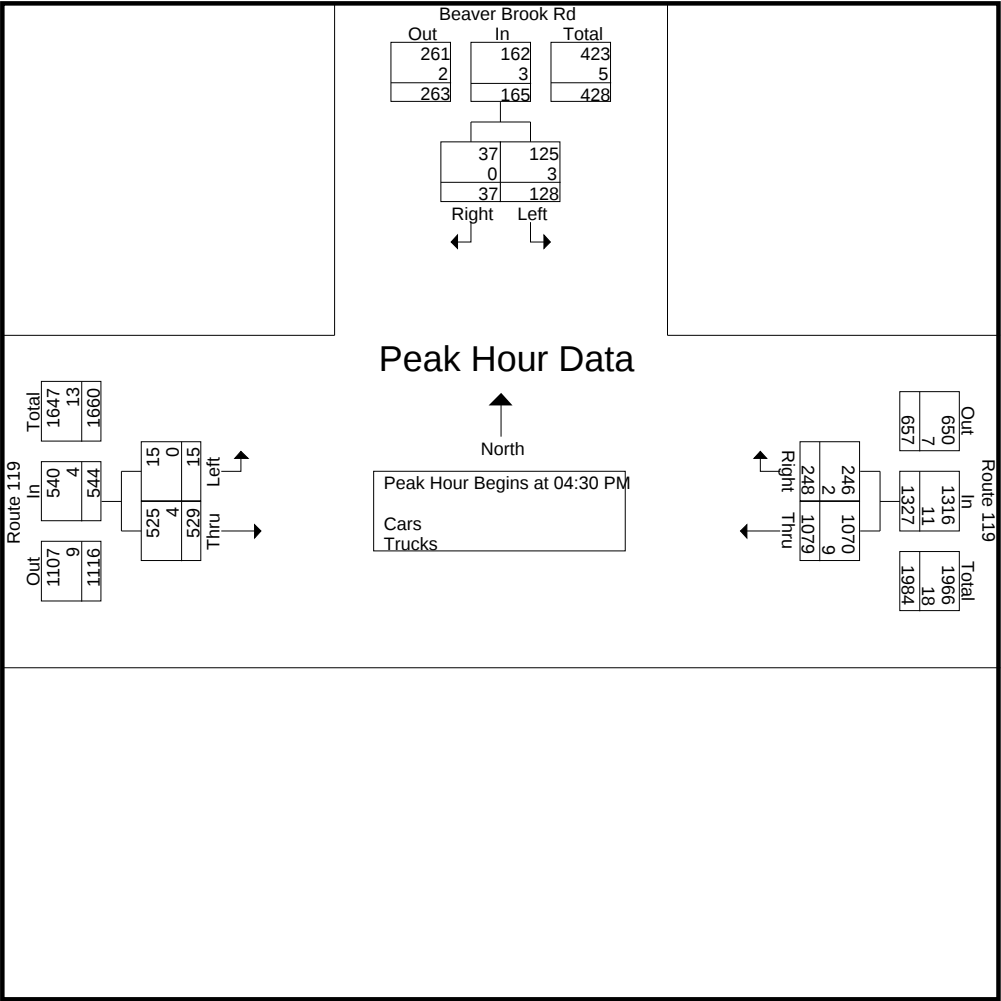
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 2

	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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 04:30 PM										
04:30 PM	44	8	52	284	47	331	2	135	137	520
04:45 PM	33	14	47	267	61	328	7	133	140	515
05:00 PM	28	7	35	254	68	322	3	126	129	486
05:15 PM	23	8	31	274	72	346	3	135	138	515
Total Volume	128	37	165	1079	248	1327	15	529	544	2036
% App. Total	77.6	22.4		81.3	18.7		2.8	97.2		
PHF	.727	.661	.793	.950	.861	.959	.536	.980	.971	.979
Cars	125	37	162	1070	246	1316	15	525	540	2018
% Cars	97.7	100	98.2	99.2	99.2	99.2	100	99.2	99.3	99.1
Trucks	3	0	3	9	2	11	0	4	4	18
% Trucks	2.3	0	1.8	0.8	0.8	0.8	0	0.8	0.7	0.9

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
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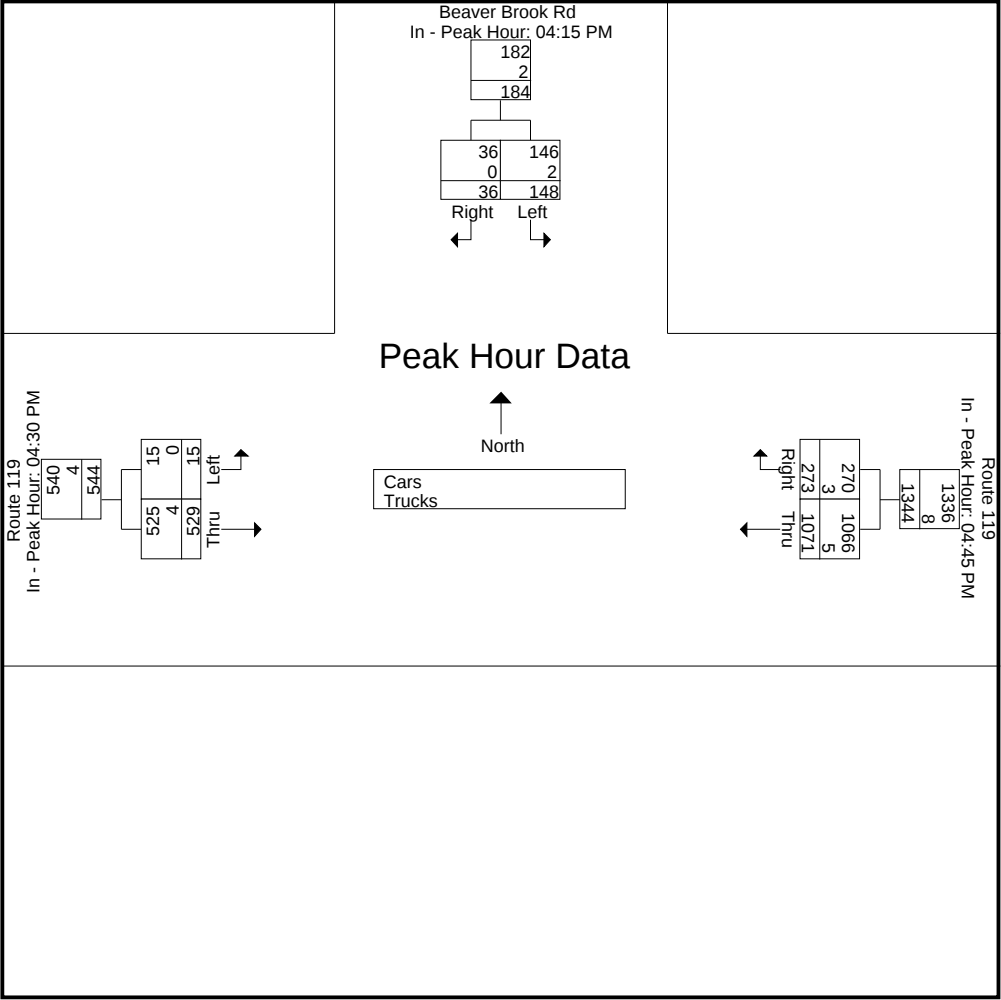
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM			04:45 PM			04:30 PM		
+0 mins.	43	7	50	267	61	328	2	135	137
+15 mins.	44	8	52	254	68	322	7	133	140
+30 mins.	33	14	47	274	72	346	3	126	129
+45 mins.	28	7	35	276	72	348	3	135	138
Total Volume	148	36	184	1071	273	1344	15	529	544
% App. Total	80.4	19.6		79.7	20.3		2.8	97.2	

Accurate Counts
978-664-2565

PHF	.841	.643	.885	.970	.948	.966	.536	.980	.971
Cars	146	36	182	1066	270	1336	15	525	540
% Cars	98.6	100	98.9	99.5	98.9	99.4	100	99.2	99.3
Trucks	2	0	2	5	3	8	0	4	4
% Trucks	1.4	0	1.1	0.5	1.1	0.6	0	0.8	0.7



Accurate Counts

978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 5

Groups Printed- Cars

	Beaver Brook Rd From North		Route 119 From East		Route 119 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	20	11	254	60	5	127	477
04:15 PM	42	7	234	56	3	127	469
04:30 PM	44	8	280	47	2	134	515
04:45 PM	33	14	266	61	7	131	512
Total	139	40	1034	224	17	519	1973
05:00 PM	27	7	254	66	3	125	482
05:15 PM	21	8	270	72	3	135	509
05:30 PM	18	9	276	71	8	95	477
05:45 PM	30	6	251	61	1	104	453
Total	96	30	1051	270	15	459	1921
Grand Total	235	70	2085	494	32	978	3894
Apprch %	77	23	80.8	19.2	3.2	96.8	
Total %	6	1.8	53.5	12.7	0.8	25.1	

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

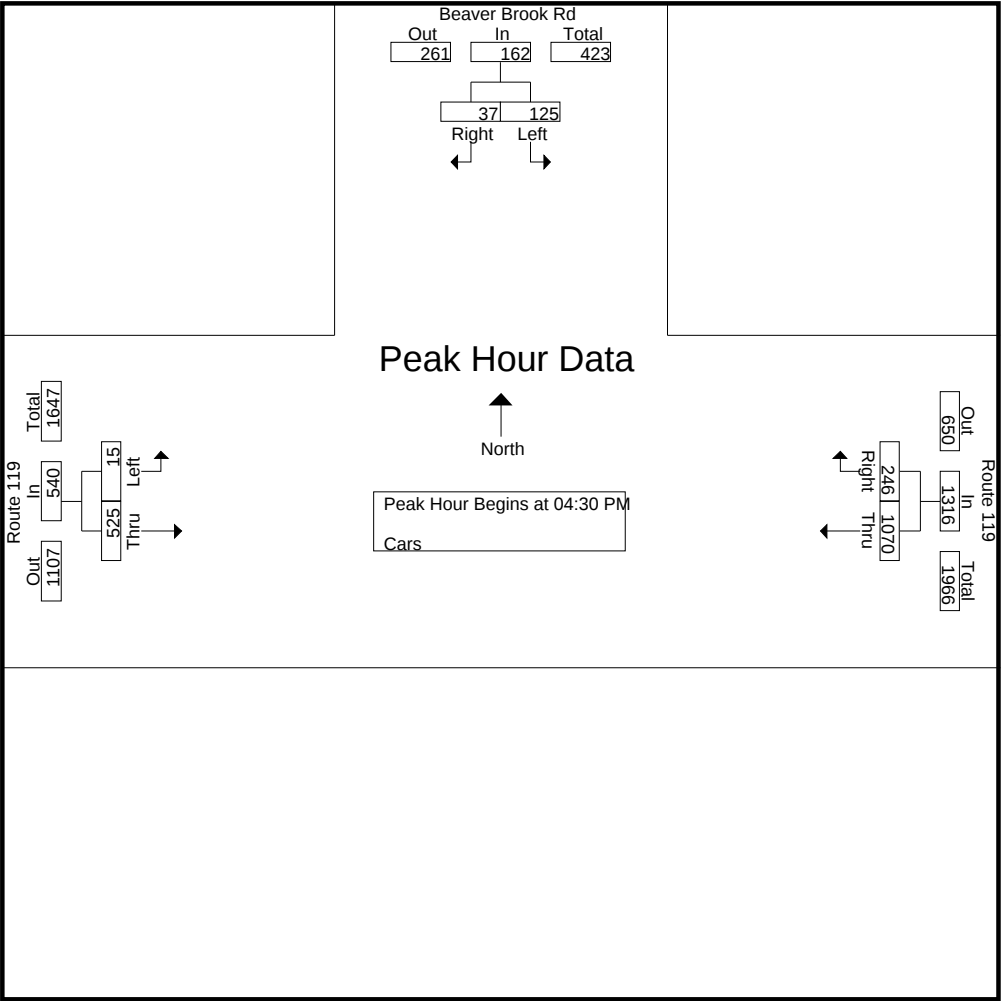
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 6

	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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 04:30 PM										
04:30 PM	44	8	52	280	47	327	2	134	136	515
04:45 PM	33	14	47	266	61	327	7	131	138	512
05:00 PM	27	7	34	254	66	320	3	125	128	482
05:15 PM	21	8	29	270	72	342	3	135	138	509
Total Volume	125	37	162	1070	246	1316	15	525	540	2018
% App. Total	77.2	22.8		81.3	18.7		2.8	97.2		
PHF	.710	.661	.779	.955	.854	.962	.536	.972	.978	.980

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 7



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM			04:45 PM			04:30 PM		
+0 mins.	42	7	49	266	61	327	2	134	136
+15 mins.	44	8	52	254	66	320	7	131	138
+30 mins.	33	14	47	270	72	342	3	125	128
+45 mins.	27	7	34	276	71	347	3	135	138
Total Volume	146	36	182	1066	270	1336	15	525	540
% App. Total	80.2	19.8		79.8	20.2		2.8	97.2	

Accurate Counts
978-664-2565

PHF

.830

.643

.875

.966

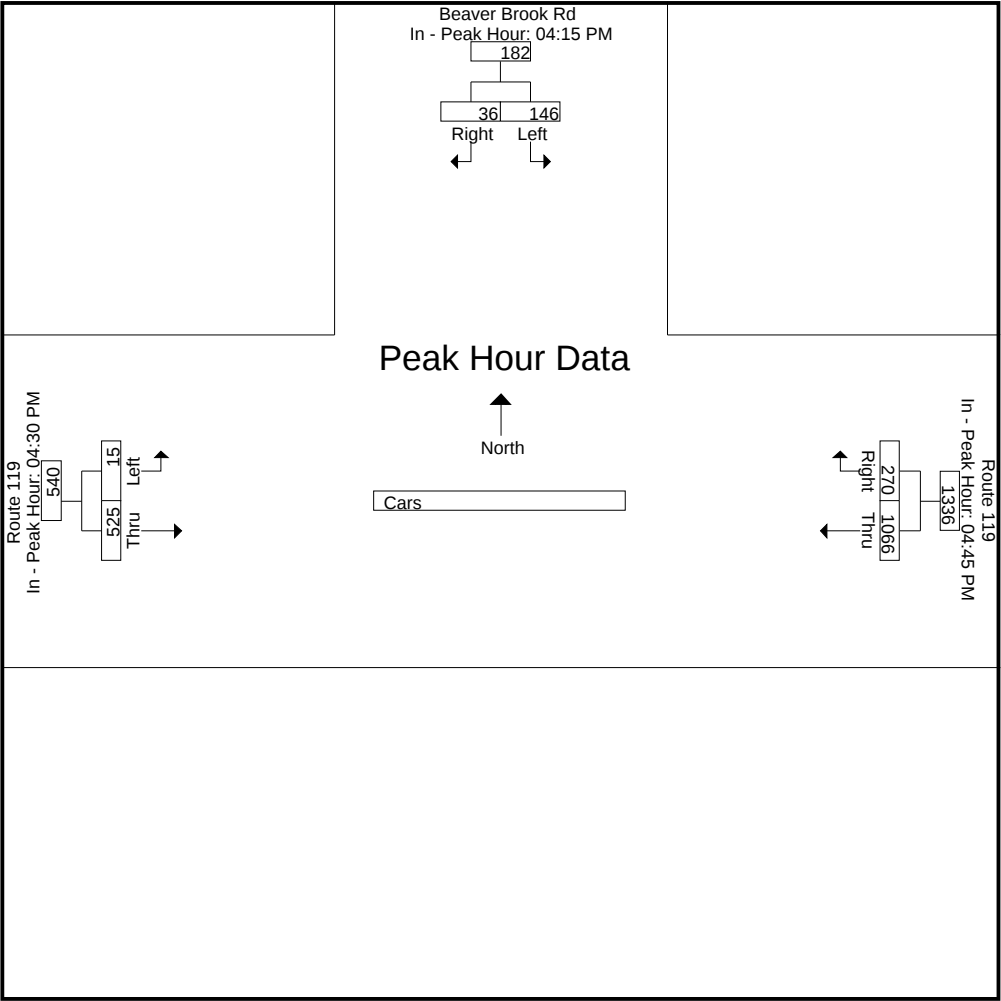
.938

.963

.536

.972

.978



Accurate Counts

978-664-2565

File Name : 00440003

Site Code : 00440003

Start Date : 7/16/2019

Page No : 9

N/S Street : Beaver Brook Road

E/W Street : North of Route 119

City/State : Littleton, MA

Weather : Clear

Groups Printed- Trucks

	Beaver Brook Rd From North		Route 119 From East		Route 119 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	1	2	1	0	0	4
04:15 PM	1	0	4	0	0	2	7
04:30 PM	0	0	4	0	0	1	5
04:45 PM	0	0	1	0	0	2	3
Total	1	1	11	1	0	5	19
05:00 PM	1	0	0	2	0	1	4
05:15 PM	2	0	4	0	0	0	6
05:30 PM	0	0	0	1	0	0	1
05:45 PM	0	0	0	0	0	2	2
Total	3	0	4	3	0	3	13
Grand Total	4	1	15	4	0	8	32
Apprch %	80	20	78.9	21.1	0	100	
Total %	12.5	3.1	46.9	12.5	0	25	

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

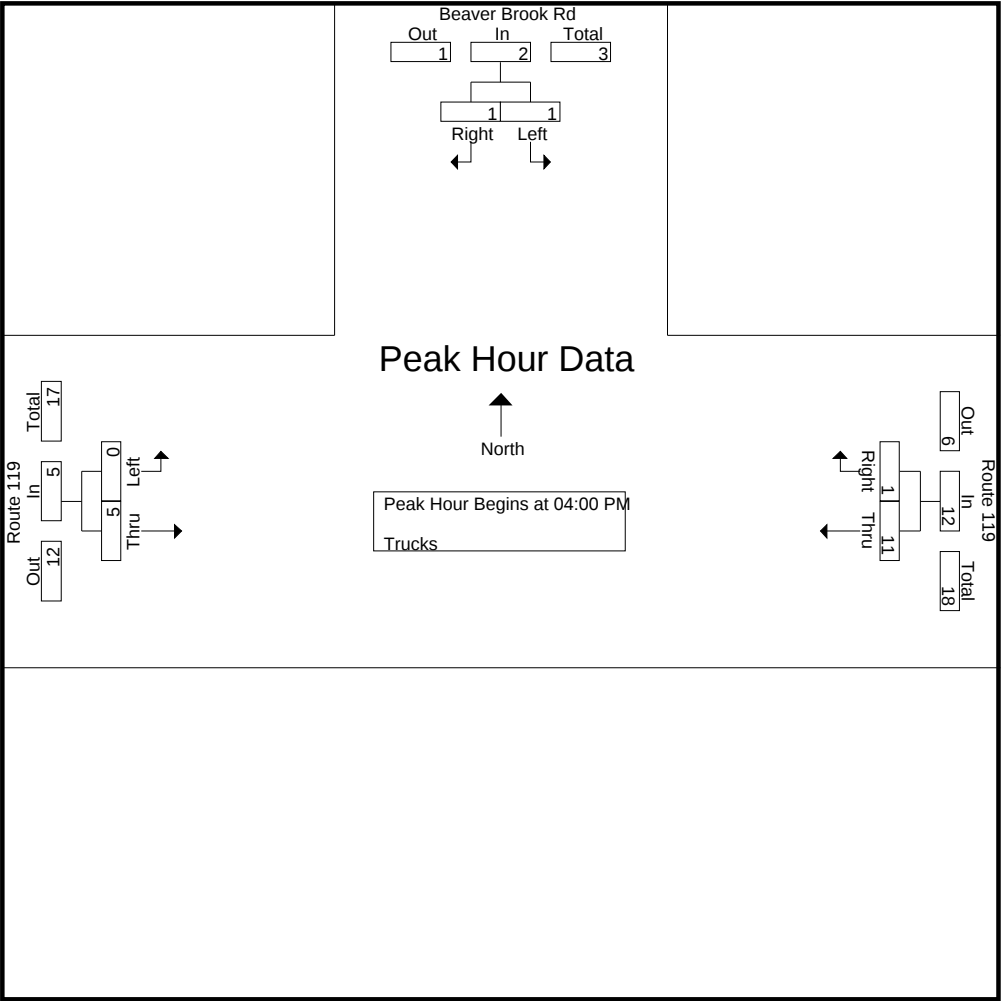
File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 10

	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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 04:00 PM										
04:00 PM	0	1	1	2	1	3	0	0	0	4
04:15 PM	1	0	1	4	0	4	0	2	2	7
04:30 PM	0	0	0	4	0	4	0	1	1	5
04:45 PM	0	0	0	1	0	1	0	2	2	3
Total Volume	1	1	2	11	1	12	0	5	5	19
% App. Total	50	50		91.7	8.3		0	100		
PHF	.250	.250	.500	.688	.250	.750	.000	.625	.625	.679

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			04:15 PM		
+0 mins.	0	0	0	2	1	3	0	2	2
+15 mins.	0	0	0	4	0	4	0	1	1
+30 mins.	1	0	1	4	0	4	0	2	2
+45 mins.	2	0	2	1	0	1	0	1	1
Total Volume	3	0	3	11	1	12	0	6	6
% App. Total	100	0		91.7	8.3		0	100	

Accurate Counts
978-664-2565

PHF

.375

.000

.375

.688

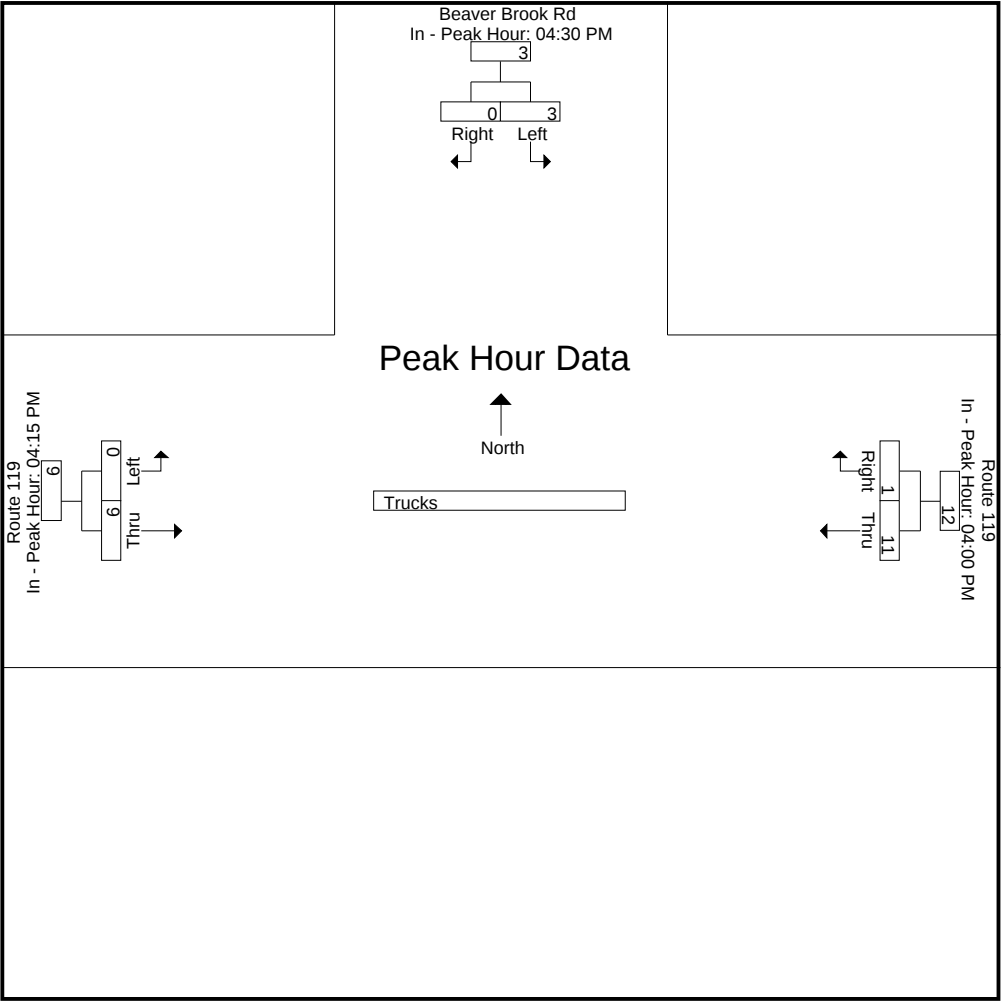
.250

.750

.000

.750

.750



Accurate Counts

978-664-2565

File Name : 00440003

Site Code : 00440003

Start Date : 7/16/2019

Page No : 13

N/S Street : Beaver Brook Road

E/W Street : North of Route 119

City/State : Littleton, MA

Weather : Clear

Groups Printed- Bikes Peds

	Beaver Brook Rd From North			Route 119 From East			Route 119 From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	0	0	0	0	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	0	0	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	1	0	0	0	0	0	1	1
Apprch %	0	0		0	100		0	0				
Total %	0	0		0	100		0	0		0	100	

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

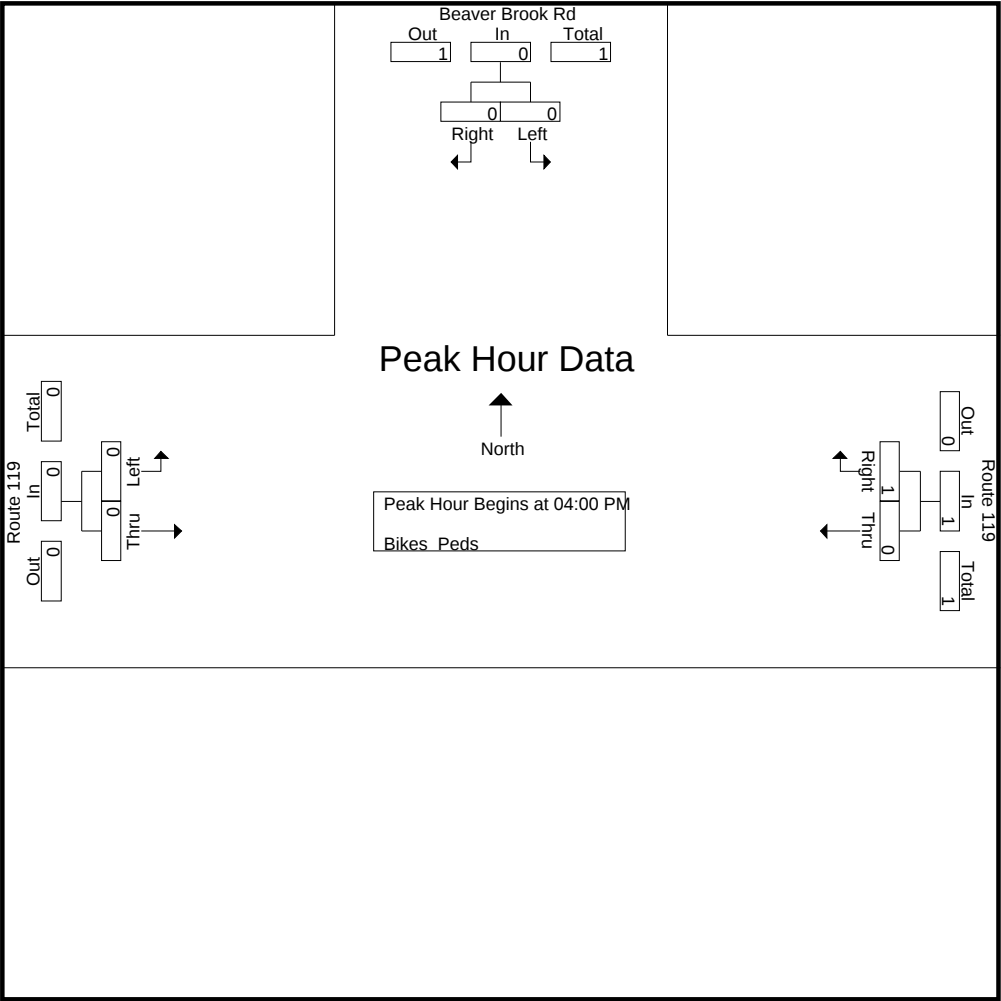
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Site Code : 00440003
Start Date : 7/16/2019
Page No : 14

	Beaver Brook Rd			Route 119			Route 119			
	From North			From East			From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	1	0	0	0	1
% App. Total	0	0		0	100		0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.000	.000	.250

Accurate Counts
978-664-2565

N/S Street : Beaver Brook Road
E/W Street : North of Route 119
City/State : Littleton, MA
Weather : Clear

File Name : 00440003
Site Code : 00440003
Start Date : 7/16/2019
Page No : 15



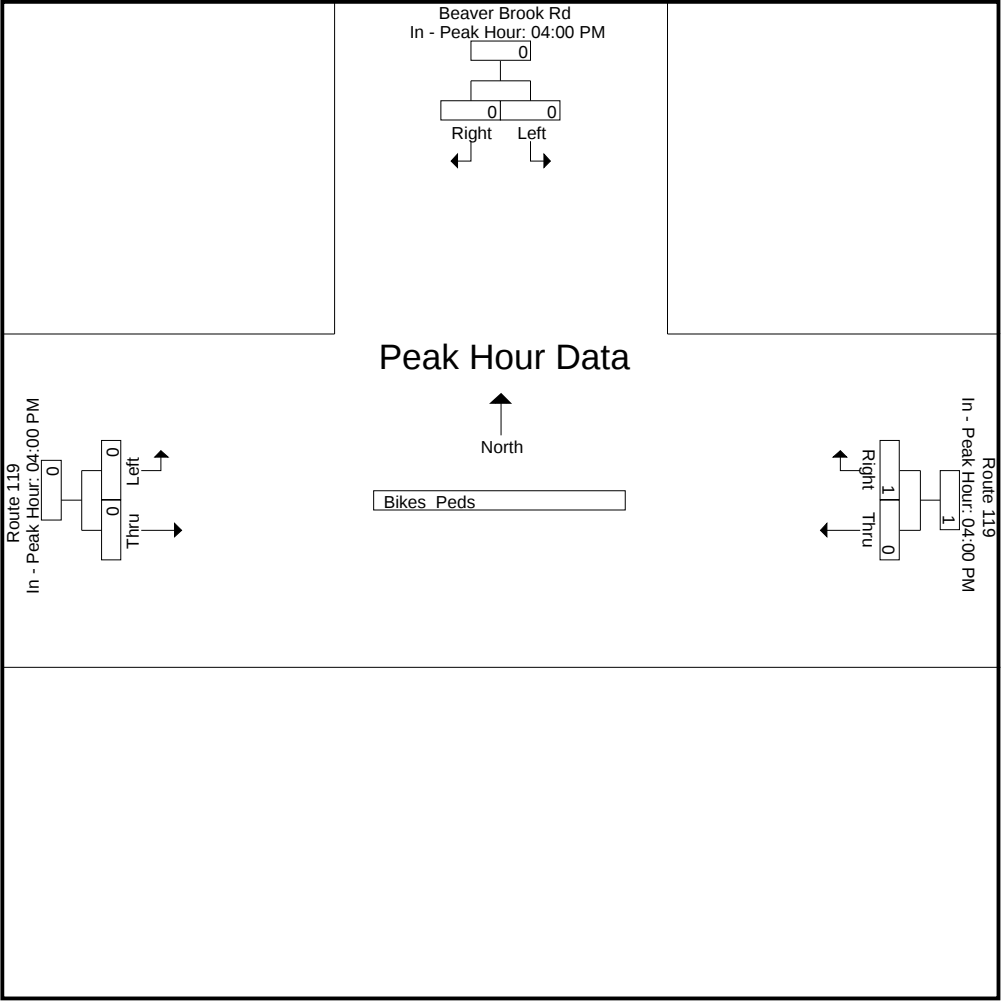
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	1	1	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	1	0	0	0

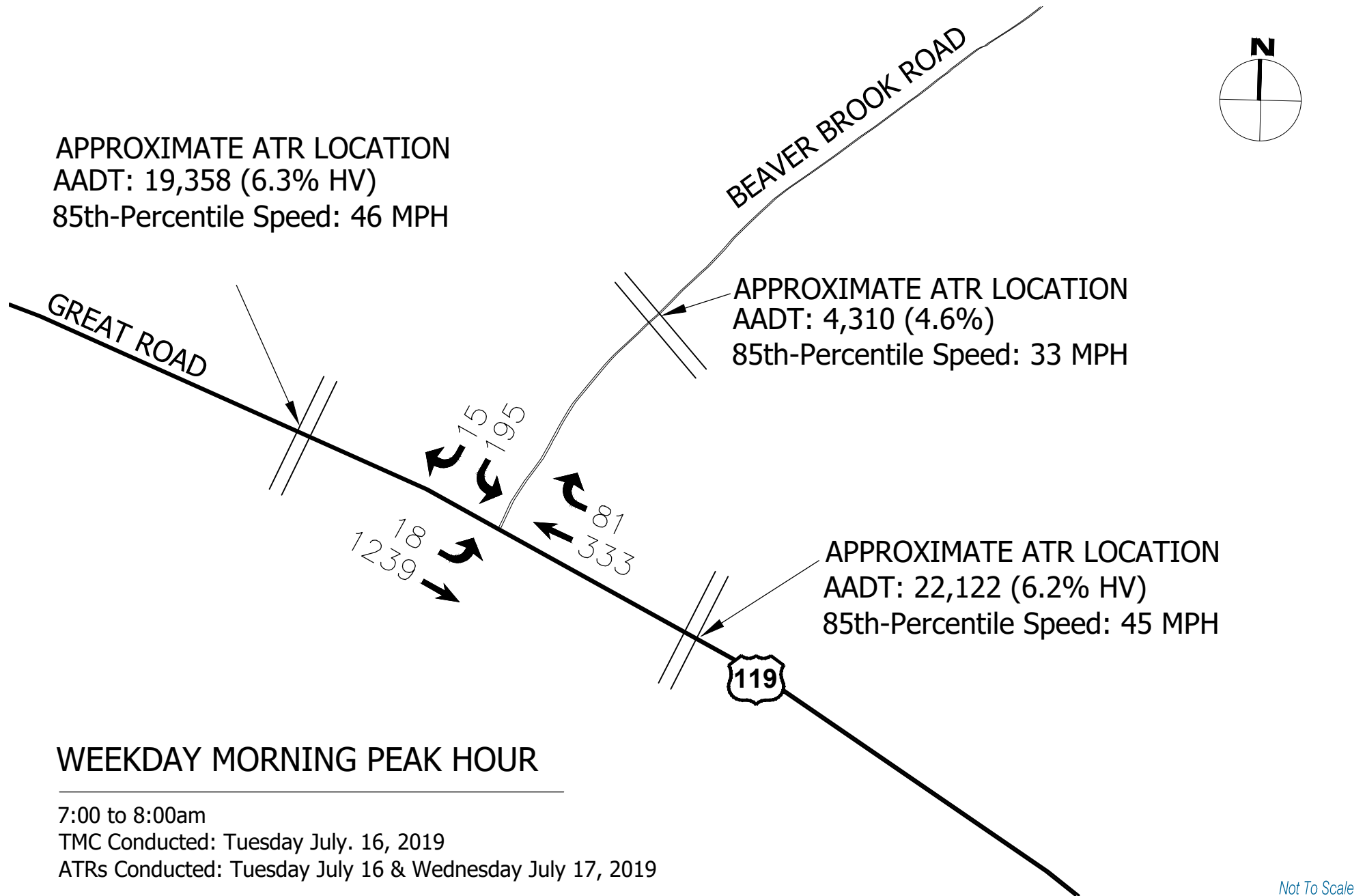
Accurate Counts
978-664-2565

% App. Total	0	0	0	100	0	0
PHF	.000	.000	.000	.250	.250	.000

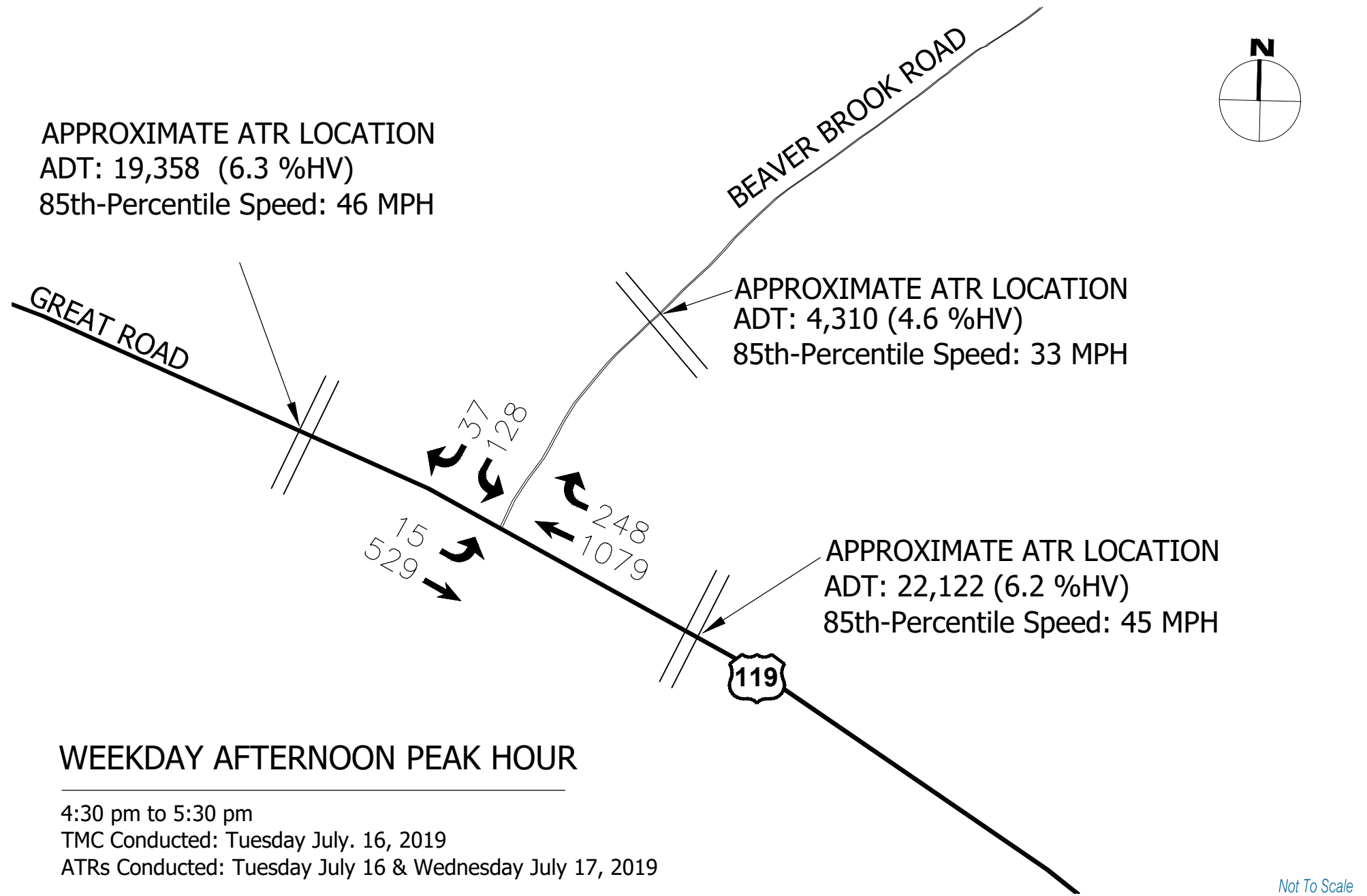


Attachment 2
Existing Traffic Volume Figures

File Path: F:\P20170044\A70\Traffic work\Traffic Figures\Traffic figures.dwg Layout: AMBASE Plotted: Tue, July 23, 2019 - 3:44 PM User: AARON KEEGAN



File Path: F:\P20170044\A70\Traffic work\Traffic Figures\Traffic figures.dwg Layout: PMBASE Plotted: Tue, July 23, 2019 - 3:45 PM User: AARON KEEGAN



Attachment 3
Crash History Summary Table & MassDOT Intersection Crash Worksheet

CRASH DATA SUMMARY TABLE - 2011 to 2017
STUDY AREA INTERSECTIONS

Criteria	Rt 119/ Great Rd and Beaver Brook Rd				
YEAR					
2011	4				
2012	4				
2013	3				
2014	1				
2015	6				
2016	4				
2017	6				
Total	28				
Average No. of Crashes 2011-2017	4.00				
Average No. of Crashes 2011-2014	3.00				
Average No. of Crashes 2015-2017	5.33				
Crash Rate 2015-2017	0.56				
TYPE					
Angle	11				
Rear-End	8				
Head-On	3				
Sideswipe	3				
Pedestrian/Bicycle	0				
Collision w/ Parked Car	0				
Collision w/ Animal	2				
Unknown/Other	1				
Total	28				
SEVERITY					
Property Damage Only	23				
Non-fatal Injury	5				
Fatality	0				
Unknown/Other	0				
Total	28				
WEATHER					
Clear	17				
Wet	3				
Snow/Ice	4				
Clouds	3				
Fog	0				
Unknown/Other	1				
Total	28				
TIME					
Weekday 7:30 AM - 9:30 AM	6				
Weekday 3:30 PM - 5:30 PM	7				
Other	15				
Total	28				

Statewide Average Crash Rates: 0.78 Signalized Intersections
0.57 Unsignalized Intersections

District 3 Average Crash Rates 0.89 Signalized Intersections
0.61 Unsignalized Intersections

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Littleton, MA COUNT DATE : 7/16 & 7/17/2019

DISTRICT : 3 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Great Rd/Route 119

MINOR STREET(S) : Beaver Brook Rd

**INTERSECTION
DIAGRAM
(Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	SB			
PEAK HOURLY VOLUMES (AM/PM) :	544	1327	165			2036

" K " FACTOR : 0.078

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

26,102

TOTAL # OF CRASHES : 16

OF YEARS :

3 YEARS (2015-2017)

AVERAGE # OF CRASHES PER YEAR (A) :

5.3

CRASH RATE CALCULATION :

0.56

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

Comments : _____

Project Title & Date: Beaver Brook Rd and Great Rd Intersection Analysis 7/29/2019

Attachment 4
Traffic Signal Warrant Analysis Worksheets



FUSS & O'NEILL, INC.
1550 Main St
Springfield, MA 01108

Prep. By:	Date:	Chk. by:	Date:	Project No:
AJK	7/23/2019			20170044_A70
Traffic Signal Warrants				Sheet No:
Rte 119/Great Rd & Beaver Brook Rd in Littleton, MA				1 of 3

Major St: <u>Rte 119/ Great Rd</u>	Critical Approach Speed <u>45</u> mph	Count Date <u>7/16/2019 & 7/17/2019</u>
1 Lane: <u>Y</u> 2 or more: <u> </u>		
Minor St: <u>Beaver Brook Rd</u>	Critical Approach Speed <u>25</u> mph	Count Date <u>7/16/2019 & 7/17/2019</u>
1 Lane: <u>Y</u> 2 or more: <u> </u>	Existing Control: STOP <u>Y</u> YIELD <u> </u>	
Critical speed of major street traffic $\geq$ 40 mph	<u>R</u> or	Rural (R)
In built up area of isolated community of $\leq$ 10,000 pop.	<u> </u>	Rural (R)
Otherwise if neither of the above statements are true	<u> </u>	Urban (U)

WARRANT 1 - Eight-Hour Vehicular Volume

Condition A - Minimum Vehicular Volume

100% Satisfied for 8 hours? No
 80% Satisfied for 8 hours? No
 70% Satisfied for 8 hours? Yes Applies to Rural Only
 56% Satisfied for 8 hours? Yes Applies to Rural Only

Number of lanes on each approach		VPH on major st (both approaches)				VPH on higher vol minor st approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

OR

Condition B - Interruption of Continuous Traffic

100% Satisfied for 8 hours? Yes
 80% Satisfied for 8 hours? Yes
 70% Satisfied for 8 hours? Yes Applies to Rural Only
 56% Satisfied for 8 hours? Yes Applies to Rural Only

Number of lanes on each approach		VPH on major st (both approaches)				VPH on higher vol minor st approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

	Hour	Major (both app.)	Minor (higher app.)
1st	16:00	1694	220
2nd	17:00	1656	270
3rd	7:00	1631	205
4th	15:00	1539	164
5th	8:00	1432	200
6th	18:00	1430	196
7th	6:00	1351	110
8th	14:00	1335	146

	Hour	Major (both app.)	Minor (higher app.)
1st	16:00	1694	220
2nd	17:00	1656	270
3rd	7:00	1631	205
4th	15:00	1539	164
5th	8:00	1432	200
6th	18:00	1430	196
7th	6:00	1351	110
8th	14:00	1335	146

Warrant 1 is met when:

Either Condition A or Condition B are met at the 100% level.

Both Conditions A and B are met at the 80% level.

Either Condition A or Condition B are met at the 70% level where Rural community ($<10,000$ and isolated) or Major Street Approach is ≥ 40 mph.

Both Condition A and Condition B are met at the 56% level where Rural community ($<10,000$ and isolated) or Major Street Approach is ≥ 40 mph.

Is Warrant 1 met?

Yes

Yes

Yes

Yes



FUSS & O'NEILL, INC.
1550 Main St
Springfield, MA 01108

Prep. By:

Date:

Chk. by:

Date:

Project No:

AJK

7/23/2019

20170044_A70

Traffic Signal Warrants

Sheet No:

Rte 119/Great Rd & Beaver Brook Rd in Littleton, MA

2 of 3

WARRANT 2 - Four- Hour Vehicular Volume

Number of lanes on each approach

Major Street	Minor Street
1	1
2 or more	1
2 or more	2 or more
1	2 or more

Highest Hours	Above Fig 4C-1?	Above Fig 4C-2?	Hour	Major (both app.)	Minor (higher app.)
1st	Yes	Yes	16:00	1694	220
2nd	Yes	Yes	17:00	1656	270
3rd	Yes	Yes	7:00	1631	205
4th	Yes	Yes	15:00	1539	164

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

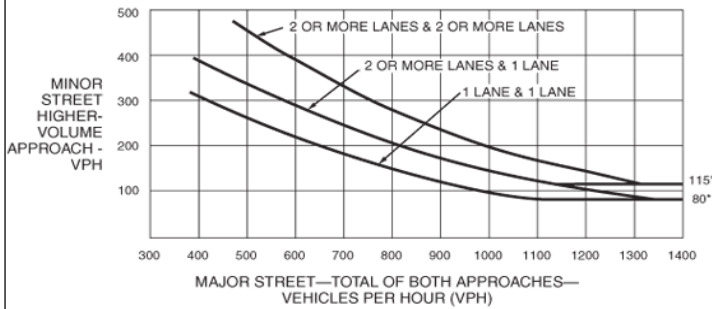
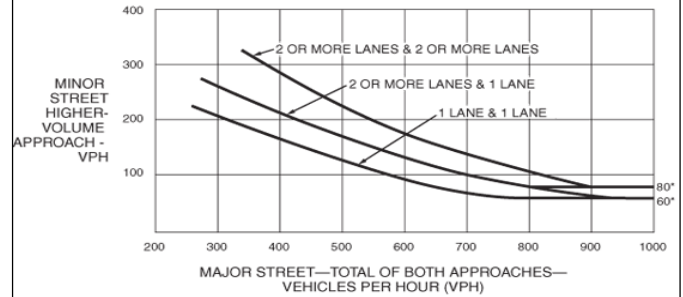


Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



Warrant 2 is met when:

At least four hours plot above the appropriate decision curve in Figure 4C-1

At least four hours plot above the appropriate decision curve in Figure 4C-2 where Rural community (<10,000 and isolated) or Major Street Approach is >=40mph.

Is Warrant 2 met?

Yes

Yes



FUSS & O'NEILL, INC.
1550 Main St
Springfield, MA 01108

Prep. By:

Date:

Chk. by:

Date:

Project No:

AJK

7/23/2019

20170044_A70

Traffic Signal Warrants

Sheet No:

Rte 119/Great Rd & Beaver Brook Rd in Littleton, MA

3 of 3

WARRANT 3 - Peak Hour

Warrant 3A Peak Hour Volume

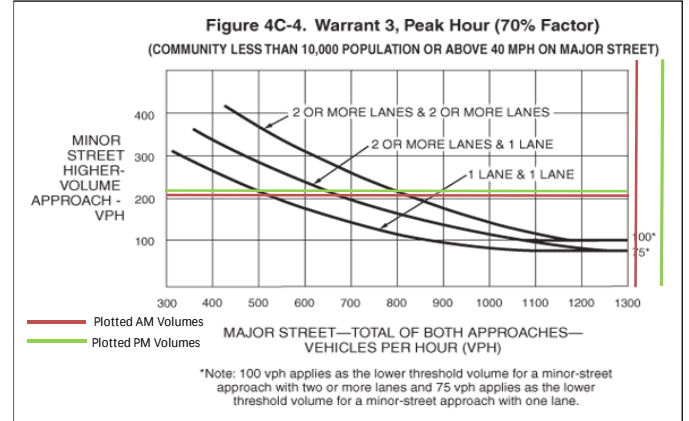
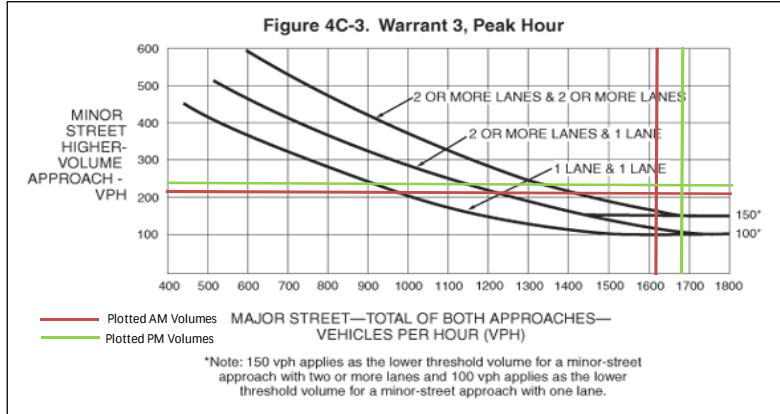
Does at least one hour plot above the appropriate decision curve in Figure 4C-3?

Yes

PKHR	Hour	Major (both app.)	Minor (higher app.)
AM	7:00	1631	205
PM	16:00	1694	220

Does at least one hour plot above the appropriate decision curve in Figure 4C-3 where Rural community (<10,000 and isolated) or Major Street Approach is ≥ 40 mph?

Yes



OR

Warrant 3B Peak Hour Volume Delay

Are all three SATISFIED?

YES

The total delay experienced by traffic on a side street controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; and

The volume on the side-street approaches equals or exceeds 100 vph for a one-lane approach or 150 vph for a two lane approach; and

The total entering volume serviced during this hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

SATISFIED	
YES	NO
X	
X	
X	

Attachment 5
Alternative Concept Renderings



CONCEPT - ROUNDABOUT



CONCEPT - SIGNAL