



2016-2017 PRELIMINARY EVALUATION REPORT

Town-Wide Traffic Counting Program Watertown, MA



DRAFT

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Prepared for:

**Town of Watertown
Department of Public Works
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1.0 Introduction

WorldTech Engineering, LLC (WorldTech) was retained by the Town of Watertown to conduct a Town-wide traffic counting program. This project includes collection of Automatic Traffic Recorder (ATRs) and manual turning movement counts (TMCs) at various locations throughout Town. Locations were identified through a collaborative process with the Department of Public Works and the Town Council Public Works Subcommittee. ATRs were collected for a seven-day period and include speed and vehicle classification. TMCs were collected during weekday peak periods (7:00 to 9:00 a.m., 4:00 to 6:00 p.m.) and include pedestrian and bicycle volumes. Data collection locations are as follows:

Automatic Traffic Recorder Counts

- Belmont Street west of Pierce Road
- Main Street east of Lexington Street
- Lexington Street north of Main Street
- Pleasant Street east of Howard Street
- Howard Street north of Pleasant Street
- Waverley Avenue south of Fayette Street
- Irving Street north of Arsenal Street
- Arsenal Street west of Beacon Park
- Common Street north of Bellevue Road
- Common Street south of Spring Street
- Mount Auburn Street east of Common Street
- School Street north of Mount Auburn Street
- Mount Auburn Street east of Lloyd Road
- Arlington Street south of Belmont Street
- Grove Street north of Coolidge Avenue
- Mount Auburn Street east of Arlington Street
- Galen Street south of Aldrich Road
- Arsenal Street west of Elm Street

Manual Turning Movement Counts

- Belmont Street at Lexington Street
- Main Street at Waverley Avenue & Myrtle Street
- Common Street at Orchard Street & Church Street
- Mount Auburn Street at School Street
- Mount Auburn Street at Arlington Street
- Arsenal Street at School Street
- Arsenal Street at Arlington Street & Coolidge Avenue
- Pleasant Street at Bridge Street



Counts are being conducted on a quarterly basis, beginning in Summer 2016. Traffic counts were incorporated into a Microsoft Access database which was used to analyze the data. Differences in volumes from quarter to quarter were used to determine seasonal variations for each count station. Ultimately, data points from future years will be used to determine trends in traffic volume growth throughout the Town of Watertown.

In addition, historic counts as published in previous studies provided by the Department of Public Works and Department of Community Development and Planning, obtained by WorldTech for other projects in the Town of Watertown, or available from MassDOT were also incorporated into the database to further identify traffic volume trends in the Town of Watertown.



2.0 Summer 2016-Spring 2017 Traffic Volumes

2.1 Average Weekday Traffic (AWT) Volumes by Quarter

The following section summarizes the Average Daily Traffic (AWT) volume for the four quarters beginning Summer 2016 for the 18 ATR count locations. AWT volume was determined by averaging the total two-way traffic volume collected on the Tuesday, Wednesday, and Thursday of data collection for each quarter. Mondays and Fridays typically have variations from typical traffic patterns and are omitted from the AWT calculation. The AWT traffic for each ATR location is summarized in Table 1.

Table 1 – Average Weekday Traffic (AWT) Volume, Summer 2016 through Spring 2017

LOCATION	FUNCTIONAL CLASS	SUMMER 2016 ^a	FALL 2016 ^b	WINTER 2017 ^c	SPRING 2017 ^d
Belmont Street west of Pierce Road	Minor	13,600	14,273	15,823	14,800
Main Street east of Lexington Street	Principal	16,262	16,170	14,129	16,076
Lexington Street north of Main Street	Collector	6,485	5,659	6,459	6,768
Pleasant Street east of Howard Street	Collector	10,751	11,337	10,627	11,679
Howard Street north of Pleasant Street	Collector	2,832	2,700	2,512	2,830
Waverley Avenue south of Fayette Street	Collector	9,947	11,308	10,249	11,164
Common Street north of Bellevue Road	Minor	8,887	11,176	10,260	11,415
Common Street south of Spring Street	Minor	11,152	11,510	10,419	11,846
Mt. Auburn Street east of Common Street	Principal	18,221	18,451	16,502	18,517
Mt. Auburn Street west of Irma Avenue	Principal	15,322	15,624	14,676	16,937
Mt. Auburn Street east of Arlington Street	Principal	14,112	14,205	14,037	14,886
School Street north of Mt. Auburn Street	Collector	7,679	7,966	7,800	8,845
Arlington Street south of Belmont Street	Collector	8,903	9,298	9,253	10,490 ^e
Grove Street north of Coolidge Avenue	Local	9,828	10,778	10,880	11,372
Irving Street north of Arsenal Street	Local	6,387	7,462	6,428	6,719
Arsenal Street west of Beacon Park	Minor	13,363	14,529	13,629	14,957
Arsenal Street west of Elm Street	Minor	15,558	15,150	13,985	15,242
Galen Street south of Aldrich Road	Principal	22,511	22,527	22,552	23,953

Source: Automatic Traffic Recorder (ATR) counts conducted by Boston Traffic Data

^aSummer 2016 counts collected July 30-August 15, 2016

^bFall 2016 counts collected October 22-November 6, 2016

^cWinter 2016-17 counts collected February 26-March 10, 2017

^dSpring 2017 counts collected May 11-26, 2017

^eBased on one day of data collected May 25, 2017

Based on the AWT volumes obtained throughout the year, an Average Annual Weekday Traffic (AAWT) Volume was calculated. Using the ratio of the quarterly AWT to the AAWT volume, seasonal variation factors were calculated for each count location. Table 2 summarizes the AAWT and seasonal variation factors for the 18 ATR count locations collected in 2016 and 2017.



Table 2 – Average Annual Weekday Traffic (AAWT) Volume and Seasonal Variation, Summer 2016 through Spring 2017

LOCATION	AAWT	SUMMER 2016	FALL 2016	WINTER 2017	SPRING 2017
Belmont Street west of Pierce Road	14,624	0.93	0.98	1.08	1.01
Main Street east of Lexington Street	15,659	1.04	1.03	0.90	1.03
Lexington Street north of Main Street	6,343	1.02	0.89	1.02	1.07
Pleasant Street east of Howard Street	11,099	0.97	1.02	0.96	1.05
Howard Street north of Pleasant Street	2,719	1.04	0.99	0.92	1.04
Waverley Avenue south of Fayette Street	10,667	0.93	1.06	0.96	1.05
Common Street north of Bellevue Road	10,435	0.85	1.07	0.98	1.09
Common Street south of Spring Street	11,232	0.99	1.02	0.93	1.05
Mt. Auburn Street east of Common Street	17,923	1.02	1.03	0.92	1.03
Mt. Auburn Street west of Irma Avenue	15,640	0.98	1.00	0.94	1.08
Mt. Auburn Street east of Arlington Street	14,310	0.99	0.99	0.98	1.04
School Street north of Mt. Auburn Street	8,073	0.95	0.99	0.97	1.10
Arlington Street south of Belmont Street	9,486	0.94	0.98	0.98	1.11
Grove Street north of Coolidge Avenue	10,715	0.92	1.01	1.02	1.06
Irving Street north of Arsenal Street	6,749	0.95	1.11	0.95	1.00
Arsenal Street west of Beacon Park	14,120	0.95	1.03	0.97	1.06
Arsenal Street west of Elm Street	14,984	1.04	1.01	0.93	1.02
Galen Street south of Aldrich Road	22,886	0.98	0.98	0.99	1.05
Overall		0.97	1.01	0.97	1.05

As shown in Table 2, overall traffic volumes during the Spring were found to be approximately 5 percent higher than annual average traffic volumes. Volumes were approximately 1 percent greater than the annual average in the Fall, and approximately 3 percent lower than the annual average in the Summer and Winter.

Accordingly, each roadway studied experienced the highest traffic volume in the Spring with the exception of Belmont Street west of Pierce Road, which carried the greatest volume of traffic in the Winter (8 percent above the AAWT).

2.2 Holiday Shopping Traffic

To identify variations in traffic volumes during the peak holiday shopping season, additional ATR counts were collected along Arsenal Street, Galen Street, and Pleasant Street the week following Thanksgiving. Table 3 shows the Fall 2016 average weekday and Saturday daily traffic volumes collected along these roadways between October 25 and November 5, 2016 compared with weekday and Saturday traffic volumes collected December 3, 2016.



Table 3 – Average Weekday and Saturday Daily Traffic Volume, Fall 2016 & Holiday Shopping 2016

LOCATION	FALL	HOLIDAY	WEEKDAY VARIATION	FALL	HOLIDAY	SATURDAY VARIATION
	2016 WEEKDAY	SHOPPING WEEKDAY ^a		2016 SATURDAY	SHOPPING SATURDAY ^a	
Pleasant Street east of Howard Street	11,337	11,200	-1.2%	5,132	10,101	+96.8%
Arsenal Street west of Beacon Park	14,529	14,248	-1.9%	13,681	14,153	+3.5%
Arsenal Street west of Elm Street	15,150	13,000	-14.2%	13,476	11,841	-12.1%
Galen Street south of Aldrich Road	22,527	22,423	-0.5%	21,803	22,277	+2.2%

Source: Automatic Traffic Recorder (ATR) counts conducted by Boston Traffic Data

^aHoliday shopping counts collected November 29-December 3, 2016

As shown in Table 4, average weekday volumes following Thanksgiving were approximately 14 percent lower along Arsenal Street east of the malls compared with weekday traffic earlier in the fall. Other weekday traffic volumes remained relatively unchanged. On Saturday, Arsenal Street west of Beacon Park and Galen Street south of Aldrich Road experienced marginal increases in traffic volume over a typical fall Saturday. Pleasant Street, however, carried almost twice as much traffic during the post-Thanksgiving week as it did earlier in the fall. Similar to the average weekday traffic volume, Arsenal Street east of the malls experienced a similar decrease in volume on Saturday compared with the Saturday daily traffic earlier in the fall.



3.0 Conclusion and Next Steps

This report summarizes daily traffic volumes and seasonal variation based on traffic counts collected from Summer 2016 through Spring 2017. The final Preliminary Evaluation Report for the 2016-2017 counting season will include additional information on daily variation, peak hour volumes, vehicle speeds, and truck traffic. In addition, comparison with historical traffic data will be provided where available.

Following the completion of data collection in Winter 2017, seasonal variations will be revised to reflect the annual average traffic volumes for calendar year 2017.