Transportation
Land Development
Environmental
Services

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Memorandum

To: Transportation Advisory Committee
Town of Arlington
Department of Public Works
730 Massachusetts Avenue
Arlington, Massachusetts 02476

Date: May 20, 2005

Project No.: 09145.00

From: Donald J. Cooke, P.E., P.T.O.E.
Joseph G. Quitter

Re: Traffic Justification Memorandum
Massachusetts Avenue Improvements
Arlington, Massachusetts

INTRODUCTION

Vanasse Hangen Brustlin, Inc. (VHB) has completed a preliminary review, evaluation and recommendations of improvements of the current transportation trends in terms of vehicular, pedestrian, bicyclist traffic, parking, and transit conditions along Massachusetts Avenue (Route 2A), between Mill Street and Alewife Brook Parkway in Arlington, Massachusetts. This effort is in support of the Town's desire to pursue State and/or Federal funding for implementation of needed transportation improvements along the corridor.

To facilitate our review and evaluation, VHB compiled existing traffic data and associated information including previously completed designs and studies, from the Town of Arlington, and recent crash data from the Massachusetts Highway Department (MassHighway). As part of the corridor study, VHB has recommended modifications to the current roadway cross section and traffic controls that are intended to improve the safety and mobility of the area users. This memorandum documents the results of an initial capacity and safety analysis along the corridor, and a review of the current roadway cross sectional elements, and identifies conceptual-level improvements for consideration, the anticipated construction cost of these measures.

EXISTING AND FUTURE CONDITIONS

Study Area

Massachusetts Avenue is the main east-west thoroughfare in the Town of Arlington, with a functional classification of Urban Principal Arterial. For this study, the transportation trends along the Massachusetts Avenue corridor were analyzed between Mill Street (near Arlington Center) and Alewife Brook Parkway (at the Cambridge border), approximately 1.6 miles.

Within the project limits, Massachusetts Avenue is approximately 65 feet (+/-) wide, with the exception at Lake Street between Oxford Street and Windsor Street where the corridor widens to 80 feet (+/-). There are typically two travel lanes in each direction with parallel parking on both sides of roadway, although in many areas lane definition is poor.

Sidewalks of varying width are provided along both sides of Massachusetts Avenue throughout the study area. Crosswalks are provided at all signalized intersections, at several unsignalized intersections, and at selected mid-block locations.

There are 45 intersecting streets along Massachusetts Avenue within the study limits. Of the total amount, six of the intersections are signalized (the Massachusetts Avenue intersection with Mill Street, Pleasant Street, Medford Street, Franklin Street, Lake Street, Thorndike Street, and Alewife Brook Parkway), 5 intersecting roadways are either used as a commuter cut through, or have been identified by the Town as trouble spots (Water Street, Tufts Street, Bates Road, Orvis Road, and Winter Street), and the balance of the roadways are entrances to residential neighborhood, that are local streets that are not used for cut through traffic at peak times of the day. For the purposes of this safety and capacity evaluation, the local street intersections were not analyzed for vehicular improvements.

Traffic Volumes

The Town of Arlington has provided information regarding traffic volumes for roadway segments and at specific intersections in the form of previous traffic studies along the Massachusetts Avenue corridor. A majority of this information was collected from previously conducted Massachusetts Avenue corridor studies dated December 11, 2001 and November 2002.

Although the traffic volumes were counted four years ago, this data can be considered current for the purposes of this preliminary study since the relatively stagnant economy and population growth over the last several years has resulted in negligible increases and, in some cases, decreases of traffic volumes throughout the region. Therefore, any growing of the traffic volumes data to develop present-day data would be overly conservative and was not completed. As project development continues, complete peak hour and daily traffic volumes should be collected for the entire corridor.

Based on the information included in previous studies and the accepted standard set by MassHighway for projecting traffic in this area, an annual growth rate of 1.0 percent (approximately 10.5 percent compounded over 10 years) was applied to the 2005 Existing volumes to develop the 2015 Future volumes. A summary of these traffic volumes is shown in Table 1.

Table 1
Roadway Segment Traffic Volume Summary

Massachusetts Avenue:	Period	Directional Distribution [a]	2005 Existing Volumes [b]		2015 Future Volumes [c]	
			Eastbound	Westbound	Eastbound	Westbound
From Pleasant St to Medford St/ Broadway St	Weekday Morning	51% WB	1,113	1,137	1,229	1,256
	Weekday Evening	53% EB	1,239	1,093	1,369	1,207
From Medford St / Broadway St to Linwood St	Weekday Morning	59% WB	887	1,303	980	1,439
	Weekday Evening	53% EB	967	856	1,068	946
From Linwood St to Lake St	Weekday Morning	63% EB	1,116	654	1,233	722
	Weekday Evening	53% EB	981	872	1,084	963
From Lake St to Thorndike St	Weekday Morning	57% EB	967	726	1,068	802
	Weekday Evening	51% WB	857	902	947	996
From Thorndike St to Alewife Brook Pkwy	Weekday Morning	60% EB	919	616	1,015	680
	Weekday Evening	54% WB	715	847	790	936

Source: Based on data from Massachusetts Avenue corridor studies conducted by the Louis Berger Group, Inc. dated December 11, 2001 and November 2002.

a directional distribution of peak period traffic

b peak period traffic volume, expressed in vehicles per hour

c 2005 volumes grown by 1.0 percent for ten years

EB = Eastbound; WB = Westbound

As shown in Table 1, approximately 1,560 to 2,330 vehicles per hour travel along Massachusetts Avenue during the weekday peak hours. The morning directional split is as high as 63% eastbound indicating the commuting nature of the AM peak hour. The directional split is relatively even during the evening peak hour, ranging from 53 percent eastbound to 54 percent westbound along the corridor. This indicates that Massachusetts Avenue within the study area, while used by

commuters, is not exclusively a commuter route during the evening peak period.

According to recent traffic data collected at MassHighway permanent count station 4935, approximately 19,700 vehicles travel along Massachusetts Avenue south of Avon Place during the average day. This means approximately 10 percent of daily traffic travels along this segment of Massachusetts Avenue during the peak hours. The traffic count data compiled is contained in the Appendix.

It should also be noted that the traffic volumes traveling east bound on Massachusetts Ave drop 21% during the evening peak, and 20% during the morning peak period through the intersection of Mass Ave and Medford Street/Broadway. This is due to the high volume of traffic traveling along Broadway as an alternate route to Alewife Brook Parkway, and beyond.

Plans number 1 through 4 (out of 4) included herein present the morning (AM) and evening (PM) peak hour turning movement volumes at major corridor intersections for which data was available.

Vehicular Crash Summary

To identify potential vehicle crash trends in the project study area, vehicular crash data for intersections within the study area was obtained from MassHighway for the years 2000 through 2002, the most recent three-year history available and the Arlington Police Department from 2002 to 2005.

MassHighway Vehicle Crash History

A summary of the MassHighway vehicle crash history is presented in Table 2. The following intersections are above the MassHighway District 4 crash rate of 0.87 crashes per million entering vehicles (mev) for signalized intersections:

- Massachusetts Avenue at Mystic Street and Pleasant Street (1.12)
- Massachusetts Avenue at Alewife Brook Parkway (1.15)

As shown in Table 2, based on MassHighway crash data, the signalized intersections at Mystic Street/Pleasant Street and at Alewife Brook Parkway experienced 44 and 55 crashes over a three-year period. A high percentage (55 and 36 percent, respectively) of these crashes were rear end-type collisions, occurring during the typical work week during daylight hours, and on dry pavement, indicating that weather is not likely a contributing factor. Furthermore, a significant percentage of the crashes at the locations (34 and 22 percent, respectively) involved personal injuries. For these signalized intersections, the probable causes for rear-end collisions could include excessive speed and inadequate signal visibility and/or timing for the specific volume conditions[1].

The signalized intersections at Alewife Brook Parkway, Mill Street/Jason Street and at Lake Street also experienced a high percentage (40, 62 and 63 percent, respectively) of angle-type incidences. For these intersections, the probable causes for angle collisions include a large number of turning vehicles, excessive speed, and inadequate signal phasing and/or timing for the specific volume conditions.

The number of crashes at the unsignalized intersections that were part of this evaluation was relatively low. In most cases, the majority of these crashes were angle-type collisions, occurring during the typical workweek and on dry pavement, indicating weather is not a likely contributing factor. Furthermore, a significant percentage of the crashes at Bates Road and at Grafton

[1] Highway Safety Engineering Studies Procedural Guide; United States Department of Transportation (USDOT); Washington, DC; June 1981.

Street/Orvis Street (50 and 63 percent, respectively) involved personal injuries. Probable causes for this type of crash include a high approach speed and high volume approaches to this intersection.

There were 56 accidents that occur within the study corridor at the local street intersections with Mass Ave. In addition, there were 52 accidents along the corridor within the study area, and away from any intersecting streets. The data also identified 86 accidents along the entire length of Mass Ave that did not have a land mark identified. The types of accidents that were along the corridor were similar to those documented at the intersections: angle-type collisions, occurring during the typical workweek and on dry pavement, indicating weather is not a likely contributing factor. The raw data, and summary of these intersections are included in the appendix.

It should be noted that, based on MassHighway crash data, a statistically large percentage (88 percent) of the crashes that occurred during this three-year period happened during the first two years (2000 and 2001). Possibilities for this anomaly include fewer *reported* crashes as a result of changes to law enforcement/insurance reporting policies, recent roadway or intersection improvements, and/or, unfortunately, unreliable data for 2002.

Arlington Police Department Vehicle Crash History

In order to review crash history that involved pedestrians and bicyclists long the Massachusetts Avenue corridor, accident data was also collected from the Arlington Police Department from 2002 to 2005. As shown on the summary table and the raw data in the appendix, there were 66 crashes that occur on the corridor that involved either pedestrians or bicyclists. The accident data collected indicated that the accidents occurred at various locations along Mass Ave, during mostly dry conditions during daylight hours.

Massachusetts Avenue Improvement Project
Arlington, MA
Vehicle and Pedestrian/Bicycle Accidents 2002 - 2005
data from the Arlington Police Department

Arlington	1/1/2000	12/31/2002					
Crash_Date	Crash_Time	Crash_Type	Road_Surface	Lighting	Weather	Street	Intersection
1/12/2002	10:00:00 AM	Pedestrian	DRY	DAYLIGHT	CLOUDY	MASS AVE	
1/29/2002	5:12:00 PM	Bicyclist	DRY	Dark(Road Lit)	CLEAR	MASS AVE	swan
5/20/2002	12:30:00 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	MILL ST
5/22/2002	7:45:00 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	MILL ST
5/24/2002	4:54:00 PM	Pedestrian	DRY	Daylight	CLOUDY	MASS AVE	
6/3/2002	6:17:00 PM	Bicyclist	DRY	Daylight	CLEAR	MASS AVE	
7/1/2002	4:10:00 PM	Bicyclist	DRY	Daylight	CLEAR	MASS AVE	
7/10/2002	5:10 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	quin
7/11/2002	10:15 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
7/12/2002	6:00 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
9/5/2002	10:55 AM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
9/24/2002	8:46 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
11/13/2002	3:27 PM	Pedestrian	wet	DAYLIGHT	rain	MASS AVE	
12/11/2002	11:45 AM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
3/2/2003	6:35 PM	Pedestrian	wet	Dark(Road Lit)	CLOUDY	MASS AVE	
3/12/2003	3:17 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
4/29/2003	5:57 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	park
5/9/2003	3:46 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	school
5/10/2003	10:20 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	melr
5/3/2003	7:28 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
9/22/2003	8:30 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
12/4/2003	5:06 PM	Pedestrian	DRY	Dark(Road Lit)	CLEAR	MASS AVE	
12/24/2003	5:45 PM	Pedestrian	wet	Dark(Road Lit)	rain	MASS AVE	MILL ST
2/28/2003	1:30 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
6/18/2004	11:33 AM	Pedestrian	wet	DAYLIGHT	rain	MASS AVE	
7/1/2004	11:33 AM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
7/17/2004	12:50 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
8/13/2004	4:10 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	mara
9/1/2004	9:14 AM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
9/26/2004	4:30 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
10/4/2004	8:00 AM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
10/7/2004	8:55 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	
10/20/2004	6:10 PM	Bicyclist	DRY	Dark(Road Lit)	CLEAR	MASS AVE	
11/1/2004	6:00 PM	Pedestrian	DRY	Dark(Road Lit)	CLEAR	MASS AVE	
12/28/2004	1:22 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
1/10/2005	1:50 PM	Pedestrian	wet	DAYLIGHT	CLEAR	MASS AVE	mara
1/11/2005	7:06 PM	Pedestrian	wet	Dark(Road Lit)	CLEAR	MASS AVE	milt
2/20/2005	2:15 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	park
3/30/2005	3:30 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	
4/1/2005	3:30 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	water
4/7/2005	4:00 PM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	melr
4/20/2005	10:13 PM	Pedestrian	DRY	Dark(Road Lit)	CLOUDY	MASS AVE	
4/21/2005	11:00 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	plea
6/7/2005	9:45 AM	Bicyclist	DRY	DAYLIGHT	CLEAR	MASS AVE	meno
6/7/2005	3:12 PM	Pedestrian	DRY	DAYLIGHT	CLEAR	MASS AVE	

Source: Arlington Police Department

TRAFFIC OPERATIONS ANALYSIS

Level-of-Service Criteria

Level-of-service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure of the effect of a number of factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. Level-of-service provides an index to the operational qualities of a roadway segment or an intersection. Level-of-service designations range from A to F, with LOS "A" representing the best operating conditions and LOS F representing the worst operating conditions. For urban areas such as the Massachusetts Avenue corridor, LOS "D" or better are generally considered acceptable levels of service.

Level of Service Analysis

For an urban arterial such as Massachusetts Avenue, overall corridor capacity is defined and restricted by the major (signalized) intersections along its length. While the number of travel lanes in each direction (i.e., one or two) plays a role, the proximity of signalized intersections governs and travel lanes provided are more related to properly processing traffic demand at the signalized locations (i.e., approach and departure lane configurations). Therefore, to fully evaluate and establish corridor capacity and operating conditions, VHB preliminarily analyzed the capacity provided at key intersections.

To establish existing conditions, VHB conducted capacity analyses using the critical lane volume (CLV) method to determine the traffic capacity at six key study area signalized intersections during the weekday morning and evening peak hours using the 2005 existing, and 2015 future volumes. The future 2015 LOS is presented for the No-Build, or no improvement case. There are a total of eight (8) signalized intersections within the section of Massachusetts Avenue studied; however, traffic volumes were not available for the intersections at Mill Street.

Table 3 presents a summary of the capacity analyses for the six key study area intersections in the absence of any improvements. The capacity analyses worksheets are included in the Appendix.

Table 3
Intersection Capacity Analyses Summary

Location	Period	2005 Existing Volumes CLV [a]	2005 Existing Volumes LOS [b]	2015 Future Volumes [c] CLV	2015 Future Volumes [c] LOS
Massachusetts Avenue at Pleasant Street (Route 60)	Weekday Morning	1,353	E	1,495	F
	Weekday Evening	1,362	E	1,503	F
Massachusetts Avenue at Medford Street	Weekday Morning	878	B	970	B
	Weekday Evening	833	A	921	B
Massachusetts Avenue at Linwood St/Foster St	Weekday Morning	506	A	556	A
	Weekday Evening	528	A	581	A
Massachusetts Avenue at Lake Street	Weekday Morning	1,205	D	1,345	E
	Weekday Evening	1,112	C	1,243	E
Massachusetts Avenue at Thorndike St/Teel St	Weekday Morning	476	A	526	A
	Weekday Evening	466	A	514	A
Massachusetts Avenue at Alewife Brook Pkwy	Weekday Morning	1,388	F	1,422	F
	Weekday Evening	1,423	F	1,572	F

a critical lane value
b level of service
c No-Build (i.e., no improvement) condition

The analysis indicates that the intersections at Pleasant Street and at Alewife Brook Parkway currently operate at unacceptable levels of service (LOS "F") during both peak hours. Furthermore, it is anticipated that the Lake Street intersection will operate at LOS E or worse in the future if no improvements are in place. The other intersections analyzed operate at LOS B or better and are expected to operate at LOS C or better in 2015.

RECOMMENDED IMPROVEMENTS

Based on field observations, traffic volume research, vehicular crash analysis and intersection capacity analysis, VHB identified and evaluated possible opportunities for improvements intended to enhance the safety and mobility for all corridor users. It is envisioned that the recommendations from this study will be further evaluated, refined and detailed through design via the work of the Transportation Advisory Committee (TAC).

The following highlights the major opportunity areas for continued discussion and evaluation:

- Overall corridor cross section and cross sectional elements
- Bicycle accommodation
- Pedestrian accommodation
- Traffic signal safety and operations
- Overall corridor safety
- Aesthetic and urban design enhancements

VHB reviewed the corridor as a whole, and at specific locations to identify possible areas for modification and improvement. The existing and projected future poor operating conditions and safety history (see Tables 2 and 3) at the intersections of Pleasant Street, Lake Street and Alewife Brook Parkway lead to the conclusion that major changes which could limit capacity are not preferable at these locations. Any proposed improvements at these locations need to include the potential for enhancing both capacity and safety. However, significant capacity enhancements (i.e., major widening) are unlikely due to the constraints associated with current cross sectional elements. Improvements at these locations will most likely be implemented within the existing curb-to-curb roadway width and be limited to traffic signal (timing and phasing) modifications in an attempt to optimize operations and safety. A detailed review of signal sequence, timing and equipment can be

completed at these locations during further project development in an attempt to identify recommended traffic control upgrades.

The most significant opportunity identified for proposed change to the corridor is the potential reduction of the cross-section from four lanes to two lanes (one travel lane in each direction) east of the Medford Street/Broadway intersection, narrowing Massachusetts Avenue vehicular travel way from Franklin Street to Grafton Street (approximately one-half mile). This reduction in cross section would need to be expanded to accommodate current and future traffic demand at Lake Street, but then narrowed again to the east, between Marathon and Lafayette Streets (approximately 1750 feet). Massachusetts Avenue would be expanded, east of Lafayette Street, to accommodate the traffic demand at the Alewife Brook Parkway intersection (Refer to Sheets 1 through 4 attached). The potential reduction to a two-lane cross-section along these portions of Massachusetts Avenue is possible due to the significant amount (approximately 20 percent) of traffic turning to/from Broadway. The resulting lower corridor traffic volumes, thus a reduction of roadway capacity within these sections allow consideration of a reduced cross sectional width for the vehicular travel way that could be utilized for other modes of transportation (either bicycle or pedestrian), or improved streetscape along the corridor.

The detailed design of the reduced travel way cross section will need to consider the need to allow for traffic making left turns from Massachusetts Avenue to adjacent roadways, residents and businesses. The vehicular travel lanes must be a minimum of 16 feet for through traffic and emergency vehicles to pass around a stopped vehicle on Massachusetts Ave. Although the lane width will be designed with a wider cross section than typical (16 feet verses 12 feet), the overall pavement width will be reduced, thus making the pedestrian passage across Mass Ave shorter, improving pedestrian mobility and safety.

The conceptual improvements plans provided herein (plans 1 through 4) detail the potential reallocation of the roadway width gained in the reduced cross sectional areas east of Medford Street/Broadway, detailed above. For example, the possible introduction of a 4-5 foot bicycle lane. This lane, in conjunction with better bike accommodation at traffic signals (i.e., bicycle detection) and enhanced signage throughout the corridor offers an opportunity to provide a more inviting and safe environment for bicycle traffic.

The additional space gained by reducing the Massachusetts Avenue cross section in selected areas could be utilized in any number of ways besides (or in combination with) bicycle enhancements, including wider sidewalks, center medians, planting strips, etc. The benefits and costs of these options can be further evaluated during future project development. In any event, the re-evaluation of the Massachusetts Avenue corridor cross section affords an opportunity to better define the existing lane definition, which in many areas is currently poor, with extended sections of wide, undefined pavement provided.

A re-evaluation of the corridor also provides an opportunity to enhance the overall pedestrian environment. As part of project development, the current location of all pedestrian crosswalks will be evaluated to determine the most appropriate locations. Highlighted crosswalk markings and signage, use of alternate crosswalk materials, improved street lighting in crossing areas, and the proper use of "neckdowns" (narrowing the roadway by extending the curb at key intersections and mid-block locations) will be considered. The conceptual improvement plans provided (Refer to Sheets 1 through 4) detail a number of potential locations for the implementation of neckdowns for enhanced pedestrian movements. These neckdown areas will be designed to improve sight lines and visibility of crossing pedestrians, shorten crossing distances, and serve as a traffic calming technique to slow traffic in areas of pedestrian activity. The neckdowns also have the added benefit of providing new space to be considered for possible aesthetic enhancements.

During future project development a complete evaluation of pedestrian phasing, signal indications and signage should also be undertaken at all signalized locations. An overall theme to these, as well

as other alternative actions, is the need to continue to consider the effects of proposed corridor modifications on vehicle, pedestrian and bicycle safety.

Tied to some of the opportunities discussed above, but also worth discussion as a stand alone topic is the upgrade and potential coordination of several traffic signal systems. This is important because the signalized intersections govern the flow of traffic along Massachusetts Avenue. In a few cases they are closely spaced, but do not facilitate acceptable traffic progression through the corridor. The upgrade and coordination of these traffic signal systems could improve the overall operation along the corridor. Existing traffic signal phasing and lane configuration also needs to be reviewed, with sensitivity towards addressing the high accident experience at many of these locations.

All proposed improvements and modifications will need to consider potential impacts to on-street parking and other related business activities (i.e., loading/unloading), as well as transit stops on the corridor. The continued maintenance of an adequate level of on-street parking is critical to overall community acceptance of proposed improvements.

Table 4 presents a brief summary of the potential improvement opportunities along the corridor.

Table 4
Recommended Transportation Improvements Summary

Massachusetts Avenue:	Existing Conditions	Proposed Improvements
From Mill St to Franklin St (Arlington Center)	Two lanes per direction Several unprotected sidewalks On street parking	1. Maintain existing two lanes per direction with additional turning lanes at intersections as necessary 2. Upgrade and coordinate traffic signals 3. Provide neck-downs at unsignalized crosswalks 4. Maintain existing parking
From Franklin St to Grafton St	Two lanes per direction Several unprotected sidewalks On street parking	1. Narrow to one travel lane per direction with additional turning lanes as necessary 2. Upgrade traffic signals 3. Provide neck-downs at unsignalized crosswalks 4. Maintain existing parking 5. Create a five-foot marked bicycle lane 6. Widen existing sidewalks or provide planting strip, where possible
From Grafton St to Marathon St (Lake Street District)	Two lanes per direction Several unprotected sidewalks On street parking	1. Transition back to two lanes per direction with additional turning lanes at intersections as necessary 2. Upgrade traffic signals 3. Provide neck-downs at unsignalized crosswalks 4. Maintain existing parking 5. Continue the bicycle lane on the south side of Massachusetts Avenue only
From Marathon St to Alewife Brook Pkwy	Two lanes per direction Several unprotected sidewalks On street parking	1. Narrow to one travel lane per direction 2. Upgrade traffic signals 3. Provide neck-downs at unsignalized crosswalks 4. Maintain existing parking 5. Bicycle lane provided on both north and south side of Massachusetts Avenue

In order to assess the impact of the conceptual level improvements detailed herein and on Sheets 1 through 4 attached, VHB evaluated intersection operations. Table 5 presents a summary of the existing, and future (with and without a reduced cross section) operations at the two locations along the Massachusetts Avenue corridor affected by the proposed travel way reduction. All other locations along the corridor are not within the location of the proposed reduction.

Table 5
Intersection Capacity Analyses Summary

Location	Period	2005 Existing Volumes		2015 Future Volumes[c]		2015 Future Volumes[d]	
		CLV [a]	LOS [b]	CLV	LOS	CLV	LOS
Massachusetts Avenue at Linwood St/Foster St	Weekday Morning	506	A	556	A	1,014	C
	Weekday Evening	528	A	581	A	1,115	C
Massachusetts Avenue at Thorndike St/Teel St	Weekday Morning	463	A	526	A	1,005	C
	Weekday Evening	452	A	514	A	981	B

a critical lane value
b level of service
c No-Build (i.e., no improvement) condition
d With Improvements (i.e., reduced cross section)

As can be seen by the table, although the peak hour LOS is expected to drop at Linwood/Foster and Thorndike/Teel Streets, the anticipated future 2015 LOS is no worse than a very acceptable LOS "C". Based on this analysis, it is assumed that the cross sectional width for the sections along Massachusetts Avenue, east of Broadway (detailed above), can be reduced without significant impact to vehicle operations.

CONCLUSION

VHB has conducted an assessment of the roadway traffic capacity and safety along the 1.6 mile section of Massachusetts Avenue corridor between Mill Street and Alewife Brook Parkway. Based on this evaluation, VHB has identified several improvement opportunities to the current roadway and intersection features that are intended to enhance the safety and mobility for all area users. It is envisioned that the recommendations from this study will be evaluated and progressed through further design and construction via the work of TAC.

The order of magnitude construction cost estimate of these improvements is approximately $2,420,000. The projected costs are based on the proposed typical sections shown on the conceptual improvement plans (Sheets 1 through 4) and do not include costs associated with design, potential right-of-way acquisition, streetscape enhancements, including landscaping, permitting or police services. The conceptual improvement plan and cost estimate worksheets are provided in the Appendix.

Appendix

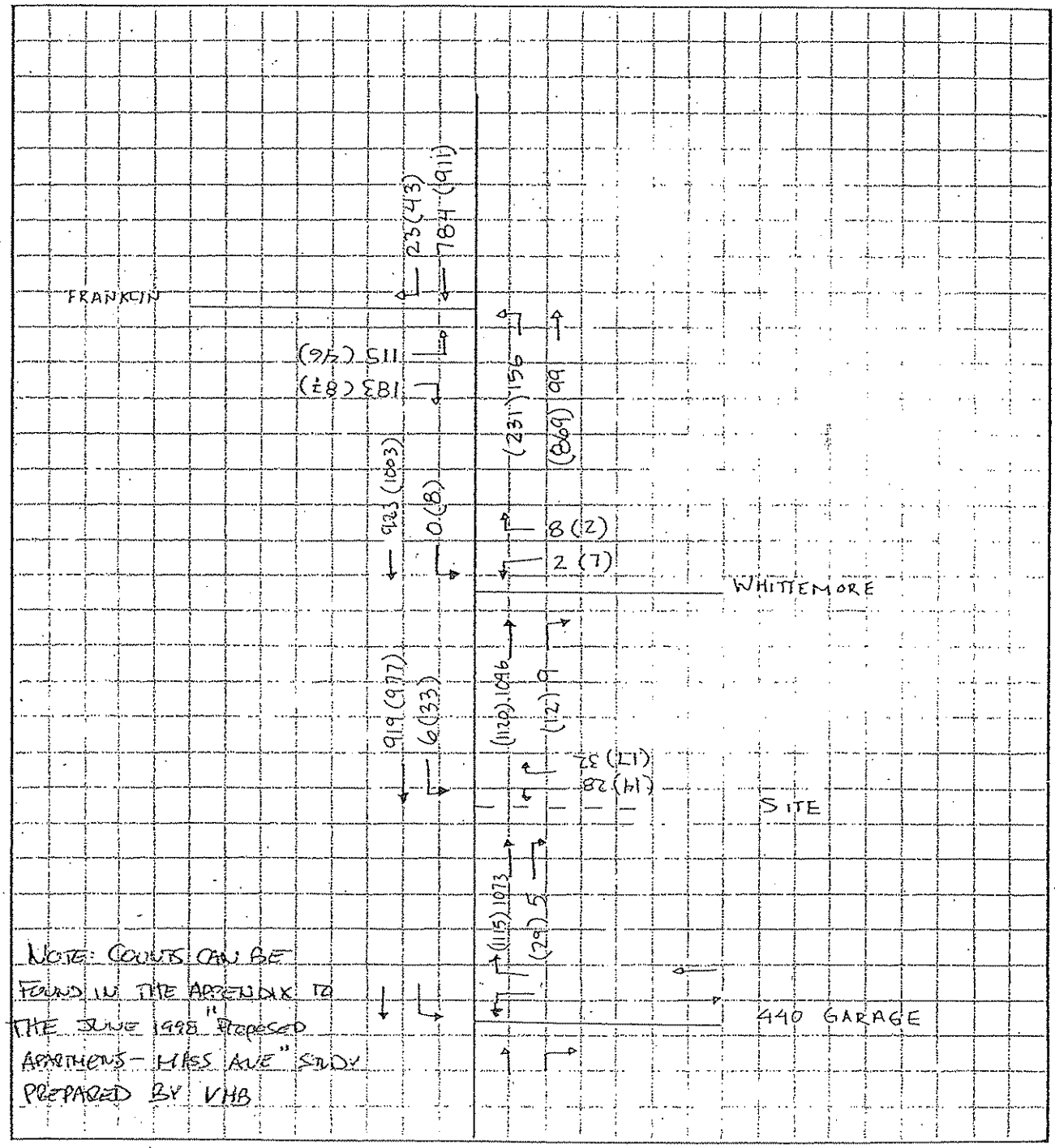
- Observed Traffic Volume Data
- Safety Information Data from Mass Highway
- Safety Information Data from Town of Arlington
- Critical Lane Volume Analysis
- Cost Estimate

Observed Traffic Volume Data

VHB

Computations

Project APARTMENTS Project # 05800
Location ARLINGTON Sheet 1 of
Calculated by EOL Date 5-21-98
Checked by Date
Title 2003 BUILD CONDITIONS



Safety Information Data from MassHighway

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 2002

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : MASSACHUSETTS AVENUE

MINOR STREET(S) : PLEASANT STREET (ROUTE 60)/MYSTIC STREET

RIN #

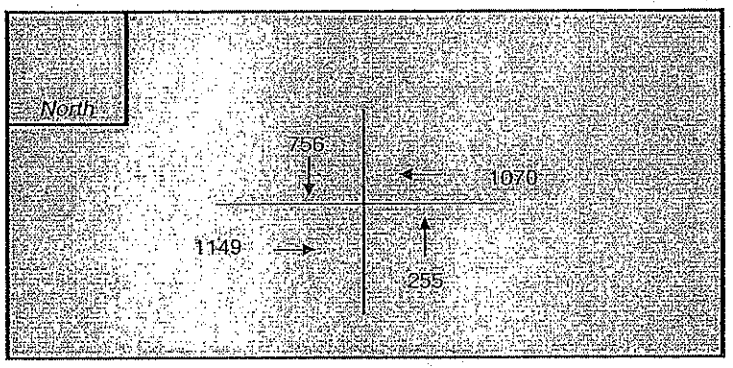
RIN #

RIN #

RIN #

RIN #

INTERSECTION DIAGRAM
(Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	255	756	1149	1070		

" K " FACTOR : 0.09 APPROACH ADT : 35888.889 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 44 # OF YEARS : 3 AVERAGE # OF ACCIDENTS (A) : 15

CRASH RATE CALCULATION : 1.12 RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): District 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 2002

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : MASSACHUSETTS AVENUE RIN #

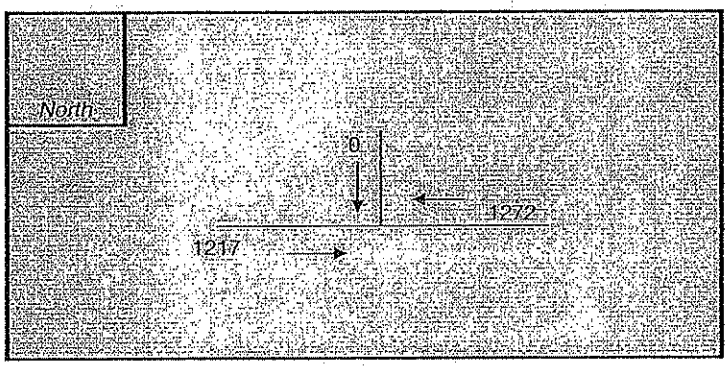
MINOR STREET(S) : MEDFORD STREET RIN #

RIN #

RIN #

RIN #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	0	0	1217	1272		

" K " FACTOR : 0.09 APPROACH ADT : 27655.556 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS :	# OF YEARS :	AVERAGE # OF ACCIDENTS (A) :
1	3	0

CRASH RATE CALCULATION : 0.03 RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): District 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 2002

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : MASSACHUSETTS AVENUE

MINOR STREET(S) : LINWOOD STREET/FOSTER STREET

RIN #

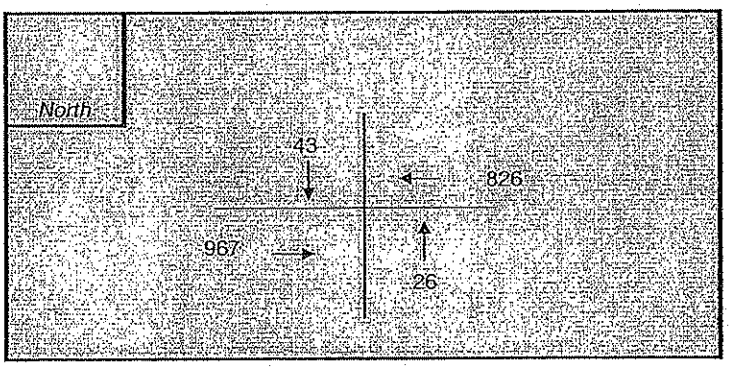
RIN #

RIN #

RIN #

RIN #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	26	43	967	826		

" K " FACTOR : 0.09 APPROACH ADT : 20688.889 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 0 # OF YEARS : 3 AVERAGE # OF ACCIDENTS (A) : 0

CRASH RATE CALCULATION : 0.00 RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): Distric 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 2002

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : MASSACHUSETTS AVENUE

MINOR STREET(S) : LAKE STREET

RIN #

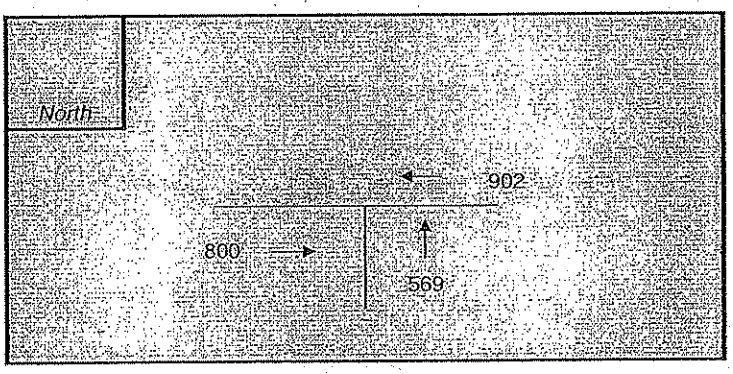
RIN #

RIN #

RIN #

RIN #

INTERSECTION DIAGRAM
(Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	569	0	800	902		

" K " FACTOR : 0.09 APPROACH ADT : 25233.333 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 16 # OF YEARS : 3 AVERAGE # OF ACCIDENTS (A) : 5

CRASH RATE CALCULATION : 0.58 RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): Distric 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 2002

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : MASSACHUSETTS AVENUE

MINOR STREET(S) : THORNDIKE STREET/TEEL STREET

RIN #

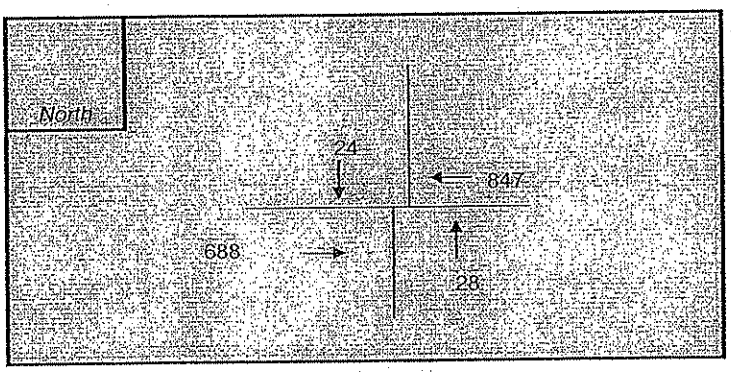
RIN #

RIN #

RIN #

RIN #

INTERSECTION DIAGRAM (Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	28	24	688	647		

"K" FACTOR : 0.09 APPROACH ADT : 17633.333 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 2 # OF YEARS : 3 AVERAGE # OF ACCIDENTS (A) : 1

CRASH RATE CALCULATION : 0.10 RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): Distric 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON | COUNT DATE : 2004

DISTRICT : 4 | UNSIGNALIZED : | SIGNALIZED : X

MHD USE ONLY

Source #

– INTERSECTION DATA –

MAJOR STREET : MASSACHUSETTS AVENUE

MINOR STREET(S) :

RIN #

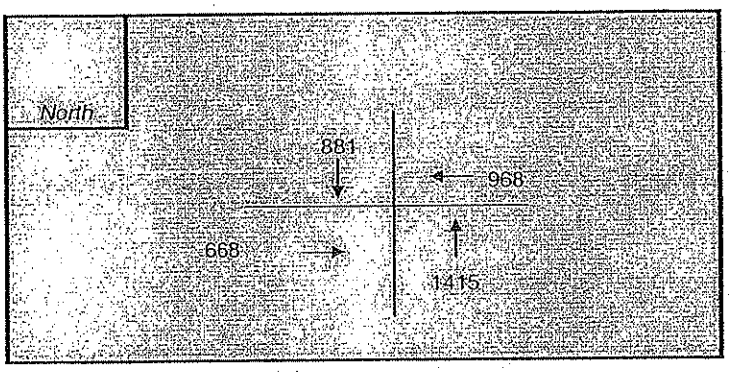
RIN #

RIN #

RIN #

RIN #

INTERSECTION DIAGRAM
(Label Approaches)



INTERSECTION REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	1415	881	668	968		

" K " FACTOR : 0.09 | APPROACH ADT : 43688.889 | ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 55 | # OF YEARS : 3 | AVERAGE # OF ACCIDENTS (A) : 18

CRASH RATE CALCULATION : 1.15 | RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): Distric 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 2003

DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : MASSACHUSETTS AVENUE

MINOR STREET(S) : FRANKLIN STREET

RIN #

RIN #

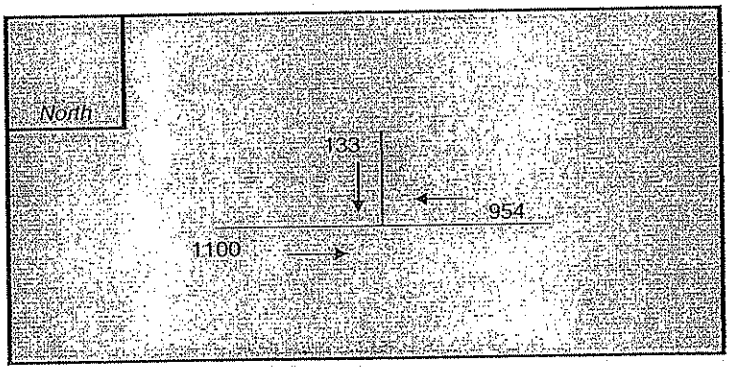
RIN #

RIN #

RIN #

INTERSECTION REF #

INTERSECTION DIAGRAM
(Label Approaches)



Peak Hour Volumes

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	0	133	1100	954		

" K " FACTOR : 0.09 APPROACH ADT : 24300 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 6 # OF YEARS : 3 AVERAGE # OF ACCIDENTS (A) : 2

CRASH RATE CALCULATION : 0.23 RATE = (A * 1,000,000) / (ADT * 365)

Source (optional): District 4 crash rate is 0.87 per mev for signalized intersections.

Comments:

Accident Date	Crash Time	Crash Type	Total Vehicles	Collision Manner	Road Surface	Lighting	Street	Intersection
1/1/2000	5:00:00 PM	Property Only	Property Only	REAREND	WET	Dark(Road Lit)	MASS AVE	PLEASANT ST
1/10/2000	4:00:00 PM	Property Only	Property Only	REAREND	WET	Dark(Road Lit)	MASS AVE	PLEASANT ST
1/12/2001	4:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	CORNER MASS AVE	COURT ST
1/12/2001	7:00:00 AM	INJURY	INJURY	ANGLE	DRY	DAYLIGHT	MASS AV	RT 60 PLEASANT ST
1/13/2000	11:00:00 AM	Hit and Run	Hit and Run	UNKNOWN	Unknown	Unknown	MASS AVE	MILTON ST
1/13/2001	1:00:00 PM	PROPERTY	PROPERTY	ANGLE	WET	DAYLIGHT	WYMAN TER	MASS AVE
1/14/2000	9:00:00 PM	Property Only	Property Only	UNKNOWN	WET	Dark(Road Lit)	LAKE ST	MASS AVE
1/14/2001	10:00:00 PM	INJURY	INJURY	ANGLE	DRY	DAYLIGHT	MASS AVE	MARATHON ST
1/14/2002	9:45:00 AM	Property damage only (none inj	Property damage only (none inj	Angle	Ice	Daylight	MILL STREET	MASSACHUSETTS AVENUE
1/17/2000	12:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	EDGERTON RD	MASS AV
1/17/2002	5:20:00 AM	Property damage only (none inj	Property damage only (none inj	Rear-end	Dry	Dark - lighted roadway	MASSACHUSETTS AVENUE	PLEASANT STREET Rte 60
1/19/2001	11:00:00 AM	INJURY	INJURY	ANGLE	WET	DAYLIGHT	BOULEVARD RD	MASS AVE
1/19/2002	3:15:00 AM	Non-fatal Injury	Non-fatal Injury	Rear-end	Dry	Daylight	MASSACHUSETTS AVENUE	WINDSOR STREET
1/2/2001	1:00:00 PM	PROPERTY	PROPERTY	REAREND	DRY	DAYLIGHT	MASS AVE	HARLOW ST
1/22/2001	8:00:00 AM	PROPERTY	PROPERTY	REAREND	WET	DAYLIGHT	MASS AVE	MEDFORD ST
1/23/2000	4:00:00 PM	Injury Accident	Injury Accident	ANGLE	WET	Dark(Road Lit)	MASS AV	ORVIS RD
1/26/2000	2:00:00 PM	Property Only	Property Only	UNKNOWN	DRY	Daylight	MASS AVE	PLEASANT ST
1/26/2000	4:00:00 PM	Property Only	Property Only	ANGLE	Unknown	Daylight	ADAMS ST	MASS AVE
1/27/2000	1:00:00 PM	Property Only	Property Only	ANGLE	WET	Daylight	MASS AVE	RTE 16
1/27/2001	5:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	WET	DARK(ROAD LIT)	MASS AVE	MILL ST
1/29/2000	1:00:00 AM	Property Only	Property Only	REAREND	DRY	Dark(Road Lit)	MASS AVE	PLEASANT ST
1/30/2000	6:00:00 PM	Injury Accident	Injury Accident	ANGLE	DRY	Dark(Road Lit)	LAKE ST	MASS AVE
1/31/2000	7:00:00 PM	Injury Accident	Injury Accident	REAREND	WET	Dark(Road Lit)	MASS AVE	PLEASANT ST RTE 6
1/9/2000	3:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	PLEASANT ST
10/1/2001	10:00:00 AM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	JASON ST	MASS AV
10/11/2002	2:40:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Wet	Daylight	MASSACHUSETTS AVENUE	BATES ROAD
10/14/2000	2:00:00 PM	Injury Accident	Injury Accident	REAREND	DRY	Daylight	MARION RD	MASS AVE
10/15/2001	5:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAWN OR DUSK	MASS AVE	GRAFTON ST
10/16/2000	3:00:00 PM	Property Only	Property Only	REAREND	WET	Daylight	LAKE ST	MASS AVE
10/16/2001	5:00:00 PM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	PLEASANT ST	MASS AVE
10/17/2000	3:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	ADAMS ST	MASS AVE
10/19/2000	9:00:00 AM	Injury Accident	Injury Accident	ANGLE	WET	Daylight	ALLEN ST	MASS AVE
10/22/2001	9:00:00 AM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	MASS AVE	MYSTIC ST
10/23/2001	8:00:00 PM	INJURY	INJURY	HEADON	DRY	DARK(ROAD LIT)	MASS AVE	PLEASANT ST
10/24/2000	2:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	BATES RD	MASS AVE
10/24/2001	8:00:00 PM	INJURY	INJURY	UNKNOWN	DRY	DARK(ROAD LIT)	715 MASS AVE	TOWN HALL
10/25/2001	12:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MILL ST	MASS AVE
10/28/2000	4:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	FRANKLIN ST	MASS AVE
10/3/2002	10:15:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Dry	Dark - lighted roadway	MASSACHUSETTS AVENUE	LAKE STREET
10/30/2000	5:00:00 PM	Injury Accident	Injury Accident	UNKNOWN	WET	Dark(Road Lit)	LAFAYETTE ST	35 MASS AVE
10/4/2001	5:00:00 PM	INJURY	INJURY	UNKNOWN	DRY	DAYLIGHT	MASS AVE	WATER ST
10/8/2000	11:00:00 AM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	OXFORD ST
10/7/2000	2:00:00 PM	Property Only	Property Only	ANGLE	Unknown	Unknown	LAKE ST	MASS AVE
10/8/2001	7:00:00 AM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	RTE 16E	MASS AVE
11/1/2000	12:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AVE	PLEASANT ST
11/1/2001	7:00:00 PM	INJURY	INJURY	UNKNOWN		UNKNOWN	MASS AVE	FRANKLIN
11/10/2000	8:00:00 AM	Injury Accident	Injury Accident	ANGLE	WET	Daylight	MASS AVE	VARNUM ST
11/11/2000	5:00:00 PM	Injury Accident	Injury Accident	ANGLE	DRY	Dark(Road Lit)	LAFAYETTE	MASS AVE
11/13/2002	6:30:00 AM	Property damage only (none inj	Property damage only (none inj	Angle	Wet	Dark - lighted roadway	MILL STREET	MASSACHUSETTS AVENUE
11/16/2001	3:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MYSTIC STREET	MASSACHUSETTS AVE
11/18/2000	10:00:00 PM	Injury Accident	Injury Accident	REAREND	DRY	Daylight	MASS AVE	MYSTIC ST
11/19/2000	6:00:00 PM	Property Only	Property Only	ANGLE	DRY	Dark(Road Lit)	CLEVELAND ST	MASS AVE
11/21/2000	5:00:00 PM	Property Only	Property Only	ANGLE	DRY	Dawn or Dusk	MASS AVE	MYSTIC
11/22/2000	12:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	PLEASANT ST
11/25/2000	8:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	FOREST ST	MASS AVE
11/29/2001	7:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	WET	DARK(ROAD LIT)	MASSACHUSETTS AVE	ACADEMY STREET
11/3/2001	12:00:00 PM	PROPERTY	PROPERTY	HEADON	DRY	DAYLIGHT	MASS AVE	WATER ST
11/3/2001	8:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	DRY	DARK(ROAD LIT)	MASSACHUSETTS AVE	PLEASANT STREET
11/30/2000	1:00:00 PM	Injury Accident	Injury Accident	REAREND	DRY	Daylight	JASON ST	MASSACHUSETTS AVE
11/30/2001	8:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	WET	DARK(ROAD UNLIT)	MARATHON STREET	MASSACHUSETTS AVE
11/5/2001	5:00:00 PM	PROPERTY	PROPERTY	REAREND	WET	DARK(ROAD UNLIT)	MASSACHUSETTS AVE	POND LANE
11/6/2000	7:00:00 PM	Property Only	Property Only	ANGLE	DRY	Dark(Road Lit)	ACADEMY ST	MASS AVE
11/8/2001	8:00:00 PM	PROPERTY	PROPERTY	REAREND	DRY	DARK(ROAD LIT)	TEELE ST	MASSACHUSETTS AVE
12/1/2000	2:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AVE	PLEASANT ST
12/1/2000	6:00:00 PM	Property Only	Property Only	ANGLE	DRY	Dawn or Dusk	MASS AVE	WINDSOR ST
12/13/2002	12:30:00 PM	Non-fatal Injury	Non-fatal Injury	Not reported	Sand, mud, dirt, oil, gravel	Daylight	MASSACHUSETTS AVENUE Rte 2A	ALLEN STREET
12/14/2000	12:00:00 PM	Injury Accident	Injury Accident	ANGLE	DRY	Daylight	LAFAYETTE ST	MASS AVE
12/14/2002	12:45:00 PM	Non-fatal Injury	Non-fatal Injury	Rear-end	Wet	Daylight	MASSACHUSETTS AVENUE Rte 2A E	MELROSE STREET
12/15/2000	12:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	FRANKLIN ST	MASS AVE
12/15/2000	4:00:00 PM	Injury Accident	Injury Accident	REAREND	DRY	Dawn or Dusk	MASS AVE	PLEASANT ST
12/18/2000	8:00:00 AM	Injury Accident	Injury Accident	UNKNOWN	DRY	Daylight	MASS AVE	ORVIS RD
12/20/2000	10:00:00 AM	Property Only	Property Only	ANGLE	WET	Daylight	ADAMS ST	MASS AVE
12/25/2001	5:00:00 AM	PROPERTY	PROPERTY	REAREND	DRY	DARK(ROAD LIT)	MASSACHUSETTS AVE	LAKE STREET
12/25/2000	10:00:00 AM	Injury Accident	Injury Accident	UNKNOWN	Unknown	Unknown	MASS AVE	MYSITC AVE
12/26/2000	10:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	12 POND LN RR	370 MASS AV RR
12/3/2001	4:00:00 PM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	MASSACHUSETTS AVE	LAKE STREET
12/4/2000	7:50:00 AM	Injury Accident	Injury Accident	ANGLE	DRY	Dawn or Dusk	MASS AVE	MILL ST
12/5/2001	8:00:00 AM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MASSACHUSETTS AVE	CLEVELAND STREET
12/6/2001	9:00:00 AM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MASSACHUSETTS AVE	THORNDIKE STREET
12/9/2001	3:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	OTHER	DAYLIGHT	MASSACHUSETTS AVE	LAKE STREET
12/9/2002	8:20:00 AM	Property damage only (none inj	Property damage only (none inj	Not reported	Dry	Dark - lighted roadway	ORVIS ROAD	MASSACHUSETTS AVENUE
2/1/2001	5:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DARK(ROAD LIT)	MILL ST	MASS AVE
2/12/2000	3:00:00 PM	Hit and Run	Hit and Run	REAREND	DRY	Dark(Road Lit)	MASS AVE	WINTER ST
2/14/2001	2:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	PALMER ST
2/15/2001	9:00:00 AM	INJURY	INJURY	ANGLE	DRY	DAYLIGHT	MASS AVE	CLEVELAND ST
2/17/2001	11:00:00 AM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	MYSTIC AVE	MASS AVE
2/2/2000	1:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	FRANKLIN ST	MASS AVE
2/20/2000	4:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	RT 16
2/21/2001	3:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	LAKE ST
2/22/2001	11:00:00 AM	PROPERTY	PROPERTY	ANGLE	ORY	DAYLIGHT	MASS AV	PLEASANT ST RT 60
2/22/2001	9:00:00 AM	PROPERTY	PROPERTY	ANGLE	ORY	DAYLIGHT	MYSTIC ST	MASS AVE
2/23/2000	4:00:00 PM	Injury Accident	Injury Accident	ANGLE	DRY	Daylight	MASS AVE	PLEASANT ST
2/25/2000	9:00:00 PM	Injury Accident	Injury Accident	REAREND	WET	Dark(Road Lit)	BATES RD	MASS AV
2/28/2001	8:00:00 AM	PROPERTY	PROPERTY	REAREND	DRY	DAYLIGHT	MASSACHUSETTS AVE	PLEASANT ST RTE6
2/29/2000	8:00:00 AM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	MILL ST
2/3/2001	1:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	COURT ST
2/3/2001	7:00:00 PM	INJURY	INJURY	REAREND	DRY	DARK(ROAD LIT)	MASS AVE	SWAN PLACE

2/4/2000	4:00:00 PM	Property Only	Property Only	ANGLE	DRY	Dawn or Dusk	MASS AVE	PLEASANT ST
2/5/2000	8:00:00 AM	Property Only	Property Only	ANGLE	DRY	Dawn or Dusk	LAKE ST	MASS AVE
2/7/2001	7:00:00 AM	PROPERTY	PROPERTY	ANGLE		DAYLIGHT	MASSACHUSETTS AVE	LAKE ST
2/7/2001	9:00:00 PM	PROPERTY	PROPERTY	REAREND	ICE	DARK(ROAD LIT)	PALMER ST	MASS AVE
3/13/2000	2:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AV	MILL ST
3/16/2000	5:00:00 PM	Injury Accident	Injury Accident	ANGLE	WET	Dawn or Dusk	ACADEMY T	MASS AVE
3/17/2000	9:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASSACHUSETTS AVE	OXFORD ST
3/19/2000	9:00:00 AM	Property Only	Property Only	ANGLE	Unknown	Unknown	MASS AVE	WYMAN TERR
3/2/2000	2:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	MYSTIC ST
3/21/2000	8:00:00 PM	Property Only	Property Only	ANGLE	WET	Dark(Road Lit)	ALEWIFE BROOK PKW	MASS AV
3/23/2001	10:00:00 AM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MASS AVE	BATES RD
3/26/2002	11:00:00 AM	Non-fatal Injury	Non-fatal Injury	Rear-end	Dry	Dark - lighted roadway	ALEWIFE BROOK PARKWAY Rte 16 N	MASSACHUSETTS AVENUE Rte 2A W
3/30/2001	8:00:00 PM	PROPERTY	PROPERTY	ANGLE	WET	DARK(ROAD LIT)	MASS AVE	FRANKLIN ST
3/5/2002	8:40:00 AM	Property damage only (none inj	Property damage only (none inj	Angle	Dry	Daylight	MASSACHUSETTS AVENUE	WATER STREET
3/5/2000	11:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	ADAMS ST	MASS AVE
3/5/2001	10:00:00 PM	PROPERTY	PROPERTY	REAREND	SNOW	DARK(ROAD LIT)	MASS AVE	PLEASANT ST
4/1/2002	9:30:00 AM	Property damage only (none inj	Property damage only (none inj	Angle	Wet	Daylight	MASSACHUSETTS AVENUE	CENTRAL STREET
4/11/2001	9:00:00 AM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MILL ST	MASS AVE
4/11/2002	9:00:00 AM	Property damage only (none inj	Property damage only (none inj	Angle	Dry	Daylight	MASSACHUSETTS AVENUE	CLEVELAND STREET
4/12/2001	8:00:00 PM	PROPERTY	PROPERTY	ANGLE	WET	DARK(ROAD LIT)	MASS AVE	WYMAN TERR
4/12/2001	8:00:00 PM	INJURY	INJURY	REAREND	WET	DARK(ROAD LIT)	MASS AVE	MILTON ST
4/13/2001	6:00:00 PM	INJURY	INJURY	ANGLE	DRY	DAYLIGHT	JASON ST	MASS AVE
4/16/2001	12:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	ACADEMY ST
4/25/2000	8:00:00 AM	Property Only	Property Only	ANGLE	WET	Daylight	LAFAYETTE ST	MASS AVE
4/26/2001	7:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	CHANDLER
4/3/2001	9:00:00 AM	PROPERTY	PROPERTY	UNKNOWN		UNKNOWN	MASS AVE	MILL ST
4/4/2000	5:00:00 PM	Property Only	Property Only	REAREND	WET	Dawn or Dusk	MASS AV	POND AV
4/8/2000	9:00:00 AM	Injury Accident	Injury Accident	ANGLE	DRY	Daylight	MASS AVE	SWAN PL
4/8/2002	2:10:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Dry	Daylight	MASSACHUSETTS AVENUE	AMSDEN STREET/MAGNOLIA STREET
5/1/2000	12:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	CENTRAL ST	MASS AV
5/1/2000	7:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	CENTRAL ST	MASS AVE
5/1/2001	7:00:00 AM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASSACHUSETTS AVE	EGERTON RD
5/14/2001	7:00:00 PM	PROPERTY	PROPERTY	REAREND	DRY	DAYLIGHT	MASS AVE	ACADEMY ST
5/15/2000	9:00:00 AM	Property Only	Property Only	UNKNOWN	DRY	Daylight	MASS AVE	WINDSOR
5/18/2001	12:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	COURT	MASS AVE
5/20/2002	12:30:00 PM	Non-fatal Injury	Non-fatal Injury	Angle	Dry	Daylight	MASSACHUSETTS AVENUE	MILL STREET
5/21/2000	2:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AVE	PLEASANT ST
5/22/2001	6:00:00 AM	INJURY	INJURY	ANGLE	WET	DAYLIGHT	ORVIS RD	MASS AVE
5/22/2002	1:30:00 AM	Property damage only (none inj	Property damage only (none inj	Not reported	Dry	Daylight	CLEVELAND STREET	MASSACHUSETTS AVENUE
5/22/2002	7:45:00 AM	Non-fatal Injury	Non-fatal Injury	Single vehicle crash	Dry	Daylight	MASSACHUSETTS AVENUE	MILTON STREET
5/26/2002	6:10:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Dark - lighted roadway	Daylight	MASSACHUSETTS AVENUE	WYMAN STREET
5/31/2001	4:00:00 AM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	RTE 16
5/4/2001	3:00:00 PM	PROPERTY	PROPERTY	REAREND	DRY	DAYLIGHT	MYSTIC	MASS AVE
5/5/2000	5:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AVE	PLEASANT ST
5/5/2001	5:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAWN OR DUSK	MASS AVE	MILL ST
5/5/2001	8:00:00 AM	INJURY	INJURY	REAREND	WET	DAYLIGHT	MASS AVE	PLEASANT
6/14/2001	7:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	PALMER ST
6/15/2001	12:00:00 PM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	MASS AVE	RTE 20
6/17/2001	7:00:00 PM	INJURY	INJURY	ANGLE	WET	DAWN OR DUSK	MASS AVE	LAKE ST
6/18/2001	1:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	WATER ST
6/2/2001	4:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	CLEVELAND ST
6/22/2000	10:00:00 PM	Injury Accident	Injury Accident	REAREND	DRY	Dark(Road Lit)	MASS AVE	PLEASANT ST RTE 6
6/24/2001	8:00:00 PM	INJURY	INJURY	ANGLE	WET	DAYLIGHT	MASS AVE	WINTER ST
6/26/2000	6:00:00 PM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	PLEASANT ST
6/30/2000	7:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AVE	MILL ST
6/30/2001	12:00:00 PM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	MASS AVE	FRANKLIN ST
6/5/2002	10:15:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Wet	Daylight	MASSACHUSETTS AVENUE	JASON STREET/MILL STREET
6/6/2001	12:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	325 MASS AVE	ADAMS ST
6/6/2002	1:15:00 AM	Not Reported	Not Reported	Angle	Wet	Daylight	MASSACHUSETTS AVENUE	ORVIS ROAD/RAFTON STREET
6/7/2000	10:00:00 AM	Injury Accident	Injury Accident	REAREND	WET	Daylight	ACADEMY ST	MASS AVE
6/7/2002	6:51:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Wet	Daylight	MASSACHUSETTS AVENUE	LAKE STREET
7/11/2001	7:00:00 AM	INJURY	INJURY	REAREND	DRY	DAYLIGHT	MASS AVE	EGERTON RD
7/13/2001	10:00:00 AM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	MILL ST
7/15/2001	3:00:00 PM	INJURY	INJURY	ANGLE	DRY	DAYLIGHT	MASS AVE	MILL ST
7/16/2001	5:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MASS AVE	MYSTIC AVE
7/18/2001	7:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	MARATHON ST
7/19/2000	5:00:00 PM	Injury Accident	Injury Accident	REAREND	DRY	Daylight	MASS AVE	RTE 60
7/2/2001	6:00:00 PM	PROPERTY	PROPERTY	UNKNOWN	DRY	DAYLIGHT	MASS AVE	MILL ST
7/20/2000	8:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AV	PLEASANT ST
7/20/2002	6:29:00 AM	Non-fatal Injury	Non-fatal Injury	Angle	Dry	Daylight	MASSACHUSETTS AVENUE	JASON STREET
7/23/2001	7:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	EGERTON RD	MASS AVE
7/25/2001	7:00:00 PM	PROPERTY	PROPERTY	REAREND	DRY	DAYLIGHT	PLEASANT ST	MASS AVE
7/28/2000	1:00:00 PM	Property Only	Property Only	REAREND	WET	Daylight	FOREST ST	MASS AVE
7/27/2001	8:00:00 PM	INJURY	INJURY	ANGLE	DRY	DAYLIGHT	119 MASS AVE	CHURCH
7/29/2000	5:00:00 AM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	PLEASANT ST
7/31/2000	7:00:00 AM	Property Only	Property Only	REAREND	WET	Daylight	MASS AVE	WYMAN ST
7/7/2000	2:00:00 PM	Injury Accident	Injury Accident	UNKNOWN	WET	Daylight	MASS AVE	ORVIS RD
7/8/2000	10:00:00 AM	Injury Accident	Injury Accident	ANGLE	DRY	Daylight	BALES RD	MASS AVE
7/9/2001	12:00:00 PM	PROPERTY	PROPERTY	UNKNOWN		DAYLIGHT	MASS AVE	TUFTS ST
8/1/2002	8:15:00 AM	Non-fatal Injury	Non-fatal Injury	Sideswipe, opposite direction	Dry	Daylight	MASSACHUSETTS AVENUE	WINTER STREET
8/1/2002	9:01:00 AM	Property damage only (none inj	Property damage only (none inj	Rear-end	Dry	Dark - lighted roadway	MYSTIC STREET	MASSACHUSETTS AVENUE
8/10/2000	8:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASSACHUSETTS AVE	TUFTS ST
8/10/2001	9:00:00 PM	INJURY	INJURY	REAREND	DRY	DARK(ROAD LIT)	MASS AVE	RTE 16
8/15/2000	4:00:00 PM	Property Only	Property Only	ANGLE	DRY	Daylight	MASS AVE	WATER ST
8/22/2000	5:00:00 PM	Injury Accident	Injury Accident	UNKNOWN	DRY	Daylight	MASS AVE	RAILROAD
8/22/2000	8:00:00 AM	Property Only	Property Only	REAREND	DRY	Daylight	BATES RD	MASS AVE
8/23/2000	12:00:00 PM	Hit and Run	Hit and Run	REAREND	DRY	Daylight	MASS AVE	PLEASANT ST RTE 6
8/31/2000	9:00:00 AM	Injury Accident	Injury Accident	ANGLE	DRY	Daylight	CLEVELAND	MASS
8/7/2001	12:00:00 PM	INJURY	INJURY	ANGLE	ICE	UNKNOWN	MYSTIC ST	MASS AVE
9/1/2000	3:00:00 PM	Injury Accident	Injury Accident	UNKNOWN	DRY	Daylight	CENTRAL ST	MASS AVE
9/1/2001	9:00:00 AM	INJURY	INJURY	UNKNOWN	DRY	DAYLIGHT	MASS AVE	E/B 16
9/11/2000	9:00:00 AM	Property Only	Property Only	REAREND	DRY	Daylight	MASS AVE	PLEASANT
9/13/2000	12:00:00 PM	Property Only	Property Only	UNKNOWN	DRY	Dark(Road Lit)	LAKE ST	MASS AVE
9/14/2001	10:00:00 AM	PROPERTY	PROPERTY	UNKNOWN	WET	DAYLIGHT	MASS AVE	CLEVELAND ST
9/22/2001	10:00:00 AM	PROPERTY	PROPERTY	ANGLE	DRY	DAYLIGHT	MASS AVE	LAKE ST
9/25/2000	11:00:00 AM	Property Only	Property Only	ANGLE	DRY	Daylight	MARATHON ST	MASS AVE
9/25/2001	8:00:00 PM	INJURY	INJURY	REAREND	WET	DARK(ROAD LIT)	MASS AVE	MARION RD
9/25/2001	9:00:00 PM	PROPERTY	PROPERTY	ANGLE	DRY	DARK(ROAD LIT)	MASS AVE	LAKE ST
9/27/2002	5:30:00 AM	Property damage only (none inj	Property damage only (none inj	Angle	Dry	Daylight	CLEVELAND STREET	MASSACHUSETTS AVENUE

9/6/2002	5:25:00 AM	Property damage only (none inj	Property damage only (none inj	Rear-end	Dry	Daylight	MASSACHUSETTS AVENUE	VARNUM STREET
9/7/2001	8:00:00 PM	PROPERTY	PROPERTY.	UNKNOWN	DRY	DARK(ROAD LIT)	CLEVLAND ST	MASS AVE
9/6/2000	5:00:00 PM	Injury Accident	Injury Accident	UNKNOWN	DRY	Daylight	GRAFTON ST	MASS AVE

Addition	1/1/2000	12/31/2003	Where street or intersection is similar to these															
Crash_Date	Crash_Time	Crash_Type	Total_Vehicles	Non-Fatal Injuries	Fatal Injuries	Veh1_Dir	Veh2_Dir	Collision_manner	Object_hit	Collision_with	Road_Surface	Lighting	Weather	Street	Intersection	Feet_From_Dir_From		
9/25/2000	5:00:00 PM	Property Only	2	0	0	E	E	REAREND	MVTRAF	REAREND	DRY	Unknown	Foggy	160 MASS AVE		0		
11/26/2000	6:00:00 PM	Property Only	2	0	0	E	E	REAREND	MVTRAF	REAREND	WET	Dark(Road Lit)	RAIN	23 MASS AVE		0		
1/2/2001	9:00:00 AM	PROPERTY	2	0	0	W	W	ANGLE	MVTRAF	ANGLE	DRY	DAYLIGHT	CLEAR	455 MASS AVE		0		
1/7/2001	5:00:00 PM	PROPERTY	2	0	0	W	W	UNKNOWN	MVPRKD	UNKNOWN	WET	DAWN OR DUSK	CLOUDY	324 MASS AVE		0		
2/17/2001	2:00:00 PM	INJURY	2	1	0	S	W	ANGLE	MVTRAF	ANGLE	DRY	DAYLIGHT	CLEAR	25 MASS AVE		0		
3/22/2001	7:00:00 PM	INJURY	2	1	0	W	E	ANGLE	MVTRAF	ANGLE	WET	DARK(ROAD LIT)	RAIN	366 MASS AVE		0		
3/25/2001	4:00:00 PM	INJURY	2	3	0	W	W	REAREND	MVTRAF	REAREND	DRY	DAYLIGHT	CLEAR	655 MASS AVE		0		
5/11/2001	4:00:00 PM	PROPERTY	2	0	0	E		UNKNOWN	MVPRKD	UNKNOWN	DRY	DAYLIGHT	NOSPEC	192 MASS AV		0		
5/28/2001	6:00:00 PM	INJURY	2	1	0	E	W	REAREND	MVPRKD	REAREND	DRY	DARK(ROAD LIT)	CLOUDY	457 MASS AVE		0		
6/20/2001	10:00:00 AM	INJURY	1	1	0	E		UNKNOWN	PEDEST	UNKNOWN	DRY	DAYLIGHT	CLEAR	608 MASS AVE	FOODMASTER PKLOT	0		
6/27/2001	12:00:00 PM	PROPERTY	2	0	0		W	ANGLE	MVTRAF	ANGLE	DRY	DAYLIGHT	CLEAR	385 MASS AVE		5	W	
8/11/2001	2:00:00 PM	INJURY	2	1	0	E	E	ANGLE	MVTRAF	ANGLE	DRY	DAYLIGHT	CLOUDY	370 MASS AVE		0		
8/20/2001	2:00:00 PM	INJURY	3	2	0			UNKNOWN	MVPRKD	UNKNOWN	DRY	DAYLIGHT	CLEAR	185 MASS AVE		0		
8/21/2001	8:00:00 PM	PROPERTY	2	0	0			UNKNOWN		UNKNOWN		UNKNOWN	NOSPEC	220 MASS AVE		0		
8/27/2001	9:00:00 AM	PROPERTY	2	0	0	E	E	ANGLE	MVTRAF	ANGLE	DRY	DAYLIGHT	CLEAR	880 MASS AVE	ARLINGTON	0		
9/5/2001	8:00:00 AM	PROPERTY	2	0	0	N	W	ANGLE	MVTRAF	ANGLE	DRY	DAYLIGHT	CLEAR	365 MASS AVE		0		
10/15/2001	2:00:00 PM	PROPERTY	2	0	0	W	W	ANGLE	MVPRKD	ANGLE	DRY	DAYLIGHT	CLEAR	430 MASS AVE		0		
10/24/2001	6:00:00 PM	INJURY	1	1	0	W		UNKNOWN	OVERTURN	UNKNOWN	DRY	DARK(ROAD LIT)	CLEAR	715 MASS AVE	TOWN HALL	100	W	
1/28/2002	10:30:00 AM	Non-fatal injury	2	1	0			Rear-end		Rear-end	Wet	Daylight	Clear	918 MASS AVE				
2/23/2002	12:10:00 PM	Property damage only (none inj	2	0	0			Angle		Angle	Dry	Daylight	Clear	23 MASS AVE				
3/14/2002	1:00:00 AM	Not Reported	2	0	0			Sideswipe, same direction		Sideswipe, same direction	Dry	Daylight	Clear	808 MASS AVE				
4/1/2002	10:00:00 AM	Not Reported	2	0	0			Rear-to-rear		Rear-to-rear	Dry	Daylight	Cloudy	93 MASS AVE				
4/2/2002	8:00:00 AM	Not Reported	2	0	0			Angle		Angle	Dry	Daylight	Clear	850 MASS AVE				
4/10/2002	8:30:00 AM	Non-fatal injury	4	1	0			Rear-end		Rear-end	Dry	Daylight	Clear	62 MASS AVE				
4/18/2002	9:45:00 AM	Non-fatal injury	1	1	0			Rear-end		Rear-end	Dry	Daylight	Clear	456 MASS AVE				
5/21/2002	12:42:00 PM	Not Reported	2	0	0			Angle		Angle	Dry	Dark - lighted roadway	Clear	783 MASS AVE				
5/23/2002	3:45:00 AM	Property damage only (none inj	2	0	0			Rear-end		Rear-end	Dry	Daylight	Clear	295 MASS AVE				
5/24/2002	4:54:00 AM	Non-fatal injury	1	1	0			Single vehicle crash		Single vehicle crash	Dry	Daylight	Clear	40 MASS AVE				
6/3/2002	8:17:00 AM	Non-fatal injury	1	1	0			Single vehicle crash		Single vehicle crash	Dry	Daylight	Clear	111 MASS AVE				
6/28/2002	10:50:00 AM	Not Reported	2	0	0			Unknown		Unknown	Dry	Daylight	Clear/Clear	700 MASS AVE				
7/11/2002	9:41:00 AM	Property damage only (none inj	2	0	0			Angle		Angle	Dry	Dark - lighted roadway	Clear/Clear	23 25 MASS AVE				
10/8/2002	2:35:00 AM	Not Reported	2	0	0			Not reported		Not reported	Dry	Daylight	Clear	255 MASS AVE				
12/4/2002	8:48:00 AM	Property damage only (none inj	2	0	0			Angle		Angle	Sand, mud, dirt, oil, gravel	Daylight	Clear	594 MASS AVE				
1/13/2003	12:00:00 PM	Property damage only (none inj	2	0	0			Not reported		Not reported	Dry	Daylight	Clear	717 MASS AVE				
3/2/2003	6:35:00 AM	Non-fatal injury	1	1	0			Sideswipe, same direction		Sideswipe, same direction	Wet	Dark - lighted roadway	Cloudy/Rain	418 MASS AVE				
3/13/2003	7:28:00 AM	Non-fatal injury	1	1	0			Single vehicle crash		Single vehicle crash	Dry	Daylight	Clear	700 MASS AVE				
4/8/2003	3:50:00 AM	Non-fatal injury	1	1	0			Single vehicle crash		Single vehicle crash	Snow	Dark - lighted roadway	Snow	383 MASS AVE				
5/18/2003	7:40:00 AM	Not Reported	2	0	0			Head-on		Head-on	Dry	Daylight	Clear	220 MASS AVE				
5/10/2003	11:17:00 AM	Non-fatal injury	3	3	0			Rear-end		Rear-end	Dry	Daylight	Clear	800 MASS AVE				
5/28/2003	6:59:00 AM	Non-fatal injury	2	1	0			Rear-end		Rear-end	Dry	Daylight	Clear/Clear	152 MASS AVE				
7/2/2003	12:54:00 PM	Property damage only (none inj	2	0	0			Not reported		Not reported	Not reported	Not reported	Not Reported	730 MASS AVE				
7/29/2003	3:15:00 AM	Non-fatal injury	4	2	0			Rear-end		Rear-end	Dry	Daylight	Clear	175 MASS AVE				
7/30/2003	8:00:00 AM	Property damage only (none inj	2	0	0			Angle		Angle	Dry	Daylight	Clear	234 MASS AVE				
8/4/2003	10:25:00 AM	Non-fatal injury	3	1	0			Rear-end		Rear-end	Wet	Daylight	Cloudy/Rain	94 MASS AVE				
8/19/2003	9:00:00 AM	Property damage only (none inj	2	0	0			Rear-end		Rear-end	Dry	Daylight	Clear	475 MASS AVE				
8/26/2003	9:00:00 AM	Property damage only (none inj	1	0	0			Single vehicle crash		Single vehicle crash	Dry	Daylight	Clear	138 MASS AVE				
9/22/2003	8:30:00 AM	Non-fatal injury	1	1	0			Not reported		Not reported	Dry	Daylight	Clear	444 MASS AVE				
11/9/2003	9:00:00 AM	Not Reported	2	0	0			Angle		Angle	Dry	Daylight	Clear	271 MASS AVE				
11/12/2003	5:00:00 AM	Non-fatal injury	2	2	0			Head-on		Head-on	Wet	Dark - lighted roadway	Cloudy	767 MASS AVE				
11/12/2003	9:50:00 AM	Non-fatal injury	2	2	0			Angle		Angle	Wet	Daylight	Rain	324 MASS AVE				
12/14/2003	12:00:00 PM	Property damage only (none inj	2	0	0			Head-on		Head-on	Snow	Dawn	Snow/Blowing sand, snow	699 MASS AVE				
12/18/2003	9:35:00 AM	Non-fatal injury	2	1	0			Angle		Angle	Dry	Daylight	Clear	430 MASS AVE				

Safety Data from the Town of Arlington

1 = ped
6 = bike
2 = car in traffic

(null)

Report Executed By: JIMMC On: 06/16/05
Records Found: 535

acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
01/02/02	1851	3	MASS AVE	1	1	1	Y		2
01/09/02	1230	E	MASS AVE	1	4	2	Y		1
01/09/02	940	2 ped	MASS AVE	1	3	1	N		2
01/12/02	1000	1	MASS AVE	1	3	1	N		
01/14/02	945	2	MASS AVE & MILL	1	1	1	N		2
01/14/02	2006	2	MASS AVE	3	3	1	N	1	1
01/15/02	855	E	MASS AVE	1	3	2	Y		2
01/19/02	1515	2	MASS AVE & WIND	1	3	1			1
01/21/02	1613	2	MASS AVE & WALN	3	2	2	N		2
01/25/02	1440	3	MASS AVE	1	1	1			2
01/28/02	1918	E bike	MASS AVE	3	1	1	Y		2
01/29/02	1712	6	MASS AVE & SWAN	3	1	1	N		
01/31/02	1000	2	MASS AVE	1	3	1	N		1
01/31/02	2020	5	MASS AVE	3	5	3	N		
02/02/02	850	3	MASS AVE	1	1	1	N		2
02/02/02	1315	E	MASS AVE	1	1	1	Y		2
02/11/02	1445	2	MASS AVE	1	2	1	N		2
02/16/02	2335	2	MASS AVE & PLEA	3	1	1	N		1
02/25/02	1350	2	MASS AVE & WATE	1	3	1	N		1
02/25/02	1435	2	MASS AVE & MILL	1	3	1	N		1
02/27/02	1750	2	MASS AVE & MELR	3	5	2	N		1
03/02/02	945	2	MASS AVE	1	1	1	N		2
03/05/02	1100	2	MASS AVE	1	1	1	N		1
03/12/02	1520	2	MASS AVE	1	4	2	N		1
03/14/02	1300	3	MASS AVE	1	1	1	Y		2
03/15/02	1600	3	MASS AVE & TROW	1	3	2	N		2
03/16/02	1809	E	MASS AVE	3	1	1	Y		2
03/19/02	1330	3	MASS AVE	1	4	2	N		2
03/20/02	1645	2	MASS AVE	1	5	3	N		2
03/22/02	800	E	MASS AVE	1	1	1	Y		2
03/22/02	850	D	MASS AVE	1	1	1	N		1
03/25/02	1500	2	MASS AVE & PARK	1	3	1	N		2
03/26/02	2300	2	MASS AVE	3	4	2	N		1
04/01/02	1000	E	MASS AVE	1	3	2	Y		1
04/01/02	930	2	MASS AVE	1	4	2	N		2
04/02/02	1015	2	MASS AVE	1	1	1	N		1
04/01/02	1005	2	MASS AVE	1	3	2	N		1
04/06/02	800	5	MASS AVE	1	1	1	Y		
04/07/02	1650	3	MASS AVE	1	1	1	N		
04/07/02	120	2	MASS AVE & PLEA	1	1	1	N		1
04/08/02	1625	2	MASS AVE	1	1	1	N		2
04/10/02	1020	E	MASS AVE	1	1	1	Y		2
04/10/02	830	2	MASS AVE & THOR	1	1	1	N		1
04/18/02	1330	2	MASS AVE	1	1	1	N		1
04/24/02	1114	2	MASS AVE	1	3	1	N		3
04/27/02	900	E	MASS AVE & WYMA	1	1	1	Y		2
04/28/02	1705	2	MASS AVE & PLEA	1	4	2	N		2
04/30/02	730	2	MASS AVE	1	1	1			2

05/0[illegible]	1[illegible]	[illegible]	[illegible]	MASS[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
05/10/02	1730	E		MASS AVE	1	1	1	Y		2
05/13/02	840	2		MASS AVE	1	4	2	N		2

(null)

acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
05/15/02	1645	2	MASS AVE & PLEA	1	1	1	N		2
05/20/02	1230	6	MASS AVE & MILL	1	1	1	N	1	2
05/21/02	42	2	MASS AVE	3	1	1	N		2
05/22/02	745	6	MASS AVE & MILT	1	1	1	N		
05/24/02	1654	1	MASS AVE	1	1	1	N	1	
05/26/02	1105	3	MASS AVE & WIND	1	3	1	N		2
05/26/02	1850	3	MASS AVE	1	4	1	N		2
05/26/02	2010	2	MASS AVE & WYMA	3	1	1	N		2
05/31/02	1810	2	MASS AVE	3	4	2	N		1
06/03/02	1817	6	MASS AVE	1	1	1	N		
06/07/02	1745	2	MASS AVE	1	1	1	N		1
06/13/02	1130	2	MASS AVE	1	1	1	N		2
06/15/02	1013	2	MASS AVE & MILL	1	4	2	N		2
06/17/02	1250	3	MASS AVE	1	1	1	N		1
06/19/02	1702	2	MASS AVE	1	1	1	N		1
06/21/02	1943	3	MASS AVE	1	1	1	Y		2
06/24/02	830	2	MASS AVE	1	1	1	N		1
06/27/02	2100	2	MASS AVE	3	3	1	N		2
06/28/02	945	2	MASS AVE & PLEA	1	1	1	N		1
07/01/02	1610	6	MASS AVE	1	1	1	N		2
07/04/02	1310	E	MASS AVE	1	1	1	Y		2
07/08/02	356	5	MASS AVE	3	1	1	N		
07/08/02	1758	E	MASS AVE	1	1	1	Y		2
07/10/02	1710	6	MASS AVE & QUIN	1	1	1	N		2
07/11/02	1015	6	MASS AVE	1	1	1	N		
07/11/02	2141	2	MASS AVE	1	1	1	N		2
07/12/02	1430	3	MASS AVE	1	1	1	N		1
07/12/02	1800	6	MASS AVE	1	1	1	N		
07/18/02	1030	E	MASS AVE	1	1	1	Y		
07/20/02	730	2	MASS AVE	1	1	1	N		2
07/23/02	1000	2	MASS AVE	1	1	1	N		2
07/24/02	1035	2	MASS AVE	1	1	1	N		2
07/29/02	1016	E	MASS AVE	1	1	1	Y		2
07/30/02	1923	3	MASS AVE & WINT	1	1	1	N		2
07/30/02	2156	2	MASS AVE & MILL	3	1	1	N		1
08/01/02	820	2	MASS AVE & WINT	1	1	1	N		2
08/03/02	1000	2	MASS AVE	1	1	1	N		1
08/03/02	1523	2	MASS AVE & ROBB	1	1	1	N		2
08/05/02	930	2	MASS AVE	1	1	1	N		1
08/16/02	1438	2	MASS AVE & MT V	1	1	1	N		2
08/19/02	1700	3	MASS AVE & WILL	1	1	1	N		3
08/20/02	1703	2	MASS AVE	1	1	1	N		1
08/16/02	1640	3	MASS AVE	1	1	1	Y		2
08/29/02	1418	3	MASS AVE	1	4	2	N		1
08/29/02	1502	2	MASS AVE & SCHO	1	4	2	N		2
08/29/02	1623	2	MASS AVE & WHIT	1	4	2	N		2
08/29/02	1750	E	MASS AVE	1	4	2	Y		1
09/02/02	1234	2	MASS AVE	1	4	2	N		1
09/04/02	1830	2	MASS AVE	1	1	1	N		1
09/05/02	1055	1	MASS AVE	1	1	1	N		
09/05/02	1701	E	MASS AVE	1	1	1	Y		1
09/03/02	1326	2	MASS AVE & TUFT	1	1	1	N		1
09/06/02	1345	E	MASS AVE	1	1	1	Y		2
09/06/02	1725	2	MASS AVE & VARN	1	1	1	N		1
09/10/02	1455	3	MASS AVE	1	1	1	N		3
09/12/02	1229	2	MASS AVE & PAUL	1	1	1	N		1
09/13/02	1446	2	MASS AVE & QUIN	1	1	1	N		1
09/17/02	1009	2	MASS AVE & SCHO	1	2	1	N		2

09/11/02	[illegible]	[illegible]	MASS [illegible]	1	1	1	[illegible]	[illegible]	1
09/12/02	1229	2	MASS AVE & PAUL	1	1	1	N		1
09/13/02	1446	2	MASS AVE & QUIN	1	1	1	N		1
09/17/02	1009	2	MASS AVE & SCHO	1	1	1	N		2

(null)

acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
09/11/02	1800	E	MASS AVE	3	1	1	Y		1
09/24/02	846	6	MASS AVE	1	1	1	N		2
09/27/02	800	2	MASS AVE	1	4	2	N		1
09/27/02	1056	2	MASS AVE & ROBB	1	4	2	N		1
09/27/02	2013	2	MASS AVE	3	4	2	N		2
09/29/02	1345	2	MASS AVE & PLEA	1	1	1	N		1
09/30/02	1635	E	MASS AVE	1	1	1	Y		2
10/02/02	1243	2	MASS AVE	1	1	1	N		1
10/03/02	818	3	MASS AVE	1	1	1	N		2
10/04/02	2001	2	MASS AVE	3	1	1	N		2
10/07/02	1015	2	MASS AVE	1	1	1	N		1
10/11/02	1305	2	MASS AVE & SCHO	1	4	2	N		2
10/13/02	1700	E	MASS AVE	4	3	2	Y		1
10/18/02	2037	5	MASS AVE	4	1	1	N		1
10/22/02	1430	2	MASS AVE	1	1	1	N		1
10/24/02	1810	2	MASS AVE & WYMA	1	1	1	N		1
10/26/02	1250	2	MASS AVE	1	4	2	N		1
11/01/02	1841	3	MASS AVE & ROBB	3	4	2	N	3	1
11/01/02	1520	E	MASS AVE	1	1	1	Y		1
11/04/02	1650	2	MASS AVE	3	4	2	N		1
11/10/02	1708	3	MASS AVE	3	4	2	N		1
11/13/02	1829	2	MASS AVE & MILL	3	4	2	N		2
11/13/02	1527	1	MASS AVE	1	4	2	N		2
11/14/02	1430	E	MASS AVE & MILL	1	1	1	Y		2
11/17/02	1200	2	MASS AVE	1	4	2	N		2
11/17/02	1730	3	MASS AVE	3	4	2	Y		2
11/18/02	845	E	MASS AVE & MILT				Y		
11/19/02	1945	2	MASS AVE	3	1	1	N		1
11/20/02	950	2	MASS AVE	1	1	1	N		1
11/25/02	1758	2	MASS AVE	3	1	1	N		1
11/25/02	2100	E	MASS AVE	3	4	2	Y		
11/26/02	1643	2	MASS AVE	3	1	1	N		2
12/03/02	755	2	MASS AVE & MELR	1	1	2	N		2
12/03/02	1045	2	MASS AVE & WATE	1	1	1	N		2
12/03/02	1630	2	MASS AVE	3	1	1	N		1
12/04/02	848	2	MASS AVE	1	1	1	N		2
12/04/02	1030	2	MASS AVE	1	1	1	N		1
12/06/02	1430	2	MASS AVE & MT V	1	3	2	N		2
12/06/02	2020	E	MASS AVE	3	1	1	Y		1
12/07/02	1210	2	MASS AVE	1	1	2	N		2
12/10/02	1002	E	MASS AVE	1	1	1	Y		1
12/11/02	1145	1	MASS AVE	1	1	1	N		
12/14/02	1246	2	MASS AVE & MELR	1	4	2	N		2
12/19/02	2256	2	MASS AVE	3	1	1	N		1
12/20/02	1351	3	MASS AVE	1	4	2	N		2
12/20/02	1627	2	MASS AVE & PLEA	3	4	2	N		2
12/26/02	1130	2	MASS AVE & PARK	1	1	2	N		2
12/26/02	1505	2	MASS AVE	1	1	2	N		2
12/23/02	825	2	MASS AVE	1	1	1	N		2
12/27/02	1715	2	MASS AVE	3	1	4	N		2
01/06/03	2202	2	MASS AVE	3		2	N		2
01/13/03	700	E	MASS AVE	1	1	1	Y		2
01/13/03	855	2	MASS AVE	1	1	1	N		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

01/21/03	1000	2	MASS AVE	1	1	1	N		2
01/22/03	1527	2	MASS AVE	3	1	1	N		1

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acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
01/24/03	800	2	MASS AVE	1	1	1	N	1	1
01/26/03	1030	5	MASS AVE	1		3	N		
01/27/03	1520	2	MASS AVE	1	1	1	N		2
01/28/03	810	E	MASS AVE & PLEA	1	1	1	Y		2
02/03/03	1800	3	MASS AVE	3	4	2	Y		2
02/08/03	1220	2	MASS AVE	1	1	2	N		1
02/11/03	1755	3	MASS AVE	3	1		N		3
02/17/03	740	3	MASS AVE & PAUL	1	1	1	N		
02/13/03	1420	2	MASS AVE	1	1	1	N		1
02/21/03	1705	E	MASS AVE	3	1	2	Y		
02/25/03	845	3	MASS AVE	1	1	1	N		2
03/02/03	1835	1	MASS AVE	3	3	2	N		2
02/19/03	1000	E	MASS AVE	1	1	2	Y		2
03/05/03	1027	3	MASS AVE	1	4	2	N		2
03/07/03	1308	2	MASS AVE & MILL	1	1	2	N		1
03/07/03	820	2	MASS AVE	1	1	3	N		2
03/12/03	1337	2	MASS AVE	1	1	1	N		2
03/12/03	1517	1	MASS AVE	1	1	1	N		
03/13/03	1850	E	MASS AVE	3	5	3	Y		2
03/22/03	1814	2	MASS AVE	3	1	1	N		2
03/24/03	1729	2	MASS AVE & QUIN	1	1	1	N		2
03/28/03	920	2	MASS AVE & TEEL	1	1	1	N		2
03/29/03	2045	2	MASS AVE	3	4	2	N		2
03/29/03	2156	3	MASS AVE	3	4	2	N		2
04/01/03	1920	2	MASS AVE	3	4	2	N		2
04/02/03	1745	2	MASS AVE	1	1	1	N		2
04/03/03	1730	2	MASS AVE & WATE	3	4	1	N		2
04/08/03	350	5	MASS AVE	3	5	3	N		
04/11/03	1600	9	MASS AVE & MILL	1	4	2	N		
04/23/03	845	2	MASS AVE	1	4	2	N		1
04/25/03	1621	3	MASS AVE	1	1	1	N		1
04/25/03	1830	2	MASS AVE	1	1	1	N		1
04/26/03	945	2	MASS AVE & WYMA	1	4	2	N		1
04/29/03	1440	2	MASS AVE	1	1	1	N		1
04/29/03	1757	1	MASS AVE & PARK	1	1	1	N		
04/29/03	1847	E	MASS AVE	1	1	1	Y		
04/30/03	2230	3	MASS AVE	3	1	1	N		2
05/09/03	1546	6	MASS AVE & SCHO	1	1	1	N		
05/10/03	1020	6	MASS AVE & MELR	1	1	1	N		
05/10/03	1250	D	MASS AVE	1	1	1	N		
05/12/03	1130	E	MASS AVE	1	3	2	Y		1
05/13/03	1928	6	MASS AVE	1	1	1	N		
05/16/03	805	2	MASS AVE	1	1	1	N		1
05/16/03	1425	2	MASS AVE & OXFO	1	1	1	N		2
05/18/03	1940	2	MASS AVE	1	1	1	N		2
05/20/03	900	2	MASS AVE	1	1	1	N		2
05/21/03	1040	2	MASS AVE	1	1	1	N		2
05/23/03	730	2	MASS AVE & WINT	1	4	2	N		1
05/23/03	2219	3	MASS AVE	3	4	2	N		2
05/24/03	915	2	MASS AVE	1	1	2	N		2
05/24/03	1415	E	MASS AVE	1	1	2	Y		2
06/07/03	1250	2	MASS AVE & PLEA	1	4	2	N		1
06/10/03	1117	2	MASS AVE	1	1	1	N		1
06/11/03	1305	3	MASS AVE	1	4	2	N		1
06/13/03	1825	2	MASS AVE & MARA	3	4	2	N		1
06/14/03	2245	5	MASS AVE	3	1	1	N		
06/16/03	914	2	MASS AVE	1	1	1	N		2
06/19/03	1200	3	MASS AVE	1	1	1	N		2

06/1[illegible]	1[illegible]	[illegible]	[illegible]ASS [illegible] MAR	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
06/14/03	2245	5	MASS AVE	3	1	1	N			
06/16/03	914	2	MASS AVE	1	1	1	N	N		2
06/19/03	1200	3	MASS AVE	1	1	1	N	N		2

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acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
06/22/03	1549	2	MASS AVE	1	4	2	N		2
06/23/03	1132	2	MASS AVE & MILT	1	1	1	N	N	2
06/24/03	1040	5	MASS AVE	1	1	1	N	N	1
06/26/03	1859	2	MASS AVE	1	1	1	N	N	1
07/02/03	1215	2	MASS AVE	1	1	1	N	N	2
07/02/03	1254	2	MASS AVE	1	1	1	N	N	2
07/07/03	1730	2	MASS AVE	1	1	1	N	N	2
07/08/03	1550	3	MASS AVE	1	1	1	N	1	1
07/14/03	1915	2	MASS AVE		1	1	N	N	1
07/24/03	2130	E	MASS AVE	1	1	1	N	N	
07/28/03	800	5	MASS AVE	1	1	1	N	N	
07/29/03	1515	2	MASS AVE	1	1	1	N	N	1
07/29/03	2245	E	MASS AVE	1	1	1	Y	N	1
07/30/03	1140	3	MASS AVE	1	1	1	N	N	2
07/31/03	1544	5	MASS AVE	1	1	1	N	N	
08/04/03	1025	2	MASS AVE	1	4	2	N	N	1
08/05/03	2125	3	MASS AVE	3	1	1	N	N	1
08/14/03	1430	3	MASS AVE	1	1	1	N	N	2
08/15/03	1300	E	MASS AVE	1	1	1	Y	N	
08/19/03	900	2	MASS AVE	1	1	1	N	N	1
08/19/03	1105	3	MASS AVE	1	1	1	N	N	2
08/27/03	1630	2	MASS AVE & PLEA	1	1	1	N	N	2
08/28/03	900	E	MASS AVE	1	1	1	N	Y	1
08/28/03	929	5	MASS AVE	1	1	1	N	N	
08/31/03	1400	2	MASS AVE	1	1	1	N	N	2
09/03/03	1115	3	MASS AVE	1	1	1	N	N	2
09/08/03	1540	3	MASS AVE	1	1	1	N	N	
09/16/03	1410	2	MASS AVE & MARA	1	1	1	N	N	2
09/20/03	900	2	MASS AVE	1	1	1	N	N	2
09/20/03	1355	2	MASS AVE	1	1	1	N	N	1
09/22/03	830	6	MASS AVE	1	1	1	N	N	
09/23/03	1454	E	MASS AVE	1	4	2	Y	N	
09/24/03	1115	3	MASS AVE	1	1	1	N	N	2
09/25/03	1915	2	MASS AVE & WATE	3	1	1	N	N	2
09/26/03	950	2	MASS AVE & MILT	1	1	1	N	N	2
09/29/03	754	2	MASS AVE	1	1	1	N	N	1
10/01/03	945	3	MASS AVE	1	1	1	N	N	2
10/02/03	1138	5	MASS AVE	1	1	1	N	N	
10/03/03	934	2	MASS AVE & PLEA	1	1	1	N	N	2
10/03/03	1250	2	MASS AVE & WATE	1	1	1	N	N	2
10/04/03	1743	2	MASS AVE & TUFT	3	4	2	N	N	1
10/15/03	920	2	MASS AVE & WATE	1	3	2	N	N	2
10/19/03	1856	2	MASS AVE	3	1	1	N	N	1
10/20/03	935	3	MASS AVE	1	1	1	N	N	2
10/22/03	1253	2	MASS AVE & MILL	1	1	1	N	N	1
10/23/03	805	2	MASS AVE	1	4	2	N	N	1
10/23/03	1705	2	MASS AVE	1	1	2	N	N	1
10/24/03	1630	2	MASS AVE & PLEA	1	1	1	N	N	1
10/27/03	1737	2	MASS AVE	3	4	2	N	N	2
10/27/03	1500	2	MASS AVE	1	1	1	N	N	2
10/30/03	1013	3	MASS AVE	1	1	1	N	N	2
11/06/03	1515	2	MASS AVE & PARK	1	4	2	N	N	2
11/09/03	909	2	MASS AVE	1	1	1	N	N	2

11/1[illegible]	[illegible]	[illegible]	MASS [illegible]	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11/12/03	1709	2	MASS AVE	3	1	2	N			3
11/13/03	1838	2	MASS AVE & OLD	1	3	1	N			2
11/07/03	2230	E	MASS AVE & MELR	3	1	1	N			2

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acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
11/14/03	727	2	MASS AVE & MARA	1	1	1	N		
11/15/03	1320	2	MASS AVE & PLEA	1	1	1	N		1
11/22/03	1500	3	MASS AVE	1	1	1	N		2
11/23/03	1240	3	MASS AVE	1	1	2	N		2
11/28/03	1145	E	MASS AVE	1	4	2	Y		1
11/20/03	1300	2	MASS AVE	1	4	2	N		2
11/29/03	930	2	MASS AVE & PLEA	1	1	1	N		2
12/04/03	1706	1	MASS AVE	3	1	1	N		1
12/06/03	1114	E	MASS AVE	1	5	3	Y		2
12/06/03	2034	E	MASS AVE	3	5	3	Y		2
12/09/03	1630	E	MASS AVE	1	5	3	Y		
12/09/03	1700	E	MASS AVE & PLEA	3	1	2	Y		2
12/09/03	1200	E	MASS AVE	1	1	3	Y		2
12/12/03	1057	2	MASS AVE	1	1	1	N		2
12/15/03	1600	2	MASS AVE & PAUL	1	1	2	N		2
12/17/03	702	2	MASS AVE	1	1	2	N		2
12/18/03	935	2	MASS AVE	1	1	1	N		2
12/24/03	1745	1	MASS AVE & MILL	3	4	2	N		
01/06/04	1209	2	MASS AVE	1	1	1	N		2
01/08/04	934	2	MASS AVE & MILL	1	1	1	N		2
01/12/04	1321	2	MASS AVE	1	1	2	N		1
01/16/04	1830	2	MASS AVE & WATE	3	1	1	N		2
01/18/04	1410	2	MASS AVE	1	5	2	N		2
01/20/04	744	2	MASS AVE & ROBB	1	1	1	N		1
01/21/04	1615	E	MASS AVE & PARK	3	1	1	Y		2
01/22/04	1505	E	MASS AVE	1	1	1	Y		2
01/23/04	1048	2	MASS AVE & MILL	1	1	1	N		2
01/29/04	1450	2	MASS AVE	1	1	1	N		2
01/30/04	2045	3	MASS AVE	3	1	2	N		2
02/01/04	1420	2	MASS AVE & WATE	1	1	1	N		2
02/15/04	1445	E	MASS AVE	1	1	1	Y		
02/20/04	1345	E	MASS AVE	1	1	1	Y		1
02/21/04	1600	2	MASS AVE	1	1	1	N		2
02/22/04	351	5	MASS AVE	3	1	2	N		
02/24/04	809	2	MASS AVE & OXFO	1	1	1	N		1
02/25/04	1311	2	MASS AVE & PLEA	1	1	1	N		2
02/28/04	130	6	MASS AVE	1	1	1	N		
03/10/04	1019	3	MASS AVE	1	1	1	N		2
03/10/04	1626	2	MASS AVE	1	1	1	N		1
03/08/04	241	2	MASS AVE	1	5	2	Y		2
03/12/04	1230	3	MASS AVE	1	1	1	Y		1
03/15/04	1341	2	MASS AVE	1	1	1	N		1
03/17/04	1828	2	MASS AVE & PARK	3	5	2	N		2
03/18/04	835	2	MASS AVE	1	1	2	N		1
03/20/04	1430	2	MASS AVE & WALN	1	1	1	N		2
03/23/04	1915	2	MASS AVE & MILL	1	1	1	N		2
03/25/04	1425	2	MASS AVE	1	1	1	N		1
03/27/04	1432	2	MASS AVE & MILL	1	1	1	N		2
03/31/04	1006	2	MASS AVE & MILL	1	4	2	N		2
03/30/04	1017	2	MASS AVE & RAMS	1	1	1	N		2
04/07/04	1700	2	MASS AVE & PLEA	1	1	1	N		1
04/09/04	1500	3	MASS AVE	1	1	1	N	1	1
04/12/04	1715	2	MASS AVE	1	1	1	N		2
04/13/04	1500	2	MASS AVE & THOR	1	1	2	N		1
04/14/04	920	2	MASS AVE & OXFO	1	4	2	N		1
04/14/04	1444	5	MASS AVE & MILL	1	4	2	N		
04/15/04	1200	3	MASS AVE	1	1	1	N		1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
04/14/04	1544	5	MASS AVE & MILL	1	4	2	N			
04/15/04	1200	3	MASS AVE	1	1	1	N		1	
04/18/04	1045	E	MASS AVE	1	1	1	Y		2	

(null)

acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
04/23/04	930	E	MASS AVE	1	4	2	Y		2
04/27/04	2130	3	MASS AVE	3	4	2	N		2
05/01/04	1220	5	MASS AVE	1	1	1	N		1
05/04/04	1445	3	MASS AVE	1	1	1	N		2
05/04/04	1325	3	MASS AVE	1	1	1	N		1
05/13/04	755	3	MASS AVE	1	1	1	Y		1
05/14/04	1635	2	MASS AVE	1	1	1	N		1
05/15/04	2130	2	MASS AVE	1	1	1	N		
05/17/04	735	2	MASS AVE	1	1	1	N		1
05/17/04	1303	3	MASS AVE	1	1	1	N		2
05/18/04	900	E	MASS AVE	1	1	1	Y		
05/24/04	1137	3	MASS AVE	1	4	2	N		1
05/24/04	2216	5	MASS AVE & MILL	3	4	2	N		
05/26/04	1748	3	MASS AVE	1	1	1	N		1
05/27/04	840	E	MASS AVE	1	1	1	N		2
06/08/04	1605	2	MASS AVE & MILT	1	1	1	N		1
06/10/04	1825	5	MASS AVE	1	1	1	N		1
06/12/04	1020	5	MASS AVE & PLEA	1	1	1	N		
06/14/04	1220	2	MASS AVE & WHIT	1	1		N		1
06/14/04	1355	3	MASS AVE	1	1	1	N		2
06/18/04	1133	1	MASS AVE	1	4	2	N		1
06/18/04	1936	E	MASS AVE & MILT	1	1	1	Y	1	2
06/19/04	1041	2	MASS AVE	1	1	1	N		2
06/20/04	1130	E	MASS AVE	1	1	1	Y		1
06/21/04	1209	2	MASS AVE	1	1	1	N		2
06/22/04	1120	3	MASS AVE	1	1	1	N		2
06/22/04	1600	3	MASS AVE	1	1	1	N		2
06/24/04	1210	2	MASS AVE & OXFO	1	1	1	N		2
06/30/04	1740	3	MASS AVE	1	1	1	N		2
07/01/04	1133	1	MASS AVE	1	1	1	N		2
07/05/04	1325	2	MASS AVE	1	4	2	N		2
07/06/04	730	2	MASS AVE & PARK	1	1	1	N		2
07/14/04	1045	3	MASS AVE	1	1	2	N		2
07/15/04	702	2	MASS AVE	1	4	2	N		2
07/17/04	1250	1	MASS AVE	1	1	1	N		
07/18/04	1350	2	MASS AVE & MILL	1	1	1	N		2
07/18/04	2100	2	MASS AVE & PLEA	3	4	2	N		2
07/20/04	835	2	MASS AVE	1	1	1	N	1	2
07/21/04	1300	2	MASS AVE	1	1	1	N		2
07/28/04	2058	5	MASS AVE	3		1	N	1	
07/28/04	700	2	MASS AVE	1	4	2	N		1
07/30/04	1650	3	MASS AVE	1	1	1	N		2
08/02/04	1300	2	MASS AVE	1	1	1	N		2
08/02/04	1120	2	MASS AVE	1	1	1	N		2
08/04/04	2141	5	MASS AVE & PARK	3	1	1	N		
08/06/04	1915	2	MASS AVE	1	1	1	N		1
08/08/04	1708	2	MASS AVE	1	1	1	N		2
08/13/04	1610	6	MASS AVE & MARA	1	1	1	N		
08/13/04	1940	2	MASS AVE	1	1	1	N		1
08/14/04	1622	5	MASS AVE	3	1	1	N		
08/23/04	1830	E	MASS AVE	1	1	1	Y		1
08/25/04	1430	E	MASS AVE	1	1	1	Y		1
08/30/04	2211	3	MASS AVE	3	1	1	N		2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

09/07/04	950	2	MASS AVE & MILL	1	1	1	N			2
09/07/04	2115	2	MASS AVE & PLEA	3	1	1	N			2

(null)

acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
09/10/04	1400	2	MASS AVE & PLEA	1	1	1	N		2
09/12/04	1242	3	MASS AVE	1	1	1	N		2
09/11/04	730	3	MASS AVE	3	1	1	N		1
09/17/04	1036	2	MASS AVE	1	1	1	N		1
09/17/04	2020	2	MASS AVE & PLEA	3	4	2	N		1
09/18/04	1230	2	MASS AVE	1	1	1	N		1
09/18/04	1324	2	MASS AVE & OXFO	1	4	2	N		2
09/20/04	2300	2	MASS AVE	3	1	1	N		2
09/24/04	1430	2	MASS AVE & PLEA	1	1	1	N		2
09/26/04	1630	6	MASS AVE	1	1	1	N	1	1
09/28/04	1019	2	MASS AVE	1	1	2	N		2
09/28/04	1414	2	MASS AVE	1	4	2	N	1	2
09/29/04	935	2	MASS AVE & TUFT	1	4	2	N		1
09/30/04	1840	2	MASS AVE	3	1	1	N		1
09/30/04	805	2	MASS AVE & WYMA	1	1		N		1
10/02/04	1020	3	MASS AVE	1	1	1	N		1
10/04/04	800	1	MASS AVE	1	1	1	N		
10/07/04	855	6	MASS AVE	1	1	1	N		1
10/08/04	702	2	MASS AVE	1	1	1	N		2
10/08/04	1400	2	MASS AVE	1	1	1	N		1
10/13/04	848	2	MASS AVE	1	1	1	N		2
10/15/04	1303	2	MASS AVE	1	1	2	N		2
10/15/04	1715	3	MASS AVE	3	1	1	N		1
10/20/04	1810	6	MASS AVE	3	1	1	N		2
10/20/04	1931	2	MASS AVE & MARA	3	1	1	N		2
10/21/04	721	2	MASS AVE	1	1	1	N		2
10/20/04	1920	2	MASS AVE	3	1	1	N		1
10/24/04	1854	2	MASS AVE & QUIN	3	4	2	N		2
10/27/04	1830	E	MASS AVE	3	1	1	Y		2
10/28/04	1800	2	MASS AVE	3	1	1	N		1
10/29/04	914	3	MASS AVE	1	1	1	N		2
10/31/04	1711	3	MASS AVE	3	1	1	N		1
11/01/04	1800	1	MASS AVE	3	1	1	N		1
11/02/04	1155	2	MASS AVE	1	3	2	N		1
11/09/04	845	2	MASS AVE	1	1	1	N		2
11/14/04	1555	2	MASS AVE & PAUL	1	1	1	N		1
11/16/04	1815	2	MASS AVE & VARN	3	1	1	N		1
11/22/04	1846	2	MASS AVE	3	1	1	N		1
11/23/04	1442	2	MASS AVE	1	1	1	N		1
11/23/04	745	E	MASS AVE	1	1	1	Y	1	1
11/24/04	1530	3	MASS AVE	1	1	1	N		1
12/04/04	815	2	MASS AVE	1	1	1	N		2
12/04/04	1329	2	MASS AVE	1	1	1	N		1
12/08/04	920	2	MASS AVE	1	1	1	N		2
12/08/04	1303	2	MASS AVE	1	1	1	N		2
12/13/04	1827	3	MASS AVE	3	3	2	N		2
12/17/04	730	3	MASS AVE & PLEA	1	5	4	N		2
12/18/04	1230	E	MASS AVE	1	1	1	Y		2
12/22/04	2130	3	MASS AVE	3	1	2	N		2
12/24/04	2225	2	MASS AVE	3	1	1	N		1
12/27/04	1352	3	MASS AVE	1	1	2	N		2
12/28/04	1322	1	MASS AVE & WYMA	1	1	2	N		
12/30/04	1706	2	MASS AVE	3	1	2	N		1

01/0	2		MASS & PLL		1		2		1
01/07/05	1756	2	MASS AVE	3	1	1	Y		1
11/06/04	2139	5	MASS AVE	3	1	1	N		1
01/10/05	815	3	MASS AVE	3	1	2	N		2

(null)

acc_dateocc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
01/10/05	1350	1	MASS AVE & MARA	1	1	2	N		2
01/10/05	1916	3	MASS AVE	1	1	1	N		2
01/11/05	1906	1	MASS AVE & MILT	3	1	2	N		9
01/13/05	1030	2	MASS AVE & WATE	1	4	2	N		1
01/14/05	2000	2	MASS AVE & SCHO	3	1	2	N		1
01/18/05	957	2	MASS AVE	1	1	1	N		2
01/20/05	1359	D	MASS AVE	1	1	1	N		
01/21/05	1336	2	MASS AVE	1	1	1	N		2
01/22/05	1143	2	MASS AVE	1	1	1	N		2
01/22/05	1955	2	MASS AVE	3	4	3	N		2
01/23/05	1645	2	MASS AVE & PARK	1	2	2	N		1
01/27/05	30	2	MASS AVE	1	1	1	N		2
01/28/05	815	2	MASS AVE	1	1	2	N		2
01/28/05	2200	2	MASS AVE	3	1	2	N		2
02/01/05		3	MASS AVE	3	1	1	N		2
02/08/05	1830	E	MASS AVE	3	1	1	Y		2
02/08/05	1441	5	MASS AVE	1	1	1	N		
02/14/05	1120	2	MASS AVE	1	1	1	N		2
02/15/05	1615	2	MASS AVE & PLEA	1	1	1	N		1
02/17/05	1117	3	MASS AVE	1	1	1	N		2
02/20/05	1205	2	MASS AVE	1	1	1	N		2
02/20/05	1415	1	MASS AVE & PARK	1	1	1	N		2
02/23/05	910	2	MASS AVE & THOR	1	1	2	N		1
02/24/05	2227	2	MASS AVE & PARK	3	5	3	N		2
03/05/05	1350	2	MASS AVE	1	1	1	N		2
03/05/05	1515	2	MASS AVE	1	1	1	N		2
03/07/05	1204	2	MASS AVE	1	1	1	N		2
03/09/05	1100	E	MASS AVE	3	1	2	Y		
03/10/05	1130	2	MASS AVE	1	1	1	N		1
03/12/05	1904	2	MASS AVE	3	5	3	N		2
03/13/05	1535	2	MASS AVE & WATE	1	1	2	N		2
03/17/05	54	5	MASS AVE	1	1	1	N		1
03/24/05	1647	E	MASS AVE	1	1	1	N		2
03/26/05	1112	E	MASS AVE	1	1	1	Y	1	2
03/30/05	1530	1	MASS AVE	1	1	1	N	1	
03/30/05	1804	2	MASS AVE & TEEL	3	1	1	N		2
04/01/05	1205	3	MASS AVE	1	1	1	N		2
04/01/05	1530	1	MASS AVE & WATE	1	1	1	N		1
04/03/05	33	E	MASS AVE	3	2	2	Y		2
04/07/05	1600	6	MASS AVE & MELR	1	1	1	N	1	2
04/08/05	909	3	MASS AVE	1	1	1	N		2
04/11/05	1149	2	MASS AVE	1	1	1	N		1
04/18/05	2030	E	MASS AVE	3	1	1	Y		1
04/19/05	1101	2	MASS AVE	1	1	1	N		2
04/20/05	2213	1	MASS AVE	3	3	1	N		1
04/21/05	1100	6	MASS AVE & PLEA	1	1	1	N		2
04/25/05	918	2	MASS AVE	1	1	1	N		2
04/25/05	915	3	MASS AVE	1	1	1	N	1	2
04/26/05	1800	E	MASS AVE	1	1	1	Y		2
04/26/05	1144	2	MASS AVE	1	1	1	N		2
04/29/05	1455	2	MASS AVE	1	1	1	N		2
04/30/05	2220	2	MASS AVE	3	1	2	N		1
05/01/05	630	1	MASS AVE & PLEA	3	2	2	N		1
05/01/05	1421	2	MASS AVE	1	2	1	N		2

05/05/05	2212	3	MASS AVE	3	2	1	Y		3	
05/07/05	830	2	MASS AVE	1	3	2	N		2	
05/07/05	1305	1	MASS AVE	1	1	2	N		2	

(null)

acc_dateacc	acc_time	acc_typecode	acc_locfound	acc_light	acc_weather	acc_surface	acc_hitnrun	acc_roadcond	acc_angle
05/10/05	917	2	MASS AVE	1	1	1	N		2
05/13/05	1630	2	MASS AVE & WYMA	1	1	1	N		2
05/15/05	1249	2	MASS AVE	1	1	1	N		2
05/16/05	1230	2	MASS AVE	1	1	1	N		2
05/18/05	1230	2	MASS AVE & QUIN	1	1	1	N		2
05/20/05	1530	E	MASS AVE	1	1	1	Y		2
05/21/05	1407	2	MASS AVE & NEWM	1	1	1	N		2
05/22/05	650	E	MASS AVE	1	1	2	Y		1
05/23/05	2005	2	MASS AVE	3	3	2	N		2
05/22/05	1630	2	MASS AVE	1	1	1	N		2
06/04/05	1124	2	MASS AVE & PLEA	1	1	1	N		2
06/04/05	1130	2	MASS AVE	1	1	1	N		2
06/04/05	1345	2	MASS AVE	1	1	1	N		2
06/06/05	1830	3	MASS AVE	1	1	1	N		2
06/07/05	945	6	MASS AVE & MENO	1	1	1	N		2
06/07/05	1512	1	MASS AVE	1	1	1	N		2
06/11/05	946	2	MASS AVE	1	1	1	Y		2
06/11/05	1735	2	MASS AVE	1	1	1	N		2
06/12/05	1719	2	MASS AVE & PLEA	1	1	1	N	1	1

SEND ONE COPY TO:
MAIL: R.M.V.
P.O. BOX 199100
BOSTON, MA. 02119
NAME OF POLICE DEPT. SUBMITTING REPORT

NOT TO BE USED BY OPERATOR

MUST TYPE OR PRINT

COMMONWEALTH OF MASSACHUSETTS
POLICE REPORT
OF MOTOR VEHICLE ACCIDENT

REGISTRY USE ONLY

Date of Accident Mo / Day / Yr	Day of the Week (S M T W T F S = 1 2 3 4 5 6 7)	A.M. 1 / P.M. 2	Hour

Did you notice any indication that an operator had been taking any medication or drugs? Check One: YES 1 / NO 2

To your knowledge has any operator had a history of epilepsy, heart disease, fainting spells? YES 1 / NO 2 (explain on reverse)

Was this Accident investigated by an Officer? If Yes, Check One Box Below
1 Registry 2 MDC 3 Other 4 State Police 5 Local Police

VEHICLE 1

Name of Operator — CODES — Number of Vehicles Involved — Date of Birth MO DAY YR — Sex 1 M 2 F

Street Address — City/Town — State — Zip — Driver's License Number and State

Owners Name and Address (if same, write "same") — Registration Number and State

Name of Insurance Company only may be written here — Year — Make — Type — Approximate Cost to Repair $

Describe Damage to Vehicle: — Fire Damage YES 1 / NO 2 — Parked Car YES 1 / NO 2

VEHICLE 2

Name of Operator — Phone — Zip — Date of Birth MO. DAY YR. — Sex 1 M 2 F

Street Address — City/Town — State — Driver's License Number and State

Owners Name and Address (if same, write "same") — Phone — Zip — Registration Number and State

Name of Insurance Company only may be written here — Year — Make — Type — Approximate Cost to Repair $

Describe Damage to Vehicle: — Fire Damage YES 1 / NO 2 — Parked Car YES 1 / NO 2

OTHER

Describe Other Property Damage — Approximate Cost to Repair $

Name of Property Owner — Address — 1 State 2 MDC 3 Municipal

WITNESSES

Other Witnesses or Persons Present	Address	Phone
		Bus. / Res.
		Bus. / Res.

Number Injured — To what hospital was injured taken? — Taken by Ambulance? YES 1 / NO 2

INJURED 1

Name of Injured — Street — City/Town — State

Age — Sex 1 M 2 F

Ejected from Vehicle YES 1 / NO 2

INJURY SEVERITY: 1 Killed; 2 Serious Visible Injury; 3 Minor Visible Injury; 4 No Visible Injury but Complaints of Pain

RESTRAINT SYSTEMS (Yes / No / ?): 1 Safety Belt Used; 2 Child Restraint Used; 3 Helmet Used; 4 Air Bag Used

PERSON INJURED: 1 Operator, 2 Passenger (In Vehicle, No. ____); 3 Passenger In Train, Bus, Etc.; 4 Operator, 5 Passenger (On Motorcycle); 6 Pedestrian; 7 Bicyclist; 8 Moped; 9 Other

INJURED 2

Name of Injured — Street — City/Town — State

Age — Sex 1 M 2 F

Ejected from Vehicle YES 1 / NO 2

INJURY SEVERITY: 1 Killed; 2 Serious Visible Injury; 3 Minor Visible Injury; 4 No Visible Injury but Complaints of Pain

RESTRAINT SYSTEMS (Yes / No / ?): 1 Safety Belt Used; 2 Child Restraint Used; 3 Helmet Used; 4 Air Bag Used

PERSON INJURED: 1 Operator, 2 Passenger (In Vehicle, No ____); 3 Passenger In Train, Bus, Etc.; 4 Operator, 5 Passenger (On Motorcycle); 6 Pedestrian; 7 Bicyclist; 8 Moped; 9 Other

INJURED 3

Name of Injured — Street — City/Town — State

Age — Sex 1 M 2 F

Ejected from Vehicle YES 1 / NO 2

INJURY SEVERITY: 1 Killed; 2 Serious Visible Injury; 3 Minor Visible Injury; 4 No Visible Injury but Complaints of Pain

RESTRAINT SYSTEMS (Yes / No / ?): 1 Safety Belt Used; 2 Child Restraint Used; 3 Helmet Used; 4 Air Bag Used

PERSON INJURED: 1 Operator, 2 Passenger (In Vehicle, No ____); 3 Passenger In Train, Bus, Etc; 4 Operator, 5 Passenger (On Motorcycle); 6 Pedestrian; 7 Bicyclist; 8 Moped; 9 Other

BE SURE TO COMPLETE AND SIGN REPORT ON REVERSE SIDE

attached. Please sign report in space provided below.

LOCATION

City or Town Where Accident Occurred | Nearest Mile Marker | Number of Lanes | At Rotary 1 ☐ Yes 2 ☐ No

Street Name or Route Number — at intersection with

Which direction was each vehicle traveling?

Vehicle No 1 ☐ N S E W — No 2 ☐ N S E W

Or — If not at intersection, fill in below:

_____ feet ☐ N S E W Of nearest intersection, bridge, mile marker, railroad.

Other Landmarks: _____

If Accident Occurred on Ramp — Fill in Below:

1 ☐ On ramp to route number _____ going ☐ N S E W

2 ☐ On ramp from route number _____ going ☐ N S E W

TYPE

Accident Involved Collision With:

1 ☐ Pedestrian
2 ☐ Motor Vehicle in Traffic
3 ☐ Motor Vehicle Parked
4 ☐ Railroad Train
5 ☐ Ran off roadway hit fixed object _____ feet from road
6 ☐ Bicycle
7 ☐ Overturned in road
8 ☐ Ran off roadway — non-collision
9 ☐ Fixed object on shoulder sidewalk or island
A ☐ School Bus
B ☐ Truck
C ☐ Moped
D ☐ Other

If collision involved two or more vehicles mark one of the following:

1 ☐ Rear End 2 ☐ Angle 3 ☐ Head On

COLLISION CONDITIONS

What were vehicles doing prior to accident? Mark appropriate box

	Vehicle 1	Vehicle 2	
1			Making right turn
2			Making left turn
3			Making U turn
4			Going straight ahead
5			Passing on right
6			Passing on left
7			Stop sign
8			Skidding
9			Slowing or stopping
A			Crossing median strip
B			Driverless moving vehicle
C			Backing
D			Starting in traffic
E			Starting from parked position
F			Parked
G			Stalled or disabled
H			Stalled or disabled with flasher on
J			In process of parking
K			Entering or exiting from alley or driveway
L			Making right turn on red
M			Entering median
N			Crossed median
O			Other

Where was pedestrian located at time of accident? Mark appropriate box

X		
1		At intersection
2		Within 300 feet of intersection
3		More than 300 feet from intersection
4		Walking in street with traffic
5		Walking in street against traffic
6		Standing in street
7		Getting on/off vehicle
8		Working on vehicle
9		Working in street
A		Playing in street
B		Not in street
C		Other

TRAFFIC CONTROLS

X		
1		Stop sign
2		Yield sign
3		Warning sign
4		Signal light
5		Officer or flagman
6		Railroad crossing gate
7		Railroad automatic signal
8		Control device not working
9		No control present
A		No turn on red

ROAD SURFACE

X		
1		Dry
2		Wet
3		Snowy
4		Icy
5		Other

ROAD CONDITIONS

X		
1		No Defects
2		Holes, ruts, bumps
3		Foreign matter on surface
4		Defective shoulder
5		Road under construction
6		Other

COLLISION CONDITIONS

X		
1		Hit median barrier
2		Hit guard rail
3		Hit curbing
4		Hit abutment
5		Hit signpost
6		Hit utility or light pole
7		Hit tree
8		Embankment
9		Ditch
A		Rock ledge
B		Stone wall
C		Bridge rail
D		Other

LIGHT CONDITIONS

X		
1		Daylight
2		Dawn or dusk
3		Darkness — road lighted
4		Darkness — road unlighted

WEATHER CONDITIONS

X		
1		Clear
2		Foggy
3		Cloudy
4		Rain
5		Snow
6		Sleet

DIAGRAM

INDICATE ON THIS DIAGRAM WHAT HAPPENED.

Use one of these outlines to sketch the scene of your accident, writing in street or highway names or numbers.

1 Number each vehicle and show direction of travel by arrow: 1 2

2 Use solid line to show path before accident; dotted line after accident: 2 2

3. Show pedestrian by: ——

4. Show railroad by: ++++++++

5 Show distance and direction in landmarks; identify landmarks by name or number.

6 Indicate north by arrow, as:

INDICATE NORTH BY ARROW

VIOLATIONS

	Operator (mark one or more) 1	2		Operator 1	2		Operator 1	2		Operator 1	2	
1			Operating Under Influence of Liquor			6 Improper Passing			B Disregarded Traffic Light			G Leaving Scene of Accident
2			Operating Under Influence of Drugs			7 On Wrong Side of Road Not Overtaking			C Disregarded Warning or Stop Signs			H Other Moving Violations (explain below)
3			Exceeding Lawful Speed			8 Failed to Give Proper Signal			D Disregarded Other Traffic Control			J Operating to Endanger
4			Failed to Grant Right of Way to Other Vehicle			9 Improper Turning Movement			E Improper Start from Parked Position			K Failed to Stop for a Schoolbus
5			Failed to Grant Right of Way to Pedestrian			A Operating Unregistered Uninsured Vehicle			F Improper Parked Position			L Defective Equipment
												M No Violation
												N Seat Belt (Operator)
												O Seat Belt (Passenger)

Describe What Happened (Refer to Vehicles by Number)

Citation Number if issued _____

Signature _____

Name and Rank — Police Dept — Date

Critical Lane Volume Analysis

TRANSPORTATION RESEARCH CIRCULAR

Number 212, January 1980
ISSN 0097-8515

Transportation Research Board, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C. 20418

INTERIM MATERIALS ON HIGHWAY CAPACITY

modes
1 highway transportation
2 public transit
5 other

subject areas
12 planning
21 facilities design
54 operations and traffic control
55 traffic flow, capacity, and measurements

(Example 1)

Note: "(R)" denotes a recalculation.

Step 1(R). Identify Lane Geometry. Left turn lanes are added on Approaches 3 and 4.

Step 2(R). Identify Volumes. Volumes, in vph are shown on the form.

Step 3(R). Identify Phasing. The existing two phase signal will be analyzed.

Step 4(R). Left Turn Check. Step 4(R) is identical to the preceeding Step 5.

Step 5(R). Assign Lane Volumes. Left turns are assigned to left turn lanes and through plus right turn volumes are distributed equally to the remaining lanes.

Step 6(R). Critical Volumes. Critical volumes for phase A1A2 on Approaches 1 and 2 are 795 + 40 LT or 455 + 50 LT. Use 835. Critical volumes for phase A3A4 on Approaches 3 and 4 are 165 + 120 LT or 265 + 90 LT. Use 355.

Step 7(R). Sum of Critical Volumes. The sum of the critical volumes is (835 + 355) or 1190 vph.

Table 6. Level of Service Ranges

PLANNING Applications (in vph)

Level of Service	Maximum Sum of Critical Volumes: Two Phase	Three Phase	Four or more Phases
A	900	855	825
B	1050	1000	965
(C)	1200	1140	1100
D	1350	1275	1225
E	1500	1425	1375
F	---------not applicable---------		

OPERATIONS AND DESIGN Applications (in pch)

(deleted)

Step 8(R). Intersection Level of Service. Using Table 6, the value of 1190 vph falls within the range of 1051 to 1200, or Level of Service C for two phase operation.

Step 9(R). Recalculate. No recalculation is necessary as it is demonstrated that left turn lanes alter the intersection Level of Service D to C.

Table 3. PCE Values: Left Turn Effects

Left Turns Allowed from Left-Through Lanes[a]					
1. No Turn Phase	Opposing Volume, in vph: 1 left turn equals:	0-299 1.0 PCE	300-599 2.0 PCE	600-999 4.0 PCE	1000 + 6.0 PCE
2. With Turn Phase	1 left turn equals 1.2 PCE				
Left Turns Allowed from Left Turn Bays Only[b]					
3. No Turn Phase	Opposing Volume, in vph: 1 left turn equals:	0-299 1.0 PCE	300-599 2.0 PCE	600-999 4.0 PCE	1000 + 6.0 PCE
4. With Turn Phase	1 left turn equals 1.05 PCE				

[a] PCE Values are used in Step 5, PLANNING applications, to develop a distribution of volumes among several traffic lanes. PCE Values are also used in Step 7, OPERATIONS AND DESIGN applications, to convert left turn volumes to passenger car volumes prior to adding them to through and right turn volumes, in pch.

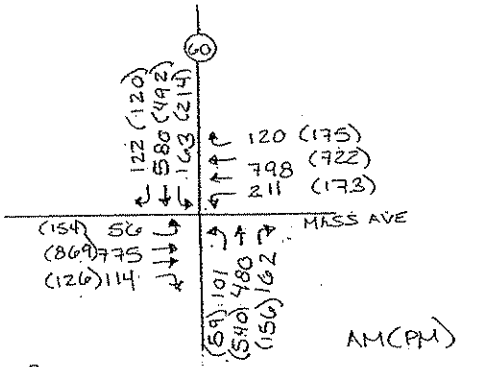
[b] PCE Values are used in Step 7, OPERATIONS AND DESIGN applications, to convert left turn volumes (operating from a turn bay) to passenger car volumes, in pch.

Source: W. R. Reilly (NCHRP Project 3-28), based on a synthesis of various data, including Ref. (5).

Computations

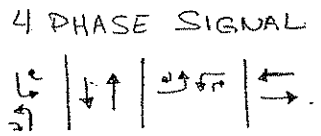
Project: MASS AVE — Project # 09145
Location: ARLINGTON — Sheet 1 of 6
Calculated by: SLL — Date: 3/18/05
Checked by: — Date:
Title CRITICAL LANE BY PHASE

MASS AVE AT PLEASANT STREET - EXISTING VOLS



vols from Louis Berger Group (Figs)
ARLINGTON TRANSPORTATION ASSESSMENT

4 PHASE SIGNAL



CONCURRENT PEDS

WEEKDAY MORNING

EXISTING

↳	↓	↰	←
163	580	211	798
1 lane	1 lane	1 lane	2 lanes

163 + 580 + 211 + 399

1353

WEEKDAY EVENING

↳	↑	↰	→
214	540	173	869
1 lane	1 lane	1 lane	2 lanes

214 + 540 + 173 + 435

1362

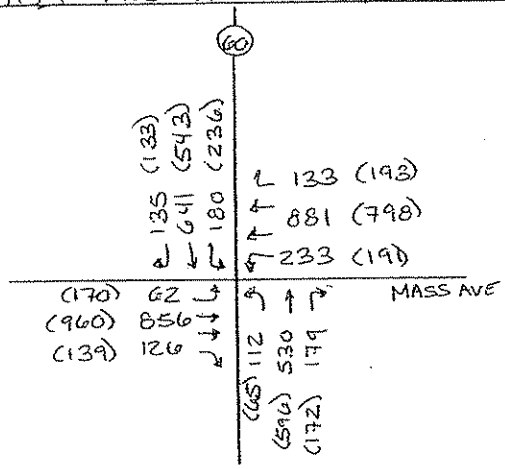
PROPOSED - SIGNAL UPGRADE & COORDINATION

Computations

Project: MASS AVE
Location: ARLINGTON
Calculated by: SLL
Checked by:
Title CRITICAL LANE BY PHASE

Project # 09145
Sheet 1A of 6A
Date: 4/19/05
Date:

MASS AVE AT PLEASANT STREET - FUTURE VOLUMES



11. growth → 10 years

WEEKDAY MORNING

EXISTING

↳	↓	↶	←
180 / 1 lane	641 / 1 lane	233 / 1 lane	881 / 2 lanes

180 + 641 + 233 + 441

1495

WEEKDAY EVENING

↳	↑	↶	→
236 / 1 lane	596 / 1 lane	191 / 1 lane	960 / 2 lanes

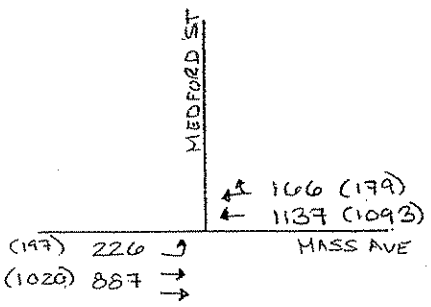
236 + 596 + 191 + 480

1503

Computations

Project: MASS AVE — Project # 09145
Location: ARLINGTON — Sheet 2 of 6
Calculated by: SLL — Date: 3/18/05
Checked by: — Date:
Title CRITICAL LANE BY PHASE

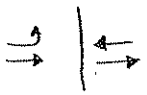
MASS AVE AT MEDFORD STREET – EXISTING VOLS



AM (PM)

Vols from Louis Berger Group (FIG 5)
ARLINGTON TRANSPORTATION ASSESSMENT

2 PHASE SIGNAL + PEDS



WEEKDAY MORNING

EXISTING

↱	←
226	1303
1 lane	2 lanes

226 + 652

878

WEEKDAY EVENING

↱	←
197	1272
1 lane	2 lanes

197 + 636

833

PROPOSED – SINGLE LANE

Morning

0.67 A

Evening

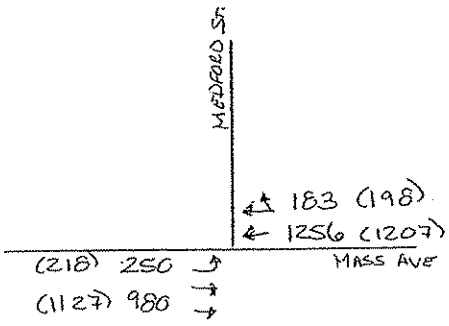
0.59 A

Computations

Project: MASS AVE
Location: ARLINGTON
Calculated by: SLL
Checked by:
Title

Project # 09145
Sheet 2A of 6A
Date: 4/19/05
Date:

MASS AVE AT MEDFORD STREET - FUTURE VOLUMES



1% growth → 10 years
AM (PM)

WEEKDAY MORNING

EXISTING CONDITIONS

↑	←
250	1439
1 lane	2 lanes

250 + 720

970

WEEKDAY EVENING

↑	←
218	1405
1 lane	2 lanes

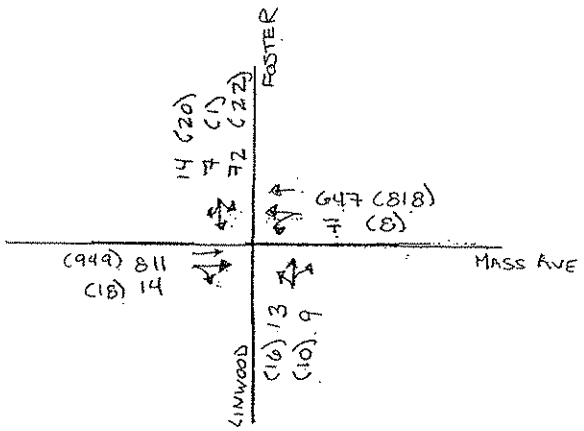
218 + 703

921

Computations

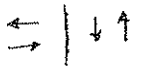
Project: MASS AVE — Project # 09145
Location: ARLINGTON — Sheet 3 of 6
Calculated by: SLL — Date: 3/18/05
Checked by: — Date:
Title CRITICAL LANE BY PHASE

MASS AVE AT LINWOOD ST/FOSTER STREET - EXISTING VOLS



from Jan 2002 Louis Berger Group Study
MASS AVE CORRIDOR STUDY
AM (PM)

2 PHASE SIGNAL



EXISTING

WEEKDAY MORNING

→	↓
825	93
2 lanes	1 lane
413	93

413 + 93

506

WEEKDAY EVENING

→	↓
967	44
2 lanes	1 lane
484	44

484 + 44

528

PROPOSED - SINGLE LANE

WEEKDAY MORNING

825	93
1 lane	1 lane

825 + 93

918

LOS A .71

WEEKDAY EVENING

967	44
1 lane	1 lane

967 + 44

1011

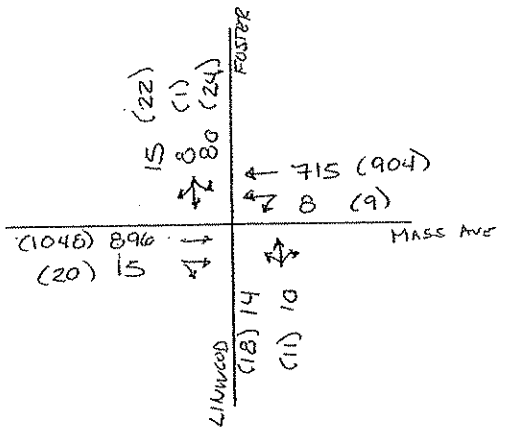
LOS A .74

Computations

Project: MASS AVE
Location: ARLINGTON
Calculated by: SLL
Checked by:
Title

Project # 09145
Sheet 3A of 6A
Date: 4/19/05
Date:

MASS AVE AT LINWOOD STREET / FOSTER STREET - FUTURE VOLUMES



1% growth → 10 years AM(PM)

WEEKDAY MORNING

EXISTING CONDITIONS

→ 911 / 2 lanes
↓ 103 / 1 lane

456 + 103

556

WEEKDAY EVENING

→ 1068 / 2 lanes
↓ 47 / 1 lane

534 + 47

581

PROPOSED CONDITIONS - SINGLE LANE ON MASS AVE

911 / 1 lane 103 / 1 lane

911 + 103

1014

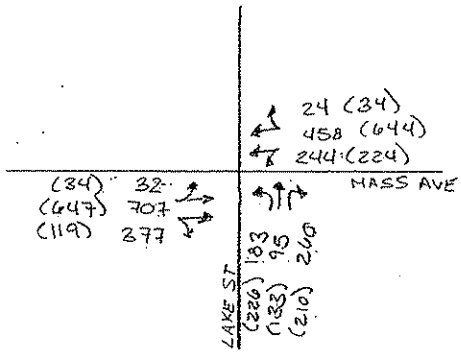
1068 / 1 lane 47 / 1 lane

1115

Computations

Project: MASS AVE — Project # 09145
Location: ARLINGTON — Sheet 4 of 6
Calculated by: SLL — Date: 3/16/05
Checked by: — Date:
Title CRITICAL LANE BY PHASE

MASS AVE AT LAKE STREET - EXISTING VOLS



3 PHASE SIGNAL + PEDS

ASSUME ADVANCE IS 10 SEC → 12.5% of CYCLE LENGTH

Volumes from "The Louis Berger Group, Inc" study
JAN 2002 MASS AVE CORRIDOR STUDY

EXISTING

WEEKDAY MORNING

↑ 538* (2 lanes) | → (2 lane) | → 1116 (2 lanes)

403 + 244 + 558

1205

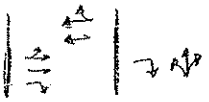
WEEKDAY EVENING

↑ 569* (2 lanes) | → (2 lane) | ← 454 (678 − 224) → 400/LANE

434 + 224 + 454

1,112

PROPOSED -



TRAFFIC SIGNAL UPGRADE & COORDINATION

WEEKDAY MORNING

↶ 244 (1 lane) | → 1116 (2 lanes) | ↑ 538 (1 lane)

244 + 558 + 538

1040

WEEKDAY EVENING

↶ 224 (1 lane) | → 800 (2 lanes) | ↑ 569 (1 lane)

224 400 569

1193

* SHORT-LANE 75' = 3 veh/φ × 45 cycles/hr = 135 vph

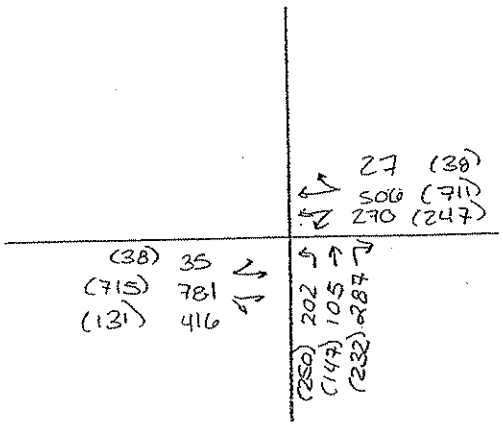
AM 538 − 135 = 403 IN 1 LANE
PM 569 − 135 = 434 IN 1 LANE

Computations

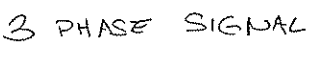
Project:
Location:
Calculated by:
Checked by:
Title

Project #
Sheet 4A of 6A
Date:
Date:

MASS AVE AT LAKE STREET - FUTURE VOLUMES



3 PHASE SIGNAL



ASSUME ADVANCE IS 10 sec → 12.5% of CYCLE LENGTH

1% growth → 10 years

WEEKDAY MORNING

EXISTING CONDITIONS

↑ ↙ →
594* 270 1232 / 2 lanes

459 + 270 + 616

1345

PROPOSED CONDITIONS

↙ → ↑
270 / 1 lane 1232 / 2 lanes 594 / 1 lane

270 + 616 + 594

1480

WEEKDAY EVENING

↑ ↙ ←
494* 247 + 502

1243

↙ → ↑
247 / 1 lane 864 / 2 lanes 629 / 1 lane

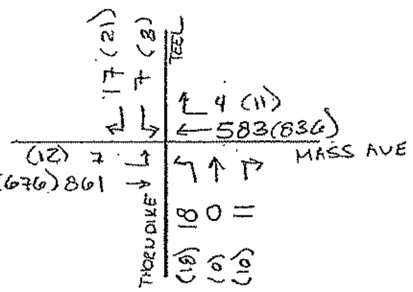
247 + 442 + 629

1318

Computations

Project: MASS AVE Project # 09145
Location: ARLINGTON Sheet 5 of 6
Calculated by: SLL Date: 3/18/05
Checked by: Date:
Title CRITICAL LANE BY PHASE

MASS AVENUE AT THORNDIKE STREET - EXISTING VOLS



Vols from Jan 2002 The Louis Berger Group Study
MASS AVE CORRIDOR STUDY

2 PHASE SIGNAL + PEDS

WEEKDAY MORNING

868 / 2 lanes → 587 / 2 lanes ←

24, 1, 18 → 29

$\phi 1$ → CLV = 434

$\phi 2$ ↓ CLV = 42

$\phi 1 + \phi 2$ = **476**

WEEKDAY EVENING

688 / 2 → 847 / 2 ←

24, 3, 18 → 28

$\phi 1$: 424

$\phi 2$ = ~~42~~ 28

$\phi 1 + \phi 2$ = **466**

PROPOSED - SINGLE LANE

WEEKDAY MORNING

868 / 1 lane, 29 / 1 lane

897

WEEKDAY EVENING

847 / 1 lane, 28 / 1 lane

875

Vanasse Hangen Brustlin, Inc.

Computations

Project: | Project #

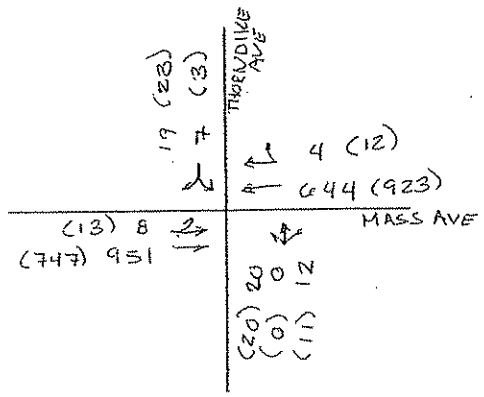
Location: | Sheet 5A of 6A

Calculated by: | Date:

Checked by: | Date:

Title

MASS AVENUE AT THORNDIKE STREET - FUTURE VOLUMES



1% growth → 10 years

WEEKDAY MORNING

EXISTING CONDITIONS

959 / 2 lanes → 480 + 46 = 526

46 / 1 lane

PROPOSED CONDITIONS

959 / 1 lane → 959 + 46 = 1005

46 / 1 lane

WEEKDAY EVENING

EXISTING CONDITIONS

935 / 2 lanes → 468 + 46 = 514

31 / 1 lane

PROPOSED CONDITIONS

935 / 1 lane → 935 + 46 = 981

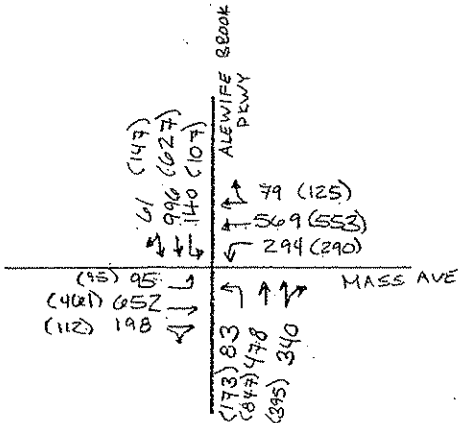
46 / 1 lane

46

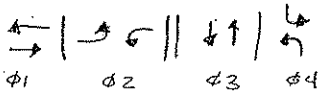
Computations

Project: MASS AVE — Project # 09145
Location: ARLINGTON — Sheet 6 of 6
Calculated by: SLL — Date: 3/18/05
Checked by: — Date:
Title CRITICAL LANE ANALYSIS BY PHASE

MASS. AVE AT ALEWIFE BROOK PARKWAY - EXISTING VOLS



4 PHASE SIGNAL + PEDS



Vols from July 2004 VAI study
AM (PM)
XX (XX)

WEEKDAY MORNING

←	↓	↓	↳
850	294	1057	140
2 lanes	1 lane	2 lanes	1 lane
425	294	529	140

1388

WEEKDAY EVENING

←	↓	↑	↰
678	290	1242	173
2 lanes	1 lane	2 lanes	1 lane
339	290	621	173

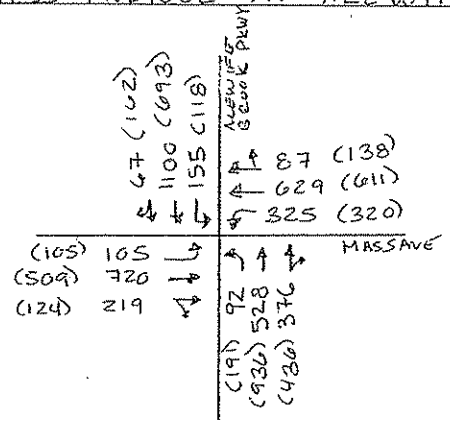
1423

Computations

Project: MASS AVE
Location: ARLINGTON
Calculated by: SLL
Checked by:
Title

Project # 09145
Sheet 6A of 6A
Date: 4/19/05
Date:

MASS AVENUE AT ALEWIFE BROOK PARKWAY - FUTURE VOLUMES



1% growth → 10 years
AM(PM)

WEEKDAY MORNING

←	↖	↓	↳
716 / 2 lanes	325 / 1 lane	1167 / 2 lanes	155 / 1 lane

358 + 325 + 584 + 155

1422

WEEKDAY EVENING

←	↖	↑	↰
749 / 2 lanes	320 / 1 lane	1372 / 2 lanes	191 / 1 lane

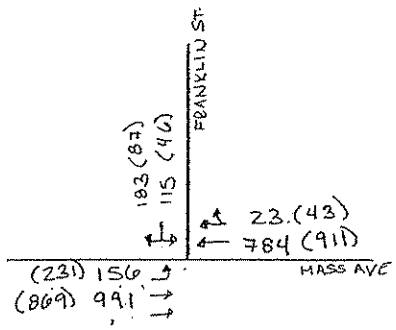
375 + 320 + 686 + 191

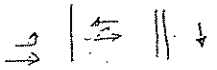
1572

Computations

Project: | Project #
Location: | Sheet 7 of
Calculated by: | Date:
Checked by: | Date:
Title

MASS AVE AT FRANKLIN STREET - EXISTING VOLUMES





3 PHASE SIGNAL

PEDS

BUILD 2003 VOLUMES FROM 1998 "PROPOSED APARTMENTS - MASS AVE" STUDY

WEEKDAY MORNING

EXISTING CONDITIONS

→ → ↓

156 $\frac{991-156}{2 \text{ lanes}}$ + 298

872

LOS B

WEEKDAY EVENING

→ ← ↓

231 + $\frac{954}{2 \text{ lanes}}$ + 133

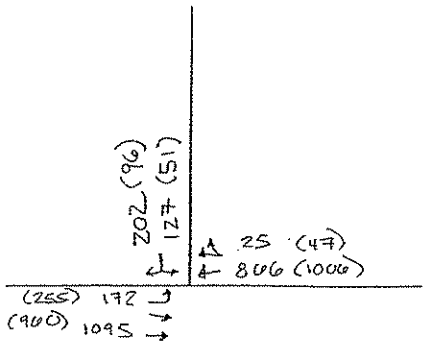
721

LOS A

Computations

Project: | Project #
Location: | Sheet 8 of
Calculated by: | Date:
Checked by: | Date:
Title

MASS AVE AT FRANKLIN STREET – FUTURE VOLUMES



1% growth → 10 years

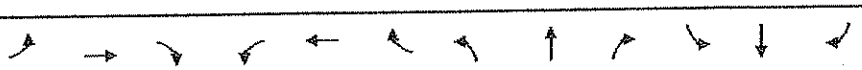
FUTURE CONDITIONS

WEEKDAY MORNING

↑ | → | ↓
172 + (1095 − 172)/2 lanes + 329
963
LOS B

WEEKDAY EVENING

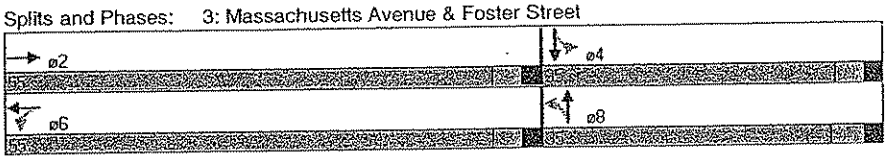
↑ | ← | ↓
255 + 1053/2 lanes + 147
929
LOS B

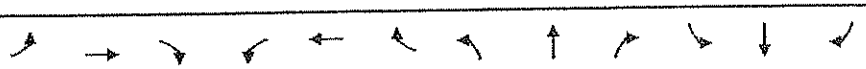


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50		50	50		50	50		50	50	
Trailing Detector (ft)		0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3408			3504			2712			2728	
Travel Time (s)		77.5			79.6			61.6			62.0	
Volume (vph)	0	811	14	7	647	0	13	0	9	72	7	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lane Group Flow (vph)	0	897	0	0	711	0	0	24	0	0	101	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Detector Phases		2		6	6		8	8		4	4	
Minimum Initial (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)		21.0		21.5	21.5		21.5	21.5		21.0	21.0	
Total Split (s)	0.0	55.0	0.0	55.0	55.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	0%	61%	0%	61%	61%	0%	39%	39%	0%	39%	39%	0%
Maximum Green (s)		50.0		50.0	50.0		29.5	29.5		30.0	30.0	
Yellow Time (s)		3.0		3.0	3.0		3.5	3.5		3.0	3.0	
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		None		None	None		Min	Min		Min	Min	
Walk Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Queue Length 50th (ft)		36			36			2			12	
Queue Length 95th (ft)		90			82			16			49	
Internal Link Dist (ft)		3328			3424			2632			2648	
50th Up Block Time (%)												
95th Up Block Time (%)												
Turn Bay Length (ft)												
50th Bay Block Time %												
95th Bay Block Time %												
Queuing Penalty (veh)												

Intersection Summary
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 34.6
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Massachusetts Avenue & Foster Street





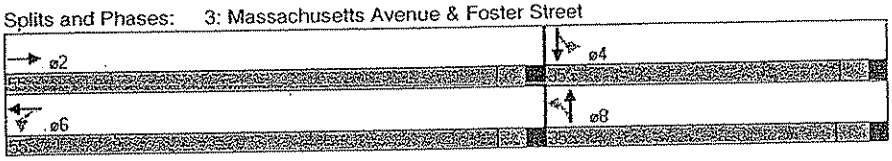
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			1.00			0.94			0.98	
Flt Protected		1.00			1.00			0.97			0.96	
Satd. Flow (prot)		3177			3184			1537			1582	
Flt Permitted		1.00			0.94			0.82			0.76	
Satd. Flow (perm)		3177			3005			1293			1250	
Volume (vph)	0	811	14	7	647	0	13	0	9	72	7	14
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	882	15	8	703	0	14	0	10	78	8	15
Lane Group Flow (vph)	0	897	0	0	711	0	0	24	0	0	101	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)		15.8			15.8			7.8			8.3	
Effective Green, g (s)		15.8			15.8			9.3			9.3	
Actuated g/C Ratio		0.49			0.49			0.27			0.27	
Clearance Time (s)		5.0			5.0			5.5			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1555			1480			353			341	
v/s Ratio Prot		c0.28										
v/s Ratio Perm					0.24			0.02			c0.08	
v/c Ratio		0.57			0.48			0.07			0.30	
Uniform Delay, d1		6.1			5.7			9.2			9.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.2			0.1			0.5	
Delay (s)		6.6			6.0			9.3			10.3	
Level of Service		A			A			A			B	
Approach Delay (s)		6.6			6.0			9.3			10.3	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	34.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50		50	50		50	50		50	50	
Trailing Detector (ft)		0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3408			3504			2712			2728	
Travel Time (s)		77.5			79.6			61.6			62.0	
Volume (vph)	0	811	14	7	647	0	13	0	9	72	7	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lane Group Flow (vph)	0	897	0	0	711	0	0	24	0	0	101	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Detector Phases		2		6	6		8	8		4	4	
Minimum Initial (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)		21.0		21.5	21.5		21.5	21.5		21.0	21.0	
Total Split (s)	0.0	55.0	0.0	55.0	55.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	0%	61%	0%	61%	61%	0%	39%	39%	0%	39%	39%	0%
Maximum Green (s)		50.0		50.0	50.0		29.5	29.5		30.0	30.0	
Yellow Time (s)		3.0		3.0	3.0		3.5	3.5		3.0	3.0	
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		None		None	None		Min	Min		Min	Min	
Walk Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Queue Length 50th (ft)		136			113			4			31	
Queue Length 95th (ft)		370			276			24			79	
Internal Link Dist (ft)		3328			3424			2632			2648	
50th Up Block Time (%)												
95th Up Block Time (%)												
Turn Bay Length (ft)												
50th Bay Block Time %												
95th Bay Block Time %												
Queuing Penalty (veh)												

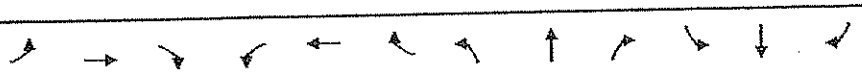
Intersection Summary
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 59.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Massachusetts Avenue & Foster Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.94			0.98	
Flt Protected		1.00			1.00			0.97			0.96	
Satd. Flow (prot)		1673			1676			1537			1582	
Flt Permitted		1.00			0.99			0.82			0.76	
Satd. Flow (perm)		1673			1662			1300			1247	
Volume (vph)	0	811	14	7	647	0	13	0	9	72	97	14
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	882	15	8	703	0	14	0	10	78	105	15
Lane Group Flow (vph)	0	897	0	0	711	0	0	24	0	0	101	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)		38.8			38.8			9.4			9.9	
Effective Green, g (s)		39.8			39.8			10.9			10.9	
Actuated g/C Ratio		0.68			0.68			0.19			0.19	
Clearance Time (s)		5.0			5.0			5.5			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1134			1127			241			232	
v/s Ratio Prot		c0.54										
v/s Ratio Perm					0.43			0.02			c0.08	
v/c Ratio		0.79			0.63			0.10			0.44	
Uniform Delay, d1		6.6			5.3			19.3			21.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.8			1.2			0.2			1.3	
Delay (s)		10.4			6.5			20.0			22.5	
Level of Service		B			A			C			C	
Approach Delay (s)		10.4			6.5			20.0			22.5	
Approach LOS		B			A			C			C	

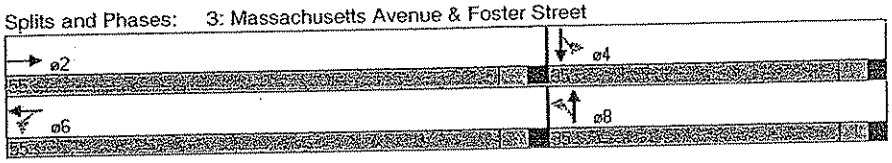
Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
c Critical Lane Group			

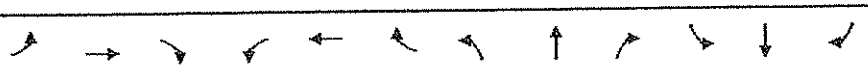


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50		50	50		50	50		50	50	
Trailing Detector (ft)		0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3408			3504			2712			2728	
Travel Time (s)		77.5			79.5			61.6			62.0	
Volume (vph)	0	949	18	8	818	0	16	0	10	22	1	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lane Group Flow (vph)	0	1052	0	0	898	0	0	28	0	0	47	0
Turn Type			Perm				Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Detector Phases		2		6	6		8	8		4	4	
Minimum Initial (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)		21.0		21.0	21.0		21.0	21.0		21.0	21.0	
Total Split (s)	0.0	55.0	0.0	55.0	55.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	0%	61%	0%	61%	61%	0%	39%	39%	0%	39%	39%	0%
Maximum Green (s)		50.0		50.0	50.0		30.0	30.0		30.0	30.0	
Yellow Time (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		None		None	None		Min	Min		Min	Min	
Walk Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Queue Length 50th (ft)		37			42			2			4	
Queue Length 95th (ft)		80			84			19			25	
Internal Link Dist (ft)		3328			3424			2632			2648	
50th Up Block Time (%)												
95th Up Block Time (%)												
Turn Bay Length (ft)												
50th Bay Block Time %												
95th Bay Block Time %												
Queuing Penalty (veh)												

Intersection Summary
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 35.1
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Massachusetts Avenue & Foster Street





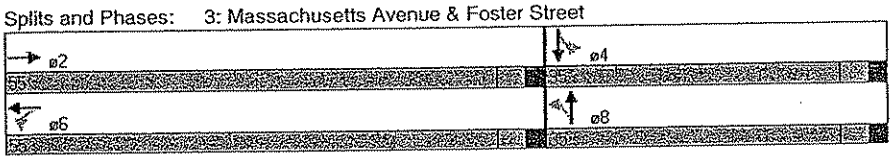
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑			↑	
Ideal Flow (vphpl)	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			1.00			0.95			0.94	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		3176			3184			1541			1531	
Flt Permitted		1.00			0.94			0.82			0.84	
Satd. Flow (perm)		3176			3003			1294			1320	
Volume (vph)	0	949	18	8	818	0	16	0	10	22	1	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1032	20	9	889	0	17	0	11	24	1	22
Lane Group Flow (vph)	0	1052	0	0	898	0	0	28	0	0	47	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)		18.1			18.1			6.6			6.6	
Effective Green, g (s)		19.1			19.1			7.6			7.6	
Actuated g/C Ratio		0.55			0.55			0.22			0.22	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1748			1653			283			289	
v/s Ratio Prot		c0.33										
v/s Ratio Perm					0.30			0.02			c0.04	
v/c Ratio		0.60			0.54			0.10			0.16	
Uniform Delay, d1		5.2			5.0			10.8			11.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.4			0.2			0.3	
Delay (s)		5.8			5.4			11.0			11.2	
Level of Service		A			A			B			B	
Approach Delay (s)		5.8			5.4			11.0			11.2	
Approach LOS		A			A			B			B	

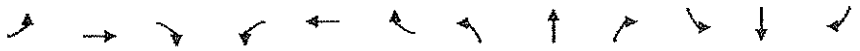
Intersection Summary				
HCM Average Control Delay	5.6	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.48			
Actuated Cycle Length (s)	34.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	42.4%	ICU Level of Service	A	
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50		50	50		50	50		50	50	
Trailing Detector (ft)		0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		3408			3504			2712			2728	
Travel Time (s)		77.5			79.6			61.6			62.0	
Volume (vph)	0	949	18	8	818	0	16	0	10	22	1	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Lane Group Flow (vph)	0	1052	0	0	898	0	0	28	0	0	47	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Detector Phases		2		6	6		8	8		4	4	
Minimum Initial (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)		21.0		21.0	21.0		21.0	21.0		21.0	21.0	
Total Split (s)	0.0	55.0	0.0	55.0	55.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	0%	61%	0%	61%	61%	0%	39%	39%	0%	39%	39%	0%
Maximum Green (s)		50.0		50.0	50.0		30.0	30.0		30.0	30.0	
Yellow Time (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)		2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode		None		None	None		Min	Min		Min	Min	
Walk Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Queue Length 50th (ft)		141			432			6			9	
Queue Length 95th (ft)		#623			#679			28			37	
Internal Link Dist (ft)		3328			3424			2632			2648	
50th Up Block Time (%)												
95th Up Block Time (%)												
Turn Bay Length (ft)												
50th Bay Block Time %												
95th Bay Block Time %												
Queuing Penalty (veh)												

Intersection Summary
Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 87
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Massachusetts Avenue & Foster Street





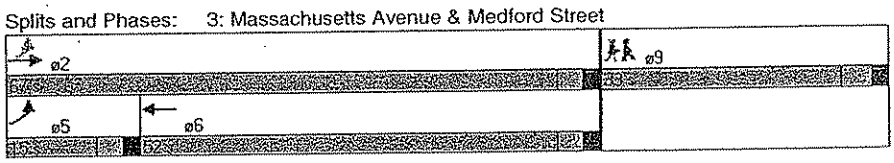
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710	1710
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.95			0.94	
Flt Protected		1.00			1.00			0.97			0.98	
Satd. Flow (prot)		1672			1676			1541			1531	
Flt Permitted		1.00			0.99			0.86			0.83	
Satd. Flow (perm)		1672			1660			1275			1301	
Volume (vph)	0	949	18	8	818	0	16	0	10	22	1	20
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1032	20	9	889	0	17	0	11	24	1	22
Lane Group Flow (vph)	0	1052	0	0	898	0	0	28	0	0	47	0
Turn Type				Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases				6			8			4		
Actuated Green, G (s)		50.0			50.0			7.0			7.0	
Effective Green, g (s)		51.0			51.0			8.0			8.0	
Actuated g/C Ratio		0.76			0.76			0.12			0.12	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1273			1264			152			155	
v/s Ratio Prot		c0.63										
v/s Ratio Perm					0.54			0.02			c0.04	
v/c Ratio		0.83			0.71			0.18			0.30	
Uniform Delay, d1		5.2			4.2			26.6			27.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.5			1.9			0.6			1.1	
Delay (s)		9.7			6.1			27.1			28.1	
Level of Service		A			A			C			C	
Approach Delay (s)		9.7			6.1			27.1			28.1	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø9
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150			0	0	0	
Storage Lanes	1			0	0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50	50				
Trailing Detector (ft)	0	0	0				
Turning Speed (mph)	15			9	15	9	
Right Turn on Red				Yes		Yes	
Link Speed (mph)		30	30		30		
Link Distance (ft)		2942	2962		2567		
Travel Time (s)		66.9	67.3		58.3		
Volume (vph)	226	887	1137	168	0	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Lane Group Flow (vph)	246	964	1419	0	0	0	
Turn Type	pm+pt						
Protected Phases	5	2	6				9
Permitted Phases	2						
Detector Phases	5	2	6				
Minimum Initial (s)	4.0	4.0	4.0				4.0
Minimum Split (s)	9.0	21.0	21.0				9.5
Total Split (s)	15.0	67.0	52.0	0.0	0.0	0.0	33.0
Total Split (%)	15%	67%	52%	0%	0%	0%	33%
Maximum Green (s)	10.0	62.0	47.0				27.5
Yellow Time (s)	3.0	3.0	3.0				3.5
All-Red Time (s)	2.0	2.0	2.0				2.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	None	None	None				None
Walk Time (s)		5.0	5.0				
Flash Dont Walk (s)		11.0	11.0				
Pedestrian Calls (#/hr)		0	0				
Queue Length 50th (ft)	33	0	121				
Queue Length 95th (ft)	#131	0	173				
Internal Link Dist (ft)		2862	2882		2487		
50th Up Block Time (%)							
95th Up Block Time (%)							
Turn Bay Length (ft)	150						
50th Bay Block Time %							
95th Bay Block Time %							
Queuing Penalty (veh)							

Intersection Summary
Area Type: CBD
Cycle Length: 100
Actuated Cycle Length: 52.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Massachusetts Avenue & Medford Street



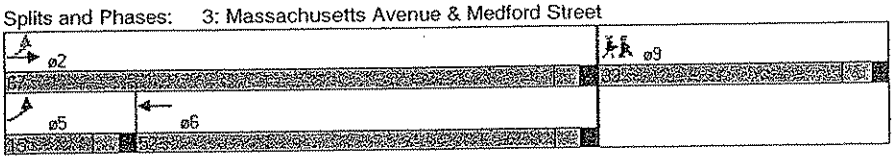
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1710	1710	1710	1710	1710	1710
Total Lost time (s)	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95	0.95			
Frt	1.00	1.00	0.98			
Flt Protected	0.95	1.00	1.00			
Satd. Flow (prot)	1593	3185	3124			
Flt Permitted	0.12	1.00	1.00			
Satd. Flow (perm)	201	3185	3124			
Volume (vph)	226	887	1137	168	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	964	1236	183	0	0
Lane Group Flow (vph)	246	964	1419	0	0	0
Turn Type	prot	pt				
Protected Phases	5	2	6			
Permitted Phases	2					
Actuated Green, G (s)	47.8	52.8	32.6			
Effective Green, g (s)	48.8	52.8	33.6			
Actuated g/C Ratio	0.92	1.00	0.64			
Clearance Time (s)	5.0	5.0	5.0			
Vehicle Extension (s)	3.0	3.0	3.0			
Lane Grp Cap (vph)	461	3185	1988			
v/s Ratio Prot	c0.11	0.30	c0.45			
v/s Ratio Perm	0.36					
v/c Ratio	0.51	0.30	0.71			
Uniform Delay, d1	7.3	0.0	6.4			
Progression Factor	1.00	1.00	1.00			
Incremental Delay, d2	0.9	0.1	1.2			
Delay (s)	8.2	0.1	7.6			
Level of Service	A	A	A			
Approach Delay (s)		1.7	7.6	0.0		
Approach LOS		A	A	A		

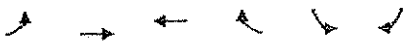
Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	B
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø9
Lane Configurations							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	150			0	0	0	
Storage Lanes	1			0	0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Leading Detector (ft)	50	50	50				
Trailing Detector (ft)	0	0	0				
Turning Speed (mph)	15			9	15	9	
Right Turn on Red				Yes		Yes	
Link Speed (mph)		30	30		30		
Link Distance (ft)		2942	2962		2567		
Travel Time (s)		66.9	67.3		58.3		
Volume (vph)	197	1020	1093	179	0	0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Lane Group Flow (vph)	214	1109	1383	0	0	0	
Turn Type	pm+pt						
Protected Phases	5	2	6				9
Permitted Phases	2						
Detector Phases	5	2	6				
Minimum Initial (s)	4.0	4.0	4.0				4.0
Minimum Split (s)	9.0	21.0	21.0				9.5
Total Split (s)	15.0	67.0	52.0	0.0	0.0	0.0	33.0
Total Split (%)	15%	67%	52%	0%	0%	0%	33%
Maximum Green (s)	10.0	62.0	47.0				27.5
Yellow Time (s)	3.0	3.0	3.0				3.5
All-Red Time (s)	2.0	2.0	2.0				2.0
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	None	None	None				None
Walk Time (s)		5.0	5.0				
Flash Dont Walk (s)		11.0	11.0				
Pedestrian Calls (#/hr)		0	0				
Queue Length 50th (ft)	21	0	115				
Queue Length 95th (ft)	91	0	166				
Internal Link Dist (ft)		2862	2882		2487		
50th Up Block Time (%)							
95th Up Block Time (%)							
Turn Bay Length (ft)	150						
50th Bay Block Time %							
95th Bay Block Time %							
Queuing Penalty (veh)							

Intersection Summary	
Area Type:	CBD
Cycle Length: 100	
Actuated Cycle Length: 50.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 3: Massachusetts Avenue & Medford Street





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1710	1710	1710	1710	1710	1710
Total Lost time (s)	4.0	4.0	4.0			
Lane Util. Factor	1.00	0.95	0.95			
Frt	1.00	1.00	0.98			
Flt Protected	0.95	1.00	1.00			
Satd. Flow (prot)	1593	3185	3118			
Flt Permitted	0.12	1.00	1.00			
Satd. Flow (perm)	209	3185	3118			
Volume (vph)	197	1020	1093	179	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	1109	1188	195	0	0
Lane Group Flow (vph)	214	1109	1383	0	0	0
Turn Type	pm+pt					
Protected Phases	5	2	6			
Permitted Phases	2					
Actuated Green, G (s)	45.3	50.3	30.4			
Effective Green, g (s)	46.3	50.3	31.4			
Actuated g/C Ratio	0.92	1.00	0.62			
Clearance Time (s)	5.0	5.0	5.0			
Vehicle Extension (s)	3.0	3.0	3.0			
Lane Grp Cap (vph)	492	3185	1946			
v/s Ratio Prot	0.09	c0.35	c0.44			
v/s Ratio Perm	0.31					
v/c Ratio	0.43	0.35	0.71			
Uniform Delay, d1	5.0	0.0	6.4			
Progression Factor	1.00	1.00	1.00			
Incremental Delay, d2	0.6	0.1	1.2			
Delay (s)	5.6	0.1	7.6			
Level of Service	A	A	A			
Approach Delay (s)		1.0	7.6		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	4.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
c Critical Lane Group			

Cost Estimate

Transportation
Land Development
Environmental
Services

101 Walnut Street
Post Office Box 9151
Watertown
Massachusetts 02471
617 924 1770

Vanasse Hangen Brustlin, Inc.

CONCEPTUAL COST ESTIMATE
Massachusetts Avenue Tranportation Improvements
Arlington, Massachusetts

Segment	Total Cost
Mill Street to Water Street	$159,183.00
Water Street to Franklin Street	$374,721.00
Franklin Street to Grafton Street	$572,490.50
Grafton Street to Marathon Street	$307,663.25
Marathon Street to Alewife Brook Parkway	$599,605.50
SUBTOTAL:	$2,013,663.25
20 % Contingency:	$402,732.65
TOTAL:	$2,416,395.90
SAY:	$2,420,000

This estimate does not consider any Permitting or Police Services.

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CONCEPTUAL COST ESTIMATE

Mill Street to Water Street (1,150 lf)

Description	Unit Price	Quantity	Total Cost
Cold Plane & Pavement Overlay	$1.80 /SY	8435 SY	$15,183.00
Granite Curb Removed & Reset	$22.00 /LF	175 LF	$3,850.00
Full Depth Pavement (less than 3.0' wide)	$37.00 /SY	0 SY	$0.00
Cement Concrete Sidewalk	$53.00 /SY	80 SY	$4,240.00
Brick Sidewalk	$80.00 /SY	230 SY	$18,400.00
Loam & Seed	$3.75 /SY	0 SY	$0.00
Traffic Signal Upgrade	$100,000.00 /EA	1 EA	$100,000.00
Pavement Markings	$3,510.00 /LS	1 LS	$3,510.00
Brick Sidewalk Bulb-Out	$3,500.00 /EA	4 EA	$14,000.00
		Section TOTAL:	$159,183.00

Water Street to Franklin Street (1,700 lf)

Description	Unit Price	Quantity	Total Cost
Cold Plane & Pavement Overlay	$1.80 /SY	13045 SY	$23,481.00
Granite Curb Removed & Reset	$22.00 /LF	260 LF	$5,720.00
Brick Sidewalk	$80.00 /SY	415 SY	$33,200.00
Loam Borrow & Seed	$3.75 /SY	0 SY	$0.00
Traffic Signal Upgrade	$100,000.00 /EA	3 EA	$300,000.00
Pavement Markings	$5,320.00 /LS	1 LS	$5,320.00
Brick Sidewalk Bulb-Out	$3,500.00 /EA	2 EA	$7,000.00
		Section TOTAL:	$374,721.00

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Vanasse Hangen Brustlin, Inc.

CONCEPTUAL COST ESTIMATE

Franklin Street to Grafton Street (2,800 lf)

Description	Unit Price	Quantity	Total Cost
Cold Plane & Pavement Overlay	$1.80 /SY	15560 SY	$28,008.00
Granite Curb Removed & Reset	$22.00 /LF	3360 LF	$73,920.00
Granite Curb	$38.00 /LF	630 LF	$23,940.00
Pavement Removal	$12.50 /SY	5000 SY	$62,500.00
Cement Concrete Sidewalk	$53.00 /SY	4500 SY	$238,500.00
Loam Borrow & Seed	$3.75 /SY	7310 SY	$27,412.50
Traffic Signal Upgrade	$100,000.00 /EA	1 EA	$100,000.00
Pavement Markings	$6,210.00 /LS	1 LS	$6,210.00
Cement Concrete Sidewalk Bulb-Out	$3,000.00 /EA	4 EA	$12,000.00
		Section TOTAL:	$572,490.50

Grafton Street to Marathon Street (1,150 lf)

Description	Unit Price	Quantity	Total Cost
Cold Plane & Pavement Overlay	$1.80 /SY	8690 SY	$15,642.00
Granite Curb Removed & Reset	$22.00 /LF	1380 LF	$30,360.00
Granite Curb	$38.00 /LF	345 LF	$13,110.00
Pavement Removal	$12.50 /SY	1100 SY	$13,750.00
Cement Concrete Sidewalk	$53.00 /SY	2300 SY	$121,900.00
Loam Borrow & Seed	$3.75 /SY	1155 SY	$4,331.25
Traffic Signal Upgrade	$100,000.00 /EA	1 EA	$100,000.00
Pavement Markings	$2,570.00 /LS	1 LS	$2,570.00
Cement Concrete Sidewalk Bulb-Out	$3,000.00 /EA	2 EA	$6,000.00
		Section TOTAL:	$307,663.25

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CONCEPTUAL COST ESTIMATE

Marathon Street to Alewife Brook Parkway (1,900 lf)

Description	Unit Price	Quantity	Total Cost
Cold Plane & Pavement Overlay	$1.80 /SY	10835 SY	$19,503.00
Granite Curb Removed & Reset	$22.00 /LF	2340 LF	$51,480.00
Granite Curb	$38.00 /LF	585 LF	$22,230.00
Pavement Removal	$12.50 /SY	3600 SY	$45,000.00
Cement Concrete Sidewalk	$53.00 /SY	3565 SY	$188,945.00
Brick Sidewalk	$80.00 /SY	370 SY	$29,600.00
Loam Borrow & Seed	$3.75 /SY	5410 SY	$20,287.50
Traffic Signal Upgrade	$100,000.00 /EA	2 EA	$200,000.00
Pavement Markings	$4,560.00 /LS	1 LS	$4,560.00
Cement Concrete Sidewalk Bulb-Out	$3,000.00 /EA	6 EA	$18,000.00
		Section TOTAL:	$599,605.50

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Vanasse Hangen Brustlin, Inc.

UNIT COSTS

* Prices Based on MHD Weighted Average Bid Prices (2004)

Full Depth Pavement

	Depth (IN)	Width (in)	Conversion	Unit Cost	
Hot Mix Asphalt	2	N/A	0.0560 Ton/SY*IN	$45.00 /Ton	$5.04
Hot Mix Asphalt Binder Course	2	N/A	0.0560 Ton/SY*IN	$45.00 /MG	$5.04
Hot Mix Asphalt Base Course	4	N/A	0.0560 Ton/SY*IN	$45.00 /MG	$10.08
Dense Graded Crushed Stone	4	N/A	0.0278 YD/IN	$40.00 /YD^3	$4.44
Gravel Borrow	8	N/A	0.0278 YD/IN	$15.00 /YD^3	$3.33
Unclassified Excavation	20	N/A	0.0278 YD/IN	$12.00 /YD^3	$6.67
Fine Grading and Compacting	N/A	N/A	N/A	$2.00 /SY	$2.00
				per SY Total=	$36.60

Full Depth Pavement COST PER SY= $37.00

Hot Mix Asphalt Walk Surface

	Depth (in)	Width (in)	Conversion	Unit Cost	
Hot Mix Asphalt	3	N/A	0.0560 Ton/SY*IN	$85.00 /Ton	$14.28
Gravel Borrow	8	N/A	0.0278 YD/IN	$22.00 /YD^3	$4.89
Unclassified Excavation	11	N/A	0.0278 YD/IN	$18.00 /YD^3	$5.50
Fine Grading and Compacting	N/A	N/A	N/A	$1.75 /SY	$1.75
				per SY Total=	$26.42

Hot Mix Asphalt Walk Surface COST PER SY= $26.50

Hot Mix Asphalt Driveway

	Depth (in)	Width (in)	Conversion	Unit Cost	
Hot Mix Asphalt	3.5	N/A	0.0560 Ton/SY*IN	$90.00 /Ton	$17.64
Gravel Borrow	8	N/A	0.0278 YD/IN	$22.00 /YD^3	$4.89
Unclassified Excavation	11.5	N/A	0.0278 YD/IN	$18.00 /YD^3	$5.75
Fine Grading and Compacting	N/A	N/A	N/A	$1.75 /SY	$1.75
				per SY Total=	$30.03

Hot Mix Asphalt Driveway COST PER SY= $30.00

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Vanasse Hangen Brustlin, Inc.

Cement Concrete Walk / Wheelchair Ramps

	Depth (in)	Width (in)	Conversion	Unit Cost	
Cement Concrete	4	N/A	N/A	$40.00 /SY	$40.00
Gravel Borrow	8	N/A	0.0278 YD/IN	$22.00 /YD^3	$4.89
Unclassified Excavation	12	N/A	0.0278 YD/IN	$18.00 /YD^3	$6.00
Fine Grading and Compacting	N/A	N/A	N/A	$1.75 /SY	$1.75
				per SY Total=	$52.64

Cement Concrete Walk / Wheelchair Ramp COST PER SY= $53.00

Granite Curb

	Depth (in)	Width (in)	Conversion	Unit Cost	
Granite Curb	N/A	N/A	N/A	$30.00 /LF	$30.00
Cement Concrete	6	N/A	0.0093 SY/ FT*IN	$40.00 /SY	$2.22
Unclassified Excavation	18	N/A	0.0093 SY/ FT*IN	$22.00 /YD^3	$3.67
				per LF Total=	$35.90

Granite Curb COST PER LF= $36.00

Pavement Removal

	Depth (IN)		Conversion	Unit Cost	
Unclassified Excavation	15	N/A	0.0278 YD/IN	$18.00 /YD^3	$7.50
Ordinary Borrow	15	N/A	0.0278 YD/IN	$12.00 /YD^3	$5.00
				per SY Total=	$12.50

Pavement Removal COST PER SY= $12.50

Loam Borrow and Seed

	Depth (IN)	Conversion	Unit Cost	
Loam Borrow	4	0.0278 YD/IN	$24.00 /YD^3	$2.67
Seed			$1.00 /SY	$1.00
			per SY Total=	$3.67

Loam Borrow and Seed COST PER SY= $3.75

Transportation
Land Development
Environmental
Services

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Watertown
Massachusetts 02471
617 924 1770

Vanasse Hangen Brustlin, Inc.

Pavement Markings

	Unit Cost	
12" White Line	$1.40 /LF	$1.40
4" Yellow Line	$0.85 /LF	$1.40

12" White Line COST PER LF= $1.40
4" Yellow Line COST PER LF= $0.85

Cement Concrete Bulb-out

	Quantity		Unit Cost	
Granite Curb	50	LF	$38.00 /LF	$1,900.00
Cement Concrete Sidewalk	20	SY	$53.00 /SY	$1,060.00
			per EACH Total=	$2,960.00

Cement Concrete Bulb-out COST PER EACH= $3,000.00

Brick Bulb-out

	Quantity		Unit Cost	
Granite Curb	50	LF	$38.00 /LF	$1,900.00
Brick Sidewalk	20	SY	$80.00 /SY	$1,600.00
			per EACH Total=	$3,500.00

Cement Concrete Bulb-out COST PER EACH= $3,500.00

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VHB Vanasse Hangen Brustlin, Inc.

This estimate assumes the following:

Mill Street to Water Street (1,150 lf)

Pavement

Assume existing pavement width is approx 66'
Assume matching existing pavement width
Assume 2-12' lanes and 8.5' parking lane for each side
Assume Cold Plane & Overlay

Granite Curb

Assume there is 75% existing granite curb along corridor
Assume existing granite curb can be removed and reset if needed
Assume 10% of curb needs removing and resetting

Loam & Seed

Assume no areas require loam & seed

Sidewalk

Assume sidewalk reconstruction matching existing width of 12 feet on both sides
Assume 75% of sidewalk brick and 25% cement concrete
Assume 10% of sidewalk requires reconstruction

Drainage

Assume 4 structures need to be adjusted

Pavement Markings

Assume 2300 LF of 4" yellow line (DYCL) at $0.40/LF = $920
Assume 2300 LF of 4" white line (SWEL) (both sides) at $0.40/LF = $920
Assume 600 LF of 4" white line (BWLL) at $0.40/LF = $240
Assume 350 LF of 12" white line (SL & CW) at $1.40/LF = $490
Assume 170 SF of pavement markings at $3.50/SF = $600
Assume 84 parking stall markings at 10 LF of 4" white line/stall at $0.40/LF = $340
Total Pavement Marking = $3510

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Vanasse Hangen Brustlin, Inc.

This estimate assumes the following:

Water Street to Franklin Street (1,700 lf)

Pavement

Assume existing pavement width is approx 78'
Assume matching existing pavement width
Assume 2-12' lanes and 8.5' parking lane for each side
Assume Cold Plane & Overlay

Granite Curb

Assume there is 75% existing granite curb along corridor
Assume existing granite curb can be removed and reset if needed
Assume 10% of curb needs removing and resetting

Loam & Seed

Assume no areas require loam & seed

Median

Assume all medians require no reconstruction

Sidewalk

Assume sidewalk reconstruction matching existing width of 12' on both sides
Assume 100% of sidewalk brick
Assume 10% of sidewalk requires reconstruction
Assume 90% of length has sidewalk

Drainage

Assume 4 structures need to adjusted

Pavement Markings

Assume 3400 LF of 4" yellow line (DYCL) at $0.40/LF = $1360
Assume 3400 LF of 4" white line (SWEL) (both sides) at $0.40/LF = $1360
Assume 850 LF of 4" white line (BWLL) at $0.40/LF = $340
Assume 450 LF of 12" white line (SL & CW) at $1.40/LF = $630
Assume 355 SF of pavement markings at $3.50/SF = $1250
Assume 94 parking stall markings at 10 LF of 4" white line/stall at $0.40/LF = $380
Total Pavement Marking = $5320

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Vanasse Hangen Brustlin, Inc.

This estimate assumes the following:

Franklin Street to Grafton Street (2,800 lf)

Pavement

Assume 50' cross section 1 - 12' lane w/ 5' striped bike lane & 8' parking in each direction
Assume existing pavement width is approx 66'
Assume narrowing pavement width 16 feet (8' each side)
Assume Cold Plane & Overlay

Granite Curb

Assume there is 75% existing granite curb along corridor
Assume removing and resetting both sides of roadway
Assume 80% existing granite curb can be removed and reset
Assume 20% of new granite curb required

Loam & Seed

Assume 4" depth for all loam & seed areas
Assume loam & seed existing pavement that is being removed (approx 8' width)
Assume existing loam and seed along 50% of corridor
Assume existing loam & seed width is approx 7.5' (area between exist curb & exist sidewalk)

Sidewalk

Assume sidewalk reconstruction matching existing width of 8' on both sides
Assume 100% of sidewalk cement concrete
Assume 100% of sidewalk requires reconstruction
Assume 90% of length has sidewalk

Drainage

Assume CIT the existing basins and adding new catch basins
Assume 300' spacing for basins
Assume 10 sets of basins (14 cb)
Assume 6 lf of 12"RCP to connect each of the new structues

Pavement Markings

Assume 5600 LF of 4" yellow line (DYCL) at $0.40/LF = $2240
Assume 5600 LF of 4" white line (SWEL) (both sides) at $0.40/LF = $2240
Assume 465 LF of 12" white line (SL & CW) at $1.40/LF = $650
Assume 105 SF of pavement markings at $3.50/SF = $370
Assume 176 parking stall markings at 10 LF of 4" white line/stall at $0.40/LF = $710
Total Pavement Marking = $6210

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VHB Vanasse Hangen Brustlin, Inc.

This estimate assumes the following:

Grafton Street to Marathon Street (1,150 lf)

Pavement

Assume 68' cross section 4 lanes - 11' inside lanes 15' outside lanes & 8' parking on both sides
Assume existing pavement width is approx 76'
Assume narrowing pavement width 8 feet (4' each side)
Assume Cold Plane & Overlay

Granite Curb

Assume there is 75% existing granite curb along corridor
Assume removing and resetting both sides of roadway
Assume 80% existing granite curb can be removed and reset
Assume 20% of new granite curb required

Loam & Seed

Assume 4" depth for all loam & seed areas
Assume loam & seed existing pavement that is being removed (approx 4' width)
Assume exist loam and seed area along 75% from Grafton St to Oxford St
Assume existing loam & seed width is approx 7' (area between exist curb & exist sidewalk)

Sidewalk

Assume sidewalk reconstruction matching existing width of 10' on both sides
Assume 100% of sidewalk cement concrete
Assume 100% of sidewalk requires reconstruction
Assume 90% of length has sidewalk

Drainage

Assume CIT the existing basins and adding new catch basins
Assume 300' spacing for basins
Assume 7 sets of basins (14 cb)
Assume 6 lf of 12"RCP to connect each of the new structues

Pavement Markings

Assume 2300 LF of 4" yellow line (DYCL) at $0.40/LF = $920
Assume 2300 LF of 4" white line (SWEL) (both sides) at $0.40/LF = $920
Assume 220 LF of 12" white line (SL & CW) at $1.40/LF = $310
Assume 28 SF of pavement markings at $3.50/SF = $100
Assume 80 parking stall markings at 10 LF of 4" white line/stall at $0.40/LF = $320
Total Pavement Marking = $2570

Transportation
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Services

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VHB Vanasse Hangen Brustlin, Inc.

This estimate assumes the following :

Marathon Street to Alewife Brook Parkway (1,950 lf)

Pavement

Assume 50' cross section 1- 12' lane w/ 5' striped bike lane & 8' parking in each direction
Assume existing pavement width is approx 66.5'
Assume narrowing pavement width 16 feet (8' each side)
Assume Cold Plane & Overlay

Granite Curb

Assume there is 75% existing granite curb along corridor
Assume removing and resetting both sides of roadway
Assume 80% existing granite curb can be removed and reset
Assume 20% of new granite curb required

Loam & Seed

Assume 4" depth for all loam & seed areas
Assume loam & seed existing pavement that is being removed (approx 8' width)
Assume exist loam & seed width is approx 7.5' from Marathon St to Henderson St
and approx 6' from Boulevard Rd to Alewife Brook Parkway
Assume exist loam & seed along 75% of above lengths

Sidewalk

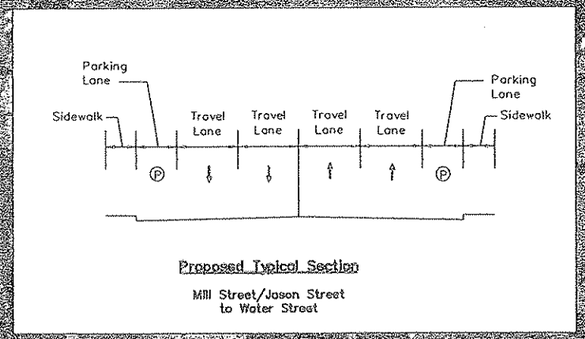
Assume sidewalk reconstruction matching existing on both sides:
cement concrete walk from Marathon St to Henderson St width of 8.5'
cement concrete walk from Henderson St to Boulevard Rd width of 16'
brick walk from Boulevard Rd to Alewife Brook Parkway width of 9.5'
Assume 100% of sidewalk requires reconstruction
Assume 90% of length has sidewalk

Drainage

Assume CIT the existing basins and adding new catch basins
Assume 300' spacing for basins
Assume 7 sets of basins (14 cb)
Assume 6 lf of 12"RCP to connect each of the new structues

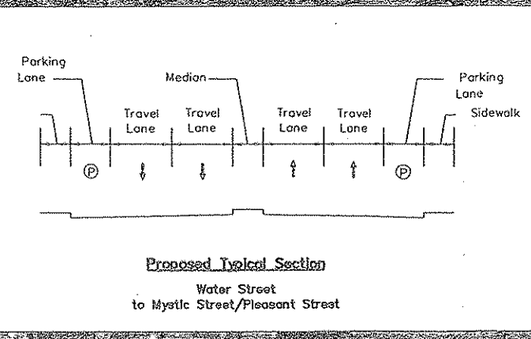
Pavement Markings

Assume 3900 LF of 4" yellow line (DYCL) at $0.40/LF = $1560
Assume 3900 LF of 4" white line (SWEL) (both sides) at $0.40/LF = $1560
Assume 565 LF of 12" white line (SL & CW) at $1.40/LF = $800
Assume 58 SF of pavement markings at $3.50/SF = $200
Assume 110 parking stall markings at 10 LF of 4" white line/stall at $0.40/LF = $440
Total Pavement Marking = $4560



Proposed Typical Section

Mill Street/Jason Street
to Water Street



Proposed Typical Section

Water Street
to Mystic Street/Pleasant Street

MASSACHUSETTS AVENUE IMPROVEMENTS

LEGEND	
Ⓢ	Signalized Intersection
Ⓟ	Parking Lane
Ⓑ	Bicycle Lane
CW	Crosswalk
SL	Stopline
→	Traffic Flow/Lane
XX(XX)	Traffic Volume AM(PM)

80 0 80 160
SCALE IN FEET

SHEET 1 OF 4

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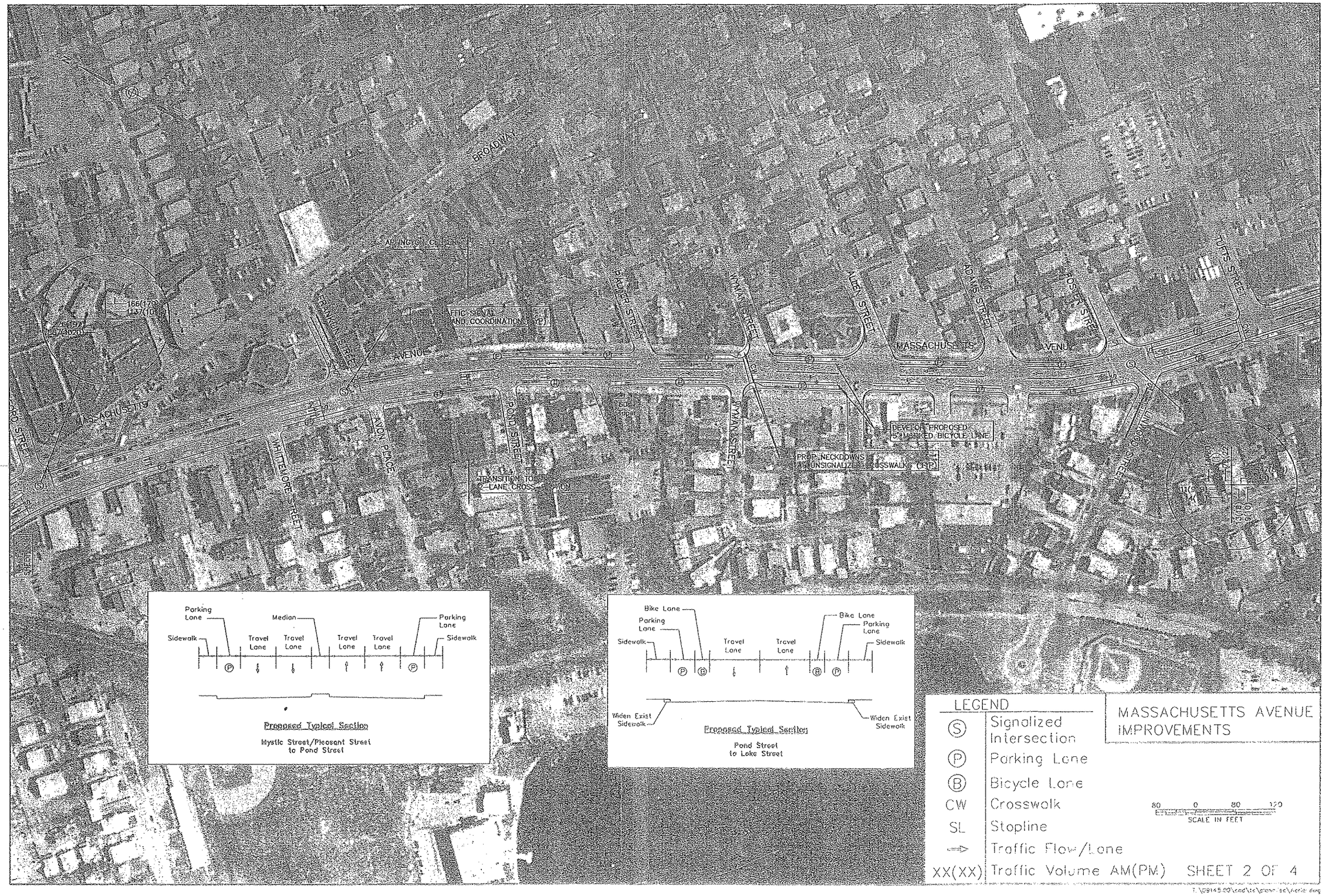

LEGEND

(S)	Signalized Intersection
(P)	Parking Lane
(B)	Bicycle Lane
CW	Crosswalk
SL	Stopline
⇨	Traffic Flow/Lane
XX(XX)	Traffic Volume AM(PM)

MASSACHUSETTS AVENUE IMPROVEMENTS

80 0 80 160
SCALE IN FEET

SHEET 2 OF 4

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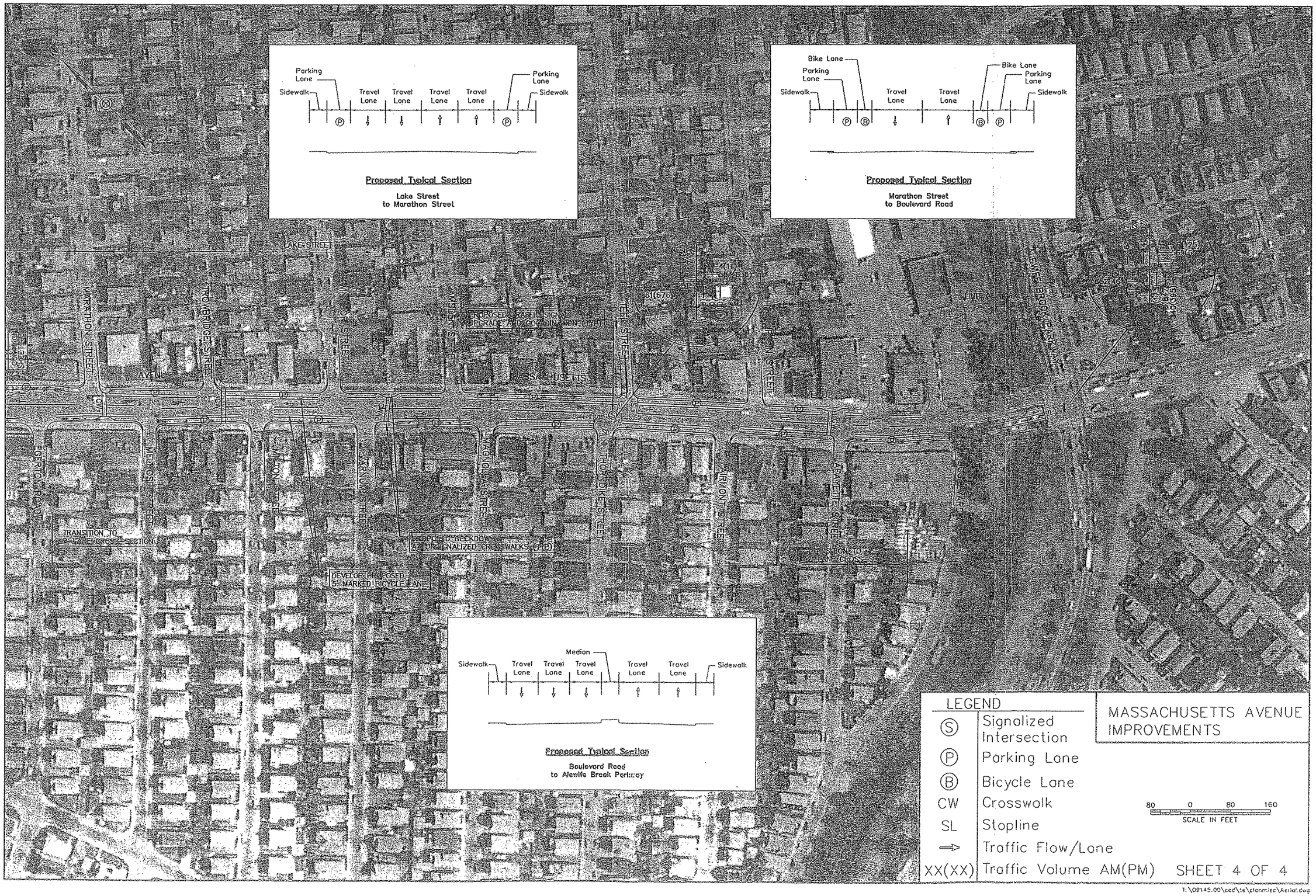

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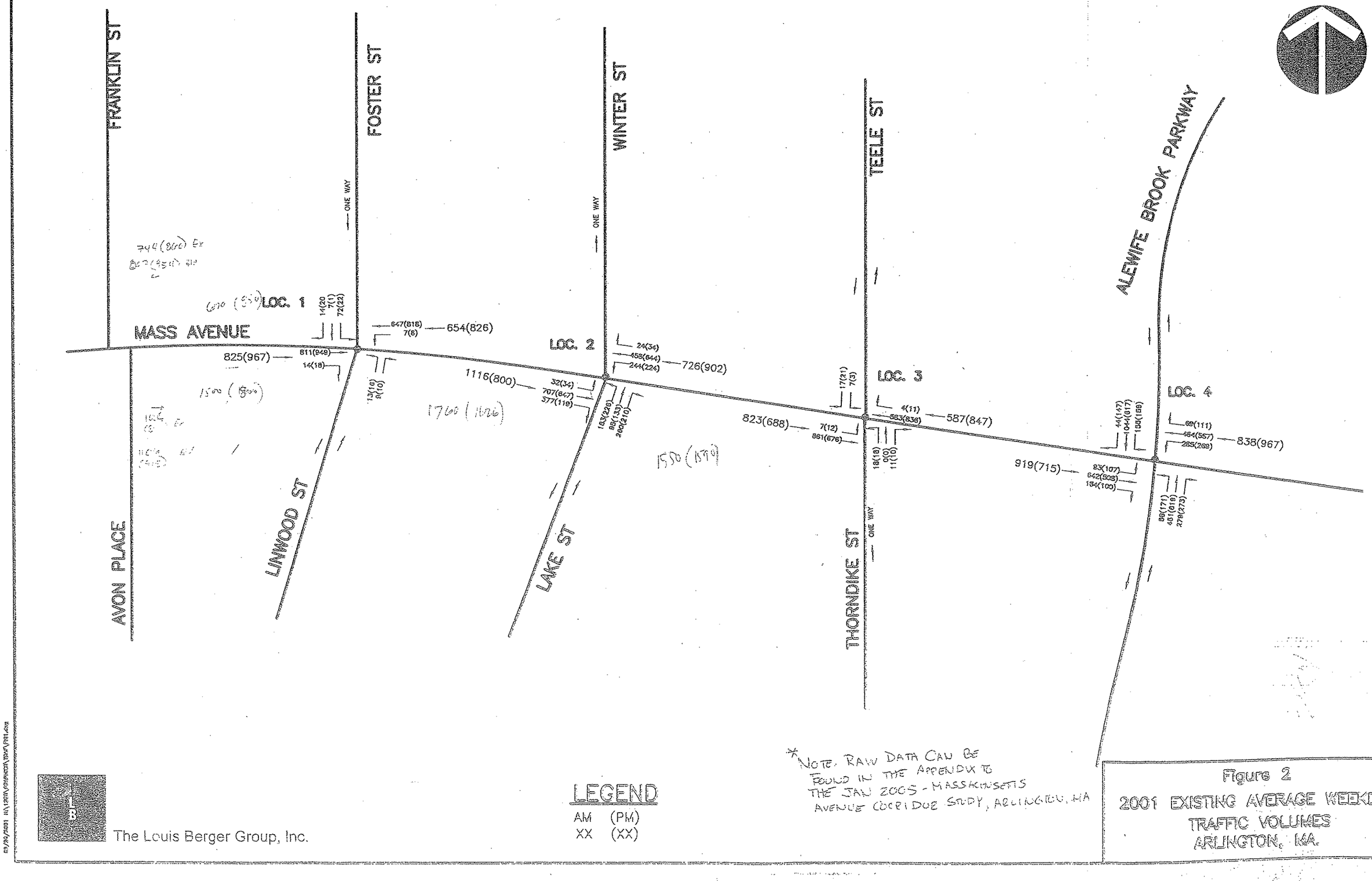
Table 2
Vehicular Crash Summary (2000-2002)

	Massachusetts Avenue at:												
	Mill St/Jason St	Water St	Mystic St/Pleasant St	Medford St	Franklin St	Tufts St	Bates Rd	Grafton St/Orvis St	Winter St	Lake St	Teel St/Thorndike St	Alewife Brook Pkwy	Total
Signalized?	Yes	No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	
Year													
2000	5	1	25	0	3	1	5	4	1	6	0	29	80
2001	11	3	17	1	3	1	2	2	1	8	2	19	70
2002	5	1	2	0	0	0	1	2	1	2	0	7	21
Total	21	5	44	1	6	2	8	8	3	16	2	55	171
Collision Type													
Angle	13	3	12	0	2	1	2	4	1	10	0	22	70
Head-on	0	1	1	0	0	0	0	0	0	0	0	0	2
Rear-end	2	0	24	1	3	0	5	0	1	3	1	20	60
Unknown	6	1	7	0	1	1	1	4	1	3	1	13	39
Total	21	5	44	1	6	2	8	8	3	16	2	55	171
Severity													
Fatality	0	0	0	0	0	0	0	0	0	0	0	0	0
Hit and Run	0	0	1	0	0	0	0	0	1	0	0	2	4
Injury	4	1	15	0	2	0	4	5	1	3	0	12	47
Property	17	4	28	1	4	2	4	2	1	13	2	41	119
Unknown	0	0	0	0	0	0	0	1	0	0	0	0	1
Total	21	5	44	1	6	2	8	8	3	16	2	55	171
Time of day													
7:00 AM - 9:00 AM	4	1	7	1	0	0	1	3	1	2	1	11	32
9:01 AM - 3:59 PM	8	4	21	0	4	1	4	2	0	8	0	24	76
4:00 PM - 6:00 PM	5	0	6	0	0	0	0	2	0	0	0	7	20
6:01 PM - 6:59 AM	4	0	10	0	2	1	3	1	2	6	1	13	43
Total	21	5	44	1	6	2	8	8	3	16	2	55	171
Day of Week													
Monday-Friday	18	4	35	1	4	2	6	7	1	10	2	47	137
Saturday-Sunday	3	1	9	0	2	0	2	1	2	6	0	8	34
Total	21	5	44	1	6	2	8	8	3	16	2	55	171
Pavement Conditions													
Dry	16	5	37	0	4	1	5	4	2	9	2	41	126
Wet	3	0	4	1	1	0	3	4	1	4	0	12	33
Snow	0	0	1	0	0	0	0	0	0	0	0	0	1
Ice	1	0	1	0	0	0	0	0	0	0	0	0	2
Other	0	0	0	0	0	0	0	0	0	1	0	1	2
Unknown	1	0	1	0	1	1	0	0	0	2	0	1	7
Total	21	5	44	1	6	2	8	8	3	16	2	55	171
MassHighway Crash Rate	NA	NA	1.12	0.03	0.23	NA	NA	NA	NA	0.58	0.10	1.15	NA

Source: MassHighway vehicle crash data



LEGEND

AM (PM)
XX (XX)

*NOTE. RAW DATA CAN BE FOUND IN THE APPENDIX TO THE JAN 2005 - MASSACHUSETTS AVENUE CORRIDOR STUDY, ARLINGTON, MA

Figure 2
2001 EXISTING AVERAGE WEEKDAY TRAFFIC VOLUMES
ARLINGTON, MA.

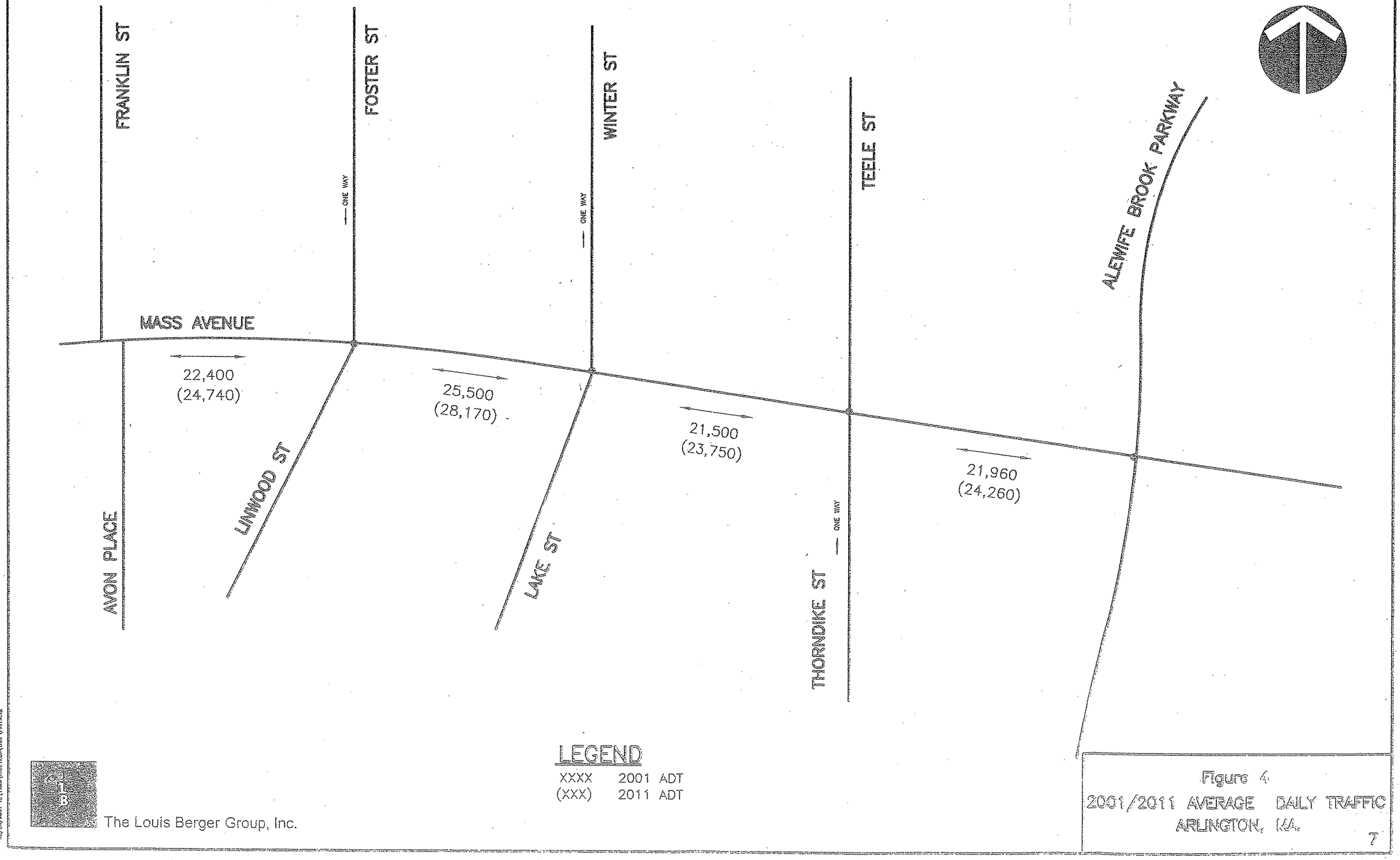


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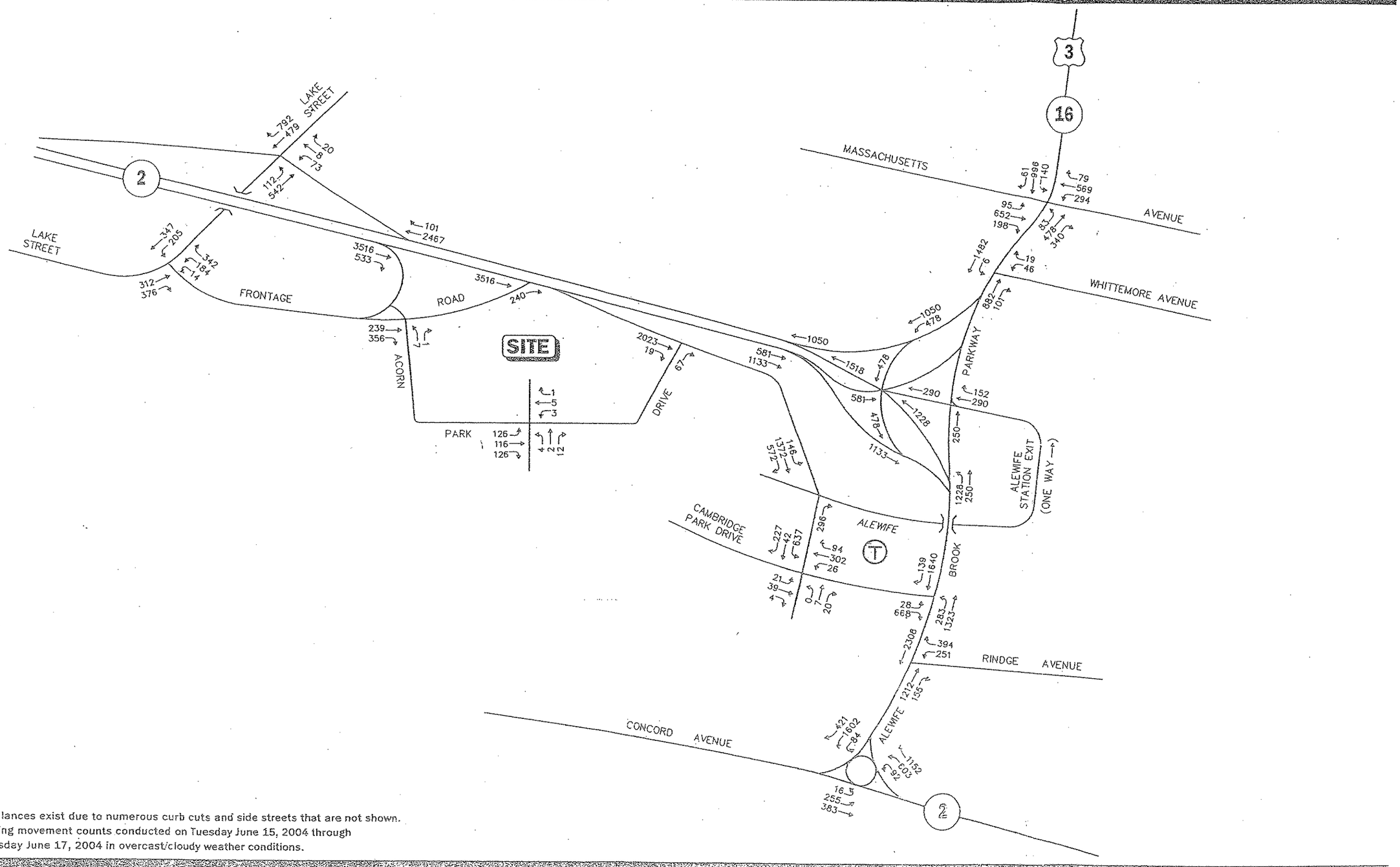
Figure 4
2001/2011 AVERAGE DAILY TRAFFIC
ARLINGTON, MA.

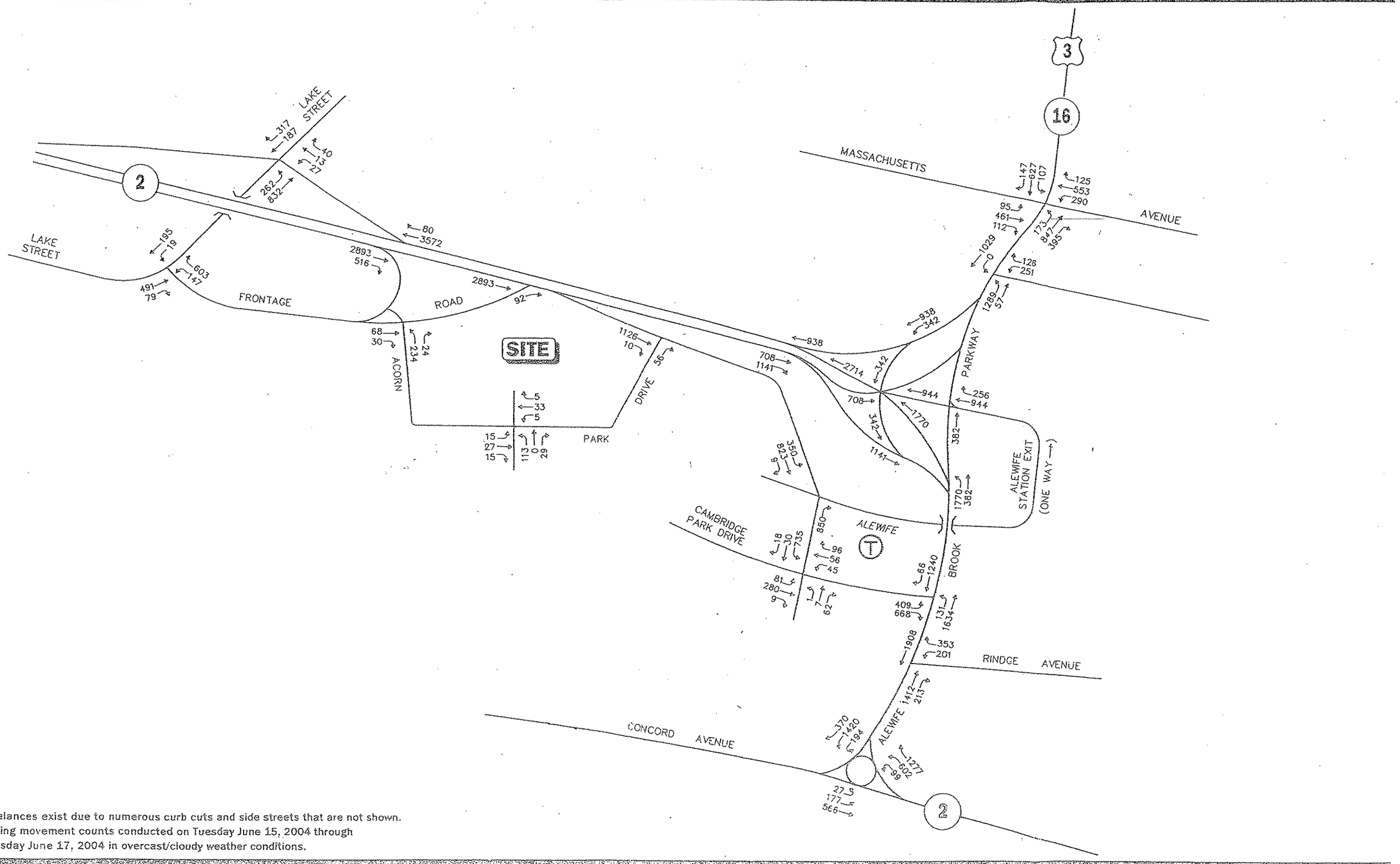


Note: 1. Imbalances exist due to numerous curb cuts and side streets that are not shown.
2. Turning movement counts conducted on Tuesday June 15, 2004 through Thursday June 17, 2004 in overcast/cloudy weather conditions.

Vanasse & Associates, Inc.
Transportation Engineers & Planners

NOTE: RAW DATA CAN BE FOUND IN THE APPENDIX TO THE JULY 2004 TRANSPORTATION IMPACT STUDY FOR CAMBRIDGE DISCOVERY PARK

2004 Baseline
Weekday Morning
Peak Hour Traffic Volumes



Note: 1. Imbalances exist due to numerous curb cuts and side streets that are not shown.
2. Turning movement counts conducted on Tuesday June 15, 2004 through Thursday June 17, 2004 in overcast/cloudy weather conditions.

N Not To Scale

Figure 21

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Transportation Engineers & Planners

2004 Baseline
Weekday Evening
Peak Hour Traffic Volumes