DEVENS TRAFFIC MONITORING PROGRAM

2006 Biennial Traffic Report

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1.0 INTRODUCTION

1.1 Overview

In the Devens Final Environmental Impact Report (FEIR), the Massachusetts Government Land Bank (now MassDevelopment) made a commitment to conduct a traffic monitoring program for study area roadways. The purpose of the monitoring program is to establish a consistent baseline of area wide traffic volumes which can subsequently be monitored to indicate the magnitude and directional distribution of traffic growth associated with the future redevelopment of Devens. The timing of off-site mitigation identified in the FEIR is tied to certain levels of traffic, and the data obtained through the monitoring program will determine when those traffic volumes are being approached.

This document is the sixth in a series of monitoring reports. Traffic data collected for this report is compared with data obtained for the previous 2004 Monitoring Report and other studies conducted in 2002, 2000, 1998, 1996 and 1990.

2.0 EXECUTIVE SUMMARY

2.1 Data Collection and Analysis

This document is the sixth in a series of traffic monitoring reports conducted for Devens. A traffic count program was implemented in the Spring (May and June) of 2006, and the data was evaluated and summarized to compare to the results of previous reports. The traffic monitoring program consisted of the following elements:

- Intersection Turning Movement Counts were performed at 14 locations between 7:00 AM – 9:00 AM, 4:00 PM – 6:00 PM on typical weekdays excluding Monday AM and Friday PM. The intersection of Willow Street/Bruce Street/Route 2A, Littleton, was counted for informational purposes for the 2005 Five-Year Traffic Report, and is evaluated in the appendix.

- Automatic Traffic Recorder Counts were performed at 14 locations for 48 consecutive hours on typical weekdays.

- Automatic Traffic Recorder Counts were performed at six locations for seven consecutive days.

- Vehicle Classification Counts were performed at six locations for a minimum of 48 consecutive hours on typical weekdays.

- Trip generation estimates were made based on traffic count data and industry data and were applied to current Deven's development land use.

The traffic data was compiled and summarized in various table and charts, and capacity analyses were conducted for the 14 intersection locations where turning movement counts were performed.

2.2 Findings

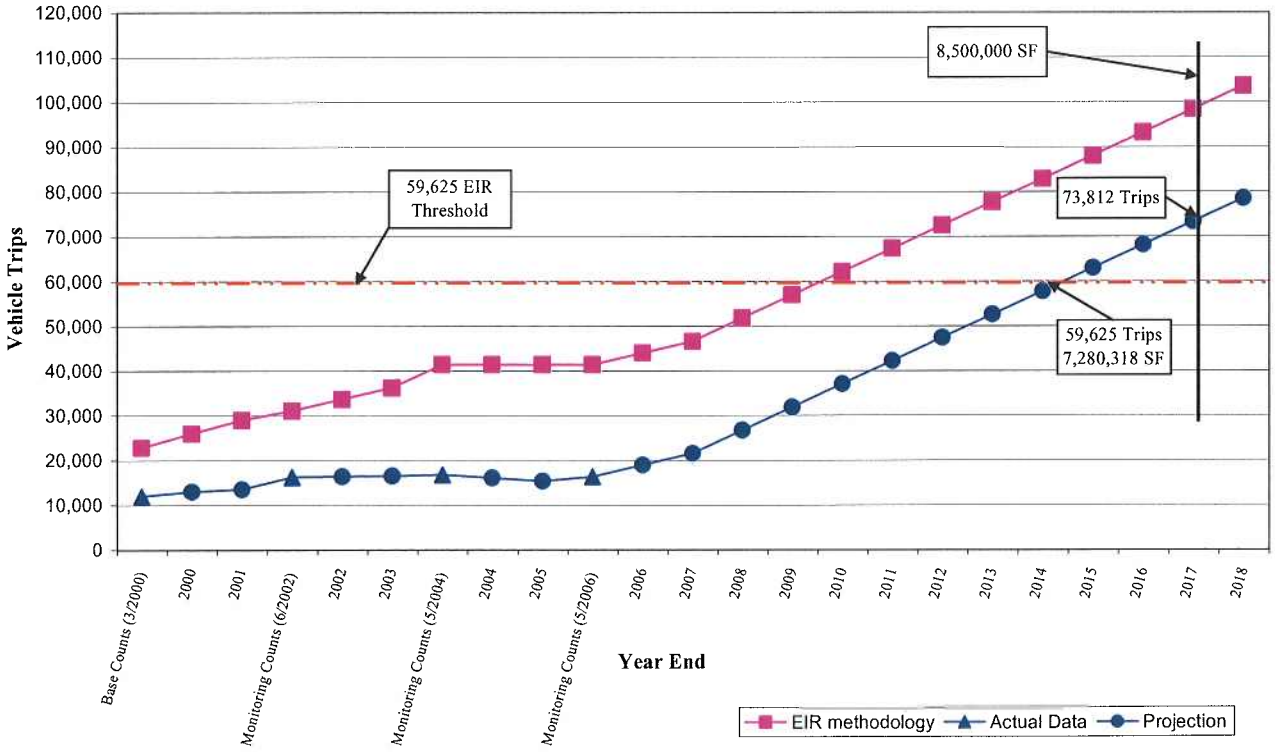
To evaluate the 2006 information, the traffic volume data and capacity analysis results were compared to the previous count results, including the previous year 2004 results. Traffic volume counts at Devens gates were used to compare with previous site generation and were compared with build-out projections. The traffic volume and trip generation findings are summarized below:

- The occupied development on Devens has decreased from 3,720,160 square feet in 2004 to 3,561,634 square feet in 2006, a decrease of 158,526 square feet.

- Between 2004 and 2006, intersection traffic turning movement volumes have decreased by approximately 0.5% on average during the AM peak hour and 0.6% on average during the PM peak hour. A total of six study intersections (of 14 compared) have experienced decreases in volume during the AM peak hour and eight decreased in volume during the PM peak hour. *This trend indicates that traffic volumes in the area may have stabilized and the decrease in Devens development between 2004 and 2006 has resulted in a slight decrease in traffic volumes at intersections in the surrounding towns.*

- In 2006, Devens development generated approximately 16,400 daily vehicle trips compared to 16,800 trips in 2004. This is a result of the decrease in occupied development in 2006 compared to 2004. *Devens development is generating fewer vehicle trips off-site than was measured in year 2004 and predicted in the EIR. If the current trend in trip generation continues in conjunction with development, the EIR threshold of 59,625 vehicle trips would not be reached until approximately 2014.* Figure ES-1 below shows this information.

Figure ES-1: Trip Generation Summary



- Daily vehicle trips generated by the current Devens development were estimated using national industry trip rates (Institute of Transportation Engineers). The current 3.6 million square feet of development is estimated to generate approximately 41,400 daily vehicle trips. This figure is more than 25,000 daily vehicle trips fewer than was recorded through the Devens gates in 2006. *Therefore, Devens development is generating significantly fewer daily vehicle trips than a comparable development.*

- Prior to the adjustment for cut-through traffic, Devens gate volumes were slightly lower in 2004 compared to 2006. *Increases in total gate volumes have occurred as a result of higher cut-through volumes and/or growth in regional traffic volumes on Route 2.* Daily and PM Devens-related peak hour traffic volumes at Devens Gates decreased by approximately 2.5% between 2004 and 2006 (corresponding to a decrease in Devens development of approximately 158,500 square feet). AM peak hour gate volumes decreased by 8.3% between 2004 and 2006. The decrease in daily and peak hour gate volumes is generally reflected in decreases to both intersections and local roadways in surrounding towns. *The decrease in peak hour gate volumes appears to be attributed to Devens decrease in occupied development.*

- Traffic volumes on roadways in surrounding towns have been generally uniform over time between 1996 and 2006. While individual roadways have experienced either increases or decreases in volume, as a group local roadways have experienced a traffic growth rate of about 0.2% per year over the last ten years. *This indicates that Devens-generated traffic is not significantly affecting traffic volume on local roadways.* This is a reasonable rate to be considered as regional growth of the area.

- Traffic volumes on Route 2 generally increased steadily each monitoring period between 1996 and 2004. However, Route 2 traffic volumes have decreased since 2004. Daily traffic volumes on Route 2 decreased by approximately 8% between 2004 and 2006. AM peak hour traffic volumes on Route 2 decreased by approximately 15% while PM peak hour volumes decreased by about 6%. This decrease in regional traffic may be attributed to the increased congestion and fuel costs and more employment in the communities surrounding Devens such as Littleton, Harvard, Ayer, and Shirley and communities west of Devens along Route 2, Fitchburg, Leominster, etc. over the last two years. The affect of housing and employment trends outside of Devens were evaluated in the recently completed Five-Year Traffic Report.

- Although percentage of daily trucks and buses through Devens gates decreased from 18.7% in 2004 to 15.0% in 2006, the total daily truck traffic through

Devens gates increased by 9% between 2004 and 2006. The largest increase in truck traffic occurred at the Jackson Gate. The increase in truck traffic can be attributed to recent construction activity on-site such as Jackson Road. The Jackson and Barnum Gates experience the highest average weekday daily truck volumes with approximately 1,705 truck trips at Jackson Gate and 1,304 truck trips at Barnum Gate. Major contributors would be traffic using Barnum Gate while Route 2/Jackson Road construction was occurring.

- Capacity analysis results for the study intersections revealed that four of the 14 previously analyzed intersections experienced an improved Level of Service during the AM peak hour and seven experienced no change. During the PM peak hour, 6 intersections experienced improved Level of Service conditions, while seven intersections experienced no change. The analysis results are consistent with the general reduction in traffic volumes measured between 2004 and 2006.

- One intersection experienced a decline in LOS from 2004 to 2006. For the AM peak hour, the northbound MacPherson Road approach to West Main Street changed from LOS C to LOS E. For both AM and PM peak hours, the southbound MacPherson Road approach to West Main Street changed from LOS C to LOS D. This is one of six study intersections where both AM and PM peak hour intersection traffic volumes increased between 2004 and 2006. Peak hour intersection volumes at this location increased by 19% for the AM peak and 17% for the PM peak between 2004 and 2006.

3.0 BUILD OUT ANALYSIS/TRIP GENERATION

3.1 Overview

There has been substantial development at Devens over the past several years including research and development, light industrial, office, commercial, and residential. A build-out analysis was updated for the 2005 Five-Year Traffic Report. This information has been used for the Year 2006 Traffic Monitoring Program.

Table 3-1 provides an update, as of October 2006, of the existing and planned development at Devens. The levels of existing and potential development have not significantly changed since the completion of the *Devens Traffic Monitoring Program 2005 Five Year Traffic Report* (March 2006). Therefore, the building expansion summarized below is the same as that provided in *the 2005 Five Year Traffic Report.*

Table 3-1: Devens Building Expansion Summary – As of October 5, 2006

CATEGORY	AREA (Bldg. SF)
Existing Buildings Currently in Reuse	636,686
New Construction (occupied)	2,924,948
Total Actual Buildout to Date	**3,561,634**[1]
Potential Expansions	1,444,720
Current Prospects	411,000
Total Potential Additional Buildout	**1,855,720**
Total Actual & Planned Buildout	**5,417,354**[2]
Total Buildout Permitted Under Devens By-Laws	*8,500,000*
Potential Uncommitted Buildout	**3,082,646**

Notes:

1. Includes 106 units of housing.
2. Includes 176 additional housing units.

Table 3-1 shows that approximately 3.6 million square feet of development have been built out to date. This represents a decrease of 158,526 square feet of occupied development since the completion of the Year 2004 *Traffic Monitoring Program Biennial Traffic Report.* Another 1,855,720 square feet of development is planned. Since the total buildout permitted under Devens By-Laws is 8.5 million square feet, a net balance of 3,082,646 square feet of uncommitted buildout remains.

3.2 Trip Generation

Vehicle trip generation estimates were made for existing and proposed development land uses at Devens. Estimates were based on land use type and size information provided by MassDevelopment. Trip generation estimates were based on current Year 2006 traffic count information and rates provided in the Institute of Transportation Engineer's (ITE), *Trip Generation*, 7th Edition, 2003. No counts were performed at development driveways as part of the year 2006 Traffic Monitoring Report.

Table 3-2 summarizes Year 2004 and 2006 trip generation estimates based on traffic counts at the Devens Gates and using ITE trip rates. The Year 2006 total average weekday daily traffic (AWDT) of all five Devens gates is 21,813 vehicle trips. As surveyed in the *2005 Five Year Traffic Report*, 25 percent of the total traffic volume is cut-through traffic, that is, not generated by Devens development. The AWDT generated by Devens adjusted for cut-through equals 16,360 vehicle trips in 2006. This is slightly less compared to AWDT figure estimated in the Year 2004 Traffic Monitoring Program: 16,776 vehicle trips.

Table 3-2: Trip Generation Summary

	YEAR 2004(1)	YEAR 2006	DIFFERENCE
Occupied Development	3,720,160 SF	3,561,634	-158,526 SF
Total Daily Traffic Counts at Devens Gates	20,458 vehicle trips	21,813	+ 1,355vehicle trips
Daily Gate Counts Adjusted for cut-through Traffic[2]	16,776 vehicle trips	16,360	-416 vehicle trips
Daily Vehicle Trips per 1,000 SF Development	4.51 trips/KSF	4.59	+0.08 trips/KSF
ITE(3) estimated Daily Devens Trips	25,962 vehicle trips	41,435 vehicle trips	15,473 vehicle trips

(1) Year 2004 Devens Traffic Monitoring Program
(2) 18% cut-through traffic in 2004 and 25% cut-through traffic in 2006
(3) Institute of Transportation Engineers, Trip Generation Manual, 7th Edition, 2003

The ITE trip rates published in *Trip Generation* were applied to the currently occupied Devens development for each land use to develop daily vehicle trips. Using ITE rates, it is estimated that the current Devens development would generate approximately 41,435 daily vehicle trips. The daily vehicle traffic counted at the gates (minus cut-through traffic of 25%) is 16,360 trips attributed to Devens. This indicates that the current Devens development is generating off-site traffic at a rate of approximately 40% of what a comparable development would generate.

Figure 3-1 below is similar to the graph shown in the previous year 2004 Report. The top line represents the trip generation based on the EIR methodology. The line labeled "Actual Data" shows the vehicle trips to year 2006 (16,360) then assumes a straight-line projection for future years. Based on this method, the EIR full build-out threshold of 59,625 will not be reached until 2014.

Figure 3-1: Trip Generation Summary

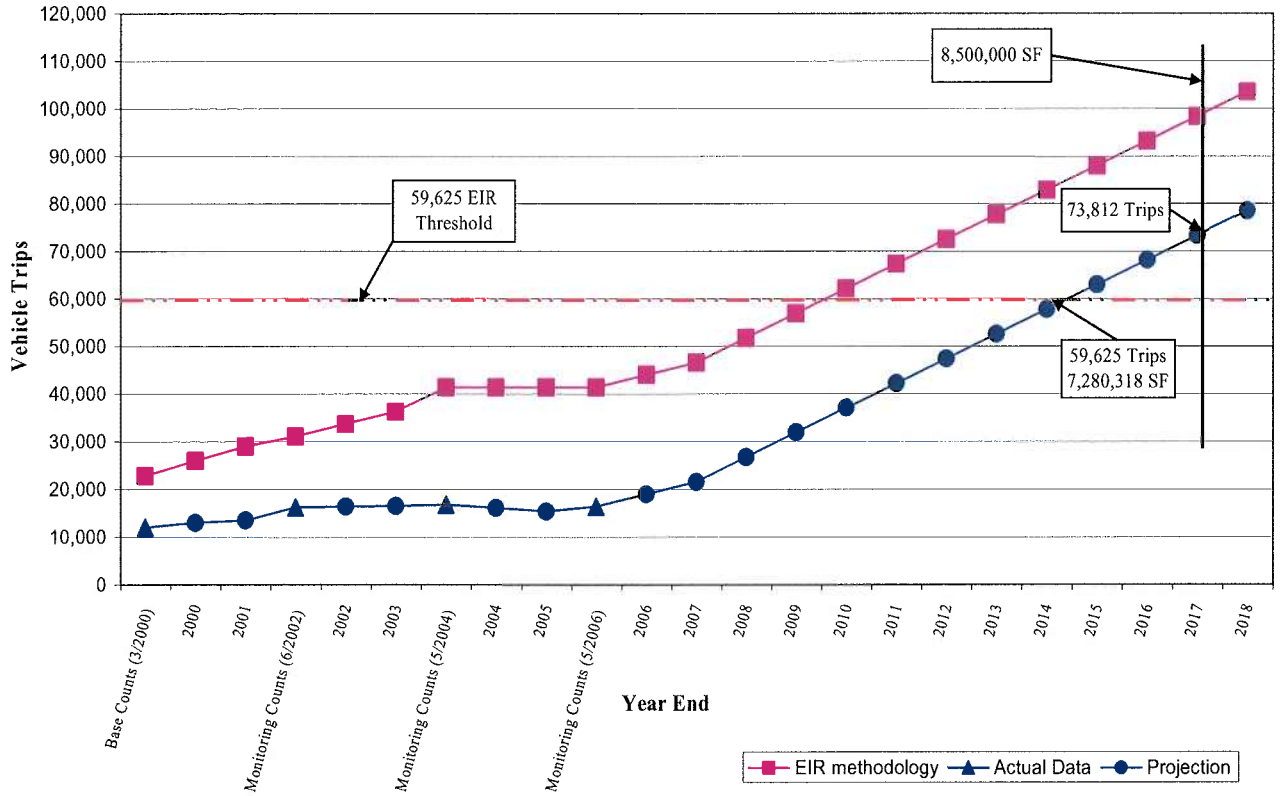
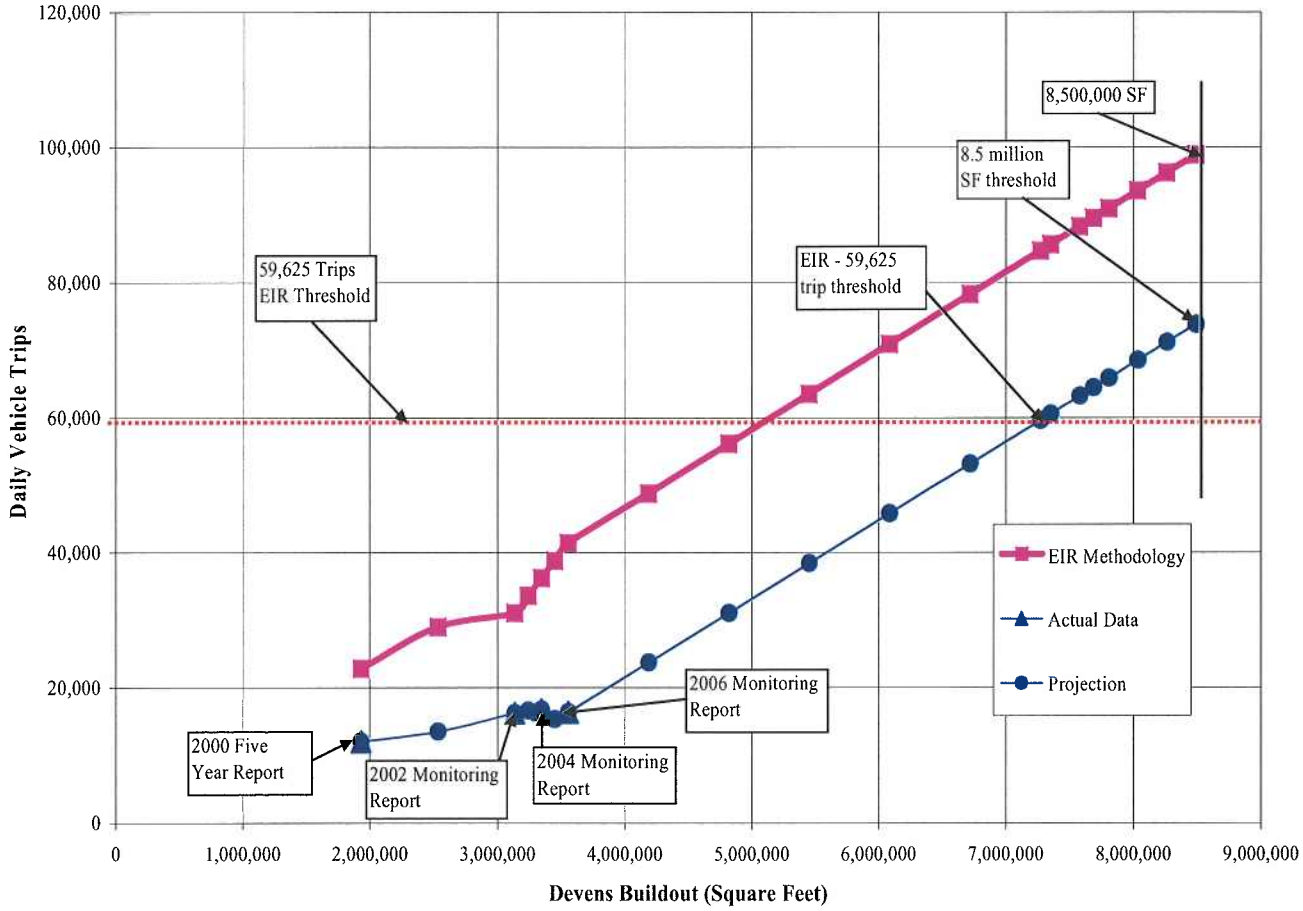


Figure 3-2 below represents the relationship between build-out square footage and vehicle trips. As previously mentioned, approximately 3.6 million square feet of building space is currently being used, which results in 16,360 vehicle trips. The top line represents build-out based on the EIR methodology. The bottom line represents vehicle trips versus build-out up to year 2006, then assumes the same slope as the EIR. The steeper slope beyond 4 million square feet assumes that some of the current development will be replaced ("re-used") by development with higher vehicle generating characteristics. If this occurs as projected, the 59,625 daily vehicle trip EIR threshold would be reached at approximately 7.3 million square feet of development. If the current trip generation trend continues, the trip generation threshold would not be reached until well beyond the 8.5 million square feet of development threshold.

Figure 3-2: Build-Out Summary



4.0 INTERSECTION TURNING MOVEMENT COUNTS AND TRAFFIC OPERATIONS

The initial monitoring program identified twelve locations where peak hour intersection turning movement counts should be conducted. Two new intersections (#13 and #14 below) were added in 2004 Biennial Traffic Report. Turning movement traffic counts were completed on Tuesday, May 16th and Wednesday, May 17th, 2006 between 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM at the following locations:

	Intersection	Town	Date
1.	Front Street/Lancaster Street/ Leominster Road/Center Road	Shirley	5/16/06
2.	Park Street/Fitchburg Road/Groton School Road	Ayer	5/16/06
3.	Park Street/Main Street/West Main Street	Ayer	5/16/06
4.	Groton-Harvard Road/Central Avenue	Ayer	5/16/06
5.	Route 2A-110/I-495 Exit 30 NB Ramps	Littleton	5/17/06
6.	Route 2A-110/I-495 Exit 30 SB Ramps	Littleton	5/17/06
7.	Route 110-111 (Ayer Road)/Route 110 (Still River Road)/Route 111	Harvard	5/16/06
8.	Route 70/117 (Seven Bridge Road)	Lancaster	5/17/06
9.	Route 70/117 (Lunenburg Road)	Lancaster	5/17/06
10.	Route 110 (King Street)/Route 119/Route 2A (Great Road)	Littleton Common	5/17/06
11.	Route 2A-110 (King Street)/Goldsmith Street	Littleton Common	5/17/06
12.	Verbeck Gate/MacPherson Road	Ayer	5/16/06
13.	Grant Rd/West Main St (New Location in 2004)	Ayer	5/16/06
14.	Hospital Rd/Front St (New Location in 2004)	Shirley	5/16/06

All traffic data was collected prior to school ending for the summer. Figure 5-1, in the following section, provides a graphical depiction of all turning movement counts (TMC's) as well as all automatic traffic recorder counts (ATR's) conducted for this monitoring report. These counts are discussed in the following sections.

A description of traffic volume and operational data at each location listed above is provided in the following pages. The operational characteristics of each intersection were determined utilizing the methodology in the 2000 Highway Capacity Manual (HCM). As was done in previous reports, descriptions of intersections analyzed originally as part of the EIR study area include a table which compares the 2006 traffic volumes to past information (1990, 1996, 1998, 2002) and 2004 volumes reported in the 2004 Traffic Monitoring Report and 2004/2005 volumes contained in the Devens Five Year Traffic Report dated March 2006. As suggested in the 1996

Earth Tech Report, the 1996 traffic data serves as a baseline for comparison of operational changes (Level of Service) at intersections included within the monitoring program.

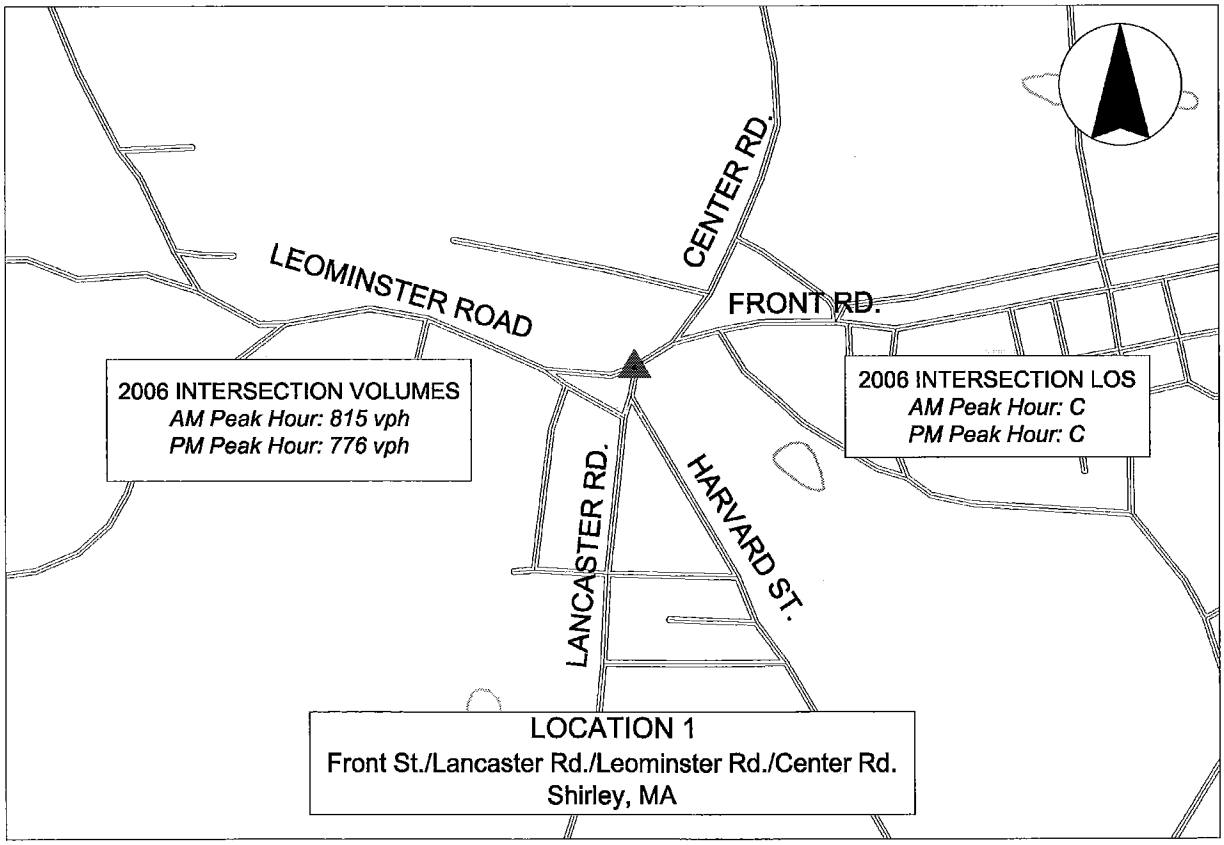
4.1 Location 1 – Front Street/Lancaster Street/Leominster Road/Center Road

This intersection was included as a monitoring location as a result of the public participation element. Figure 4-1 below depicts the intersection location and current traffic conditions. Monitoring at this location will indicate the extent to which residents of Shirley are attracted to Devens since other route options exist for out-of-town commuters. Development in the Verbeck and Shirley Gate areas of Devens will have the greatest effect on traffic volumes and operating conditions at this location.

Table 4-1: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	n/a	802 vph	861 vph	803 vph	738 vph	761 vph	**815 vph**
PM Peak Hour	n/a	953 vph	779 vph	847 vph	782 vph	850 vph	**776 vph**

Figure 4-1: Existing Conditions Summary



Traffic volumes and intersection Levels of Service (LOS) for the AM and PM peak hours are summarized in the above figure. Traffic volumes in the AM peak hour have increased by about 7% over 2004 conditions. Traffic volumes for the PM peak have decreased by approximately 9% compared to 2004 peak hour volumes. This location operates at LOS C during the AM peak hour, and LOS C during the PM peak hour. Afternoon peak hour conditions have improved over 2004 conditions.

4.2 Location 2 – Park Street/Fitchburg Road/Groton School Road

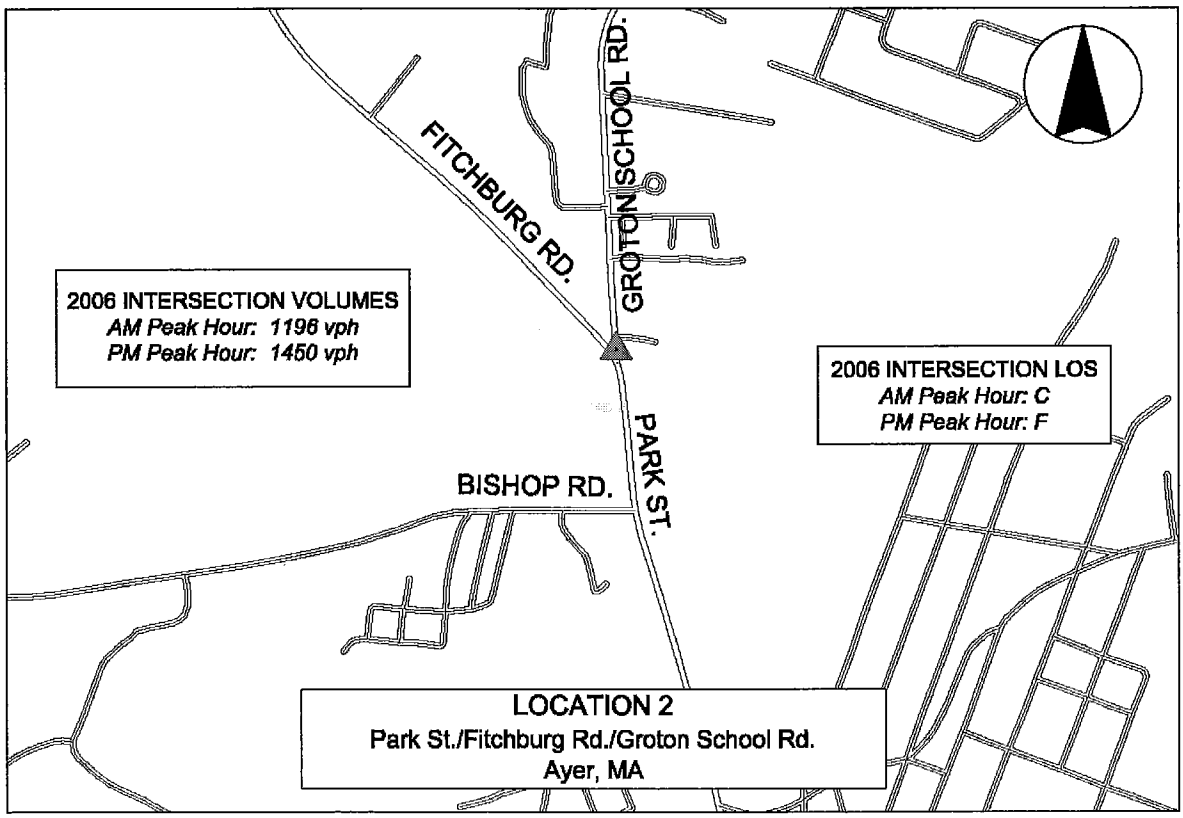
A comparison of the 1996 peak hour intersection volumes to the 1990 volumes indicates that the 1996 volumes are higher than those noted in 1990 for both AM and PM peak hours. This trend continued into 1998 but not to 2000. The 2002 volumes are approximately equal to those experienced by the intersection in 1998. The PM peak hour volumes remain relatively constant between 2000 and 2006. The AM 2006 volume decreases by 50 vehicles compared to 2004 volumes. A full comparison of all conditions is provided in the following table.

Table 4-2: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	1009 vph	1210 vph	1241 vph	1157 vph	1239 vph	1146 vph	**1196 vph**
PM Peak Hour	1210 vph	1353 vph	1523 vph	1447 vph	1487 vph	1482 vph	**1450 vph**

Intersection capacity analyses were conducted for both the AM and PM peak hours using the 2006 volumes. The results of these analyses indicate LOS C for the AM peak hour and failing conditions for the PM peak hour for the southbound Groton School Road approach. The left turn from Fitchburg Road to northbound Groton School Road operates at LOS A for both AM and PM conditions.

Figure 4-2: Existing Conditions Summary



The Final EIR indicated that the signalization of this intersection was an existing (immediate) need due to the failure conditions identified for vehicles attempting to enter Route 2A (Park Street) from Route 111 (Groton School Road). This need was based upon 1990 peak hour traffic volumes.

4.3 Location 3 – Park Street/Main Street/West Main Street

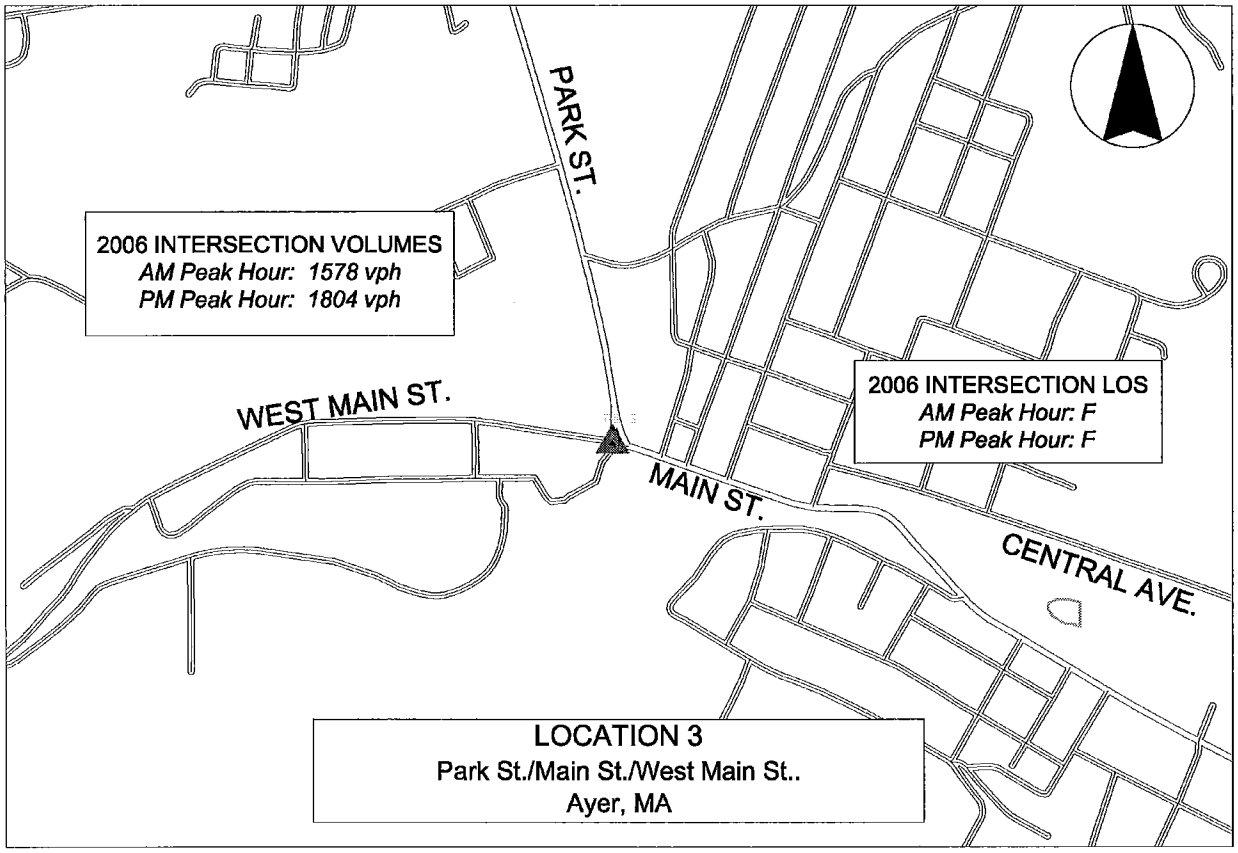
Intersection turning movement counts were performed at this location during both the AM and PM peak hours. Figure 4-3 below depicts the intersection location and current traffic conditions. Both the AM and PM peak hour volumes remained relatively constant at this location between 2000 and 2004. In 2006, AM and PM volumes increased by 15% and 6%, respectively, over 2004 volumes. A comparison of traffic volumes is provided below.

Table 4-3: Traffic Volumes Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	1431 vph	1492 vph	1556 vph	1367 vph	1442 vph	1372 vph	**1578 vph**
PM Peak Hour	1602 vph	1721 vph	1547 vph	1698 vph	1646 vph	1699 vph	**1804 vph**

This location was also identified as exhibiting existing deficiencies and requiring signalization based upon the 1990 peak hour traffic volumes. The 1996 intersection capacity analyses reported failure conditions for vehicles on the Park Street approach and indicated that signalization should be investigated as an immediate or short-term improvement at this location. Intersection capacity analyses using the 2006 volumes continues to show an overall LOS F both the AM and PM peak hours.

Figure 4-3: Existing Conditions Summary



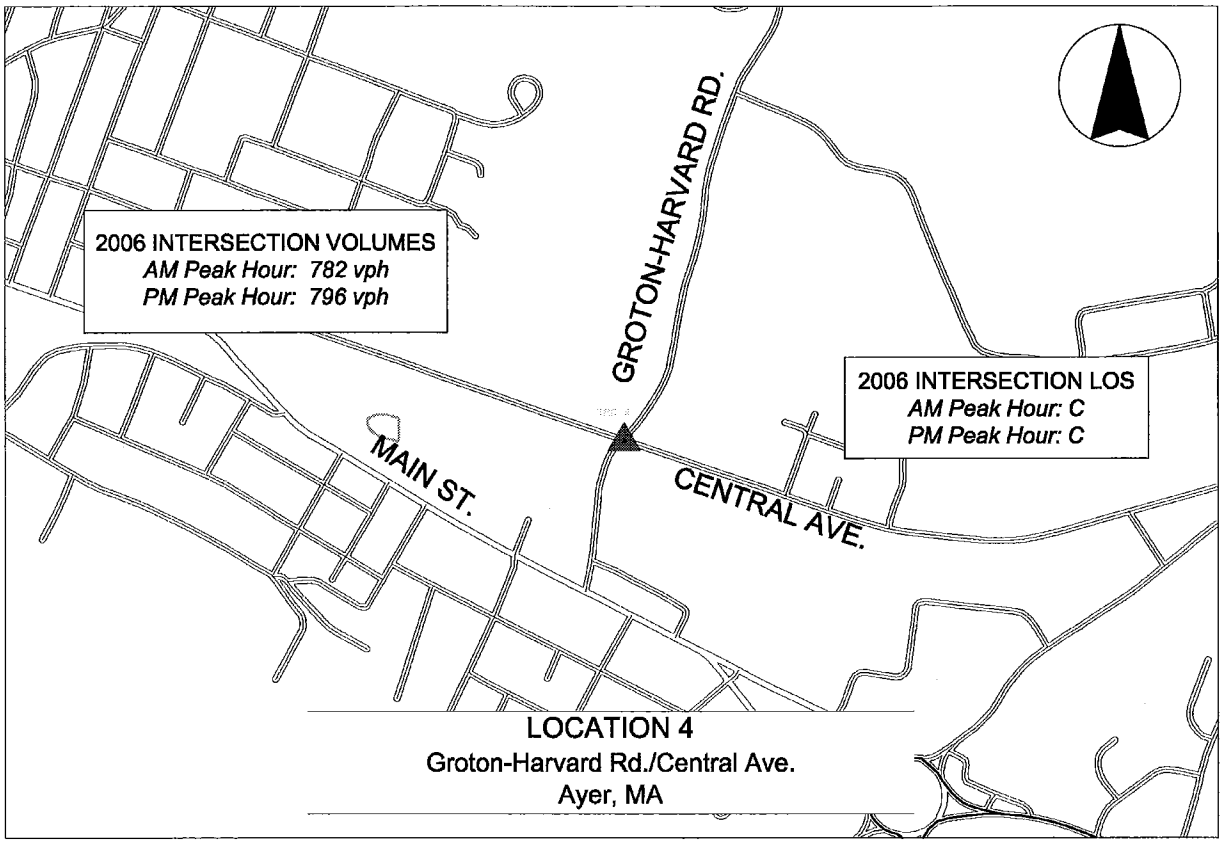
4.4 Location 4 – Groton-Harvard Road/Central Avenue

This location was not originally added as part of the EIR effort but was added as a result of the public participation element of the project. Figure 4-4 below depicts the intersection location and current traffic conditions. Traffic volumes were collected at this intersection during the AM and PM peak periods and were analyzed to determine the current operating conditions. The capacity analyses indicate that the intersection operates at LOS C during both the AM and PM peak hours, which is improved compared to year 2004 conditions. This may be the result of lower traffic volumes experienced in year 2006. The 2004 volumes were comparable to those experienced in 1996, but the 2006 volumes are 10% and 7% lower (AM and PM, respectively) than 2004 volumes.

Table 4-4: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	n/a	864 vph	941 vph	880 vph	990 vph	869 vph	**782 vph**
PM Peak Hour	n/a	841 vph	956 vph	904 vph	960 vph	854 vph	**796 vph**

Figure 4-4: Existing Conditions Summary



4.5 Location 5 – Route 2A-110/I-495 Exit 30 Northbound Ramps, Littleton

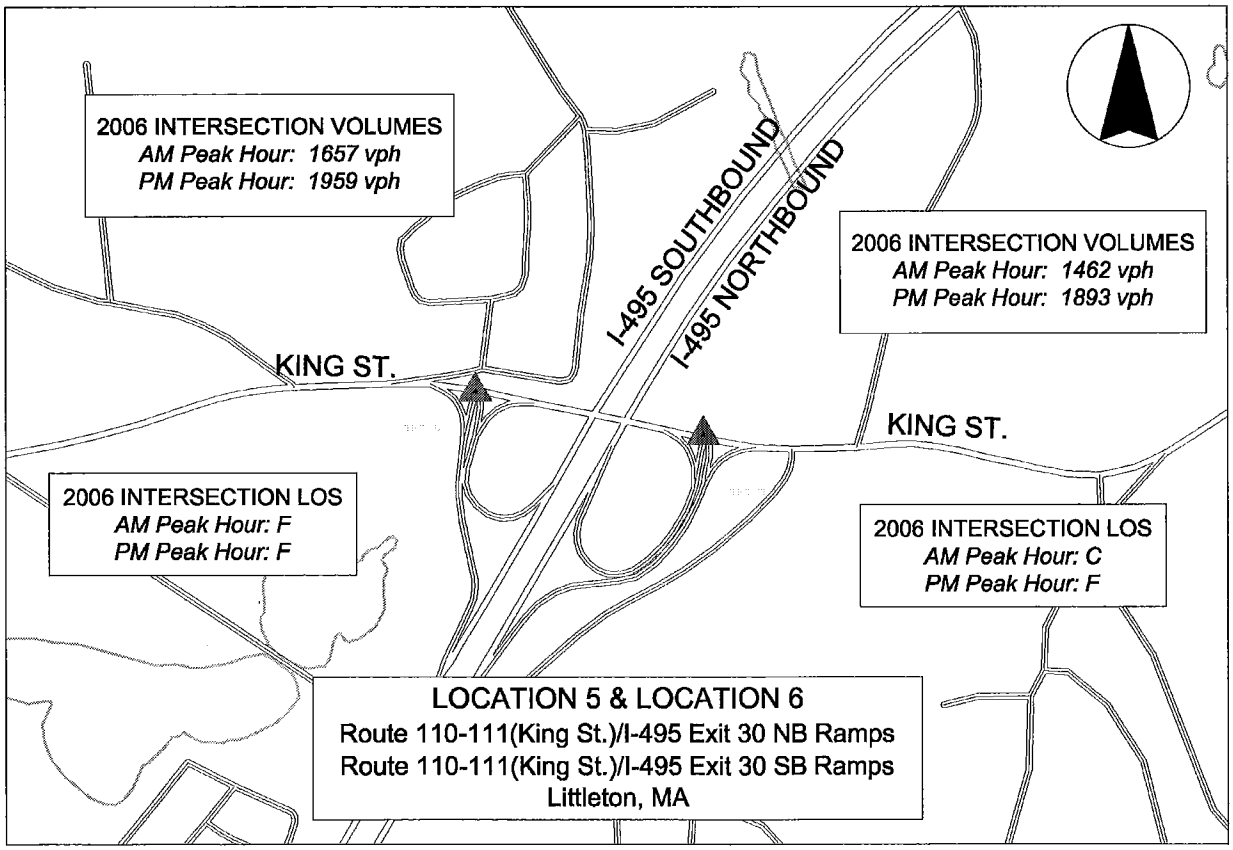
Location 6 – Route 2A-110/I-495 Exit 30 Southbound Ramps, Littleton

Traffic volumes were collected during the AM and PM peak hour at both ramp intersections with Route 2A-110 (King Street). Figure 4-5 below depicts the intersection location and current traffic conditions. A comparison of these traffic volumes to previous recorded volumes is provided below. These comparisons indicate a steady increase in the northbound ramp AM volumes and the southbound ramp PM volumes up to 2002, but both volumes decrease noticeably in 2004. The 2004 northbound PM ramp and southbound AM ramp volumes are also lower (approximately 10%) than the 2002 volumes. In 2006, the NB AM ramp volumes remain the same as in 2004. However, the other three ramp locations experience volumes between 5 and 9% higher than 2004 volumes (between 74 and 156 vph). For the PM peak hour, 2006 ramp volumes are similar to 2002 volumes.

Table 4-5: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
Route 2A-110/NB Ramps							
AM Peak Hour	1494 vph	1555 vph	1703 vph	1833 vph	1941 vph	1482 vph	**1462 vph**
PM Peak Hour	1317 vph	1675 vph	1711 vph	1656 vph	1927 vph	1737 vph	**1893 vph**
Route 2A-110/SB Ramps							
AM Peak Hour	1372 vph	1539 vph	1714 vph	1830 vph	1782 vph	1583 vph	**1657 vph**
PM Peak Hour	1538 vph	1844 vph	1705 vph	1814 vph	1981 vph	1853 vph	**1959 vph**

Figure 4-5: Existing Conditions Summary



Previous intersection capacity analyses performed as part of the EIR indicated a mid to long range need to signalize the southbound ramp intersection with Route 2A-110 at a minimum, with a potential need to also require signalization at the northbound ramp intersection. Intersection capacity analyses were conducted for 2006 AM and PM peak hour conditions at both ramp locations, with vehicles on the northbound ramp experiencing LOS C during the AM peak hour and LOS F during the PM peak hour, and vehicles on the southbound off-ramp approach experiencing LOS F during both the AM and PM peak hours.

4.6 Location 7 – Route 110-111 (Ayer Road)/Route 110 (Still River Road)/Route 111, Harvard

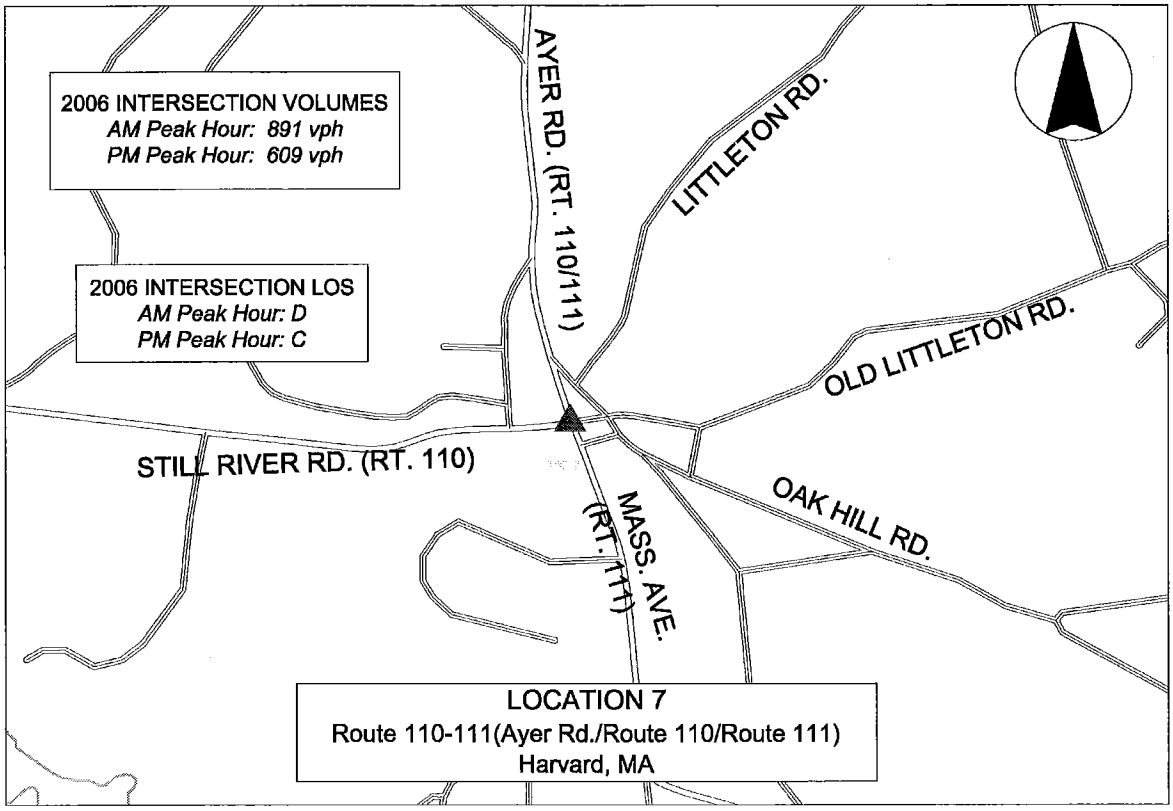
Intersection turning movement counts were conducted at the intersection of Routes 110/111 in Harvard for both AM and PM peak hour periods. Figure 4-6 below depicts the intersection location and current traffic conditions. The 2006 AM peak volumes are approximately the same as 2004 volumes. The 2006 PM volumes have decreased by 14% (100 vehicles) since 2004. A comparison of traffic volumes to previous recorded volumes is provided below.

Table 4-6: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	551 vph	818 vph	952 vph	833 vph	823 vph	875 vph	**891 vph**
PM Peak Hour	467 vph	869 vph	1135 vph	668 vph	642 vph	710 vph	**609 vph**

Previous intersection capacity analyses performed as part of the EIR indicated that acceptable conditions would prevail through the 2015 condition. Intersection capacity analyses performed using the 2006 volumes indicate that the intersection will operate at LOS D during the AM peak hour and LOS C during the PM peak hour.

Figure 4-6: Existing Conditions Summary



4.7 Location 8 – Route 70/Route 117 (Seven Bridge Road), Lancaster

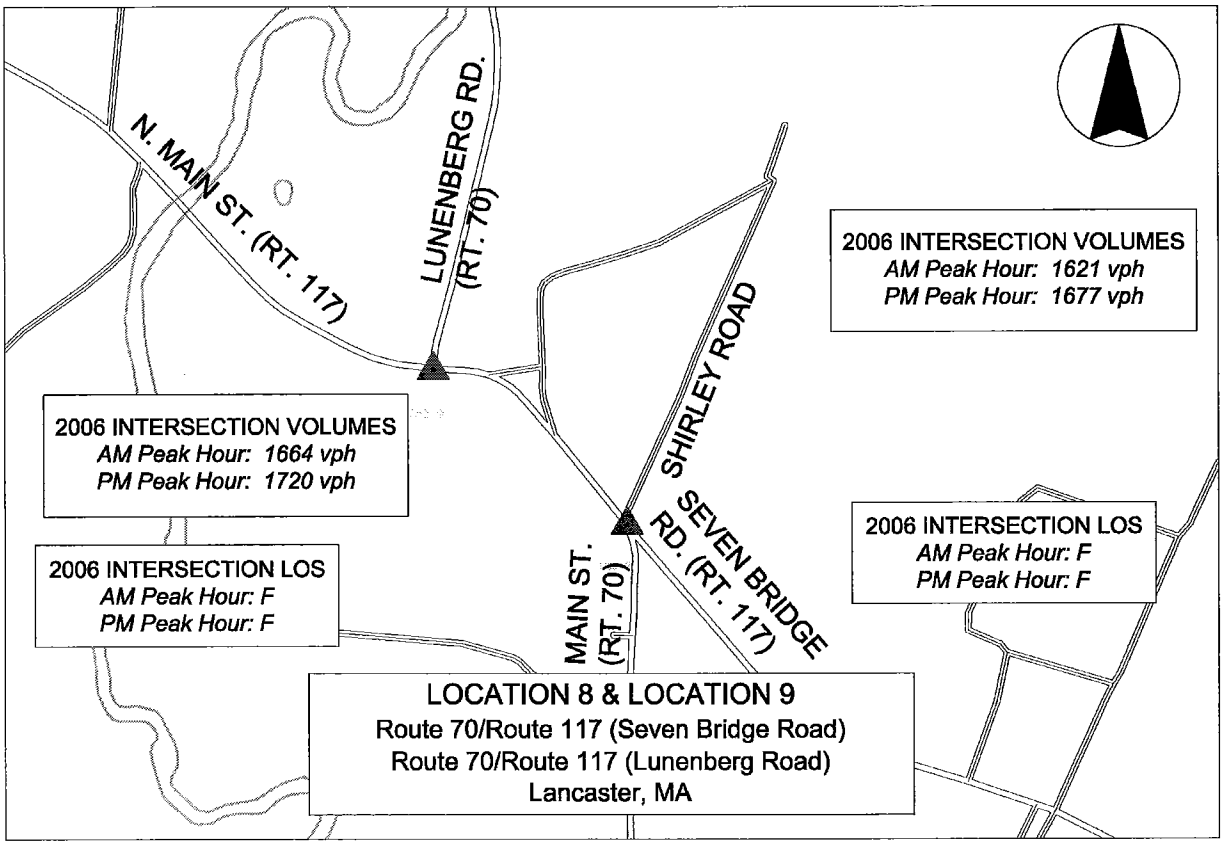
Location 9 – Route 70/Route 117 (Lunenburg Road), Lancaster

These two locations were not originally studied as part of the EIR effort but were added as a result of the public participation element of the project. Figure 4-7 below depicts the intersection locations and current traffic conditions. Intersection turning movement counts and capacity analyses were conducted at these intersections during both AM and PM peak hour periods.

Table 4-7: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
Route 70/Route 117 (Seven Bridge Road)							
AM Peak Hour	n/a	1452 vph	1582 vph	1616 vph	1597 vph	1564 vph	**1621 vph**
PM Peak Hour	n/a	1614 vph	1685 vph	1657 vph	1570 vph	1636 vph	**1677 vph**
Route 70/Route 117 (Lunenberg Road)							
AM Peak Hour	n/a	1471 vph	1581 vph	1652 vph	1649 vph	1608 vph	**1664 vph**
PM Peak Hour	n/a	1578 vph	1800 vph	1679 vph	1600 vph	1650 vph	**1720 vph**

Figure 4-7: Existing Conditions Summary



The year 2006 traffic volumes at these two intersections have increased between 2 and 4% (41-70 vph) compared to year 2004 volumes. The year 2006 traffic volumes at these two intersections are comparable to year 2000 volumes. The intersection of Route 70 (Lunenburg Road)/Route 117 operates at LOS F for vehicles exiting left from Route 70 during both the AM and PM peak hours. The same conditions (LOS F) occur for vehicles exiting left from northbound Route 70 at the intersection of Route 70 (Main Street/Route 117/Seven Bridge Road), during the AM and PM peak hours.

4.8 Location 10 – Route 110 (King Street)/Route 119/Route 2A (Great Road), Littleton Common

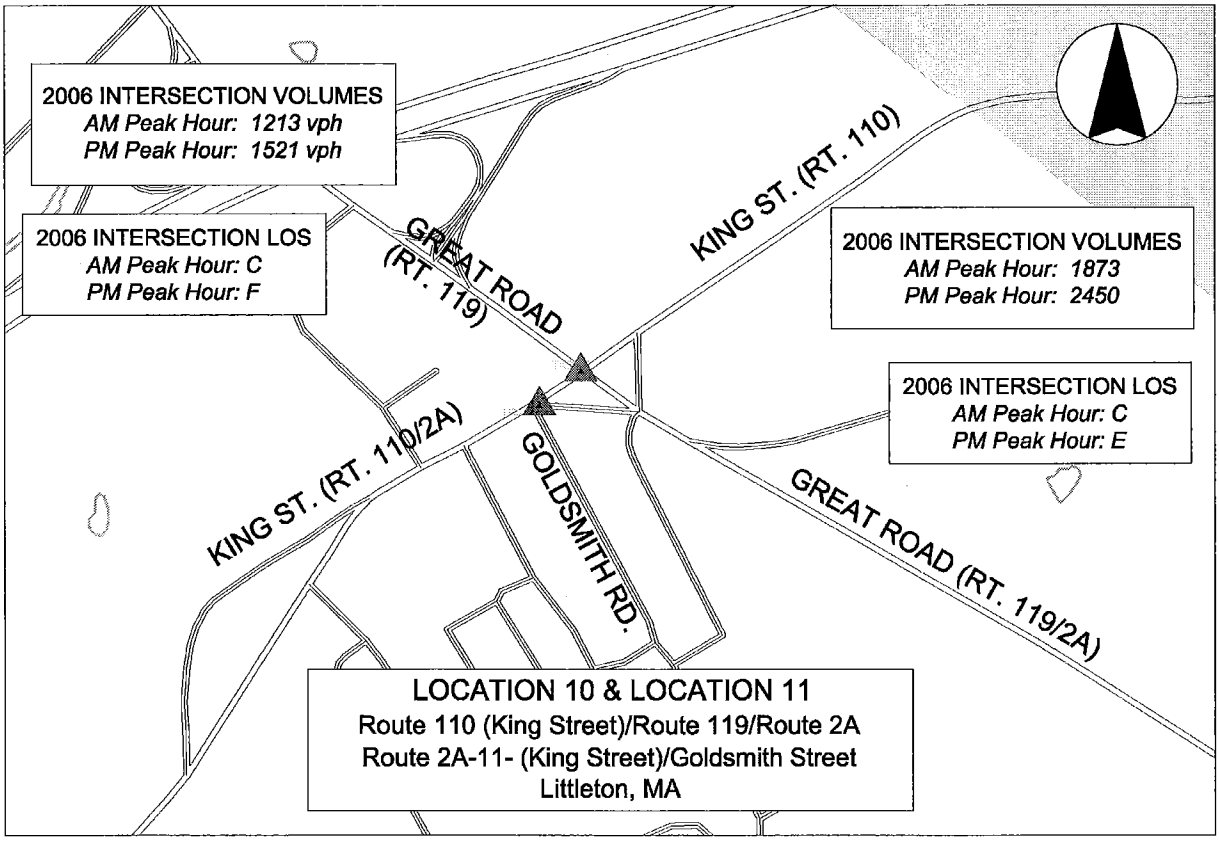
Location 11 – Route 2A-110 (King Street)/Goldsmith Street, Littleton Common

These two locations were not originally studied as part of the EIR effort but were included based on the public participation effort of the project. Figure 4-8 below depicts the intersection location and current traffic conditions. Intersection turning movement counts were conducted at these two intersections during both the AM and PM peak hour periods.

Table 4-8: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
Route 110/Route 119/Route 2A (Great Road)							
AM Peak Hour	n/a	2085 vph	2196 vph	2225 vph	2382 vph	2180 vph	**1873 vph**
PM Peak Hour	n/a	2809 vph	2880 vph	2574 vph	2871 vph	2717 vph	**2450 vph**
Route 2A-110/Goldsmith Street							
AM Peak Hour	n/a	1469 vph	1667 vph	1734 vph	1638 vph	1449 vph	**1213 vph**
PM Peak Hour	n/a	1758 vph	1724 vph	1588 vph	1840 vph	1683 vph	**1521 vph**

Figure 4-8: Existing Conditions Summary



Traffic volumes at these two intersections have been decreasing since 2002. The year 2004 volumes were between 5 and 12 percent lower than the 2002 volumes, and the year 2006 volumes are between 10 and 16 percent lower than the 2004 volumes. Intersection capacity analyses using the 2006 volumes were conducted for the AM and PM peak hour conditions at both intersections. The signalized intersection of Route 110 (King Street)/Route 119/Route 2A exhibits existing LOS C (overall) during the AM peak hour, which represents an improvement over 2004 conditions. This intersection operates at LOS E (overall) during the PM peak hour. The

intersection of Route 2A-110 (King Street)/Goldsmith Street exhibits LOS C during the AM peak hour (improved from 2004 conditions) and LOS F (same as 2004 conditions) during the PM peak hour for the left and right movements exiting Goldsmith Street.

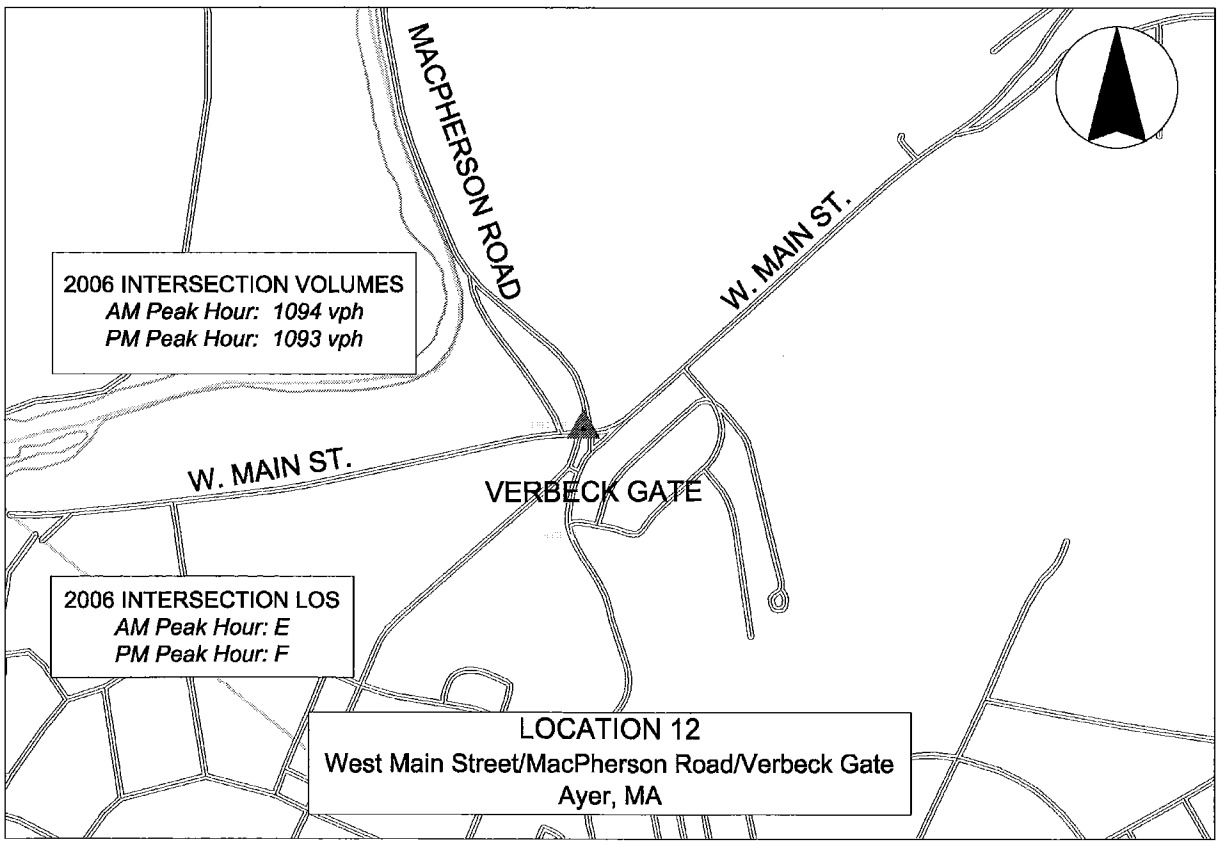
4.9 Location 12 – Verbeck Gate/MacPherson Road/West Main Street, Ayer

Intersection turning movement counts were conducted at the intersection of Verbeck Gate and MacPherson Road for both the AM and PM peak hours. Figure 4-9 below depicts the intersection location and current traffic conditions. A comparison of these traffic volumes to pervious recorded volumes is provided below.

Table 4-9: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	936 vph	774 vph	710 vph	888 vph	1014 vph	916 vph	**1094 vph**
PM Peak Hour	1246 vph	726 vph	669 vph	926 vph	959 vph	936 vph	**1093 vph**

Figure 4-9: Existing Conditions Summary



The year 2006 peak hour traffic volumes are between 157 and 178 vph (17-19%) higher than the year 2004 volumes. Previous intersection capacity analyses indicated the need for signalization as a mid-range to long-range improvement as the build-out of Devens approaches. Intersection capacity analyses conducted for 2006 peak hour conditions indicate LOS E conditions for the AM peak period and LOS F for the PM peak hour period. The AM peak hour operations decline compared to 2004 conditions. The intersection is LOS F during the PM peak hour for both 2004 and 2006.

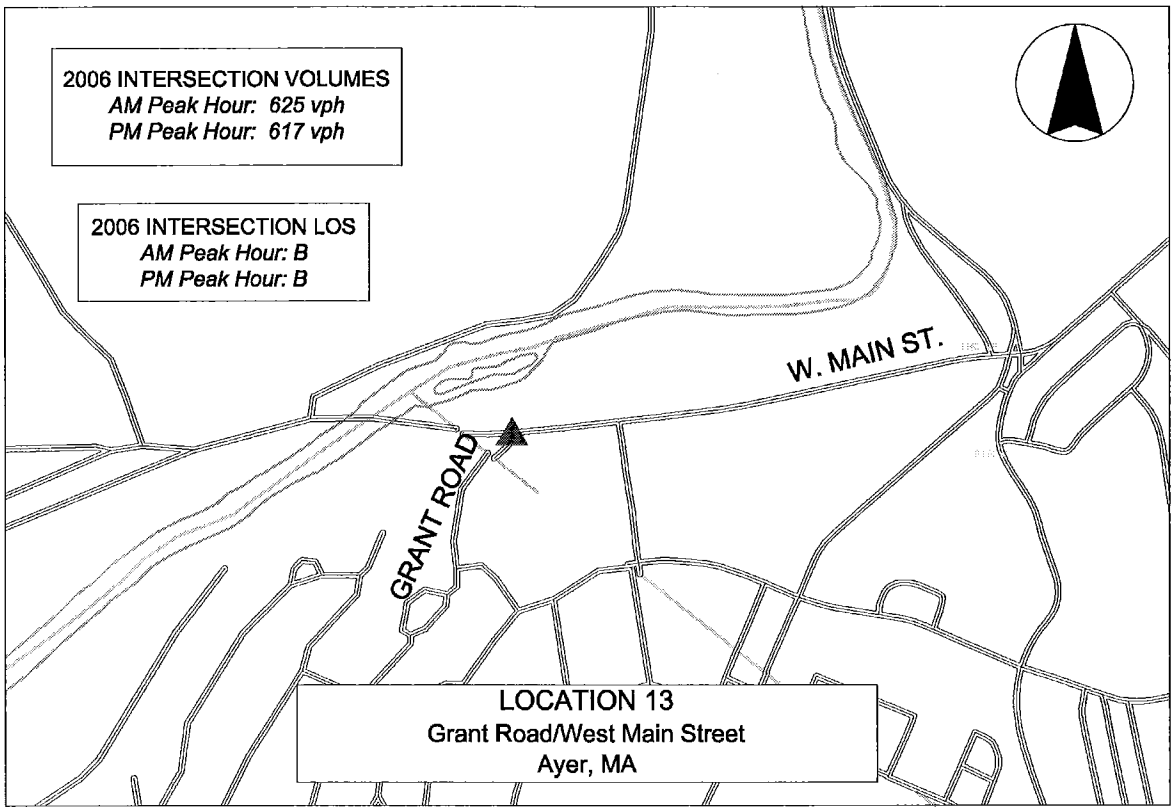
4.10 Location 13 – Grant Road /West Main Street, Ayer

This was a new location included for evaluation of the year 2004 conditions. Figure 4-10 below depicts the intersection location and current traffic conditions. Intersection turning movement counts were conducted at this intersection during both the AM and PM peak hour periods and are shown below.

Table 4-10: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	n/a	n/a	n/a	n/a	n/a	637 vph	**625 vph**
PM Peak Hour	n/a	n/a	n/a	n/a	n/a	662 vph	**617 vph**

Figure 4-10: Existing Conditions Summary



In 2004, an average of 650 vehicles were counted at this intersection for the AM and PM peak hours. Between 2004 and 2006, volumes decreased by 2% for the AM peak hour and 7% for the PM peak hour. Intersection capacity analyses using the 2006 volumes were conducted for the AM and PM peak hour conditions. As under 2004 conditions, this intersection operates at LOS B during both the AM and PM peak hours.

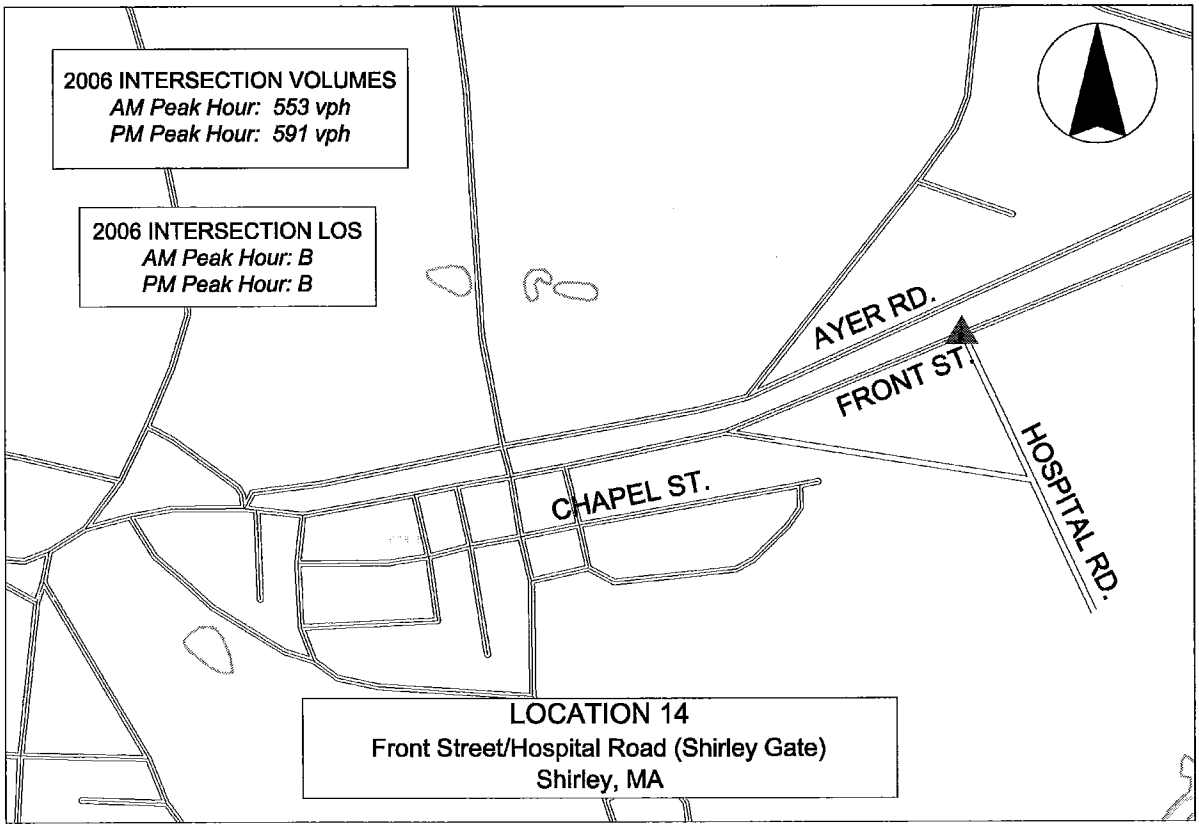
4.11 Location 14 – Hospital Road/Front Street, Shirley

This was a new location included for evaluation of the year 2004 conditions. Figure 4-11 below depicts the intersection location and current traffic conditions. Intersection turning movement counts were conducted at this intersection during both the AM and PM peak hour periods and are shown below.

Table 4-11: Traffic Volume Comparison

Total Intersection Volume	1990 Composite	1996 Baseline	1998	2000	2002	2004	2006
AM Peak Hour	n/a	n/a	n/a	n/a	n/a	668 vph	**553 vph**
PM Peak Hour	n/a	n/a	n/a	n/a	n/a	604 vph	**591 vph**

Figure 4-11: Existing Conditions Summary



In 2004, over 600 vehicles were observed at this intersection during the AM and PM peak hours. The year 2006 AM traffic volumes are 115 vehicles (approximately 17%) lower than in 2004. The 2006 PM traffic volumes are comparable to the 2004 volumes. Intersection capacity analyses using the 2006 volumes were conducted for the AM and PM peak hour conditions. As under 2004 conditions, this intersection operates at LOS B during both the AM and PM peak hours.

5.0 INTERSECTION VOLUME AND CAPACITY SUMMARY

A summary of all intersection volumes (with comparisons where available) and a summary of all intersection capacity analysis results are provided in Tables 5-1 and 5-2. Figure 5-1 shows intersection and roadway count locations. Figures 5-2 and 5-3 illustrate the 2006 AM and PM peak hour traffic volumes, respectively. Daily volumes are presented in the following pages.

Table 5-1a: Total Intersection Volumes – AM Peak Hour

Devens Traffic Monitoring Program Total Intersection Volume Summary									
Intersection	AM Peak Hour								
	1996 AM Baseline Pk. Hr. (vph)	1998 AM Pk. Hr. (vph)	2000 AM Pk. Hr. (vph)	2002 AM Pk. Hr. (vph)	2004 AM Pk. Hr. (vph)	**2006 AM Pk. Hr. (vph)**	1990 AM Composite Pk. Hr. (vph)	2015 AM No Build FEIR Pk. Hr. (vph)	2015 AM Full Build FEIR Pk. Hr. (vph)
1. Front St./Lancaster St./Leominster Rd./Center Rd., Shirley	802	861	803	738	761	**815**	n/a	n/a	n/a
2. Park St./Fitchburg Rd./Groton School Rd., Ayer	1210	1241	1157	1239	1146	**1196**	1009	1242	2199
3. Park St./Main St./West Main St., Ayer	1492	1556	1361	1442	1372	**1578**	1431	1297	2255
4. Groton-Harvard Rd./Central Ave., Ayer	864	941	880	990	869	**782**	n/a	n/a	n/a
5. Route 2A-110 (King St.)/I-495 Exit 30 NB Ramps, Littleton	1555	1703	1833	1941	1482	**1462**	1494	1450	1626
6. Route 2A-110 (King St.)/I-495 Exit 30 SB Ramps, Littleton	1539	1714	1830	1782	1583	**1657**	1272	1327	2146
7. Route 110-111 (Ayer Rd.)/Route 110/Route 111, Harvard	818	952	833	823	875	**891**	551	551	731
8. Route 70/Route 117 (Seven Bridge Rd.), Lancaster	1452	1582	1616	1597	1564	**1621**	n/a	n/a	n/a
9. Route 70/Route 117 (Lunenberg Rd.), Lancaster	1471	1581	1652	1649	1608	**1664**	n/a	n/a	n/a
10. Route 110 (King St.)/Route 119/Route 2A, Littleton Common	2085	2196	2225	2382	2180	**1873**	n/a	n/a	n/a
11. Route 2A-110 (King St.)/Goldsmith St., Littleton Common	1469	1667	1674	1638	1449	**1213**	n/a	n/a	n/a
12. Verbeck Gate/MacPherson Rd., Ayer	774	710	888	1014	916	**1094**	936	936	1292
13. Grant Rd./West Main St., Ayer	n/a	n/a	n/a	n/a	637	**625**	n/a	n/a	n/a
14. Hospital Rd./Front St., Shirley	n/a	n/a	n/a	n/a	668	**553**	n/a	n/a	n/a

Table 5-1b: Total Intersection Volumes – PM Peak Hour

Devens Traffic Monitoring Program Total Intersection Volume Summary									
Intersection	PM Peak Hour								
	1996 PM Baseline Pk. Hr. (vph)	1998 PM Pk. Hr. (vph)	2000 PM Pk. Hr. (vph)	2002 PM Pk. Hr. (vph)	2004 PM Pk. Hr. (vph)	**2006 PM Pk. Hr. (vph)**	1990 PM Composite Pk. Hr. (vph)	2015 PM No Build FEIR Pk. Hr. (vph)	2015 PM Full Build FEIR Pk. Hr. (vph)
1. Front St./Lancaster St./Leominster Rd./Center Rd., Shirley	953	779	847	782	850	**776**	n/a	n/a	n/a
2. Park St./Fitchburg Rd./Groton School Rd., Ayer	1353	1523	1447	1487	1482	**1450**	1210	1526	2460
3. Park St./Main St./West Main St., Ayer	1721	1547	1698	1646	1699	**1804**	1602	1398	2334
4. Groton-Harvard Rd./Central Ave., Ayer	841	956	904	960	854	**796**	n/a	n/a	n/a
5. Route 2A-110 (King St.)/I-495 Exit 30 NB Ramps, Littleton	1675	1711	1656	1927	1737	**1893**	1317	1292	1806
6. Route 2A-110 (King St.)/I-495 Exit 30 SB Ramps, Littleton	1844	1705	1814	1981	1853	**1959**	1538	1547	2336
7. Route 110-111 (Ayer Rd.)/Route 110/Route 111, Harvard	869	1135	668	642	710	**609**	467	534	633
8. Route 70/Route 117 (Seven Bridge Rd.), Lancaster	1614	1685	1657	1570	1636	**1677**	n/a	n/a	n/a
9. Route 70/Route 117 (Lunenberg Rd.), Lancaster	1578	1800	1679	1600	1650	**1720**	n/a	n/a	n/a
10. Route 110 (King St.)/Route 119/Route 2A, Littleton Common	2809	2880	2574	2871	2717	**2450**	n/a	n/a	n/a
11. Route 2A-110 (King St.)/Goldsmith St., Littleton Common	1758	1724	1588	1840	1683	**1521**	n/a	n/a	n/a
12. Verbeck Gate/MacPherson Rd., Ayer	726	669	926	959	936	**1093**	1246	631	1498
13. Grant Rd./West Main St., Ayer	n/a	n/a	n/a	n/a	662	**617**	n/a	n/a	n/a
14. Hospital Rd./Front St., Shirley	n/a	n/a	n/a	n/a	604	**591**	n/a	n/a	n/a

Table 5-2a: Intersection Capacity Analysis Level Of Service Summary AM Peak Hour

Unsignalized Intersections	1996 AM Peak		1998 AM Peak		2000 AM Peak		2002 AM Peak		2004 AM Peak		2006 AM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Location 1 - Front/Lancaster/Leominster/Center												
All movements from Lancaster Northbound	B	6	B	8	D	26	C	15	B	12	**B**	**13**
All movements from Center Southbound	B	10	C	20	E	48	D	29	C	19	**C**	**23**
Left turn from Leominster Eastbound	A	2	A	2	A	8	A	7	A	7	**A**	**7**
Left turn from Front Street Westbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Location 2 - Park/Fitchburg/Groton School												
Left/Right from Groton School Eastbound	F	>120	F	>120	F	102	E	44	C	20	**C**	**20**
Left turn from Fitchburg Road Southbound	A	3	A	3	A	8	A	8	A	9	**A**	**9**
Location 3 - Park/Main/West Main												
All movements from Park Street Northbound	B	9	B	8	n/a	n/a	C	16	B	14	**C**	**15**
All movements from Park Street Southbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Left turn from West Main Street Eastbound	A	4	A	5	A	9	A	9	A	9	**A**	**9**
Left turn from Main Street Westbound	A	3	A	3	n/a	n/a	A	8	A	8	**A**	**8**
Location 4 - Groton-Harvard/Central												
All movements from Groton-Harvard Northbound	B	8	C	12	C	18	C	18	B	14	**B**	**13**
All movements from Groton-Harvard Southbound	C	12	F	>120	F	80	F	118	D	26	**C**	**20**
Left turn from Central Eastbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Left turn from Central Westbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Location 5 - Route 2A-110/I-495 Northbound Ramps												
Left turn from Ramps Northbound	C	16	C	19	E	106	E	36	C	23	**C**	**22**
Right turn from Ramps Northbound	C	15	C	17	F	n/a	F	106	C	23	**B**	**13**
Left turn from Route 2A-110 Westbound	B	5	B	6	B	11	B	10	A	9	**A**	**9**
Location 6 - Route 2A-110/I-495 Southbound Ramps												
Left turn from Ramps Northbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Right turn from Ramps Northbound	B	6	B	8	C	21	C	18	B	13	**B**	**14**
All movements from Murray Street Southbound	E	35	F	>120	F	>120	F	>120	F	88	**F**	**76**
Left turn from Route 2A-110 Eastbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Left turn from Route 2A-100 Westbound	B	6	B	10	B	12	B	12	A	10	**B**	**10**
Location 7 - Route 110-111(Ayer Road)/Still River												
All movements from Still River Road Eastbound	C	11	C	19	E	47	D	28	C	22	**C**	**20**
All movements from Still River Road Westbound	C	12	E	30	F	>120	D	31	D	27	**D**	**27**
Left turn from Ayer Road Northbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Left turn from Ayer Road Southbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Location 8 - Route 70/Route 117 (Seven Bridge Rd)												
All movements from Seven Bridge Road Eastbound	F	88	A	3	A	< 8	n/a	n/a	n/a	n/a	**n/a**	**n/a**
Left turn from Seven Bridge Road Westbound	B	10	B	8	B	11	B	11	B	11	**B**	**11**
Left turn from Route 70 Northbound	B	7	F	>120	F	>120	F	>120	F	76	**F**	**>120**
Left turn from Route 70 Southbound	n/a	n/a	C	17	E	43	n/a	n/a	n/a	n/a	**D**	**26**
Location 9 - Route 70 (Lunenberg Road)/Route 117												
All movements from Lunenberg Road Southbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Left turn from Route 117 Eastbound	A	4	A	4	A	9	A	9	A	8	**A**	**8**

Table 5-2a (Continued)

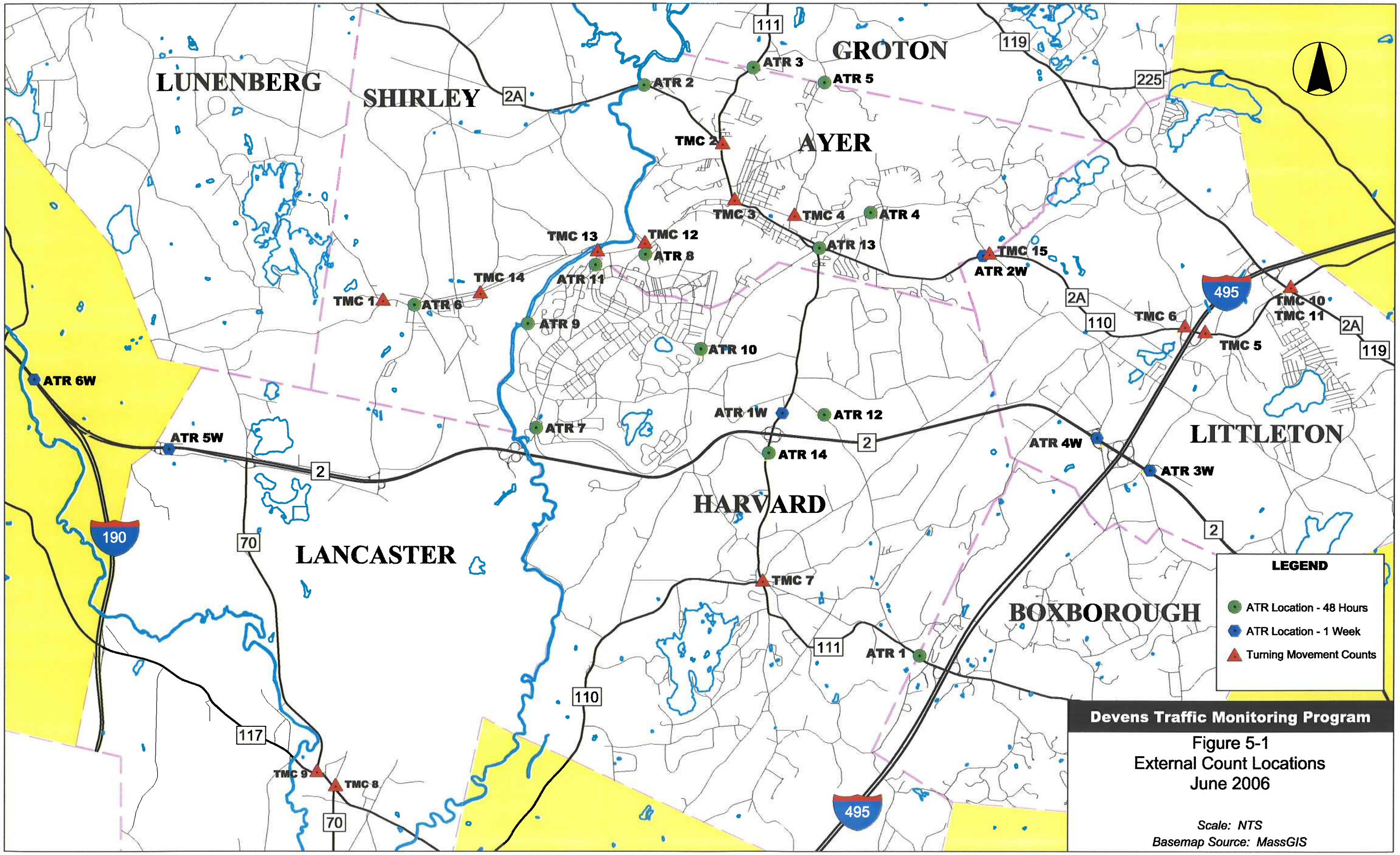
Unsignalized Intersections	1996 AM Peak		1998 AM Peak		2000 AM Peak		2002 AM Peak		2004 AM Peak		2006 AM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Location 11 - Route 2A-110/Goldsmith												
All movements from Goldsmith Northbound	F	>120	F	489	F	117	F	69	D	30	**C**	**20**
Left turn from Route 2A-110 Westbound	B	9	B	10	B	12	B	12	B	10	**A**	**10**
Location 12 - Verbeck Gate/MacPherson/West Main												
All movements from MacPherson Northbound	B	7	B	6	C	20	F	>120	C	19	**E**	**36**
All movements from MacPherson Southbound	B	6	B	9	A	< 5	F	62	C	20	**D**	**35**
All movements from West Main Eastbound			A	2	A	< 5	A	8	A	8	**A**	**8**
All movements from West Main Westbound	A	4	A	4	A	9	A	9	A	9	**A**	**9**
Location 13 - Grant/West Main												
All movements from Grant Road Northbound									B	12	**B**	**12**
Left turn from Front Street Westbound									A	8	**A**	**8**
Location 14 - Hospital/Front												
All movements from Hospital Road Northbound									B	13	**B**	**12**
Left turn from Front Street Westbound									A	8	**A**	**8**
Signalized Intersection	**1996 AM Peak**		**1998 AM Peak**		**2000 AM Peak**		**2002 AM Peak**		**2004 AM Peak**		**2006 AM Peak**	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Location 10 - Littleton Road/Great Road *(overall)*											***C***	***32***
Left turn from Littleton Road Eastbound	F	66	F	>120	F	>120	F	>120	F	>120	**B**	**17**
Through/Right from Littleton Road Eastbound	C	17	D	37			F	>120	F	>120	**B**	**16**
Left turn from Littleton Road Westbound	D	38	F	>120			E	77	D	48	**B**	**14**
Through/Right from Littleton Road Westbound	B	13	C	19			C	24	E	62	**B**	**15**
Left turn from Great Road Northbound	B	6	B	7			A	6	B	10	**A**	**6**
Through/Right from Great Road Northbound	B	7	B	8			C	20	C	29	**C**	**28**
Left turn from Great Road Southbound	A	4	A	4			A	10	B	12	**A**	**8**
Through/Right from Great Road Southbound	B	14	C	17			B	12	F	>120	**E**	**75**

Table 5-2b: Intersection Capacity Analysis Level Of Service Summary PM Peak Hour

Unsignalized Intersections	1996 PM Peak		1998 PM Peak		2000 PM Peak		2002 PM Peak		2004 PM Peak		2006 PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Location 1 - Front/Lancaster/Leominster/Center												
All movements from Lancaster Northbound	B	9	B	7	C	23	C	17	C	18	**C**	**16**
All movements from Center Southbound	C	12	B	10	C	24	C	22	D	25	**C**	**23**
Left turn from Leominster Eastbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Left turn from Front Street Westbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Location 2 - Park/Fitchburg/Groton School												
Left/Right from Groton School Eastbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**54**
Left turn from Fitchburg Road Southbound	B	6	B	8	B	11	B	10	B	11	**A**	**10**
Location 3 - Park/Main/West Main												
All movements from Park Street Northbound	C	10	D	21			D	26	D	31	**D**	**33**
All movements from Park Street Southbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Left turn from West Main Street Eastbound	B	8	C	11	B	10	B	11	B	12	**B**	**13**
Left turn from Main Street Westbound	A	3	A	3			A	8	A	8	**A**	**8**
Location 4 - Groton-Harvard/Central												
All movements from Groton-Harvard Northbound	C	10	D	24	D	34	F	64	D	33	**C**	**23**
All movements from Groton-Harvard Southbound	B	10	D	25	D	34	F	67	C	21	**C**	**24**
Left turn from Central Eastbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Left turn from Central Westbound	A	2	A	3	A	8	A	8	A	8	**A**	**8**
Location 5 - Route 2A-110/I-495 Northbound Ramps												
Left turn from Ramps Northbound	F	73	F	>120	F	94	F	>120	F	162	**F**	**>120**
Right turn from Ramps Northbound	B	6	B	7	C	16	C	16	C	18	**C**	**20**
Left turn from Route 2A-110 Westbound	A	4	A	4	A	9	A	9	A	9	**A**	**9**
Location 6 - Route 2A-110/I-495 Southbound Ramps												
Left turn from Ramps Northbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Right turn from Ramps Northbound	B	5	B	6	B	14	B	14	B	14	**B**	**13**
All movements from Murray Street Southbound	F	49	E	41	F	78	F	85	F	93	**F**	**>120**
Left turn from Route 2A-110 Eastbound	A	5	A	5	A	9	A	10	A	10	**A**	**10**
Left turn from Route 2A-100 Westbound	B	5	B	6	A	9	B	10	B	10	**A**	**10**
Location 7 - Route 110-111(Ayer Road)/Still River												
All movements from Still River Road Eastbound	C	11	C	11	C	18	C	15	C	21	**C**	**16**
All movements from Still River Road Westbound	B	9	B	10	C	23	C	18	C	24	**C**	**19**
Left turn from Ayer Road Northbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Left turn from Ayer Road Southbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Location 8 - Route 70/Route 117 (Seven Bridge Rd)												
All movements from Seven Bridge Road Eastbound	F	>120	B	6	A	10	n/a	n/a	n/a	n/a	**A**	**10**
Left turn from Seven Bridge Road Westbound	C	14	A	4	A	9	C	22	A	9	**A**	**9**
Left turn from Route 70 Northbound	A	4	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Left turn from Route 70 Southbound	B	5	D	22	E	36	n/a	n/a	n/a	n/a	**E**	**37**
Location 9 - Route 70 (Lunenberg Road)/Route 117												
All movements from Lunenberg Road Southbound	F	>120	F	>120	F	>120	F	>120	F	>120	**F**	**>120**
Left turn from Route 117 Eastbound	B	7	B	9	B	11	B	11	B	11	**B**	**11**

Table 5-2b (Continued)

Unsignalized Intersections	1996 PM Peak		1998 PM Peak		2000 PM Peak		2002 PM Peak		2004 PM Peak		2006 PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Location 11 - Route 2A-110/Goldsmith												
All movements from Goldsmith Northbound	F	>120	F	>120	F	58	F	>120	F	156	**F**	**88**
Left turn from Route 2A-110 Westbound	B	7	B	7	A	9	B	11	B	10	**A**	**10**
Location 12 - Verbeck Gate/MacPherson/West Main												
All movements from MacPherson Northbound	B	7	B	8	E	44	F	54	F	56	**F**	**>120**
All movements from MacPherson Southbound	B	7	C	12	C	16	C	16	C	20	**D**	**33**
All movements from West Main Eastbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
All movements from West Main Westbound	A	3	A	3	A	8	A	8	A	8	**A**	**8**
Location 13 - Grant/West Main												
All movements from Grant Road Northbound									B	13	**B**	**12**
Left turn from Front Street Westbound									A	8	**A**	**8**
Location 14 - Hospital/Front												
All movements from Hospital Road Northbound									B	13	**B**	**13**
Left turn from Front Street Westbound									A	8	**A**	**8**
Signalized Intersection	**1996 PM Peak**		**1998 PM Peak**		**2000 PM Peak**		**2002 PM Peak**		**2004 PM Peak**		**2006 PM Peak**	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Location 10 - Littleton Road/Great Road ***(overall)***											***E***	***69***
Left turn from Littleton Road Eastbound	F	>120	F	>120	F	>120	F	95	F	136	**F**	**>120**
Through/Right from Littleton Road Eastbound	B	7	B	9			B	15	B	16	**B**	**16**
Left turn from Littleton Road Westbound	B	11	C	17			F	86	B	19	**B**	**15**
Through/Right from Littleton Road Westbound	B	15	C	17			C	27	D	48	**C**	**33**
Left turn from Great Road Northbound	E	60	E	59			F	15	A	10	**A**	**9**
Through/Right from Great Road Northbound	D	39	D	37			F	15	F	>120	**F**	**>120**
Left turn from Great Road Southbound	E	55	F	>120			C	24	A	8	**A**	**7**
Through/Right from Great Road Southbound	E	13	D	32			F	>120	E	59	**D**	**39**


LUNENBERG
SHIRLEY
GROTON
AYER
HARVARD
LITTLETON
BOXBOROUGH
LANCASTER
ATR 1
ATR 2
ATR 3
ATR 4
ATR 5
ATR 6
ATR 6W
ATR 7
ATR 8
ATR 9
ATR 10
ATR 11
ATR 12
ATR 13
ATR 14
ATR 1W
ATR 2W
ATR 3W
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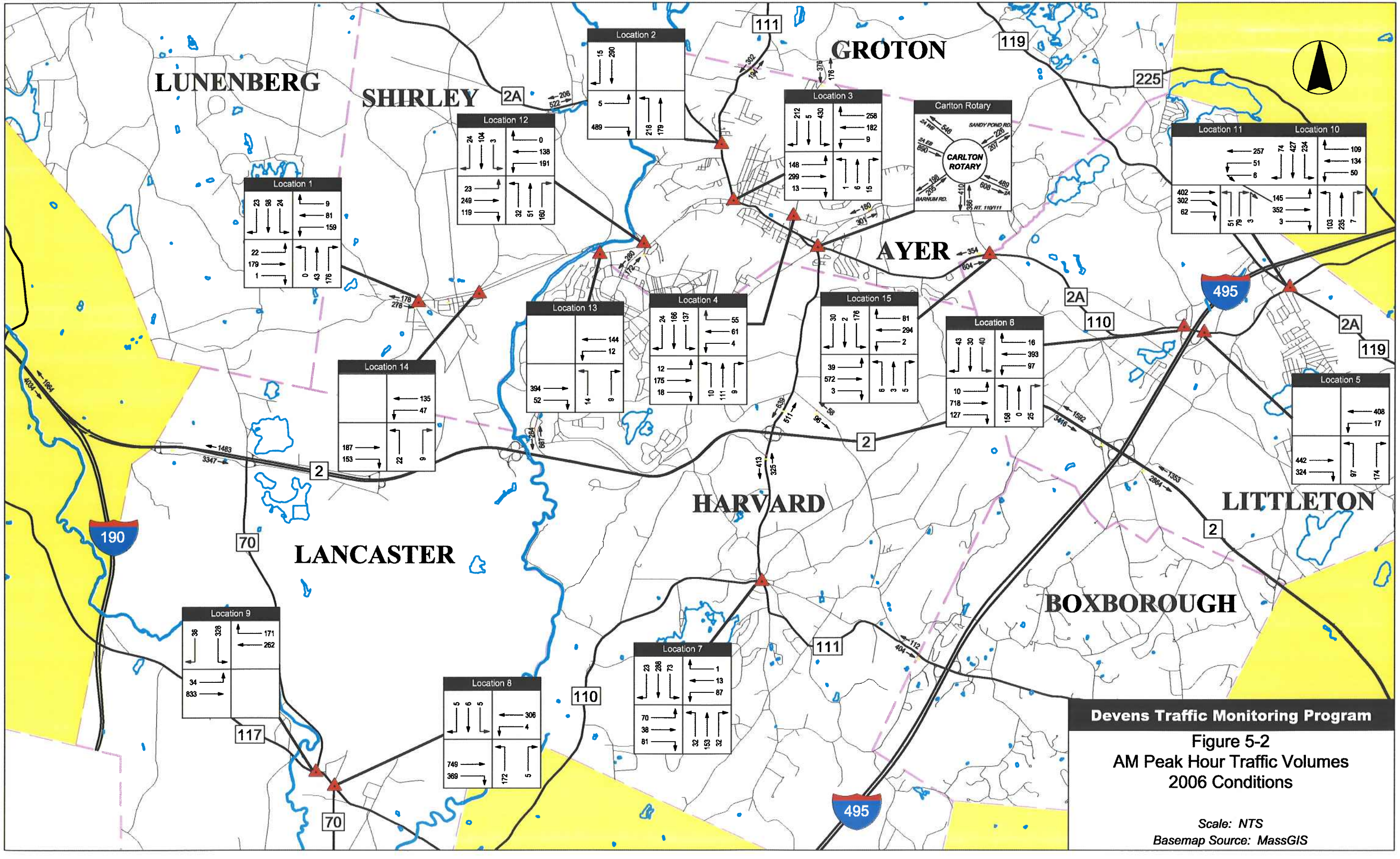
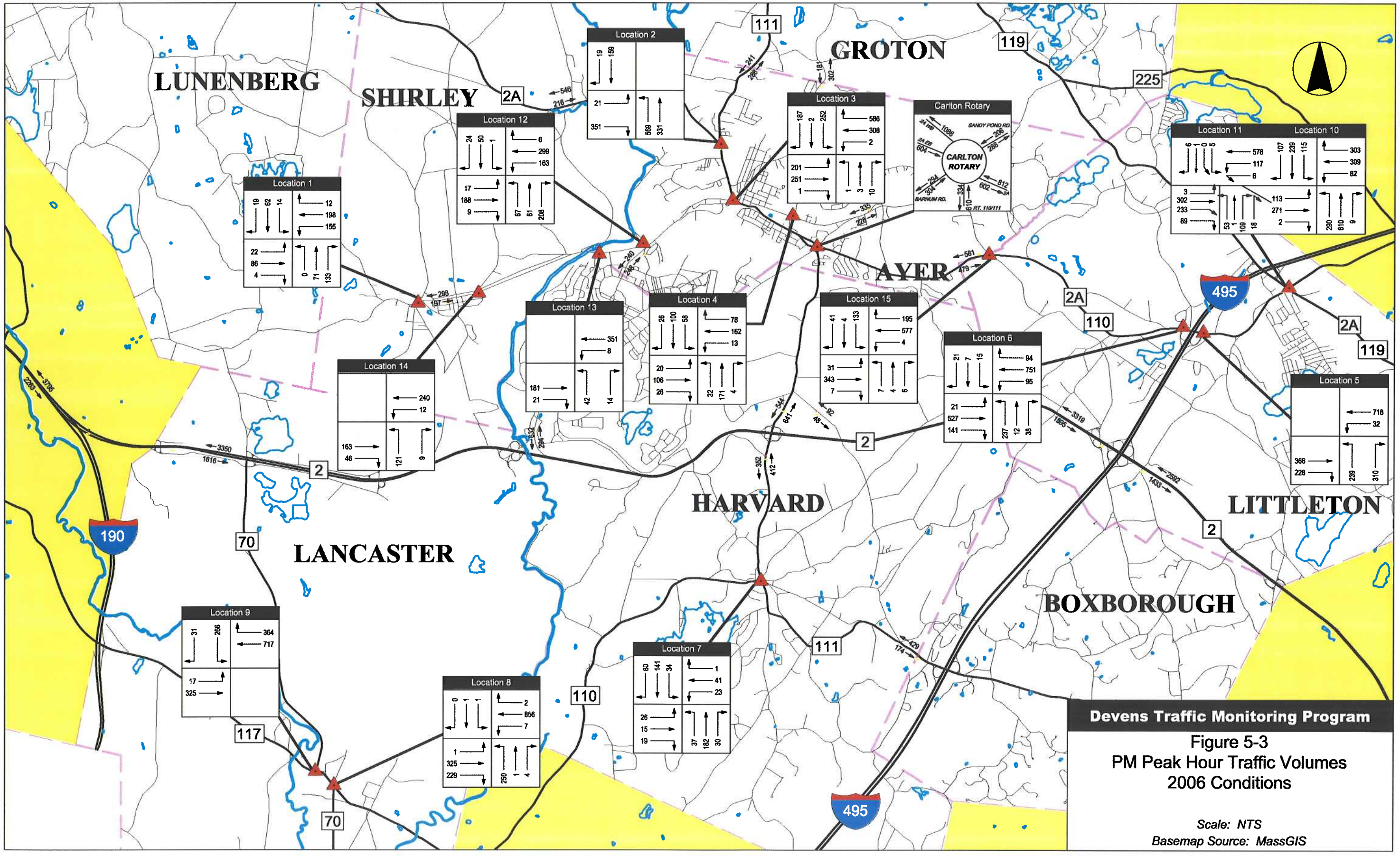
TMC 10
TMC 11
TMC 12
TMC 13
TMC 14
TMC 15
2A
2
70
110
111
117
119
225
190
495
LEGEND
ATR Location - 48 Hours
ATR Location - 1 Week
Turning Movement Counts
Devens Traffic Monitoring Program
Figure 5-1
External Count Locations
June 2006
Scale: NTS
Basemap Source: MassGIS



Devens Traffic Monitoring Program

Figure 5-2
AM Peak Hour Traffic Volumes
2006 Conditions

Scale: NTS
Basemap Source: MassGIS



Devens Traffic Monitoring Program

Figure 5-3
PM Peak Hour Traffic Volumes
2006 Conditions

Scale: NTS
Basemap Source: MassGIS

6.0 AUTOMATIC TRAFFIC RECORDER COUNTS

6.1 48 – Hour Counts

A series of 48-hour automatic traffic recorder (ATR) counts were included as part of the traffic monitoring program to conduct a comparison of daily and hourly directional traffic on critical study area roadways. Count were taken at the locations listed below during the noted dates.

	Location	Dates
1.	Route 111 at Boxborough/Harvard Town Line	5/17/06-5/18/06
2.	Route 2A at Ayer/Shirley Town Line	5/17/06-5/18/06
3.	Route 111 at Ayer/Groton Town Line	5/17/06-5/18/06
4.	Sandy Pond Road East of Central Avenue, Ayer	5/17/06-5/18/06
5.	Groton-Harvard Road at Ayer/Groton Town Line	5/17/06-5/18/06
6.	Front Street West of Ayer Street, Shirley	5/17/06-5/18/06
7.	Jackson Gate	5/17/06-5/18/06
8.	Verbeck Gate	5/17/06-5/18/06
9.	Shirley Gate	5/17/06-5/18/06 6/6/06 - 6/7/06
10.	Barnum Gate	5/17/06-5/18/06
11.	Grant Road Gate (New Location)	5/17/06-5/18/06
12.	Poor Farm Road East of Route 110-111, Harvard	5/17/06-5/18/06
13.	Carleton Rotary (all approaches and exits)	5/17/06-5/18/06 6/6/06 - 6/7/06*
14.	Route 110-111 South of Route 2, Harvard	5/17/06-5/18/06

* Eastbound Route 2A/111 west of the Carleton Rotary was counted during these two days.

All of the data was collected prior to school ending for the summer.

A summary of the average weekday (24-hour total) traffic, as well as AM and PM peak hour volumes, is provided in the following tables (6-1a – 6-1c). The average weekday volumes are also illustrated in Figure 6-1 provided at the end of this section.

Table 6-1a: Automatic Traffic Recorder (ATR) Summary – Average Weekday Daily Traffic

Location	1996 AWDT (vpd)	1998 AWDT (vpd)	2000 AWDT (vpd)	2002 AWDT (vpd)	2004 AWDT (vpd)	2006 AWDT (vpd)
1. Route 111 at Boxborough/Harvard Town Line	4,480	n/a	4,859	5,508	6,847	**5,298**
2. Route 2A at Ayer/Shirley Town Line	9,316	8,643	7,667	8,537	8,465	**7,845**
3. Route 111 at Ayer/Groton Town Line	6,482	5,497	5,120	5,764	5,609	**6,102**
4. Sandy Pond Road east of Central Ave., Ayer	5,529	n/a	5,907	5,939	5,921	**5,855**
5. Groton-Harvard Road at Ayer/Groton Town Line	4,922	n/a	4,705	5,602	6,064	**5,376**
6. Front St. west of Ayer St., Shirley	5,651	5,790	5,509	5,872	5,677	**5,716**
7. Jackson Gate	3,578	4,854	6,398	7,405	8,508	**9,552**
8. Verbeck Gate	2,354	3,363	4,655	6,134	4,798	**5,229**
9. Shirley Gate	n/a	533	1,104	731	1,927	**1,317**
10. Barnum Gate	2,172	2,766	3,418	5,966	4,587	**4,779**
11. Grant Road Gate	n/a	n/a	n/a	n/a	638	**936**
12. Poor Farm Rd. east of Route 110/111, Harvard	1,351	1,442	1,255	1,709	1,659	**1,520**
13. Carlton Rotary						
Route 2A/110 east of rotary	14,472	15,229	14,131	17,677	16,258	**16,722**
Sandy Pond Road north of rotary	4,701	6,505	3,798	4,301	5,030	**5,178**
Route 2A/111 west of rotary (WB)	10,355	10,650	9,629	10,352	10,806	**10,080**
Route 2A/111 west of rotary (EB)	9,951	10,394	9,483	9,796	10,101	**9,370**
Barnum Road south of rotary	3,186	2,694	3,418	5,966	5,326	**5,920**
Route 110/111 south of rotary	13,837	14,533	13,475	15,677	16,127	**10,715**
14. Route 110/111 south of Route 2, Harvard	7,440	8,140	7,279	8,302	8,591	**8,186**

Table 6-1b: Automatic Traffic Recorder (ATR) Summary AM Peak Hour

Location	1996 AM Pk. Hr. (vph)	1998 AM Pk. Hr. (vph)	2000 AM Pk. Hr. (vph)	2002 AM Pk. Hr. (vph)	2004 AM Pk. Hr. (vph)	2006 AM Pk. Hr. (vph)
1. Route 111 at Boxborough/Harvard Town Line	448	n/a	540	552	715	**516**
2. Route 2A at Ayer/Shirley Town Line	852	740	723	743	816	**728**
3. Route 111 at Ayer/Groton Town Line	596	540	426	469	580	**496**
4. Sandy Pond Road east of Central Ave., Ayer	445	n/a	502	498	471	**481**
5. Groton-Harvard Road at Ayer/Groton Town Line	473	n/a	546	549	500	**552**
6. Front St. west of Ayer St., Shirley	412	403	429	495	441	**456**
7. Jackson Gate	324	462	812	770	836	**951**
8. Verbeck Gate	217	264	470	492	441	**454**
9. Shirley Gate	n/a	48	70	53	232	**132**
10. Barnum Gate	159	193	260	384	418	**366**
11. Grant Road Gate	n/a	n/a	n/a	n/a	67	**97**
12. Poor Farm Rd. east of Route 110/111, Harvard	129	162	132	180	168	**154**
13. Carlton Rotary						
Route 2A/110 east of rotary	1,023	978	1,071	1,215	1,158	**1,097**
Sandy Pond Road north of rotary	307	441	325	403	433	**433**
Route 2A/111 west of rotary (WB)	537	459	519	488	622	**546**
Route 2A/111 west of rotary (EB)	1,056	1,054	1,034	1,040	940	**890**
Barnum Road south of rotary	220	181	260	384	401	**403**
Route 110/111 south of rotary	1,075	1,148	1,121	1,202	1,346	**796**
14. Route 110/111 south of Route 2, Harvard	658	678	672	695	783	**738**

Table 6.1c: Automatic Traffic Recorder (ATR) Summary PM Peak Hour

Location	1996 PM Pk. Hr. (vph)	1998 PM Pk. Hr. (vph)	2000 PM Pk. Hr. (vph)	2002 PM Pk. Hr. (vph)	2004 PM Pk. Hr. (vph)	2006 PM Pk. Hr. (vph)
1. Route 111 at Boxborough/Harvard Town Line	538	n/a	530	549	714	**603**
2. Route 2A at Ayer/Shirley Town Line	905	787	704	805	789	**762**
3. Route 111 at Ayer/Groton Town Line	554	541	406	483	554	**529**
4. Sandy Pond Road east of Central Ave., Ayer	538	n/a	575	550	551	**563**
5. Groton-Harvard Road at Ayer/Groton Town Line	438	n/a	453	493	536	**483**
6. Front St. west of Ayer St., Shirley	492	458	471	482	506	**495**
7. Jackson Gate	369	434	579	631	853	**926**
8. Verbeck Gate	206	252	380	506	421	**488**
9. Shirley Gate	n/a	53	122	36	179	**138**
10. Barnum Gate	172	224	367	430	454	**462**
11. Grant Road Gate	n/a	n/a	n/a	n/a	72	**92**
12. Poor Farm Rd. east of Route 110/111, Harvard	147	152	124	164	152	**140**
13. Carlton Rotary						
Route 2A/110 east of rotary	1,248	1,257	1,133	1,326	1,324	**1,414**
Sandy Pond Road north of rotary	456	558	320	363	449	**494**
Route 2A/111 west of rotary (WB)	1,232	1,182	1,043	1,137	1,142	**1,086**
Route 2A/111 west of rotary (EB)	611	555	581	507	636	**604**
Barnum Road south of rotary	261	170	367	430	532	**598**
Route 110/111 south of rotary	1,222	1,269	1,098	1,210	1,338	**944**
14. Route 110/111 south of Route 2, Harvard	760	766	600	640	736	**764**

6.2 Week Long Counts

Week long counts were conducted at six locations from May 15th through May 21st, 2006. These counts were reviewed to identify if any needed to be recounted. Due to disruptions with several of the ATR's, four locations were recounted. In several cases, the counts were combined with days from different weeks to develop the average weekday daily traffic. All of the data was collected prior to school ending for the summer. The following is a list of the week-long count locations and the dates that they were counted.

	Location	Dates
1.	Route 110-111 North of Route 2, Harvard	Mon. May 15th – Sun. May 21st
2.	Route 2A-110 at Ayer/Littleton Town Line	Mon. May 15th – Sun. May 21st
3.	Route 2 East of I-495, Littleton	Mon. May 15th – Sun. May 21st Sun. June 4th – Sun. June 11th
4.	Route 2 West of I-495, Littleton	Mon. May 15th – Sun. May 21st Sun. June 4th – Sun. June 11th
5.	Route 2 West of Route 70, Lancaster	Mon. May 15th – Sun May 21st Tues. June 6th–Sat. June 10th (EB) Sun. June 4th–Sun. June 11th (WB)
6.	Route 2 West of I-90, Leominster	Mon. May 15th – Sun. May 21st Sun. June 4th – Sun. June 11th

A summary of traffic volume characteristics associated with each of these roadways is provided in the following table.

Day of week variations in traffic volumes on these roadways are illustrated in Figure 6-2 below.

Table 6.2: Automatic Traffic Recorder (ATR) Summary – 7 Day Counts

Location	1996 ADT (vpd)	1998 ADT (vpd)	2000 ADT (vpd)	2002 ADT (vpd)	2004 ADT (vpd)	2006 ADT (vpd)	1996 AWDT (vpd)	1998 AWDT (vpd)	2000 AWDT (vpd)	2002 AWDT (vpd)	2004 AWDT (vpd)	2006 AWDT (vpd)
1. Route 110-111 North of Route 2, Harvard	11,912	11,524	13,258	13,471	13,378	**12,758**	13,185	12,813	14,748	14,986	14,961	**13,907**
2. Route 2A-110 at Littleton/Ayer Town Line*	8,567	10,681	12,039	12,126	11,721	**11,376**	9,598	11,958	12,039	13,470	13,084	**13,101**
3. Route 2 East of I-495, Littleton	36,141	38,979	43,851	42,076	52,876	**41,970**	40,233	43,328	50,195	46,033	59,095	**45,982**
4. Route 2 West of I-495, Littleton**	40,510	44,620	42,485	51,083	60,066	**52,484**	44,720	49,076	46,707	58,944	67,145	**57,240**
5. Route 2 West of Route 70, Lancaster	41,441	41,981	NA	NA	51,628	**53,198**	43,940	45,581	43,870	NA	57,989	**57,464**
6. Route 2 West of I-190, Leominster***	51,857	55,982	58,650	64,339	70,414	**69,094**	55,588	60,966	64,482	71,263	75,706	**73,935**
Location	**1996 AM Peak Hr. (vph)**	**1998 AM Peak Hr. (vph)**	**2000 AM Peak Hr. (vph)**	**2002 AM Peak Hr. (vph)**	**2004 AM Peak Hr. (vph)**	**2006 AM Peak Hr. (vpd)**	**1996 PM Peak Hr. (vph)**	**1998 PM Peak Hr. (vph)**	**2000 PM Peak Hr. (vph)**	**2002 PM Peak Hr. (vph)**	**2004 PM Peak Hr. (vph)**	**2006 PM Peak Hr. (vpd)**
1. Route 110-111 North of Route 2, Harvard	1,083	969	1,201	1,252	1,156	**1,150**	1,169	1,092	1,237	1,222	1,230	**1,185**
2. Route 2A-110 at Littleton/Ayer Town Line*	799	890	1,030	1,054	1,004	**958**	725	911	940	1,003	1,111	**1,060**
3. Route 2 East of I-495, Littleton	3,886	3,896	4,374	4,064	5,430	**4,217**	3,872	3,964	5,133	3,962	4,860	**4,025**
4. Route 2 West of I-495, Littleton**	4,096	4,666	4,486	4,931	6,120	**5,008**	4,008	4,080	4,052	5,028	5,787	**4,914**
5. Route 2 West of Route 70, Lancaster	4,143	4,610	****	****	6,040	**4,830**	3,858	3,868	****	NA	4,443	**4,966**
6. Route 2 West of I-190, Leominster***	4,701	5,417	5,556	5,567	6,150	**5,998**	4,625	5,082	5,313	5,766	6,135	**6,058**
Location	**1996 Sat. (vpd)**	**1998 Sat. (vpd)**	**2000 Sat. (vpd)**	**2002 Sat. (vpd)**	**2004 Sat. (vpd)**	**2006 Sat. (vpd)**	**1996 Sat. Peak Hr. (vph)**	**1998 Sat. Peak Hr. (vph)**	**2000 Sat. Peak Hr. (vph)**	**2002 Sat. Peak Hr. (vph)**	**2004 Sat. Peak Hr. (vph)**	**2006 Sat. Peak Hr. (vph)**
1. Route 110-111 North of Route 2, Harvard	10,175	9,209	10,641	11,167	10,916	**11,307**	880	764	875	933	958	**1,000**
2. Route 2A-110 at Littleton/Ayer Town Line*	6,597	8,270	*	10,033	9,659	**9,003**	553	653	*	814	776	**704**
3. Route 2 East of I-495, Littleton	27,235	30,428	28,399	34,232	44,822	**34,039**	2,047	2,240	2,227	2,454	3,294	**2,595**
4. Route 2 West of I-495, Littleton**	30,194	37,623	33,015	38,747	40,606	**42,099**	2,383	2,972	2,341	2,954	3,011	**3,134**
5. Route 2 West of Route 70, Lancaster	35,527	35,321	****	****	30,552	**45,817**	2,553	2,732	****	****	2,237	**3,341**
6. Route 2 West of I-190, Leominster***	43,925	*	46,368	53,238	62,260	**62,440**	3,174	*	3,592	4,198	4,695	**4,680**
Location	**1996 Sunday (vpd)**	**1998 Sunday (vpd)**	**2000 Sunday (vpd)**	**2002 Sunday (vpd)**	**2004 Sunday (vpd)**	**2006 Sunday (vpd)**	**1996 Sunday Peak Hr. (vph)**	**1998 Sunday Peak Hr. (vph)**	**2000 Sunday Peak Hr. (vph)**	**2002 Sunday Peak Hr. (vph)**	**2004 Sunday Peak Hr. (vph)**	**2006 Sunday Peak Hr. (vph)**
1. Route 110-111 North of Route 2, Harvard	7,282	7,403	8,442	11,167	7,926	**8,464**	628	587	828	933	815	**800**
2. Route 2A-110 at Littleton/Ayer Town Line*	5,380	6,722	*	10,033	6,969	**6,906**	491	532	*	814	625	**652**
3. Route 2 East of I-495, Littleton	24,582	25,805	27,591	34,232	29,835	**29,845**	1,989	2,149	2,436	2,454	2,583	**2,758**
4. Route 2 West of I-495, Littleton**	29,775	29,340	30,834	38,747	44,132	**38,089**	2,499	2,307	2,616	2,954	3,708	**3,363**
5. Route 2 West of Route 70, Lancaster	32,387	30,644	****	****	40,889	**39,248**	2,642	2,735	****	****	3,429	**3,289**
6. Route 2 West of I-190, Leominster***	41,133	40,936	30,834	53,238	52,103	**51,540**	3,310	3,391	3,592	4,198	4,227	**4,454**

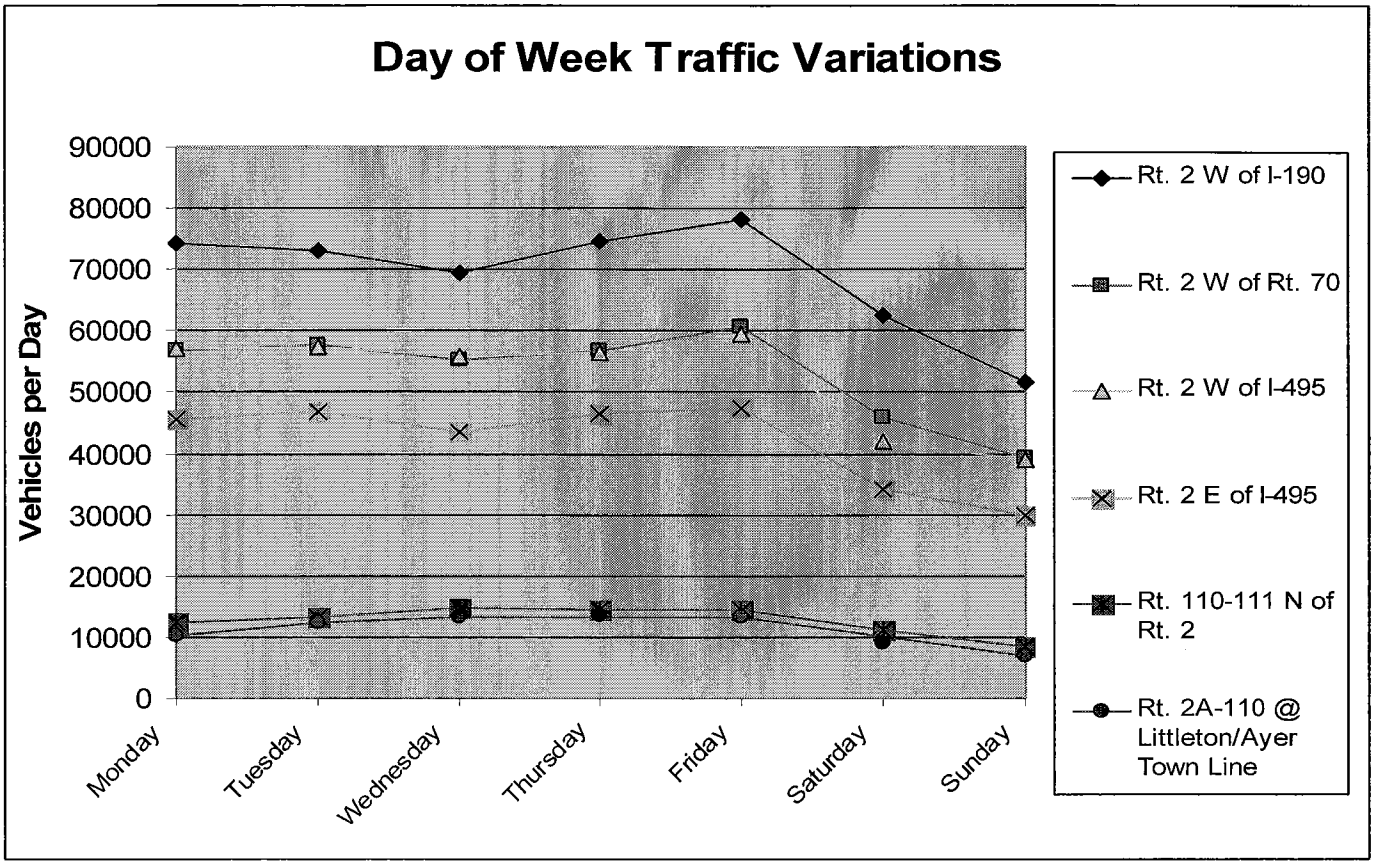
** 2 day count in 2000*

*** 5 day count in 2002*

**** 6 day count in 2002*

***** Data not available from MHD permanent count locations.*

Figure 6-2: Day of Week Traffic Variations



As was shown in previous reports, it can be seen that despite the differences in traffic volume, these roadways tend to follow an expected pattern of increasing traffic from Monday to Friday, with decreased Saturday and Sunday volumes. These characteristics are less apparent but still evident on the local roadways such as Route 2A-110, where the component of local traffic represents a higher percentage of overall daily volumes.

6.3 Vehicle Classification

A series of vehicle classification counts were conducted to monitor heavy vehicle volumes. The two-directional vehicle classification counts were conducted at the following locations during the specified dates:

	Location	Dates
1.	Barnum Gate	5/17/06-5/18/06
2.	Verbeck Gate	5/17/06-5/18/06
3.	Jackson Gate	5/17/06-5/18/06
4.	Grant Road Gate (New Location)	5/17/06-5/18/06
5.	Shirley Gate	5/17/06-5/18/06
		6/6/06 – 6/7/06
6.	Route 110/111 North of Route 2, Harvard	5/15/06-6/21/06

These vehicle classification counts were conducted for a minimum 48-hour period and were programmed to identify the 13 different Federal Highway Administration vehicle classifications. For simplicity in reporting, these results have been summarized into four categories: motorcycles, passenger vehicles, single unit trucks and buses, and tractor-trailers. The full vehicle classifications printouts are provided in the Appendix.

The charts provided on the following pages depict the hourly distribution of two-way truck traffic at each location where vehicle classification counts were conducted. Both total volume and time of day were expressed as important issues by residents concerned with noise and other impacts associated with truck traffic.

Figure 6-3: Truck Traffic Distribution, Route 110-111, Harvard

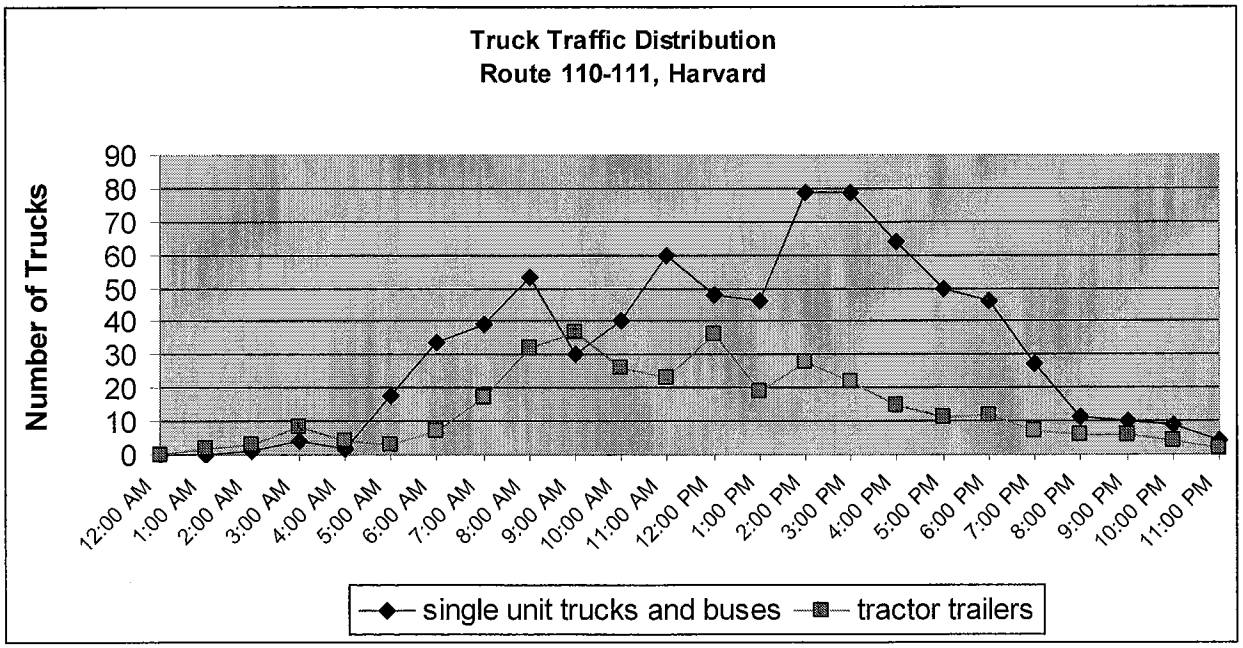


Figure 6-4: Vehicle Classification Count, Route 110-111/Harvard

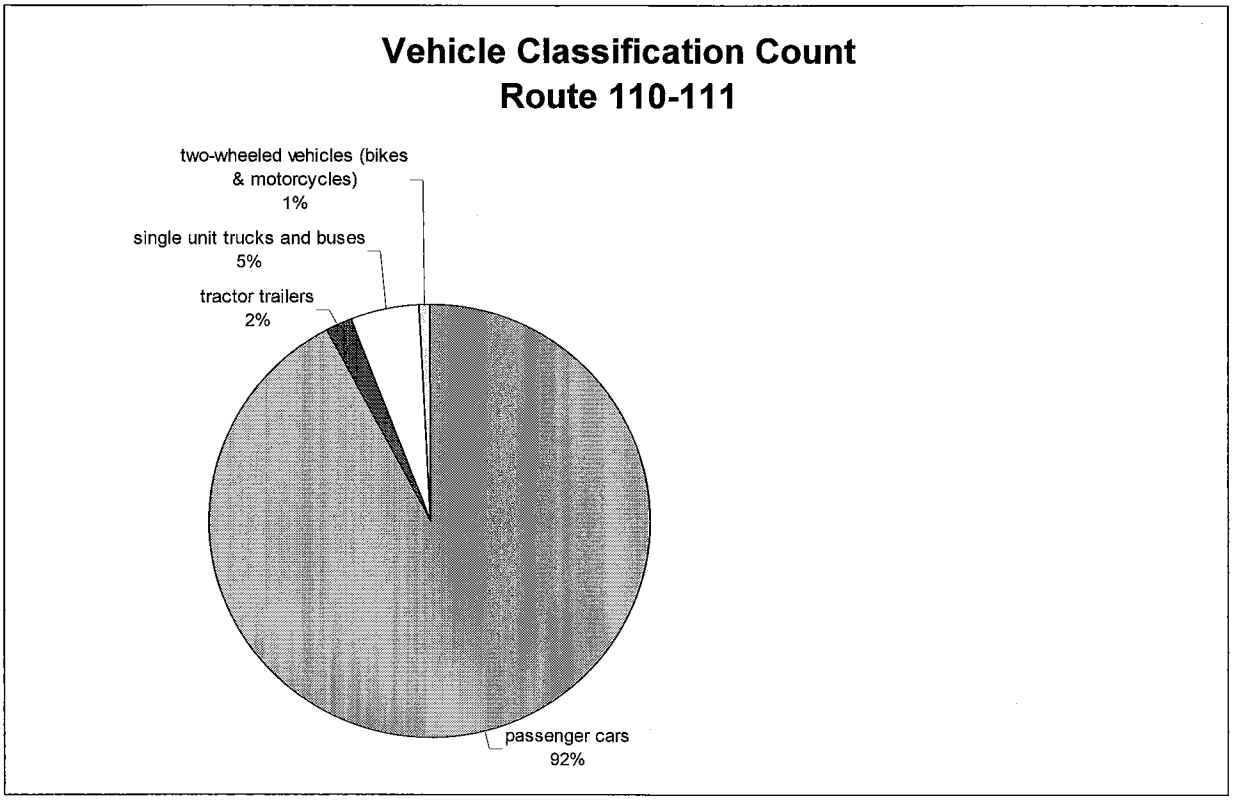


Figure 6-5: Truck Traffic Distribution, Jackson Gate

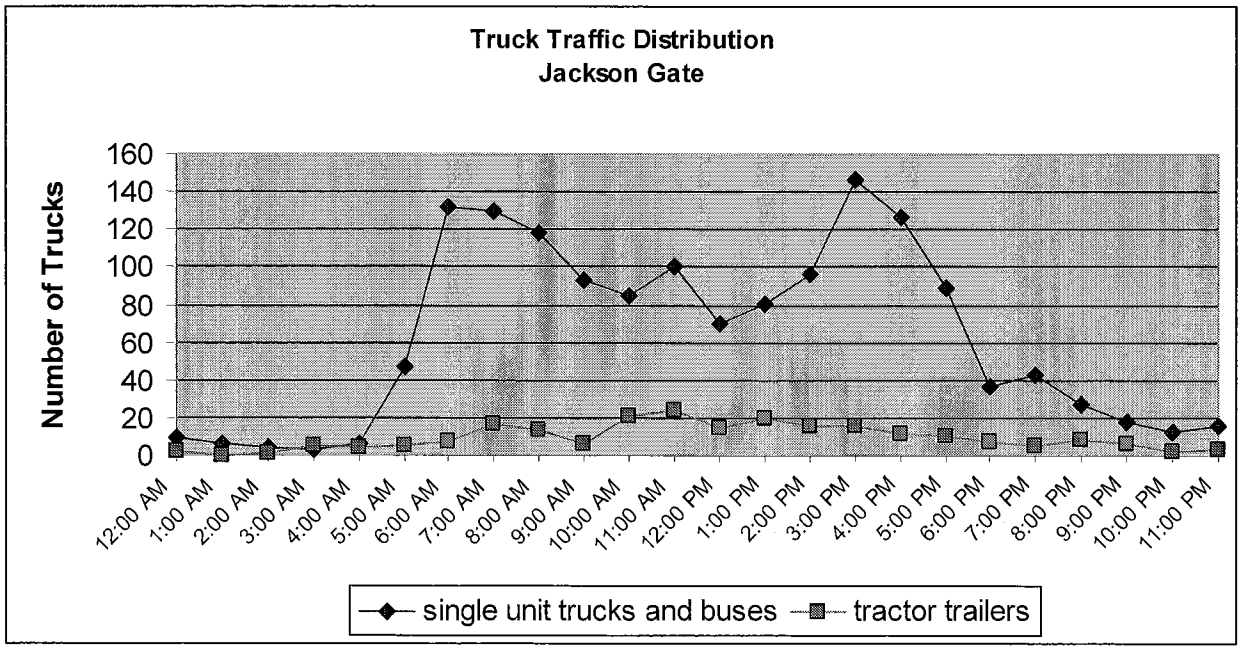


Figure 6-6: Truck Traffic Distribution, Verbeck Gate

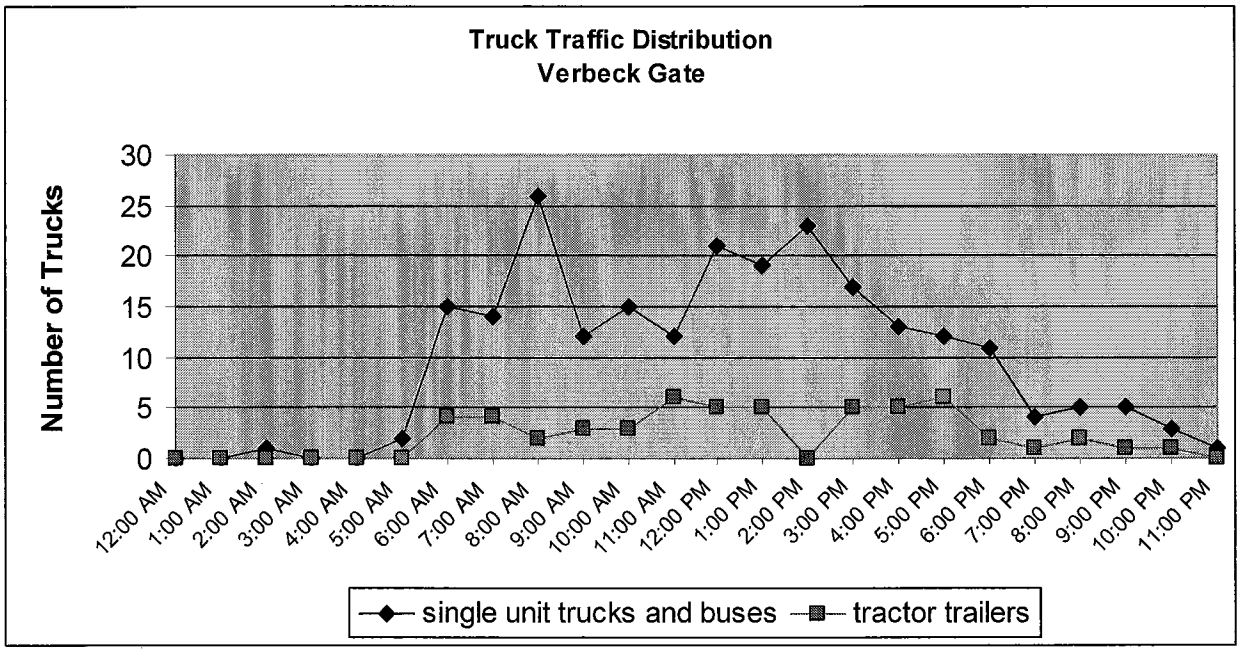


Figure 6-7: Truck Traffic Distribution, Barnum Gate

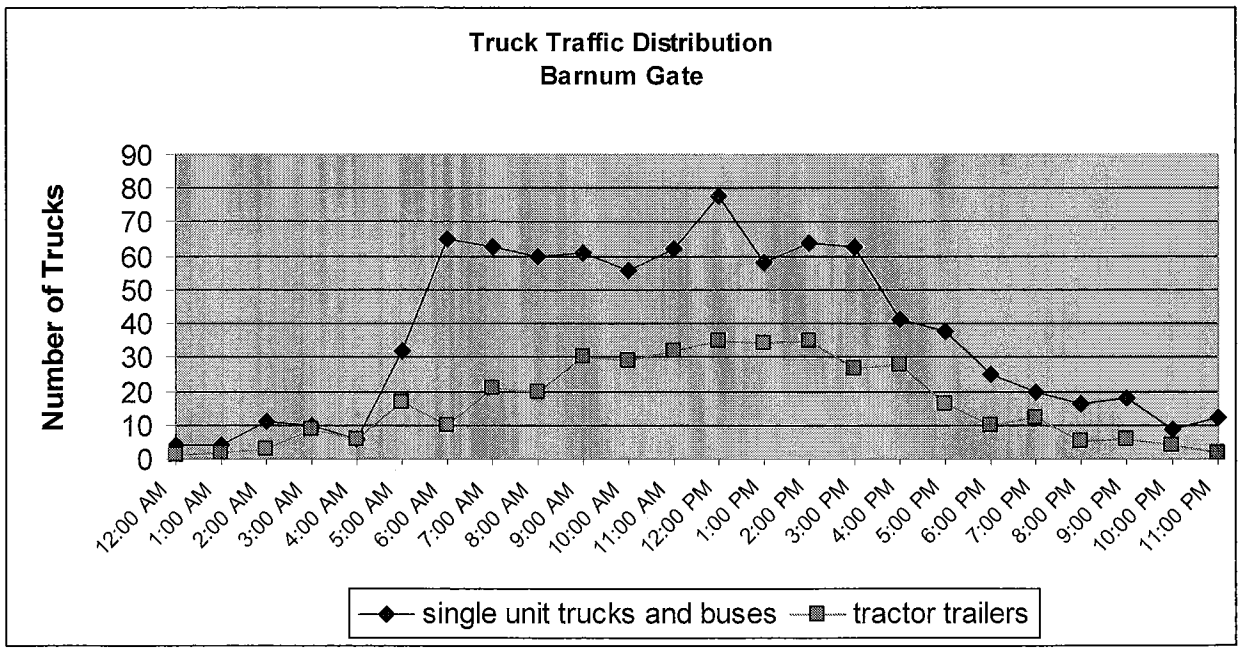


Figure 6-8: Truck Traffic Distribution, Grant Road Gate

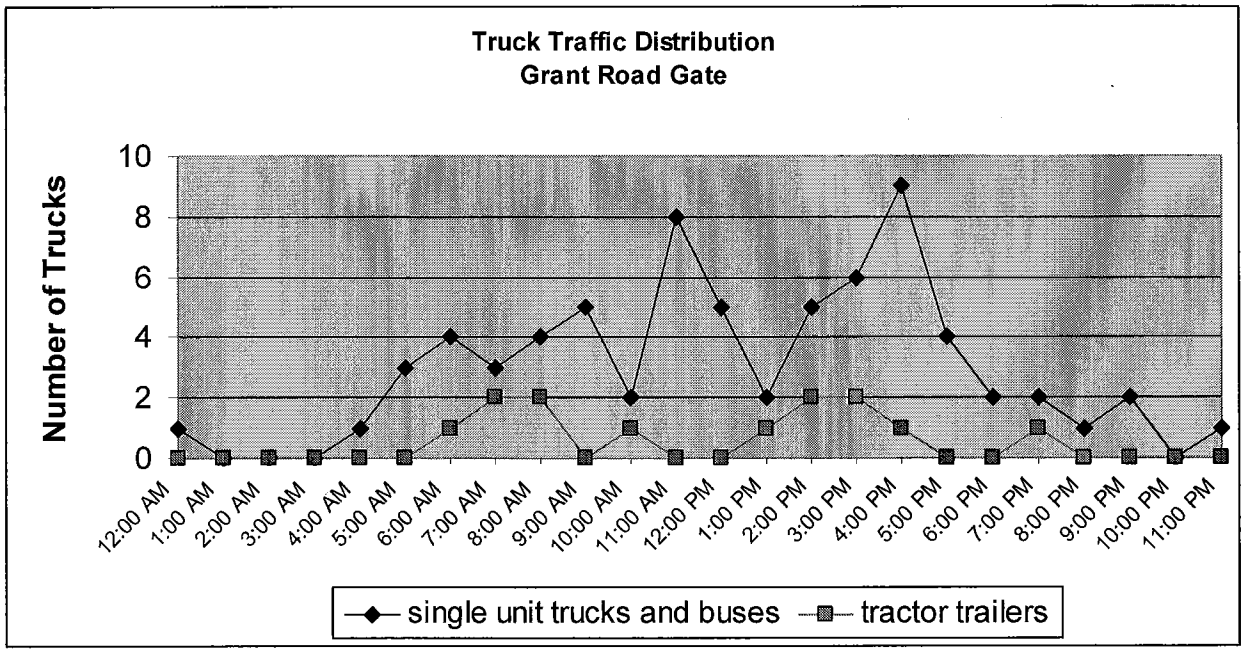


Figure 6-9: Truck Traffic Distribution, Shirley Gate

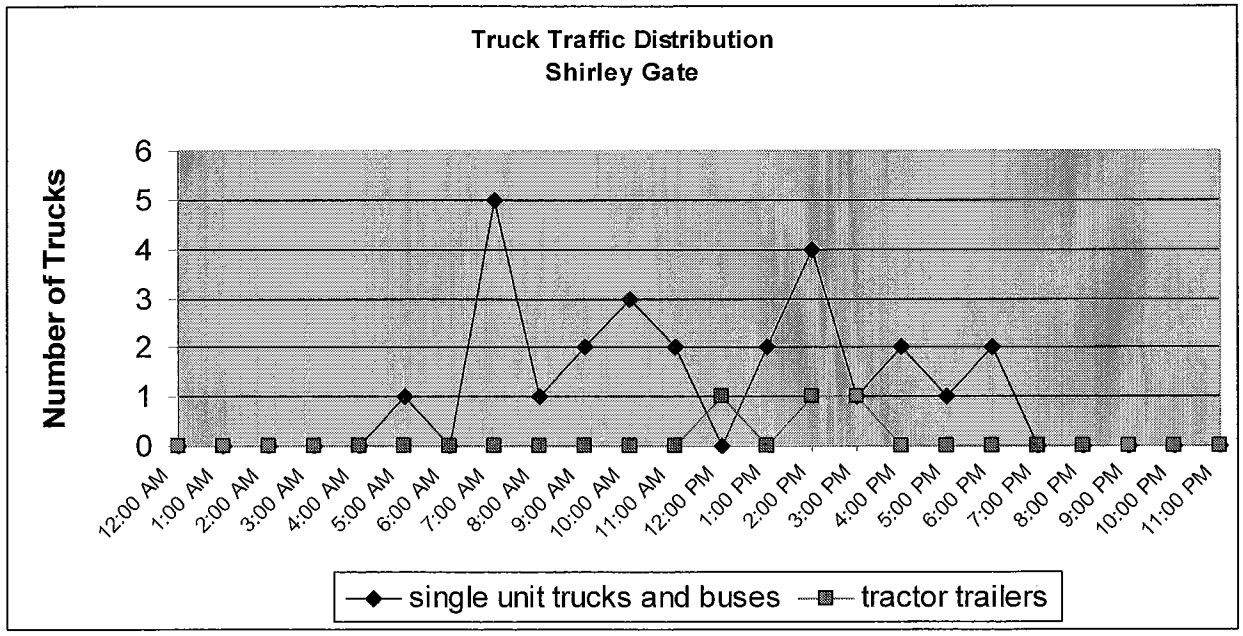


Figure 6-10: Truck Traffic Distribution, Total of Combined Gates

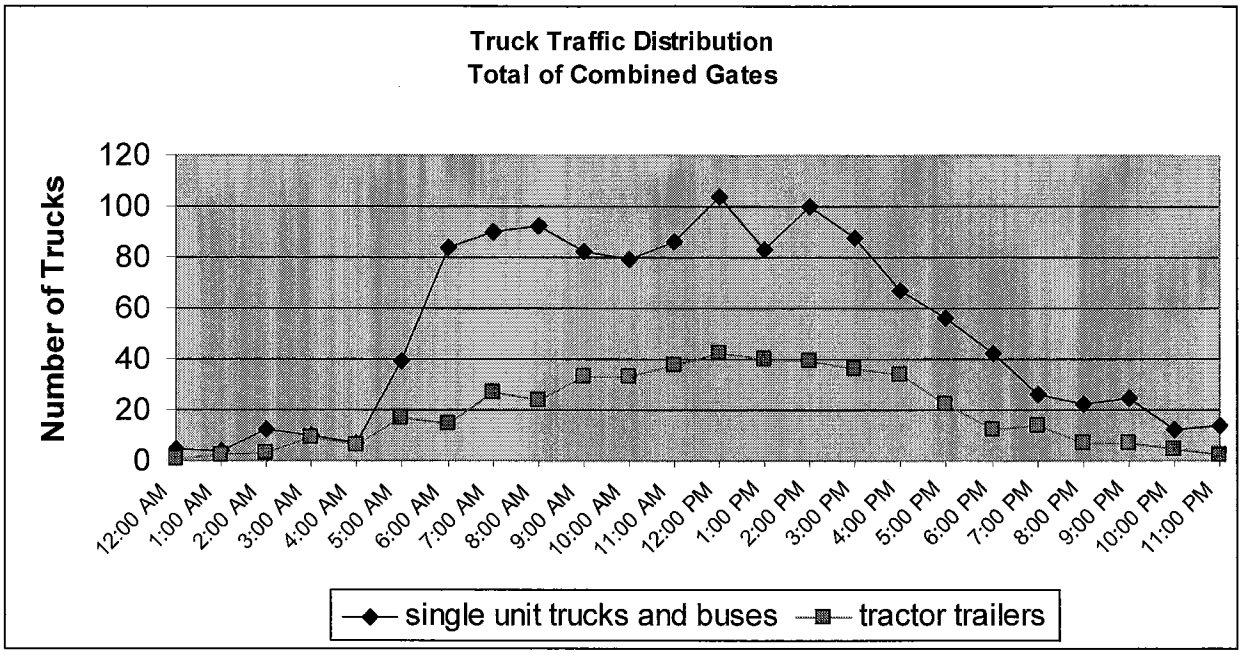


Figure 6-11: Vehicle Classification Summary, All Gates

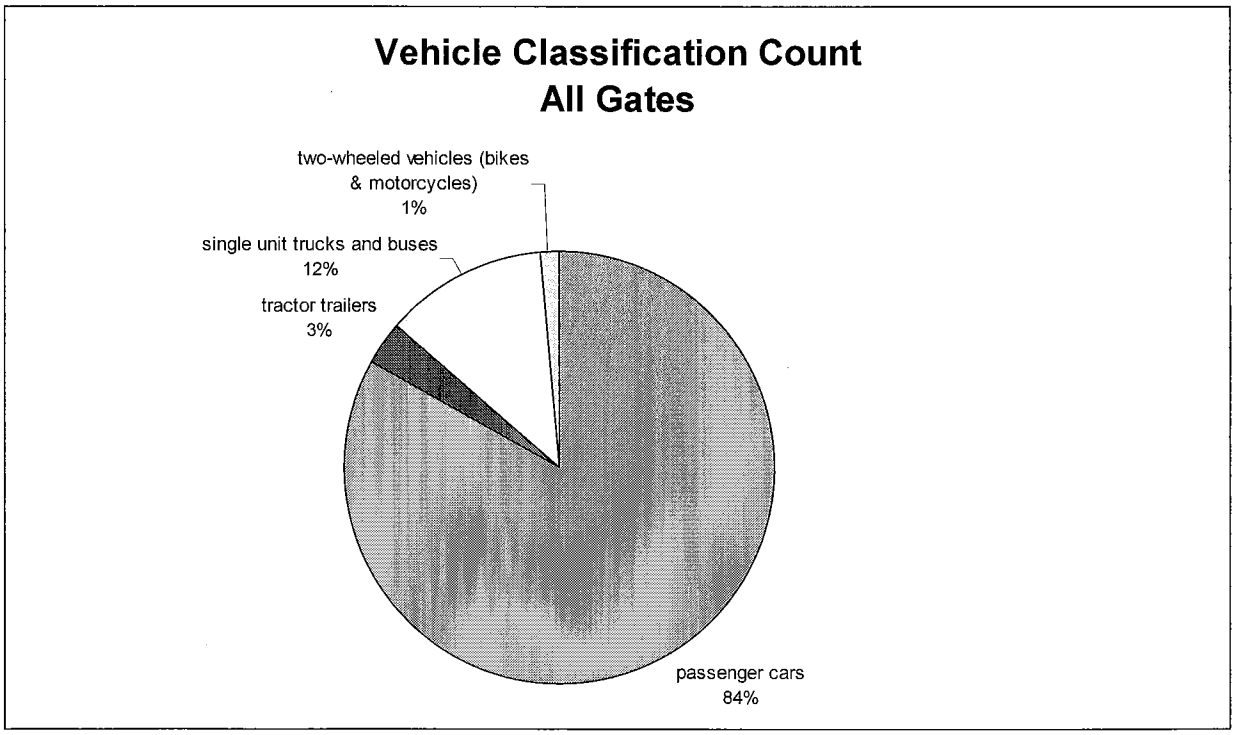
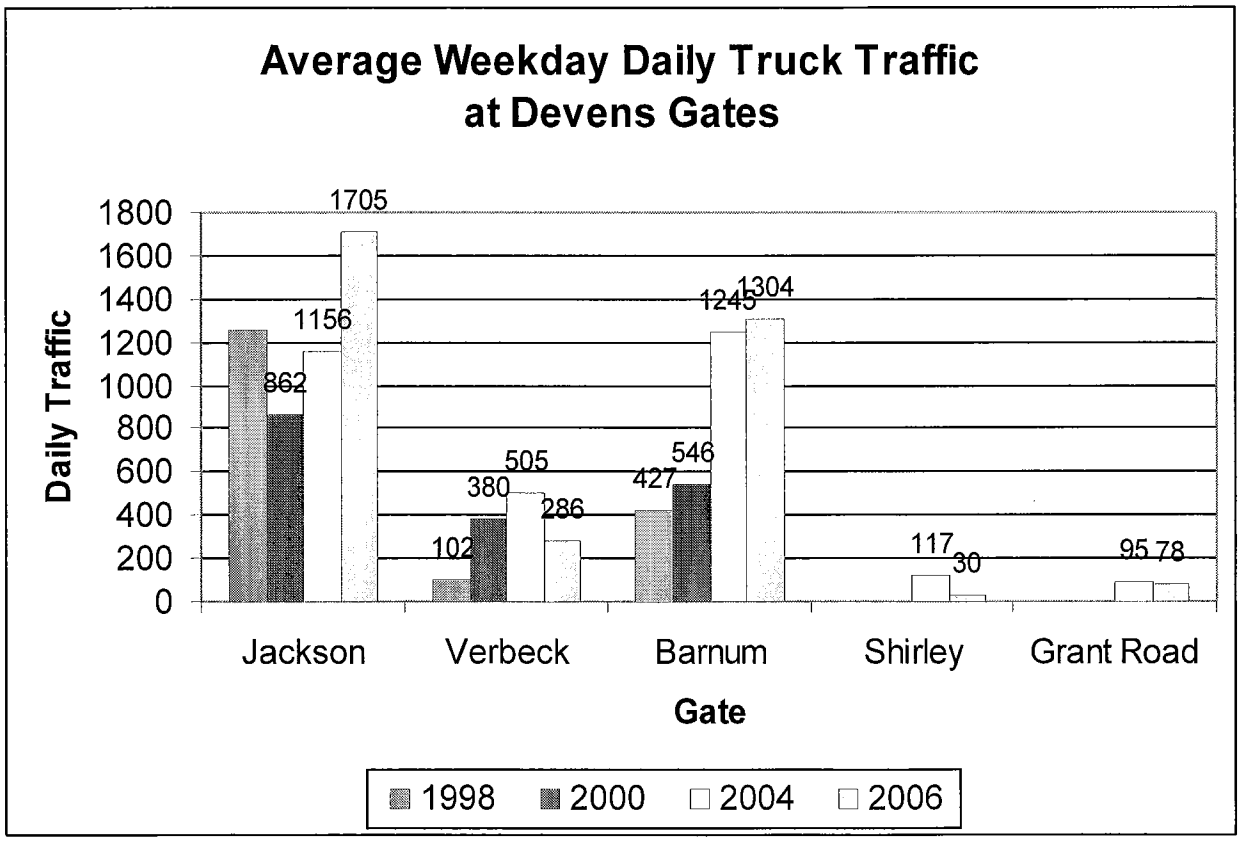
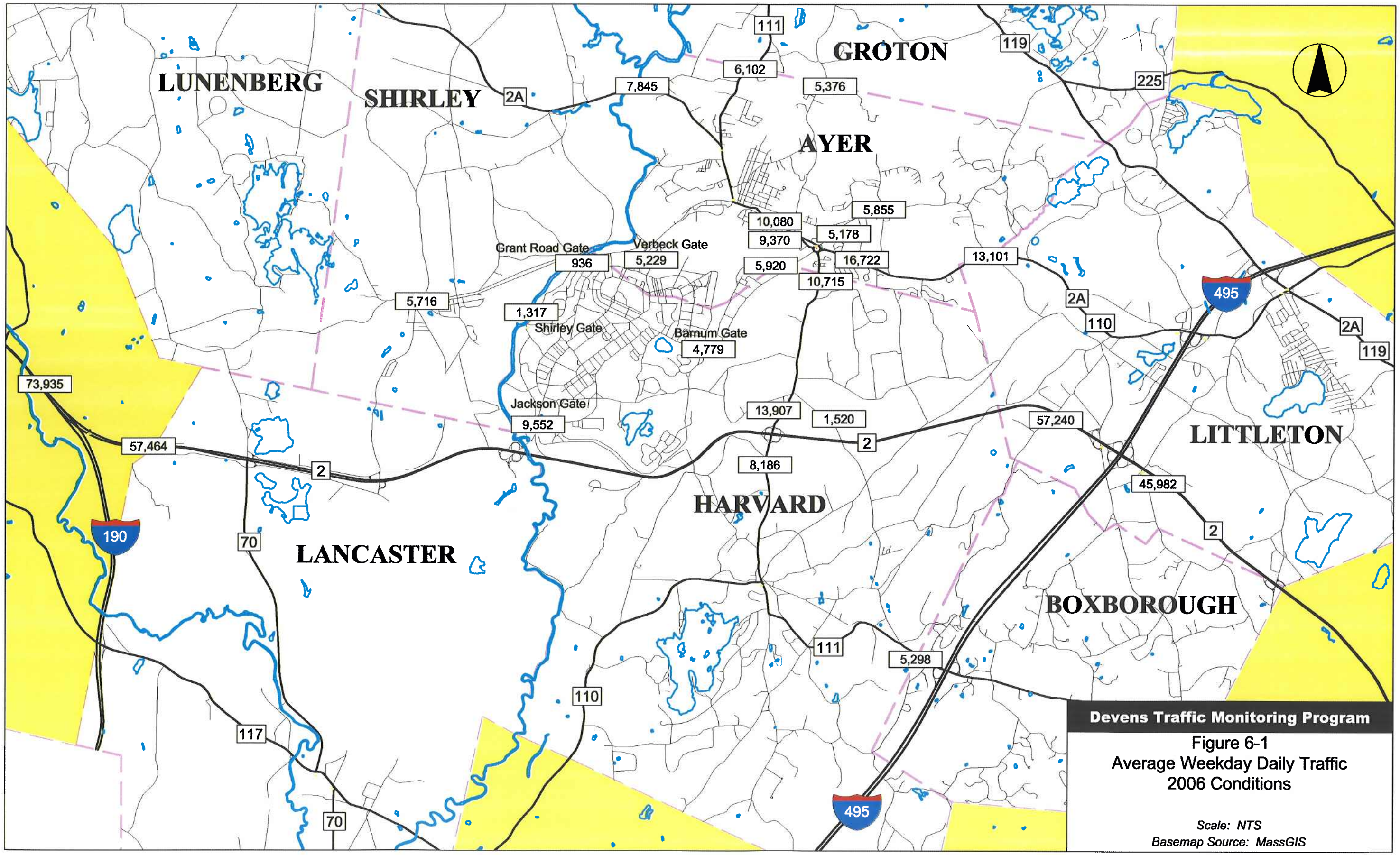


Figure 6-12 shows the average weekday daily truck volumes at Devens gates for the years 1998, 2000, 2004, and 2006. The total daily truck traffic through all gates was about equal for 1998 and 2000 (approximately 1,800 truck trips). The number of daily truck trips (3,118) increased significantly (+74%) between 2000 and 2004. The most dramatic difference occurred at the Barum Gate where truck traffic increased from 546 trips in 2000 to 1,245 trips in 2004, more than double. Daily truck trips in 2006 were 9% higher than in 2004. The increase in truck traffic may be in relation to the increased development that has occurred at Devens between 2000 and 2006 and roadway construction. It is noted that no truck traffic used the Shirley and Grant Road gates in 1998 and 2000.

Figure 6-12: Average Weekday Daily Truck Traffic at Devens Gate





Devens Traffic Monitoring Program

Figure 6-1
Average Weekday Daily Traffic
2006 Conditions

Scale: NTS
Basemap Source: MassGIS

7.0 CARLTON ROTARY/TRAFFIC VOLUMES AND TRIP DISTRIBUTION REVIEW

Traffic counts were performed at the Carlton Rotary for a 48-hour period on all approaches and exits. The daily unadjusted volumes recorded at each leg of the rotary have already been summarized in previous tables. However, due to the physical configuration of the rotary approaches and the logistical requirements of ATR placement, these volumes must be adjusted to report equivalent traffic volumes entering and exiting the rotary. These balanced weekday volumes are summarized in the following table.

Table 7-1: Carlton Rotary – Weekday Volumes – Entering/Exiting (balanced)

	1996 Entering (vpd)	1998 Entering (vpd)	2000 Entering (vpd)	2002 Entering (vpd)	2004 Entering (vpd)	2006 Entering (vpd)
Route 2A-110, East of Rotary	7,200	7,500	6,994	8,844	8,512	**8,248**
Route 110-111, South of Rotary	7,400	7,200	6,775	7,920	8,571	**6,194**
Barnum Road	1,650	1,200	1,704	3,048	2,740	**3,105**
Route 2A-111 EB, West of Rotary	10,350	10,200	9,489	9,751	10,645	**9,300**
Route 2A-111 WB, West of Rotary	n/a	n/a	n/a	n/a	n/a	**n/a**
Sandy Pond Road	2,650	3,900	2,003	2,337	2,190	**2,082**
Total	29,250	30,000	26,965	31,900	32,659	**28,930**
	1996 Exiting (vpd)	**1998 Exiting (vpd)**	**2000 Exiting (vpd)**	**2002 Exiting (vpd)**	**2004 Exiting (vpd)**	**2006 Exiting (vph)**
Route 2A-110, East of Rotary	7,600	7,500	7,140	8,842	8,181	**8,235**
Route 110-111, South of Rotary	6,750	7,200	6,693	7,764	7,994	**4,605**
Barnum Road	1,550	1,500	1,713	2,921	2,726	**2,693**
Route 2A-111 EB, West of Rotary	n/a	n/a	n/a	n/a	n/a	**n/a**
Route 2A-111 WB, West of Rotary	10,350	11,100	9,625	10,409	10,806	**10,318**
Sandy Pond Road	3,000	2,700	1,794	1,964	2,952	**3,079**
Total	29,250	30,000	26,965	31,900	32,659	**28,930**
	1996 Total (vpd)	**1998 Total (vpd)**	**2000 Total (vpd)**	**2002 Total (vpd)**	**2004 Total (vpd)**	**2006 Total (vpd)**
Route 2A-110, East of Rotary	14,800	15,000	14,134	17,686	16,693	**16,483**
Route 110-111, South of Rotary	14,150	14,400	13,468	15,684	16,565	**10,799**
Barnum Road	3,200	2,700	3,417	5,969	5,466	**5,798**
Route 2A-111 EB, West of Rotary	10,350	10,200	9,489	9,751	10,645	**10,101**
Route 2A-111 WB, West of Rotary	10,350	11,100	9,625	10,409	10,806	**10,806**
Sandy Pond Road	5,650	6,600	3,797	4,301	5,142	**5,161**
Total	58,500	60,000	53,930	63,800	65,318	**57,860**

The AM and PM peak hour entering and exiting volumes were also balanced and are summarized in the following tables.

Table 7-2: Carlton Rotary – AM Peak Hour Volumes – Entering/Exiting (balanced)

	1996 AM Peak Entering (vph)	1998 AM Peak Entering (vph)	2000 AM Peak Entering (vph)	2002 AM Peak Entering (vph)	2004 AM Peak Entering (vph)	2006 AM Peak Entering (vph)
Route 2A-110, East of Rotary	332	328	658	469	520	**436**
Route 110-111, South of Rotary	441	455	586	440	558	**357**
Barnum Road	86	85	252	170	205	**197**
Route 2A-111 EB, West of Rotary	1,143	1,122	518	999	997	**842**
Route 2A-111 WB, West of Rotary	n/a	n/a	n/a	n/a	n/a	**n/a**
Sandy Pond Road	150	141	186	288	243	**229**
Total	2,152	2,131	2,200	2,366	2,522	**2,061**
	1996 AM Peak Exiting (vph)	**1998 AM Peak Exiting (vph)**	**2000 AM Peak Exiting (vph)**	**2002 AM Peak Exiting (vph)**	**2004 AM Peak Exiting (vph)**	**2006 AM Peak Exiting (vph)**
Route 2A-110, East of Rotary	716	639	413	758	668	**643**
Route 110-111, South of Rotary	651	661	515	775	820	**426**
Barnum Road	141	107	118	216	208	**210**
Route 2A-111 EB, West of Rotary	n/a	n/a	n/a	n/a	n/a	**n/a**
Route 2A-111 WB, West of Rotary	476	426	1,019	509	622	**568**
Sandy Pond Road	168	298	135	108	204	**214**
Total	2,152	2,131	2,200	2,366	2,522	**2,061**
	1996 AM Peak Total (vph)	**1998 AM Peak Total (vph)**	**2000 AM Peak Total (vph)**	**2002 AM Peak Total (vph)**	**2004 AM Peak Total (vph)**	**2006 AM Peak Total (vph)**
Route 2A-110, East of Rotary	1,048	967	1,071	1,227	1,188	**1,079**
Route 110-111, South of Rotary	1,092	1,116	1,101	1,215	1,378	**783**
Barnum Road	227	192	370	386	413	**407**
Route 2A-111 EB, West of Rotary	1,143	1,122	518	999	997	**940**
Route 2A-111 WB, West of Rotary	476	426	1,019	509	622	**622**
Sandy Pond Road	318	439	321	396	676	**443**
Total	4,304	4,262	4,400	4,732	5,044	**4,122**

Table 7-3: Carlton Rotary – PM Peak Hour Volumes – Entering/Exiting (balanced)

	1996 PM Peak Entering (vph)	1998 PM Peak Entering (vph)	2000 PM Peak Entering (vph)	2002 PM Peak Entering (vph)	2004 PM Peak Entering (vph)	2006 PM Peak Entering (vph)
Route 2A-110, East of Rotary	820	817	359	762	778	**828**
Route 110-111, South of Rotary	809	789	438	776	874	**632**
Barnum Road	110	110	45	282	312	**326**
Route 2A-111 EB, West of Rotary	579	601	1,063	502	713	**659**
Route 2A-111 WB, West of Rotary	n/a	n/a	n/a	n/a	n/a	**n/a**
Sandy Pond Road	169	177	228	175	188	**204**
Total	2,487	2,494	2,133	2,497	2,865	**2,649**
	1996 PM Peak Exiting (vph)	**1998 PM Peak Exiting (vph)**	**2000 PM Peak Exiting (vph)**	**2002 PM Peak Exiting (vph)**	**2004 PM Peak Exiting (vph)**	**2006 PM Peak Exiting (vph)**
Route 2A-110, East of Rotary	458	449	703	563	630	**609**
Route 110-111, South of Rotary	443	499	678	452	558	**346**
Barnum Road	61	75	210	146	254	**302**
Route 2A-111 EB, West of Rotary	n/a	n/a	n/a	n/a	n/a	**n/a**
Route 2A-111 WB, West of Rotary	1,232	1,222	443	1,148	1,142	**1,099**
Sandy Pond Road	293	249	99	188	281	**293**
Total	2,487	2,494	2,133	2,497	2,865	**2,649**
	1996 PM Peak Total (vph)	**1998 PM Peak Total (vph)**	**2000 PM Peak Total (vph)**	**2002 PM Peak Total (vph)**	**2004 PM Peak Total (vph)**	**2006 PM Peak Total (vph)**
Route 2A-110, East of Rotary	1,278	1,266	1,062	1,325	1,408	**1,437**
Route 110-111, South of Rotary	1,252	1,288	1,116	1,228	1,432	**978**
Barnum Road	171	185	255	428	566	**628**
Route 2A-111 EB, West of Rotary	579	601	1,063	502	713	**659**
Route 2A-111 WB, West of Rotary	1,232	1,222	443	1,148	1,142	**1,099**
Sandy Pond Road	462	426	327	363	469	**497**
Total	4,974	4,988	4,266	4,994	5,730	**5,298**

Both weekday and peak hour traffic volumes decreased between 2004 and 2006. Weekday daily 2006 volumes at the rotary are similar to 1996 daily volumes and are 11% lower than 2004 volumes. Morning peak hour 2006 volumes at the rotary are also similar to 1996 volumes and 18% lower than 2004 volumes. Afternoon peak hour volumes for 2006 are higher than 2002 volumes but are 7.5% lower than 2004 volumes.