Transportation Element

Introduction

Longmeadow residents are concerned about pedestrian and bicycle safety at many places around town, excessive speeding on Converse Street and other locations, and traffic delays at rush hours, particularly on Longmeadow Street. School traffic and student safety when traveling are particular concerns. A detailed study of the Bliss Road / Williams Street commercial area, where commercial traffic and school students come together, is included in this element.

Speeding

The town could consider the use of speed bumps, traffic signals, warning devices, more frequent law enforcement, and other measures in areas where speeding is a problem.

Traffic Delays

The solution to Longmeadow's traffic delays would have to begin with a regional approach coordinated by the Pioneer Valley Planning Commission, because much of the traffic is due to drivers from other towns passing through Longmeadow.

Route 5 Corridor

The Route 5 Corridor from Forest Glen Road to Williams Street experiences delay and severe congestion in the morning and evening peak travel hours, resulting from heavy volumes of traffic traveling through this location. This roadway provides direct access to East Longmeadow, Springfield, Enfield, Connecticut and I-91. The Pioneer Valley Planning Commission (PVPC) is performing an analysis of existing conditions as well as forecasted future conditions, including examining timing and phasing plans for signals located throughout the corridor, to propose recommendations to improve traffic flow and increase safety. PVPC will be working with the Town to identify additional concerns and safety hazards located along Route 5 in the center of Town. The Route 5 –Longmeadow Corridor Study will provide short term, low cost alternatives as well as long term strategies to alleviate traffic congestion and improve safety conditions.

Bliss/Williams Triangle Study Area

This study provides a detailed analysis of the existing and anticipated traffic demands in the vicinity of the existing triangle comprised by Williams Street, Bliss Road, and Bliss Court in the Town of Longmeadow. The focal points of this study include traffic operations, safety issues, land use concerns, and pedestrian and bicycle concerns throughout the study area. This study was prepared according to guidelines established as part of Executive Order 418 of the Commonwealth of Massachusetts, which provided planning services for this work.

A combination of a high volume of commuter traffic as well as a number of land uses with high trip generating characteristics contribute to strains along all three study area roadways. The study area is characterized by a high concentration of retail and commercial uses and a large number of curb cuts spread out over a relatively small geographic area. This study is designed to identify current and future deficiencies to assist the Town of Longmeadow in the development of projects and strategies to improve safety and traffic flow through the study area.

The traffic study area consists of the existing triangle comprised by Williams Street, Bliss Road, and Bliss Court. In the triangle, Williams Street is a one way street in the eastbound direction with an average width of approximately 27 feet. Williams Street provides two lanes of traffic in the triangle. Pavement marking consists of broken white lane lines in poor condition. There is a sidewalk along the southern part of this roadway with an average width of approximately five feet. There are two entrance/exit curb cuts on Williams Street providing access to the Williams Place shopping plaza. The western entrance/exit is approximately 40 feet wide with a 7.5 feet crosswalk. The eastern entrance/exit is approximately 42 feet wide with a 5.5 feet crosswalk. Outside of the triangle in the eastbound direction, Williams Street becomes a two way street providing one lane in each direction with an approximate width of 18 feet for each lane until it intersects with Redfern Drive.

Bliss Road is a one way roadway in the westbound direction with an average width of approximately 28 feet until it intersects with Bliss Court. Bliss Road provides two lanes of traffic in the triangle. Pavement marking consists of white center line guide dashes in poor condition. There is a sidewalk along the northern part of this roadway with an average width of approximately six feet. Bliss Road can be accessed from the Longmeadow Shops via two curb cuts. The eastern curb cut is approximately 44 feet with a 6.5 feet crosswalk. The western entrance/exit is approximately 42 feet with a six foot crosswalk. A nine foot crosswalk is also provided across Bliss Road in the vicinity of the Big Y Supermarket. The pavement markings of the crosswalks at all locations are quite poor.

Vehicles traveling eastbound on Williams Street have access to either Bliss Road through a U-Turn, or through the Longmeadow Shops (traveling straight) via a connector that is approximately 23 feet wide. This connector is driven as two lanes

although the roadway is not striped and operates under a "STOP" sign control. In the triangle, Bliss Court is a one way street in the southbound direction with an approximate width of 40 feet. This roadway connects Bliss Road to Williams Street with no pavement markings. Traveling southbound on Bliss Court, Longmeadow High School is located on the right side of the roadway and the Big Y Supermarket is located on the left side of the roadway. There are no crosswalks along Bliss Court except at Williams Street where a 4.5 feet wide crosswalk exists.

Existing Conditions

This section provides a technical evaluation of the transportation components throughout the study area. It includes a presentation of the data collected, analysis of traffic operations, and a series of short term recommendations to improve overall performance and safety.

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Data Collection

Daily Vehicle Volume

Vehicle volume data was collected for use in the transportation analysis in order to measure the travel demands on an average weekday and on Saturdays. Average Daily Traffic (ADT) volumes were compiled for week long periods at various locations within the study area using Automatic Traffic Recorders (ATRs). Based on factors provided by MassHighway, all ADT volumes were factored to represent Average Annual Daily Traffic (AADT) levels. Saturday Traffic volumes were not adjusted and reflect the actual traffic conditions on the date of the count. The daily traffic counts conducted by the Pioneer Valley Planning Commission are shown in Table l. The traffic counts are shown in Figure 1.

Table 1
Average Annual Daily Traffic

Location	NB/EB	SB/WB	Total	Saturday
Williams Street west of Bliss Court	3517	2619	6136	5711
Williams Street east of Bliss Court	6844	N/A	6844	6242
Williams Street west of Redfern Drive	6465	6122	12587	9436
Williams Street east of Redfern Drive	5699	4013	9712	8924
Bliss Road east of Bliss Court	N/A	6520	6520	6183
Bliss Court Between Bliss Road and Williams Street	N/A	7432	7432	7279

Hourly Vehicle Volume

Manual Turning Movement Counts (TMC) were conducted at the three intersections within the triangle in the study area during the peak commuter periods. Since the study area is characterized by a high concentration of retail and commercial uses as well as the town's high school, the weekday commuter period occurs during the afternoon hours of 2:00 PM to 6:00 PM and on Saturday during the hours of 11 AM to 1 PM. The TMCs were conducted in 15-minute intervals to identify the peak four consecutive 15-minute periods of traffic through the intersection. These consecutive peak 15-minute periods constitute a location's "Peak Hour Volume." The peak hour of traffic volume represents the most critical period for operations and will be the focus for some of the analyses conducted in this study.

The TMC data also identifies the peak hour factor and vehicle classifications. The peak hour factor (PHF) accounts for variations in demand during the peak hour. The PHF is defined as the ratio of the volume occurring during the peak hour to the maximum rate of flow during a given time period within the peak hour.[1] For traffic engineering analysis the flow rate in the peak 15 minutes of the peak hour is used to determine the operational characteristics of traffic facilities. The flow rate is obtained from the peak hour volume by using the peak hour factor.

As traffic volumes tend to fluctuate over the course of the year, the Massachusetts Highway Department (MassHighway) develops traffic volume adjustment factors to reflect monthly variations. These factors were examined to determine how traffic conditions in Longmeadow from April - June compare to average month conditions. Based on the MassHighway data, traffic volumes during all three months are estimated to be slightly higher than the annual average. Therefore, the traffic count data was adjusted to reflect average month conditions.

The complete turning movement count data for the peak hours are summarized on Figures 2 and 3.

[1] Institute of Transportation Engineers, Transportation and Traffic Engineering Handbook,

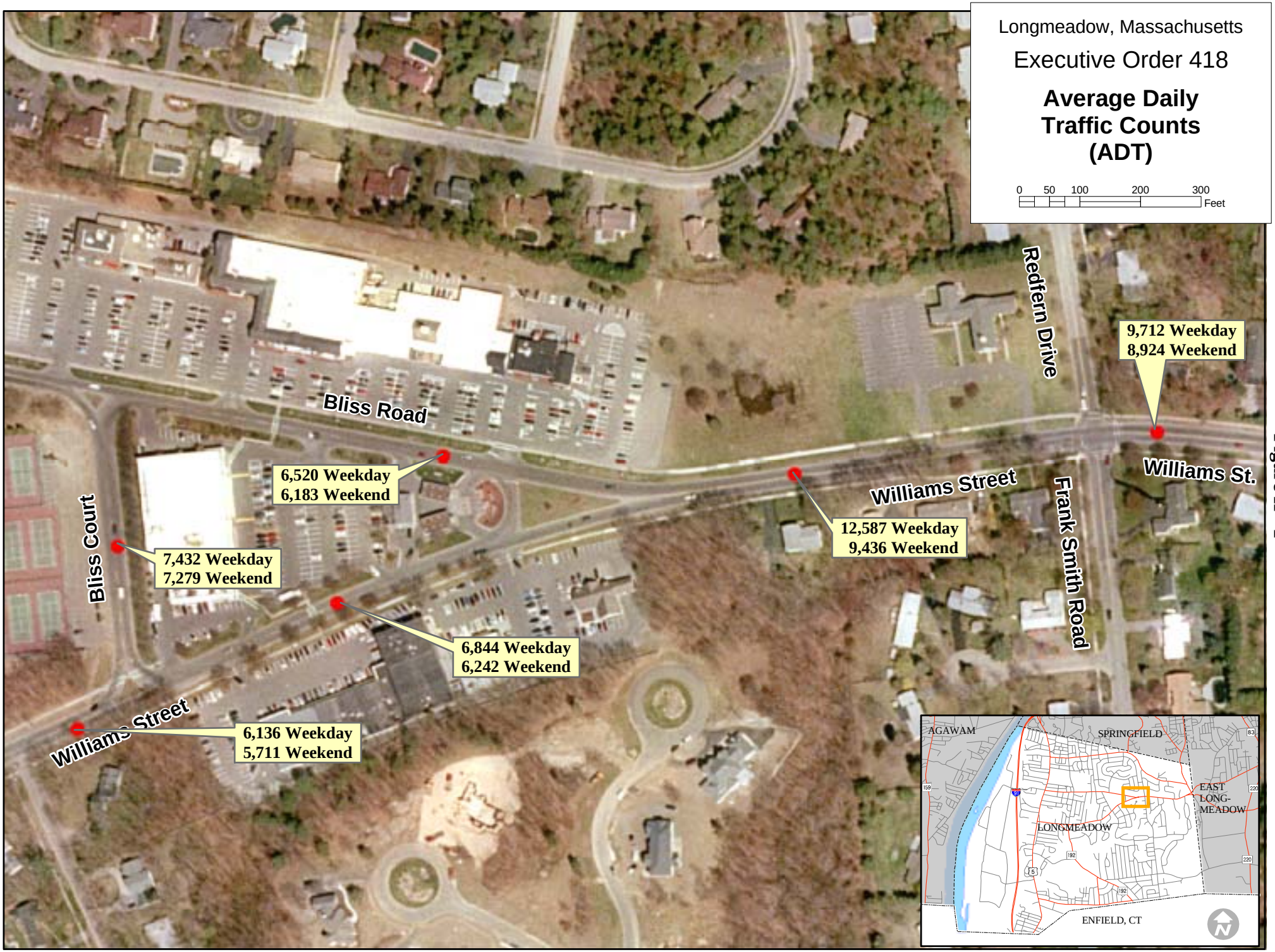

Figure II - 1

Map Document: (F:\EO418\Longmeadow\adt_map.mxd)
6/24/03 -- 10:14:39 AM

Pioneer Valley Planning Commission - June, 2003.

Longmeadow, Massachusetts

Executive Order 418

Turning Movement Counts (Weekday Peak)

0 50 100 200 300 Feet

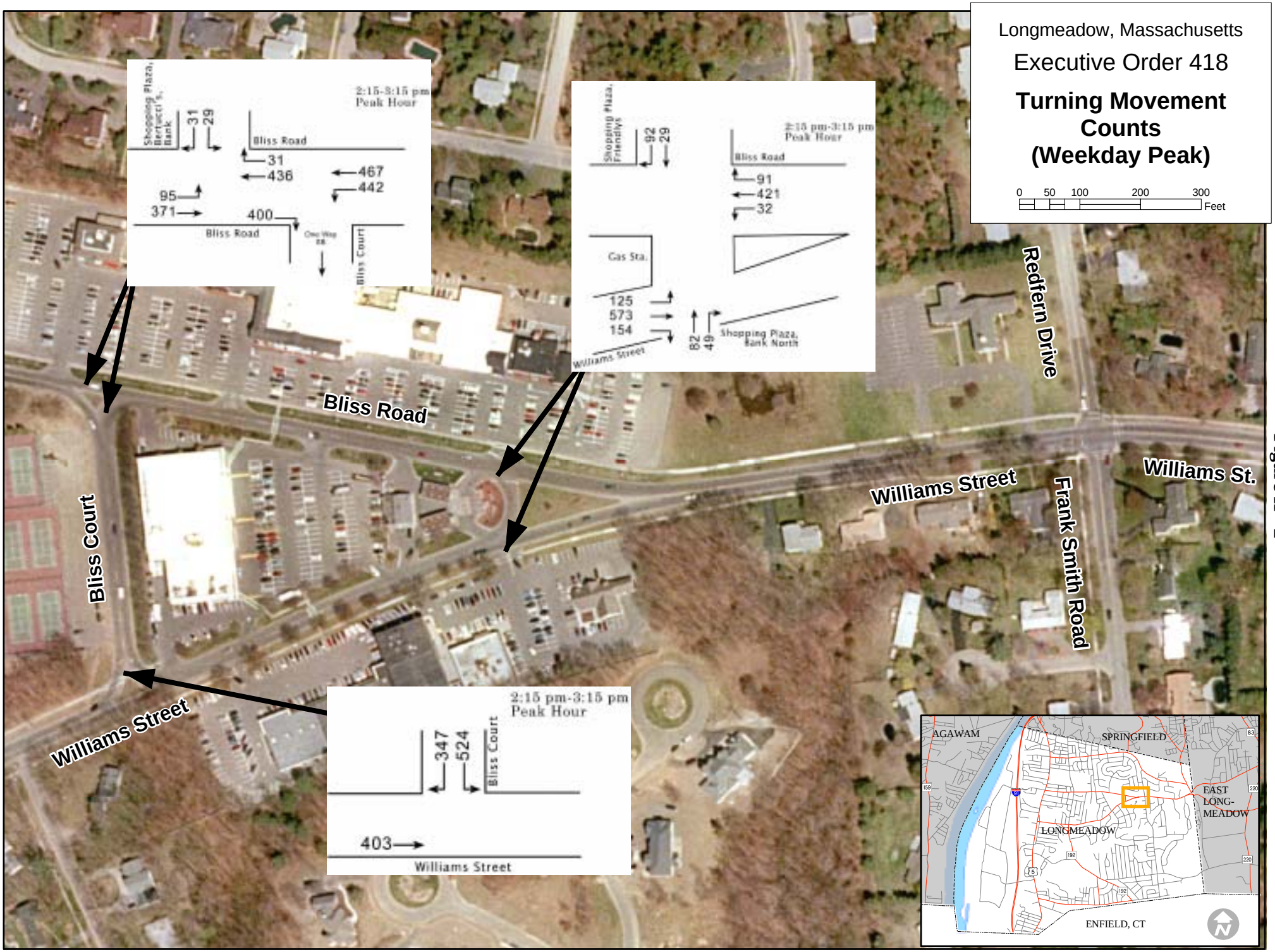

Figure II - 2

Map Document: (F:\EO418\Longmeadow\tmc_pm_map.mxd)
6/20/03 -- 1:25:21 PM

Pioneer Valley Planning Commission - June, 2003.

Longmeadow, Massachusetts

Executive Order 418

Turning Movement Counts (Saturday Peak)

0 50 100 200 300 Feet

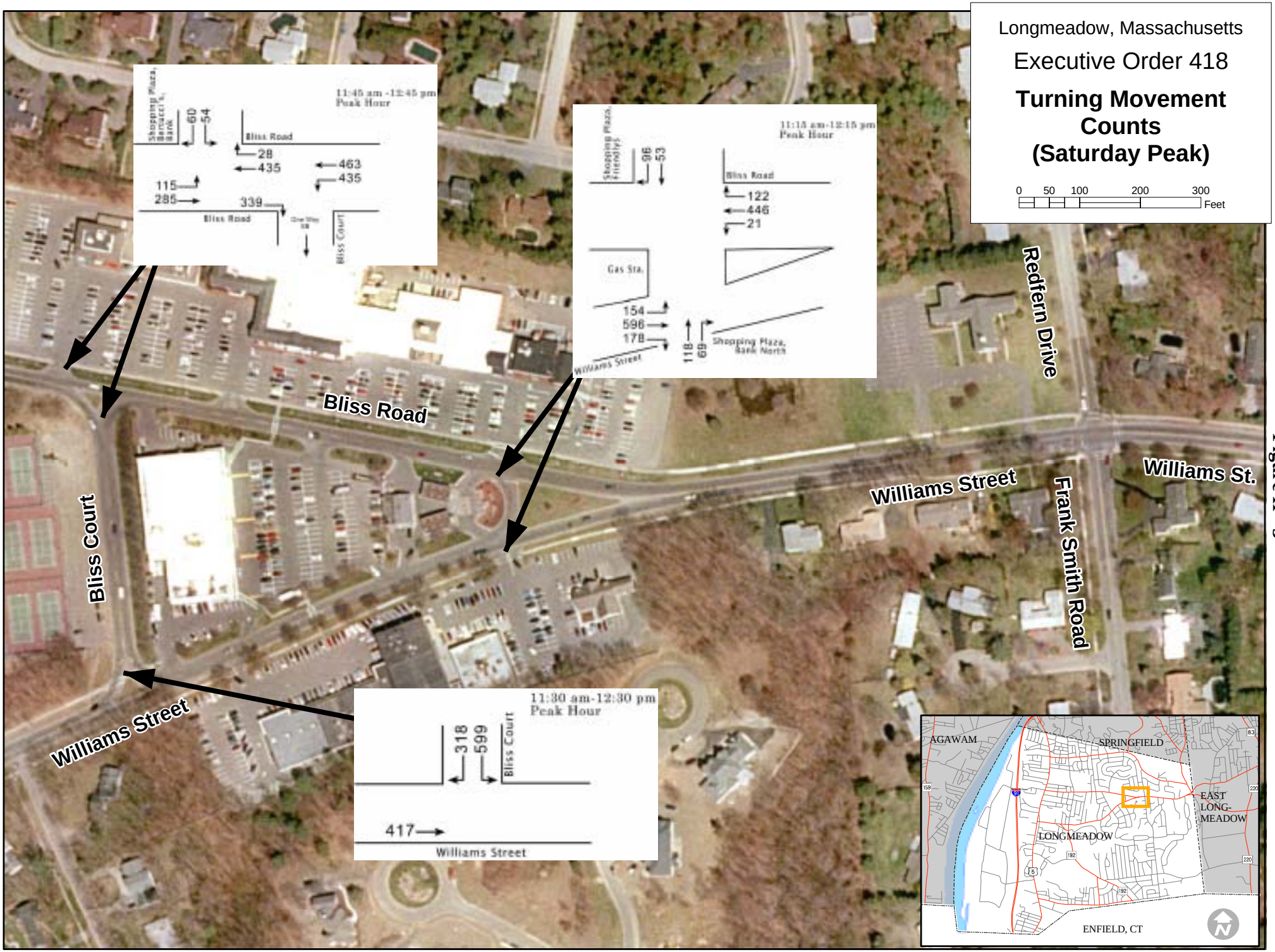

Figure II - 3

Map Document: (F:\EO418\Longmeadow\tmc_sat_map.mxd)
6/20/03 -- 11:58:58 AM

Pioneer Valley Planning Commission - June, 2003.

Vehicle Classification

Vehicle classification identifies the percentage of heavy vehicles and passenger cars on the roadway. Heavy vehicles include trucks, recreational vehicles and buses. The percent of heavy vehicles in the traffic flow is an important component in calculating the serviceability of a corridor or intersection. Trucks impact traffic flow because they occupy more roadway space than passenger cars and have poorer operating capabilities with respect to acceleration, deceleration and maneuverability. This information is also an important factor in the pavement design of a roadway.

Classification counts were conducted at all of the daily traffic count locations. Vehicles are classified based on the number of axles and the distance between each axle. Vehicles with three or more axles are classified as a "truck" or heavy vehicle. Table2 summarizes the truck traffic information in the study area. As can be seen, the study area is not burdened by heavy truck traffic.

Table 2
Vehicle Classification Summary

Street	Dir.	Location	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	>3 Axles
Bliss Rd.	SB	Betwn. Bliss Rd. & Williams St.	0.8%	88.9%	8.5%	0.2%	0.8%	0.7%	0.2%
Williams St.	EB	East of Bliss Ct.	0.4%	82.4%	15.2%	0.4%	1.1%	0.2%	0.3%
Williams St.	WB	East of Bliss Rd.	0.5%	60.0%	33.7%	2.3%	3.0%	0.1%	0.3%
Bliss Rd.	WB	East of Bliss Ct.	0.3%	74.0%	23.4%	0.2%	1.5%	0.2%	0.3%
Williams St.	WB	East of Redfern Dr.	1.5%	84.9%	9.1%	1.7%	1.2%	0.9%	0.6%
Williams St.	EB	West of Bliss Ct.	0.4%	87.0%	10.8%	0.8%	0.8%	0.1%	0.0%

Vehicle Travel Speeds

Travel Speed data was collected at all of the daily traffic count locations. This data was used to establish "bins" of data to summarize the ranges in which vehicles were measured to be traveling. The "Pace Speed" consists of the range in which most vehicles were recorded to travel. Speed data was also used to calculate the "85th Percentile" Speed for each direction on the roadway. The 85th Percentile Speed is defined as the speed that 85 percent of all traffic is traveling at or below. This method is typically used to establish the posted speed limit on a roadway. By comparing the 85th Percentile Speed to the posted speed limit a community can determine how well traffic is complying with the current posted speed limits and if increased enforcement of the posted speed limits is necessary. The speed limit in the study area is 30 mph. Table 3 summarizes the 85th percentile speed information. The shaded locations in the table indicate that vehicles in the study area are, for the most part, traveling over the speed limit.

Table 3
85th Percentile Speed Summary

Street	Dir.	Location	85th Percentile Speed (mph)
Bliss Rd.	SB	Btwn. Bliss Rd. & Williams St.	29
Bliss Rd.	WB	East of Bliss Ct.	37
Williams St.	EB	East of Bliss Ct.	36
Williams St.	WB	East of Bliss Rd.	40
Williams St.	EB	East of Bliss Rd.	41
Williams St.	EB	East of Redfern Dr.	38
Williams St.	WB	East of Redfern Dr.	38
Williams St.	EB	West of Bliss Ct.	39
Williams St.	WB	West of Bliss Ct.	30

Pedestrian Activity

Pedestrian counts were conducted to determine the volume of pedestrians at all corners of the study area. The pedestrian volume data reflects the total number of pedestrians crossing at each intersection. A large percentage of pedestrians ignore the crosswalks and cross the intersections at many different points. Table 4 provides a summary of the weekday as well as weekend pedestrian volume. As can be seen, the intersection of Bliss Road and Bliss Court, on a weekday afternoon, shows a very significant increase in the number of pedestrians and bicycles due to the presence of Longmeadow High School which is located on the west side of Bliss Court. As mentioned in the Study Area section of this report, there are no sidewalks on Bliss Court or on the southern side of Bliss Road between Bliss Court and the High School.

Table 4
Pedestrian Summary

Intersection	Pedestrians	Bikes
Bliss Rd. and Williams St. (2-6)	10	3
Bliss Rd. and Williams St. (Sat.)	7	4
Bliss Rd. and Bliss Ct. (2-6)	105	71
Bliss Rd. and Bliss Ct. (Sat.)	11	9
Williams St. and Bliss Ct. (2-6)	5	4
Williams St. and Bliss Ct. (Sat.)	20	4

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Crash Experience

Crash history was used to estimate the safety conditions throughout the study area. Crash information was gathered for the study area based on information provided by the Massachusetts Highway Department (MassHighway). Table 5 summarizes the number of crashes by location and type for a period of three years (1997- 1999) to

identify any common conditions and possible causes. As shown in the table, while Bliss Road experienced high numbers of crashes, it is not quite clear from the data source at which entrance / exit of the shopping center that the crashes occurred. The overall totals were lower than expected. A possible explanation for this is that crashes with little or no damage are not always reported. Some of the crashes at the intersection of Bliss Road and Williams Street may be attributed to the fact that many motorists use the Shell Gas Station property as a cut-through from the shopping center on Bliss Road to Williams Street in order to avoid using Bliss Court to get eastbound on Williams Street. Also, any crash that may have occurred on the Gas Station property may not be accounted for in the data.

Table 5
Crash History Summary

Location	Year	# Accidents	Type of Accident		Severity of Injury	
Williams St. Shopping Plaza	1999	4	Angle	10	PD	9
	1998	5	Rear end		PI	1
	1997	1	Head on		F	
			Ped/Bike			
			Fixed Object			
Williams St. @ Bliss Rd.	1999	1	Angle	4	PD	3
	1998	1	Rear end		PI	1
	1997	2	Head on		F	
			Ped/Bike			
			Fixed Object			
Williams St. @ Bliss Ct.	1999	0	Angle	1	PD	2
	1998	0	Rear end	2	PI	1
	1997	3	Head on		F	
			Ped/Bike			
			Fixed Object			
Williams St. @ Parking Lot	1999	4	Angle	1	PD	2
	1998	1	Rear end	2	PI	1
	1997	0	Head on		F	
			Ped/Bike		Hit and Run	1
			Fixed Object	2		
Bliss Rd. Shopping Plaza	1999	8	Angle	20	PD	20
	1998	12	Rear end	3	PI	4
	1997	5	Head on		F	
			Ped/Bike	1	Hit and Run	1
			Fixed Object	1		
Bliss Rd. @ Bliss Ct.	1999	2	Angle	2	PD	3
	1998	1	Rear end		PI	1
	1997	1	Head on		F	
			Ped/Bike			
			Fixed Object	2		
Bliss Rd. @ Parking Lot	1999	2	Angle	2	PD	2
	1998	0	Rear end	1	PI	1
	1997	1	Head on		F	
			Ped/Bike			
			Fixed Object			
Bliss Ct.	1999	3	Angle	2	PD	3
	1998	0	Rear end	1	PI	
	1997	0	Head on		F	
			Ped/Bike			
			Fixed Object			

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Analysis Procedures

Intersection Analysis

The efficiency of traffic operations at an intersection is based on the stopped delay per vehicle for a 15-minute analysis period. These conditions are measured using the nationally accepted standard methodology outlined in the 2000 Highway Capacity Manual (HCM). The HCM's measure of efficiency is quantified in terms of "Level Of Service" (LOS). The LOS refers to the quality of traffic flow along roadways and intersections. It is described in terms of A through F, where A represents the best possible conditions and F represents forced-flow or failing conditions.

This study examined the operations at three unsignalized intersections within the study area. At an unsignalized intersection, LOS is determined by the average total delay which is defined as the total elapsed time from when a vehicle stops at the end of a queue to when the same vehicle departs from the stop line. The basic assumption at an unsignalized intersection is that through moving traffic on the major street is not hindered by other movements. In reality, as minor street delays increase, vehicles are more likely to accept smaller gaps in the traffic stream causing through moving vehicles to reduce speed and suffer some delay. The left turn movement off the minor street approach is the most heavily opposed movement and typically suffers the greatest delay. Therefore this movement is used as a gauge to determine the overall operations at an unsignalized intersection. Table 6 lists the level of service criteria for unsignalized intersections.

Table 6
Level of Service (LOS) Designations - Unsignalized Intersections

Average Control Delay (s/veh)	LOS	Expected Delay To Minor Street
0.0 to 10.0	A	Little or no delay
>10.0 to 15.0	B	Short traffic delays
>15.0 to 25.0	C	Average traffic delays
>25.0 to 35.0	D	Long traffic delays
>35.0 to 50.0	E	Very long delays
>50.0	F	Extreme delays

Table 7 summarizes the level of service at the unsignalized intersections within the study area during the weekday PM peak hour and for the Saturday peak period.

Table 7
Level of Service at Unsignalized Intersection Approaches

	PM Peak Hour		Saturday Peak Hour	
	LOS*	Delay**	LOS*	Delay**
Williams St. @ Bliss Rd.				
Williams Place Plaza NB Left Turn	C	15.9	C	18.9
Longmeadow Shops Plaza SB Right Turn	B	11.0	B	11.2
Bliss Rd. @ Bliss Ct.				
Longmeadow Shops SB Left Turn	C	21.7	C	20.8
Williams St. @ Bliss Ct				
Bliss Ct. SB Left Turn	C	24.6	D	27.9

* Level of Service
** In Seconds

Based on the results of the analysis, the intersections appear to operate at acceptable levels. LOS "D" is considered acceptable in an urban area. In addition, as mentioned in the Crash Experience section of this report, the frequent use of the Gas Station property as a cut-through from Bliss Road to Williams Street creates an unsafe traffic environment for the study area.

Signal Warrant Analysis

The intersection of Bliss Road and Williams Street was examined to determine if the minimum warrants for the installation of a traffic signal are met. The millennium edition of the Manual on Uniform Traffic Control Devices (MUTCD) sets forth criteria for eight warrants of which the requirements of one or more should be fully satisfied before a signal is installed. In addition, the installation of a traffic signal must improve the safety and operation of the location under study. Warrant #1, eight hour vehicular volume, is generally considered the most comprehensive as it requires volume criteria to be satisfied for both the major street and minor streets over the course of an average day. The results of this warrant analysis show that this intersection does not currently meet the warrant criteria for a traffic signal installation.

Warrant #5, crash experience signal warrant conditions, is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. This warrant requires five or more reported crashes, of types susceptible to correction by a traffic control signal, which have occurred within a 12-month period. A trial of less restrictive remedies must be tested and proven ineffective before a signal can be installed under this warrant. Crashes on Bliss Road will be examined in order to learn about the location relative to Williams Street roadway connector.

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Short-Term Transportation Recommendations

Based on the results of this study, the study area is in need of traffic improvements both in terms of traffic flow and pedestrian safety. Throughout the study area, faded pavement markings are very apparent. Many of the pedestrians, mostly high school students, are not using crosswalks where they are available. There are no sidewalks on Bliss Court or on Williams Street adjacent to the Big Y parking lot. Many vehicles exiting the Longmeadow Shops use the Shell Gas Station lot as a cut-through to Williams Street and the entrance to the Williams Place shopping plaza. The Town of Longmeadow should consider the following improvement measures to improve traffic flow and safety, which are also outlined in the Short Term Transportation Recommendations Map:

- The roadway connector from Williams Street to Bliss Road is currently traveled as two unmarked lanes. This connector should be painted for one exclusive left turn lane and one left / through travel lane.

- Consider replacing the "STOP" sign at the approach from Williams Street to Bliss Road with a "YIELD" sign to account for lower volume for the westbound approach on Bliss Road.

- Paint channelization lines to define lanes onto Bliss Court from Bliss Road to direct traffic to the appropriate lane.

- Place a "YIELD" sign on the median at the intersection of Bliss Road and Bliss Court for the left turn movement from Bliss Road onto Bliss Court. This will allow for safer right turns of vehicles traveling eastbound on the two-way section of Bliss Road onto Bliss Court.

- Sidewalks should be constructed on both sides of Bliss Court. This should be accompanied by mid-block crosswalk as many pedestrians were observed to jaywalk across Bliss Court from the Robert Blinn Tennis Courts to the Big Y plaza, especially during after-school hours.

- A crosswalk is required on Bliss Road at the western-most exit of the Longmeadow Shops to allow pedestrian access to Bliss Court. Many students have been observed walking in this area.

- The parking lot of the Big Y plaza on the northern side of Williams Street is not accessed by a sidewalk. There needs to be a sidewalk at this location.

- A "STOP" sign should be installed at the intersection of Bliss Court and Williams Street for the left-turn movements on to Williams Street.

- On Williams Street, at the approach to the roadway connector to Bliss Road, there is a "LEFT TURN MUST TURN LEFT" sign. There should be a corresponding "LEFT TURN" arrow painted on the pavement.

- Many traffic signs are faded and/or not pointed in correct direction. Faded traffic signs are most noticeable around the Shell Gas Station, particularly the "DO NOT ENTER" signs and the "No RIGHT TURN" arrow sign at the Bliss Road entrance. Some "ONE WAY" signs positioned on Bliss Road are pointing slightly off, or are bent. In addition, the "ONE WAY EXIT ONLY" and "NO RIGHT TURNS" signs, located at the western-most exit of the Big Y parking lot on Bliss Road are obstructed by trees, and cannot be seen by motorists. Actions should be taken for corrective measures.

- Many of the pavement markings are faded. This includes, dashed lines on Bliss Road and Williams Street, crosswalk markings across Bliss Road and the entrance/exits of most of the shopping plazas, arrows indicating entrance/exit only (most notably at the four Shell gas station entrances/exits),and stop line at the Big Y entrance/exit on Williams Street. The pavement markings need to be repainted.

- Stop lines are needed at most of the plaza entrances/ exits located on Bliss Road and Williams Street to ensure that motorists stop before crosswalks.

- Speed limit signs are needed around this densely populated study area. Many vehicles are speeding in the study area, despite the presence of crosswalks and pedestrians.

- Efforts need to be placed to discourage motorists exiting the Longmeadow Shops from cutting through the Shell Gas Station to eliminate having to use Bliss Court to get eastbound on Williams Street. This is a very common occurrence and presents a dangerous situation for pedestrians in the gas station parking lot. Also, this requires motorists to cross two lanes of westbound traffic on Bliss Road. Any corrective measure must involve the owner of the gas station.

The owner of the Shell Gas Station and the Longmeadow Shops should be consulted regarding options to discourage cut-through traffic that contributes to congestion and safety problems in the vicinity of the intersection of Bliss Road with Williams Street. Possible solutions include conversions to entrance or exit only operations, speed bumps in the Gas Station, or closure of the curb cuts in the vicinity of the intersection. It is also possible to redesign the intersection to allow the connector road to operate as a two way street, however, this could require widening and possible land takings.

Longmeadow, Massachusetts

Executive Order 418

Short Term Transportation Recommendations

0 50 100 200 300 Feet

Add Crosswalk Access between Bliss Court and Bertucci's

Add YIELD sign for lefts turning from Bliss Road to Bliss Court.

Paint for better lane definition

Construct Sidewalks - Both Sides

Add Mid-block Crosswalk

Add Lane Markings & Arrows:
1 Exclusive Left Lane
1 Left/Thru Travel Lane

Change STOP Sign @ Bliss Road to a YIELD Sign

Provide Sidewalk Access: to Big Y plaza parking lot

Install STOP Sign

Discourage "cut-through" Traffic:
Possibly change to "Entrance Only/Exit Only".
Possibly Speed bumps at gas station or close curb cuts near the roadway intersection.

Paint LEFT TURN ONLY Arrow in Williams Street turning lane

General improvements for the entire study area include:
Improving and/or repainting lane markings for better visibility,
Replace faded traffic signs,
Install speed limit signs throughout this densly populated area,
Improve visibility of stop lines and lane markings at most shopping plaza curb cuts.

Bliss Road

Bliss Court

Redfern Drive

Williams Street

Williams St.

Frank Smith Road

Williams Street

AGAWAM
SPRINGFIELD
EAST LONGMEADOW
LONGMEADOW
ENFIELD, CT

Figure II - 4

Pioneer Valley Planning Commission - December, 2003

Future Build-Out

It is important to consider the impact of zoning regulations and future growth in employment, population and residential development on the existing transportation system. Zoning regulations may permit large developments with high trip generation rates in primarily residential areas. Site specific developments can be expected to impact the existing flow of traffic and add to delay throughout the study area. Growth in surrounding communities can also result in an increase in commuter traffic through the Town of Longmeadow. Many potential future deficiencies and problem areas can be eliminated by identifying the problem before it happens.

■

Future Forecasts

The Bureau of Transportation Planning and Development (MassHighway Planning) develops future forecasts of population, households and employment for the state of Massachusetts and the regional planning agencies. Their procedures and preliminary estimates were reviewed by the Pioneer Valley Planning Commission and modifications were made based on comments received.

MassHighway Planning utilizes several sources, such as the Massachusetts Institute for Social and Economic Research (MISER), Woods & Poole Economics (WPE), and the U.S. Census to forecast population for the state. To determine the number of households at the state and regional level, population in households is divided by average household size.

According to MassHighway Planning, population is projected to steadily increase in Hampden County from 2000 to 2025, whereas the number of households steadily decreases from 2005 to 2025. The total population is projected to increase by six percent from 2000 to 2025 and the total number of households increases by one percent over the same time period. The average occupancy per household is expected to increase from 2.72 residents in 2000 to 3.05 residents in 2025.

Total employment is defined as the number of employed residents plus non-residents who commute into the community to work minus residents who commute out of the community to work. Employed residents are forecast by multiplying persons 16 years and over by the labor force participation rate. Employment was allocated at the community level by regressing past decades with a non-linear growth function, and then the proportion of jobs to population is examined as a check for reasonableness.

Employment has been forecast to steadily increase in the Town of Longmeadow over the next 10 years by 20 percent and then steadily decline from 2010 to 2025 by three percent.

Maximum Build-out

In 1999, The Executive Office of Environmental Affairs (EOEA) commissioned a build- out analysis for every community in Massachusetts. The build-out analysis provided a preview of the type and location of the maximum future development that could be expected under current zoning and resource protection bylaws. While it is unlikely that maximum build-out will ever be attained, this information is useful to analyze the impact of developing every piece of available land under current regulations on population, demands for public services, and consumption of resources. The estimated impact of a complete build-out of the Town of Longmeadow on population, households and employment is shown in Table 8.

Table 8
Projected Maximum Build-out Levels

	2025	Maximum Build-out	Net Increase
Population	16,498	19,824	3,326
Households	5,417	6,489	1,072
Employment	3,642	3,784	142

As can be seen from Table 8 the complete build-out of every piece of currently undeveloped or underutilized parcel has a significant impact on population, household and employment data. The effect of this increase on traffic will be documented in a later section of this report.

■

Travel Demand Model

Travel demand models are developed to simulate actual travel patterns and existing transportation conditions. Traffic is generated using socioeconomic data such as household size, automobile availability and employment data. Once the existing conditions are evaluated and adjusted to satisfactorily replicate actual travel patterns and vehicle roadway volumes, the model is then altered to project future year conditions. The preparation of a future year socioeconomic database is the last step in the travel demand forecast process. Forecasts of population and socioeconomic data are used to determine the number of trips that will be made in the future

Travel demand forecasting is a major step in the transportation planning process. By simulating the current roadway conditions and the travel demand on those roadways, deficiencies in the system are identified. This is an important tool in planning future network enhancements and analyzing currently proposed projects. The Pioneer Valley Planning Commission (PVPC) uses the TransCAD software to perform transportation forecasts for its base year of 2000 and analysis years of 2003, 2010, 2020, and 2025. All 43 communities within the boundaries of Hampden and

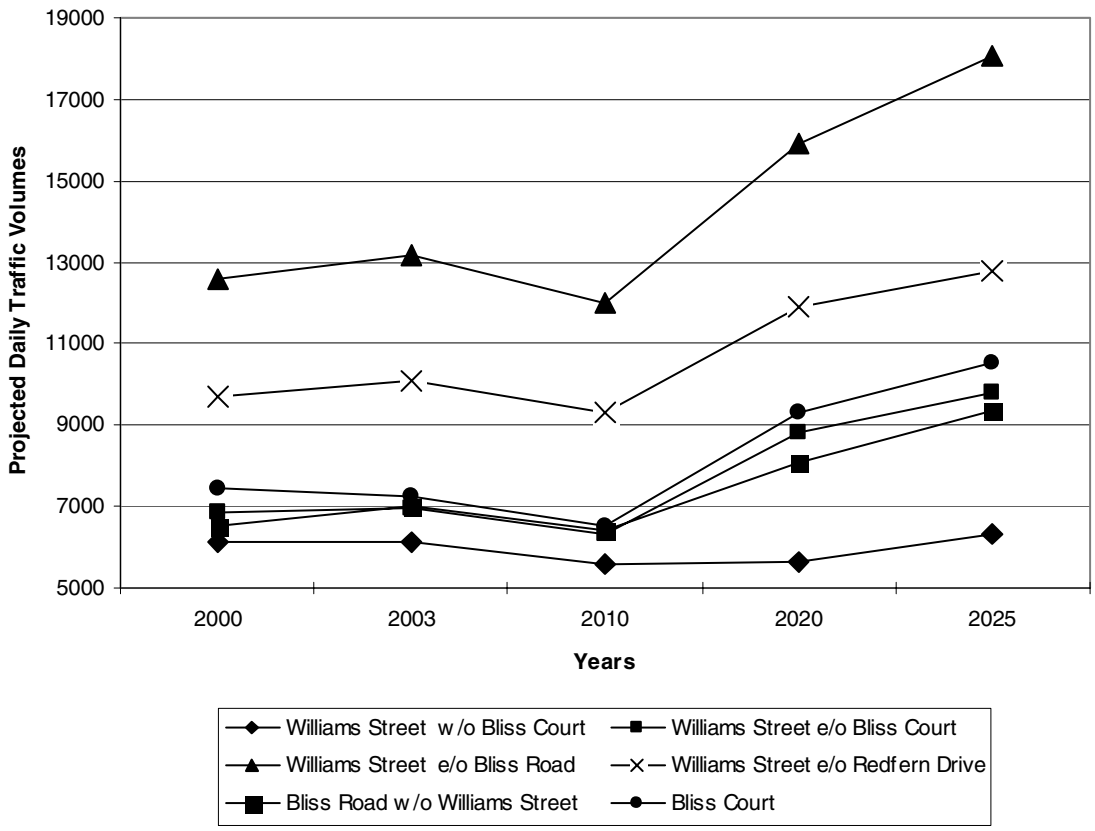
Hampshire Counties are included in the PVPC regional transportation model. Roadway networks are constructed using current information for the higher classified roads. Most local streets are not included in the travel demand model and are represented by centroid connectors that link the major routes to areas of traffic activity.

■

Future Volumes

Estimates of average weekday traffic volumes were obtained from the PVPC regional transportation model for each of the analysis years and are presented in Figure 4. As shown in Figure 4, as a result of future development, the Average Daily Traffic (ADT) for all locations in the study area are projected to significantly increase from 2000 to 2025 with the exception of Williams Street west of Bliss Court which will experience a slight increase in traffic volume. The ADT in the study area is projected to increase by an average of 30% in 2025. The figure also shows a decrease in ADT for all locations in 2010. This may be attributed to the planned traffic improvements to the East Longmeadow rotary which is expected to draw traffic volumes away from the Town of Longmeadow.

Figure 4
Future Traffic Volume Forecast



Regionally Significant Projects

Major roadway improvement projects such as the widening of an arterial roadway from two lanes to four lanes of travel can have a significant impact on future traffic volumes in the region. Improvements identified in the Short and Long Range Elements of the current Regional Transportation Plan for the Pioneer Valley Metropolitan Planning organization were incorporated into PVPC's regional transportation model. The roadway projects for each analysis year are listed in Table 9.

No site specific major improvement projects in the Town of Longmeadow have been included in the regional transportation model. Current and proposed projects such as the improvements to the East Longmeadow rotary have regional impacts and could influence current travel patterns for commuter traffic in the Town of Longmeadow.

Table 9
Projects Included in the Regional Transportation Model

Analysis Year	Community	Project Description
2003	Hadley, Northampton	Calvin Coolidge Bridge widening from 3 lanes to 4 lanes
2003	Hadley	Route 9 widening to four lanes - from Calvin Coolidge Bridge to West Street
2003	Springfield	Reversal of 4 existing I-91 ramps
2003	Chicopee	Memorial Drive signal coordination
2003	Hadley	Route 9 signal coordination
2003	Westfield	Route 20 signal coordination
2003	Springfield	Reconstruction, widening, and signal coordination on Parker Street
2003	Holyoke, W. Springfield	Route 5 signal coordination. Construct a new collector road to showcase cinema.
2010	Chicopee	Deady Memorial Bridge – widen to 5 lanes.
2010	Chicopee	Traffic coordination and improvements along Broadway
2010	Holyoke	Improvements to Commercial Street corridor
2010	Westfield	Route 10/202 Great River Bridge - two bridges acting as one-way pairs.
2010	Springfield	New slip ramp from I-291 to East Columbus Avenue
2010	Northampton	Road widening on Damon Road from Rte 9 to King St.
2010	Chester	Maple Street bridge restoration as a one-way bridge.
2010	E. Longmeadow	Improvements to the East Longmeadow Rotary.
2020	Agawam	Route 57 Phase II new limited access highway from Route 187 to Southwick Line.
2020	Holyoke	Elmwood Bypass - new roadway from I-391 to Lower Westfield Road, Holyoke
2020	Agawam, Longmeadow, Springfield	Improve the South End Bridge, construct a direct ramp from the South End Bridge to Route 57, and fix existing lane reduction problem on I-91 between Exits 1-3.
2025	Northampton	Connector roadway between Route 10 and Route 66 from Old South Street.
2025	Ludlow, Springfield	Route 21 bridge reconstruction (possible to be widened as well)

Maximum Build-out

In 1999, The Executive Office of Environmental Affairs (EOEA) commissioned a build- out analysis for every community in Massachusetts. The build-out analysis provided a preview of the type and location of the maximum future development that could be expected under current zoning and resource protection bylaws. While it is unlikely that maximum build-out will ever be attained, this information is useful to analyze the impact of developing every parcel of available land under current regulations on population, demands on public services, and consumption of resources. This information was used as the foundation for preparing the build-out for the study area.

Forecast year of 2025 was selected for the study to be consistent with the horizon years of PVPC's current Regional Transportation Model. Projected ADT volumes for 2025 were compared to ADT volumes for 2025 build-out scenario and the results showed additional increase in ADT in the study area. The additional average increase in ADT in the study area for the 2025 build-out scenario is six percent.

Future Alternatives

The section of the report presents an analysis of the different alternative scenarios that have been proposed to increase density within the Bliss Road / Williams Street Commercial Area as discussed in the Economic Development Element. The alternative was analyzed using the regional transportation model to forecast its estimated impact on existing traffic and its ability to reduce congestion in the study area. All roadways in the existing triangle in the study area were converted into two way streets providing one lane in each direction as an alternative traffic pattern using the Regional Transportation Model. Projected ADT volumes for 2025, volumes for 2025 with two way traffic, and 2025 build-out with two way traffic were compared. The comparison results are shown in Table 10.

Table 10
Two-Way Traffic Flow Alternative

Location	Projected ADT for 2025	Projected ADT for 2025 with two way traffic	Projected ADT for 2025 build-out with two way traffic	Change in ADT from 2025 to 2025 with two way traffic	Change in ADT from 2025 with two way traffic to 2025 build-out with two way traffic
Williams Street W/O Bliss Court	6,303	6,551	7,381	3.78%	11.25%
Williams Street E/O Bliss Court	9,798	10,517	11,671	6.83%	9.89%
Williams Street E/O Bliss Road	18,047	19,218	20,495	6.09%	6.23%
Williams Street E/O Redfern Drive	12,802	13,429	14,083	4.67%	4.64%
Bliss Road W/O Williams Street	9,360	9,890	10,117	5.35%	2.24%
Bliss Court	10,528	0	181	N/A	100%

As shown in Table 10, once Bliss Road and Williams Street operate as two way streets, there may be no reason to utilize Bliss Court as a connector between the two roadways any longer which explains why the projected ADT for Bliss Court in 2025 is zero. Currently vehicles driving westbound on Bliss Road use Bliss Court to gain access to the Williams Place shopping plaza via Williams Street going east with the exception of those drivers who use the Gas Station as a cut-through. With the two way traffic scenario on Bliss Road and Williams Street, both the northern and the southern shopping plazas in the study area would be accessible from both streets.