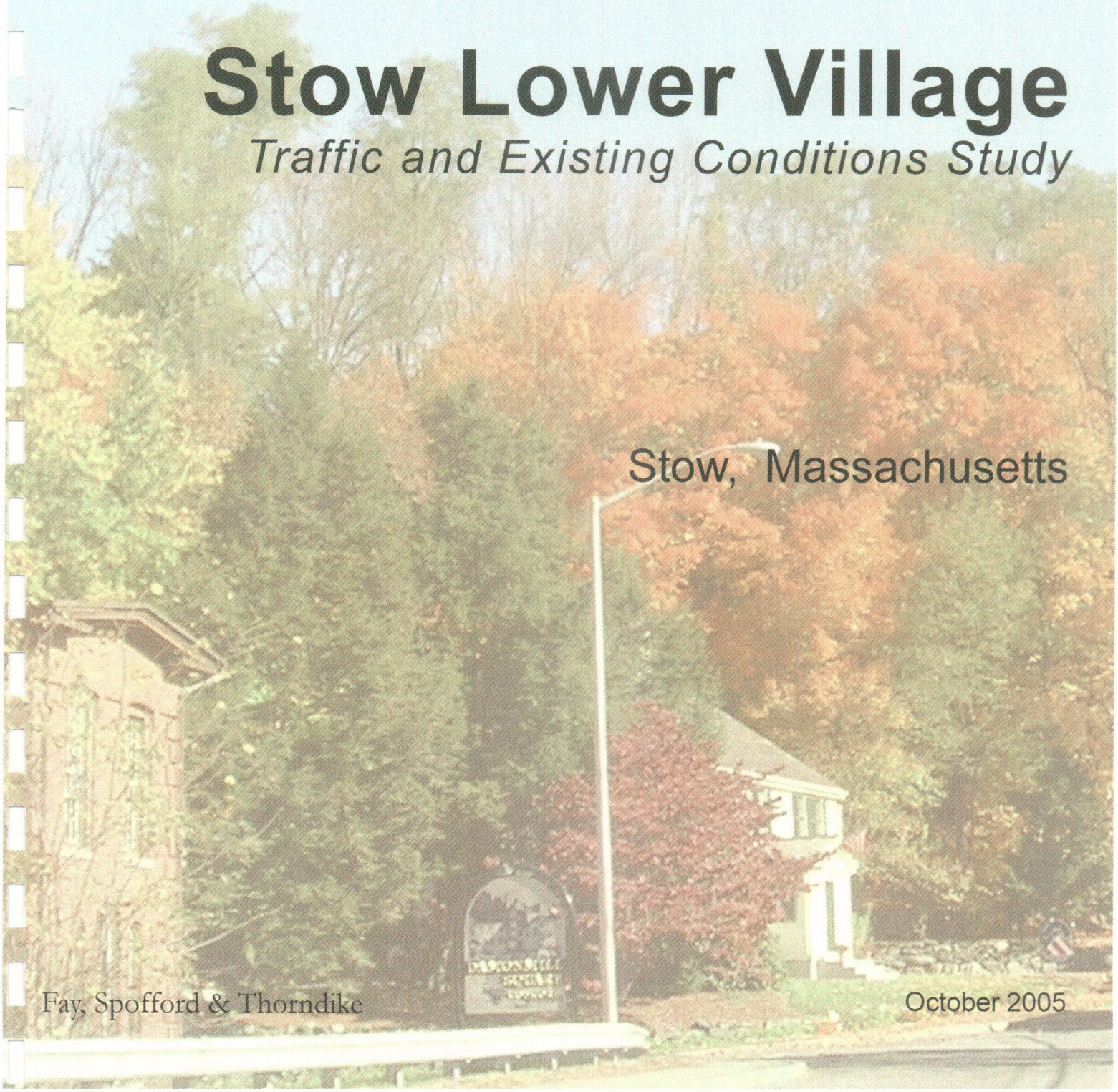
Rcd 10/5/05

Technical Memorandum 2

Stow Lower Village

Traffic and Existing Conditions Study



Stow, Massachusetts

Fay, Spofford & Thorndike

October 2005

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1.0 EXECUTIVE SUMMARY

Technical Memorandum 2 examines the current motorized traffic, pedestrian, and bicycle flow conditions of Great Road in Stow Lower Village in the context of the town's stated goals in an effort to develop an improved strategy for traffic, pedestrian, and bicycle circulation in the area. The study area includes a 2,400-foot segment of Great Road that passes through Lower Village.

This memo compiles the results of a significant count program in the area including a multi-day automatic traffic recorder count and manual turning movement/vehicle classification counts performed at 11 locations within Stow Lower Village during mid-September.

The side streets at all the intersections and driveways counted experience some level of congestion during the morning and/or afternoon peak hours due to the heavy directional flow of traffic on Great Road. During the morning and afternoon peak hours approximately 2/3 of the traffic flows in the peak direction of travel -- eastbound in the morning peak hour and westbound in the afternoon peak hour.

Most of the traffic queuing is concentrated at the intersections of Stow Plaza driveways with Great Road and the Pompositticut Road intersection with Great Road.

Red Acre Road and the Stow Plaza driveways intersections with Great Road were the sites of more crashes than other intersections, but none of the intersections in Stow Lower Village has a crash rate exceeding the statewide average for un-signalized intersections.

Given the peak hour volumes measured, the Pompositticut Road intersection with Great Road has the highest amount of conflicting traffic volumes and is most likely to meet warrants for traffic signalization on the basis of its traffic volumes. The Stow Plaza driveway intersections with Great Road are not as high volume as Pompositticut Road, but experience a greater number of reported crashes.

The existing conditions analysis sets the stage for the projection of the future traffic and walking environment in Stow Lower Village. The next step is to identify reasonable alternative futures for the Stow Lower Village circulation system.

2.0 INTRODUCTION

Fay, Spofford & Thorndike was retained by the Town of Stow, Massachusetts to conduct a traffic analysis of an approximately 2,400-foot segment of Great Road (State numbered Route 62/117) in the Stow Lower Village area. Great Road generally runs east-west, stretching from Maynard to Bolton within the Town of Stow. This study focuses on the portion of Great Road between Bradley Lane to the west and White Pond Road to the east. Figure 1 shows the regional arterial on a USGS base and Figure 2 shows an aerial of the study area.

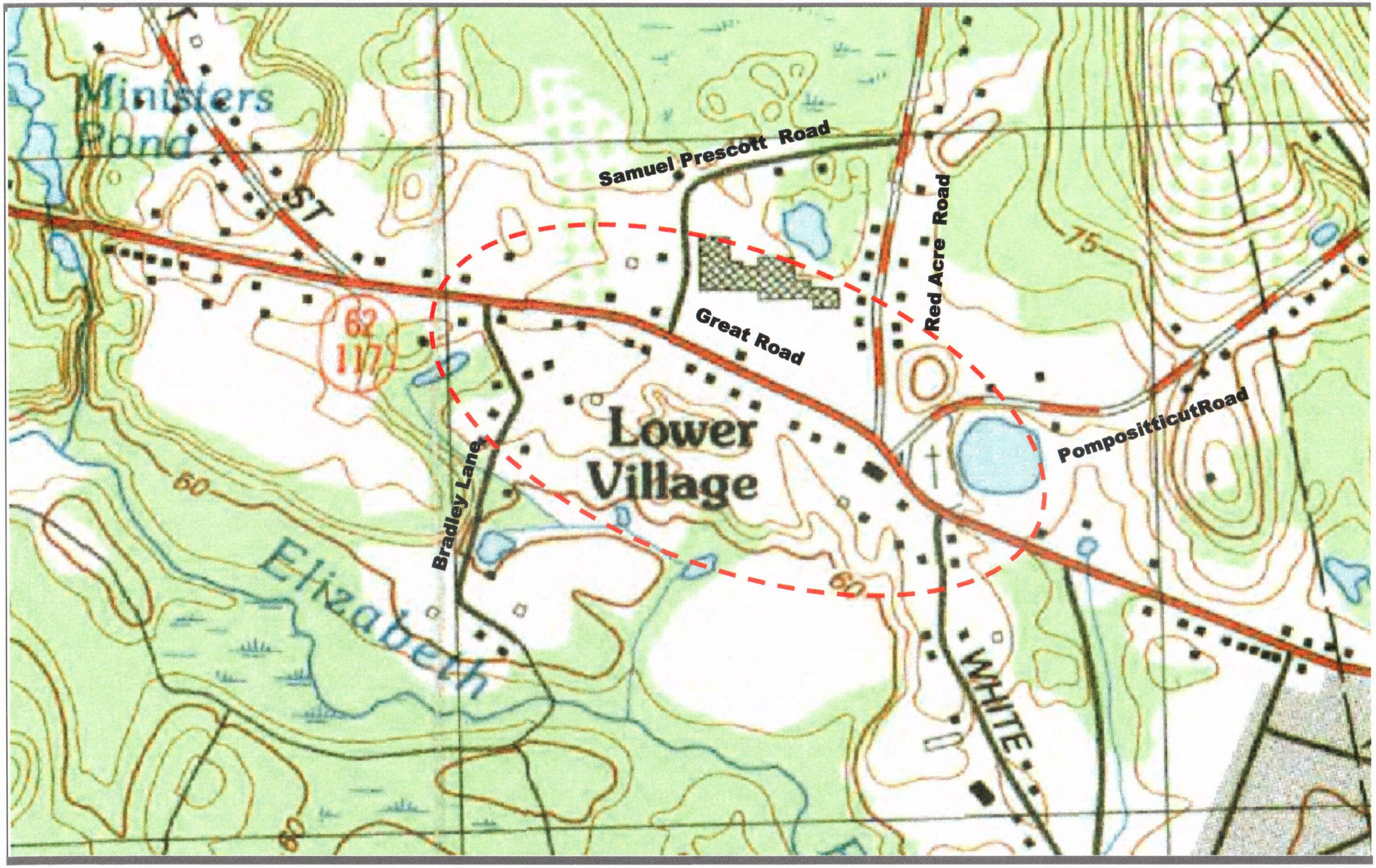
Great Road, looking west

Great Road plays a vital role for both regional and local traffic, serving as a major arterial to and from I-495 to the west and Route 2 to the east. However, it also serves a dual function as the Town of Stow's "main street". In the Lower Village area, Great Road is bordered on both sides by a variety of land uses, including several thriving businesses, charming residences and historic landmarks.

Because Great Road services so many different users, its traffic volumes vacillate greatly by time of day and on a seasonal basis. Great Road has relatively large volumes during the morning and evening commuter peak hours. Its current lane configuration and pedestrian/bicycle environment are not particularly well-suited to address either the local or regional traffic demands or pedestrian and bicycle activity. The result is peak hour congestion and impeded left-turn movements, off-peak excessive speeding, and limited pedestrian and bicycle usage.

During the *Stow 2000, A Master Plan* study, Stow Lower Village was identified as one of the critical regions of the town where redevelopment goals include:

- Growth and development of Stow Lower Village into a vibrant mixed-use town center that preserves the area's "rural" feel
- Creation of a "...more diversified, walkable village that provides more retail/service choices for local residents."
- Traffic calming and reduction of congestion along Great Road
- Reconfiguration of parking, including reduction of parking requirements and promotion of rear parking
- Resolution of the conflict between the local traffic and the regional traffic



Stow Lower Village Traffic Study
Town of Stow, Massachusetts

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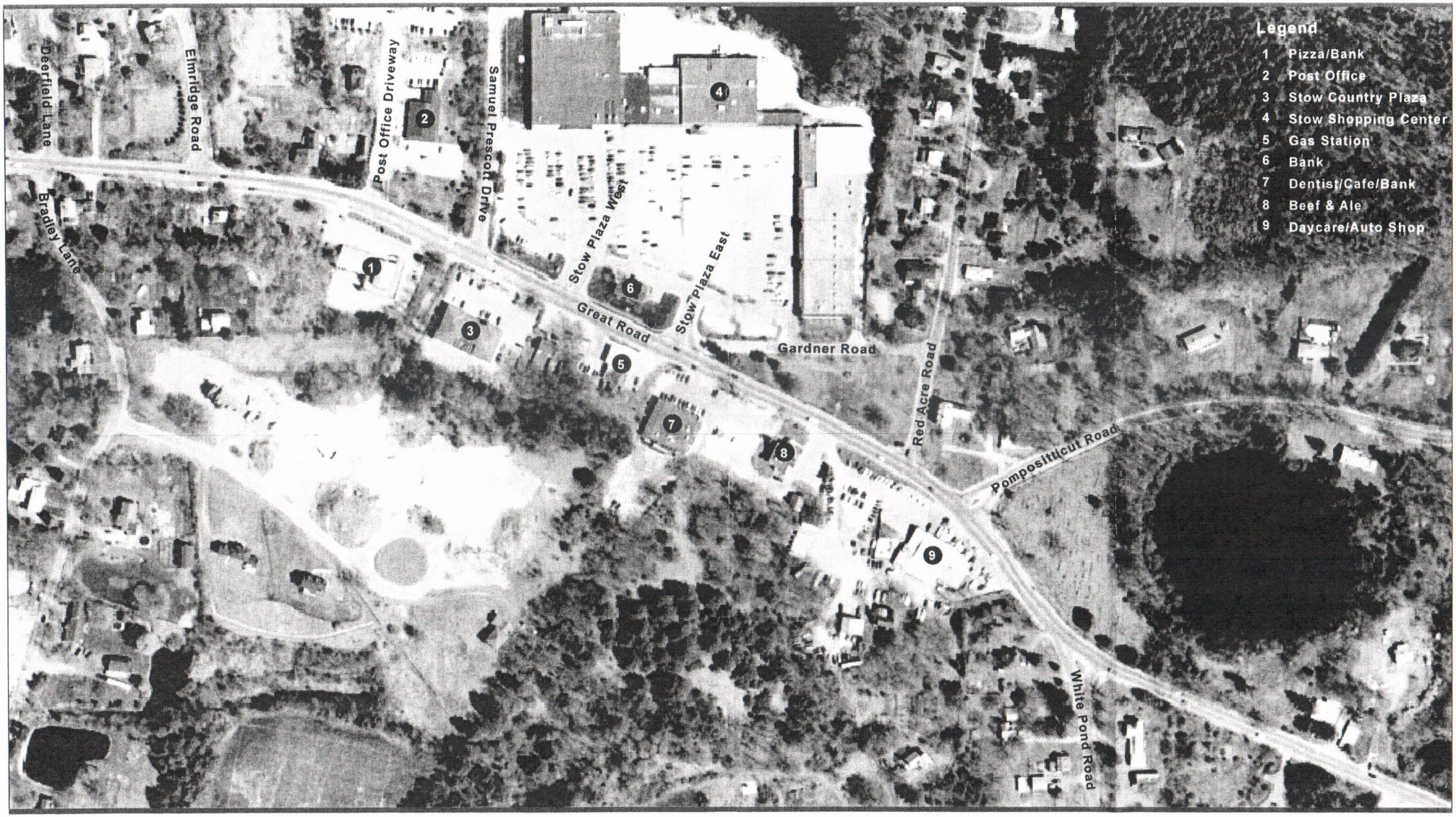
Study Area USGS Map

Figure 1

Schematic Diagram:
Not to Scale



Stow Lower Village Traffic Study
Town of Stow, Massachusetts

Study Area Aerial

Figure 2

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Schematic Diagram:
Not to Scale

3.0 TRAFFIC DATA COLLECTION

The Town of Stow has provided FST with historical traffic materials that were summarized in Technical Memorandum 1. Additionally, FST obtained:

- Tax Assessors map of study area
- Layout map of Great Road from the Town Superintendent of Public Works[1]
- Historic crash data between 2001-2005 from the Stow Police Department and 2001-2003 crash data from Mass Highway

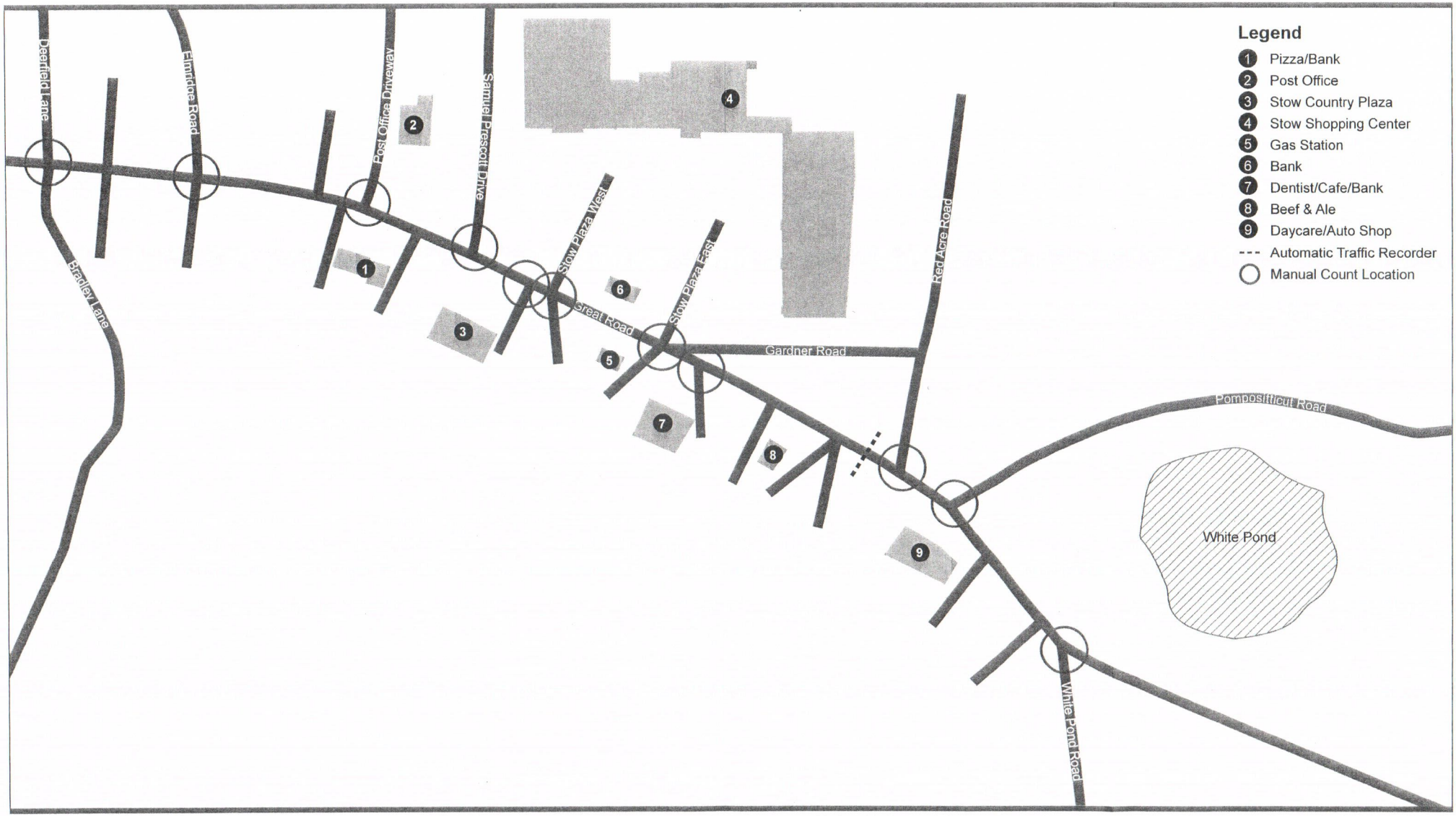
In addition to these materials, data was collected via three types of supplemental field counts: automatic traffic recorder (ATR) devices and manual turning movement/vehicle classification counts. ATR counts were performed continually over a five-day period at Great Road just west of Red Acre Road on September 9-13, 2005. Manual turning movement and vehicle classification counts were performed from 7:00 AM to 6:00 PM on Wednesday, September 14, 2005 at the following intersections:

- Great Road at Bradley Lane and Deerfield Lane
- Great Road at Elmridge Road
- Great Road at the Post Office driveway
- Great Road at the western plaza
- Great Road at Samuel Prescott Drive
- Great Road at Country Plaza
- Great Road at Stow Plaza's west driveway and Tara's driveway
- Great Road at Stow Plaza's east driveway and the Mobile gas station entrance
- Great Road at the Eastern Plaza
- Great Road at Red Acre Road
- Great Road at Pompositticut Street
- Great Road at White Pond Road

Additionally, key staff visited the site on September 13, 2005 to photograph the area, review peak hour site conditions, and measure road geometry. FST also met with the Town DPW Superintendent Michael Clayton and obtained information from the Planning Board office on the proposal for the pizza/bank shop area.

Figure 3 illustrates the study area count locations as well as the existing lane configurations at intersections studied.

[1] Source: Michael Clayton, September 13, 2004.



Stow Lower Village Traffic Study
Town of Stow, Massachusetts

Study Area Count Locations

Figure 3

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Schematic Diagram:
Not to Scale

4.0 EXISTING CONDITIONS ANALYSIS

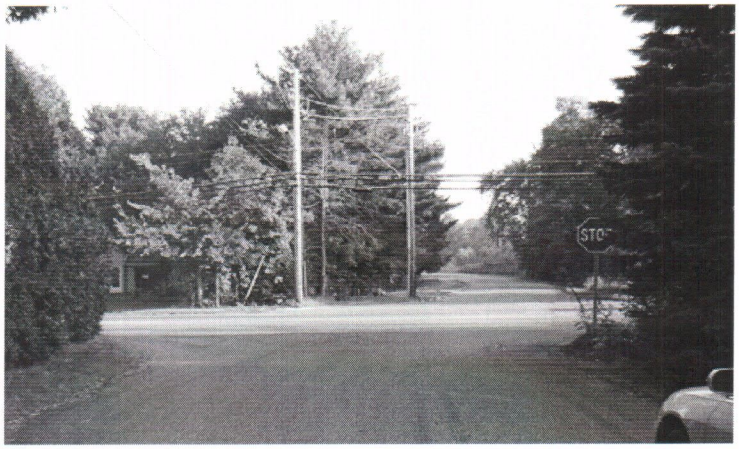
The following is summary of the traffic controls and street configurations within the study area.

4.1 ROADWAYS AND INTERSECTIONS

Great Road, looking east

Great Road is an east-west oriented high-volume arterial with one travel lane in each direction, and one center two-way left-turn lane which begins just after Bradley Lane to the west and terminates with the Stow Plaza eastern-most driveway. Its two-lane segments have average widths of 30 feet, curb to curb. The road flares to approximately 38 feet wide through the segment where it has a three-lane cross-section including a center two-way left-turn lane. The highway layout of Great Road through Lower Village varies from a minimum of approximately 54 feet at one point in front of Stow Plaza to 120 feet plus near Red Acre and Pompositticut Roads. Its pavement is in good condition. There are 5-foot paved sidewalks at some sections of the north side of the street. No formal sidewalks are present on the south side. Great Road is entirely un-signalized in the study area, and side streets are generally controlled by stop signs approaching Great Road. Three crosswalks (indicated by signage and pavement markings) traverse Great Road at the western corner of the Samuel Prescott Drive approach, and at the west and east entrances to Stow Plaza. The study area's speed limit is 35 miles per hour. Within the study area, Great Road runs through Stow's main commercial district, with 1- to 2-story businesses on both sides of the street. As can be seen from the Figure 2 aerial, Lower Village business buildings tend to be set back from the street edge with parking lots in front of the buildings.

Bradley Lane is a north-south oriented side street located at the western edge of the study area on the south side of Great Road. It is a two-way two-lane street leading back to a cul-de-sac and is bounded solely by single-family homes and recreational open space, including a soccer field. A stop sign present on the approach to Great Road is partially blocked from view by a large tree.



Bradley Lane, looking north

Deerfield Lane is a north-south oriented side street located at the western edge of the study area opposite Bradley Lane. It approaches Great Road from the north. It is a two-lane two-way street that ends with a cul-de-sac and is bound on either side by single-family homes and open space. The approach to Great Road is governed by a stop sign. A 5-foot sidewalk lines Deerfield on the west side of the street, but does not continue on to Great Road. However, a 5-foot sidewalk begins on Great Road at the east side of the street.

Deerfield Lane, looking south

Elmridge Road, looking south

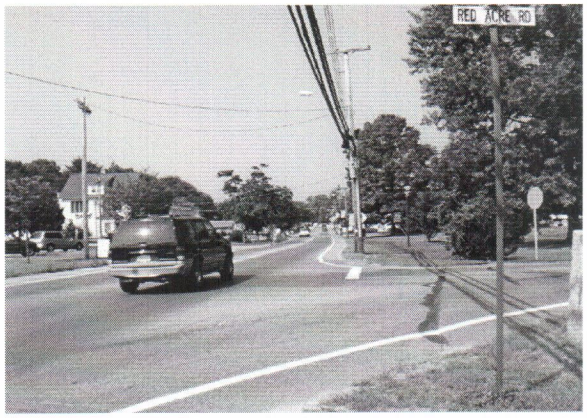
Elmridge Road is oriented north-south and approaches Great Road from the north. Like Bradley and Deerfield Lanes, it is also a two-way single lane street with a stop sign regulating its approach to Great Road. It too is surrounded by single-family residential uses. Elmridge Road has a paved 5-foot sidewalk on the east side of the road, which connects to the sidewalk on the north side of Great Road. Elmridge has two turning lanes at it's approach to Great Road, which are identified by faded turning lane pavement markings and a flush granite rubble median distinguished by the use of a slightly different paving material than the rest of the road.

Samuel Prescott Drive approaches Great Road from the north and loops around behind Stow Plaza to approach Red Acre Road from the West. It is a two-lane two-way local street providing access to a half-dozen or so homes to the north of the Plaza. The portion of Samuel Prescott Drive adjacent to Stow plaza is paved; the portion between Stow Plaza and Red Acre road is not. The Red Acre Road approach to Samuel Prescott Drive has a sign reading "Private Driveway" at the entrance. Samuel Prescott Drive's approach to Great Road is regulated by a stop sign and is traversed by a pedestrian crosswalk, which runs east-west. The southern end of the street has an entry to the Stow Plaza on it's east side and an entry to the Post Office on it's west side.

Samuel Prescott Drive, looking north

Gardner Road is a local street oriented east-west and approaches Great Road at an acute angle. It is a two-lane two-way local road paved between Great Road and Red Acre Road, however, signs restricting through traffic in both directions make it essentially an unused road for a segment between Great Road and the eastern Stow Plaza exit to Gardner Road. Gardner Road's approach to Red Acre Road is governed by a stop sign. It is bordered by Stow Plaza to the north and the Town Green to the South.

Gardner Road, looking toward Great Road



Red Acre Road, looking west

Red Acre Road is oriented north-south and is located on the north side of Great Road. It is a two-lane two-way local street with residential uses lining it on either side. Red Acre Road approaches Great Road at an acute angle to the east and its approach is regulated by a stop sign. It is abutted by the Town Green to the west of its southern end.

Pompositticut Road is oriented southwest to northeast and approaches Great Road on the north side. It is a single lane two-way collector street with residential uses lining it on either side. Pompositticut Road approaches Great Road at an acute angle to the west, and its approach is regulated by a stop sign. The cemetery and pond are adjacent to it on the south. A lot of through traffic is using Pompositticut Road as an alternative to Route 117 between Routes 27 and 62 in the Town of Maynard.

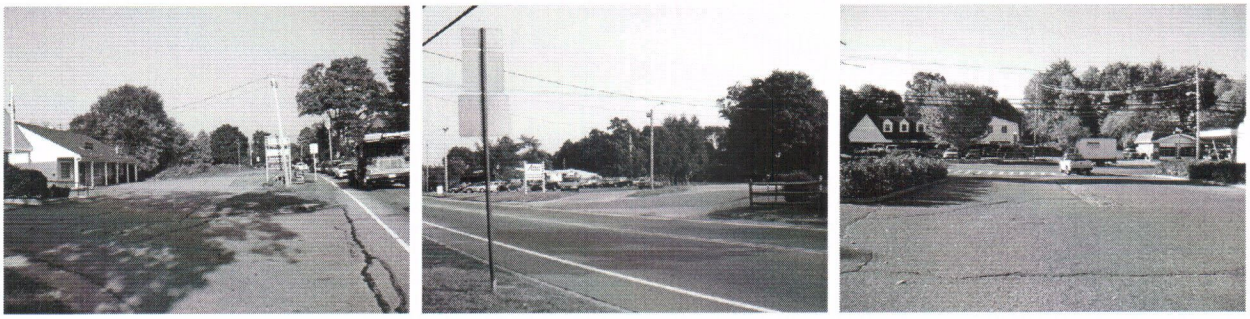
Pompositticutt Road, looking south

White Pond Road is oriented northwest-southeast, approaching Great Road from the southeast. It is a two-way single lane local street, bound on both sides by single-family homes. Its approach to Great Road is regulated by a stop sign.

4.2 CURB CUT ANALYSIS

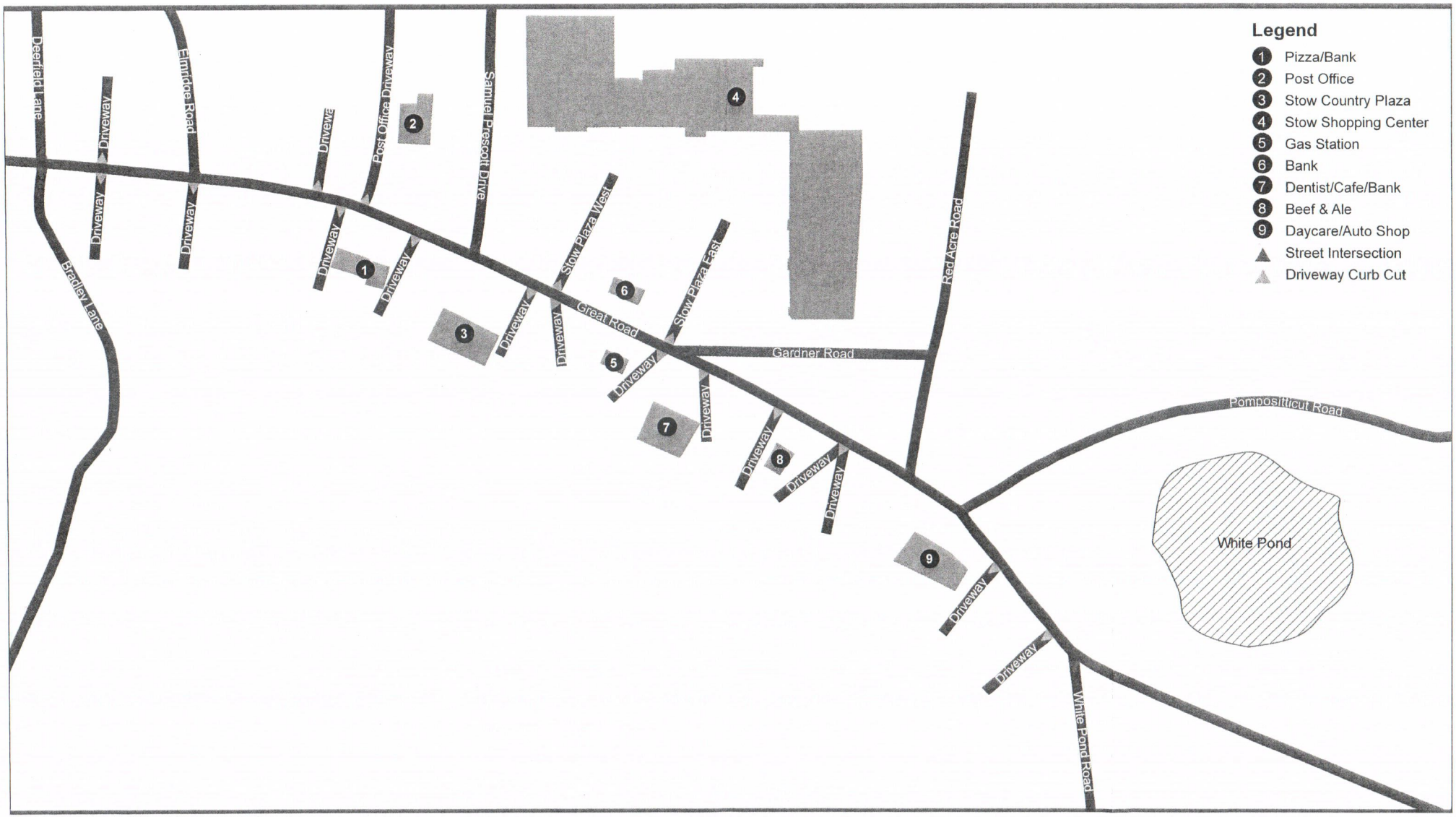
In addition to the many local street approaches that affect traffic volumes and flows on Great Road, there are also numerous curb cuts for driveways and parking lots associated with commercial uses along Great Road, as illustrated on Figure 4. Many of these curb cuts were included in the manual turning movement and vehicle classification count. Of the 12 locations selected for manual counts, six locations were driveway approaches leading to a parking lot for local businesses:

- Great Road at the Post Office driveway
- Great Road at the western plaza
- Great Road at Country Plaza
- Great Road at Stow Plaza's west driveway and Tara's driveway
- Great Road at Stow Plaza's east driveway and the Mobile gas station entrance
- Great Road at the eastern plaza



Curb cuts leading to parking lots along Great Road

Between White Pond and Bradley Road, there are a total of 23 curb cuts on both sides of Great Road. Of these curb cuts, 8 are public roads, while 16 are business or residential driveways. One of the curb cuts -- at the intersection of Gardner Road with Great Road -- serves Stow Plaza and Gardner Road. However, the Gardner Road access is not permitted, so it technically serves only A total of 9 curb cuts (6 are public roads) are on the north side of Great Road, while 2 of the14 curb cuts on the south side of Great Road are public roads. Many of these curb cuts are spaced closely together, sometimes with less than 80 feet between driveways, centerline to centerline. Additionally, in one case, the curb cut opening is exceedingly large. The curb cut, located opposite Pompositticut Road, has a continuous 200 foot wide opening. These conditions, combined with the large volume of traffic, make left turning movements difficult and impede traffic flow.



Stow Lower Village Traffic Study
Town of Stow, Massachusetts

Study Area Curb Cut Analysis

Figure 4

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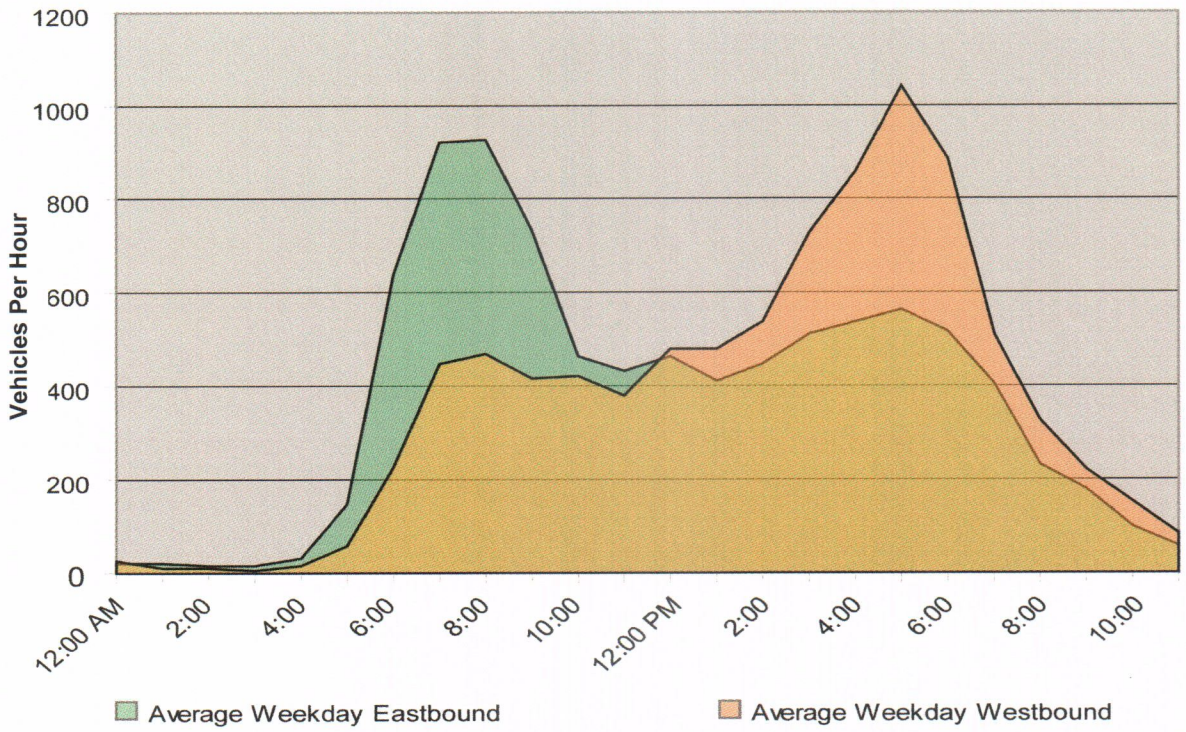
Schematic Diagram:
Not to Scale

4.3 Existing Traffic Volumes and Levels of Service

4.3.1 Average Weekday Traffic Volumes

FST used data from automatic traffic recorder (ATR) counts to obtain average weekly traffic volumes on Great Road. ATR counts were collected continuously between Friday, September 9 and Tuesday, September 13, 2005. Great Road carried approximately 17,600 vehicles per day on a typical weekday during this period. MassHighway seasonal data indicates that September generally carries nearly 10% higher traffic volumes than the typical month on roadways like Great Road. Therefore, the 2005 average annual daily traffic (AADT) volume on Great Road is estimated at approximately 16,000 vehicles per day.

Figure 5: Great Road, Stow Lower Village - Average Weekday Traffic Volumes



Findings show an average weekday morning peak hour volume of approximately 1395 vehicles, 66 percent of which were headed eastbound, and an average weekday evening peak hour volume of approximately 1605 vehicles. Sixty-five percent of the peak evening counts were headed westbound. As shown in Figures 5 and 6, volumes before and after both peak hours drop sharply. These patterns indicate the presence a large amount of commuters and school-related traffic.

ATR counts were also set to record speeds, vehicle classifications, and gaps. During the 5-day count period, the 85th percentile speed on Great Road -- the speed at which 85% of the traffic is traveling at or below -- was found to be 39 miles per hour. Additionally, the roadway carries approximately 9.5% trucks, 0.5% buses, and just under 3% bikes/motorcycles. To provide an example of the 24-hour context of speeds through the Lower Village area, FST prepared Figure 7, shown on the page that follows, to illustrate the hour-by-hour proportion of traffic through Stow Lower Village that traveled at or below 30 miles per hour on Friday September 9 and Monday, September 12, 2005.

Figure 6: Great Road, Stow Lower Village - Actual Weekday Traffic Volumes

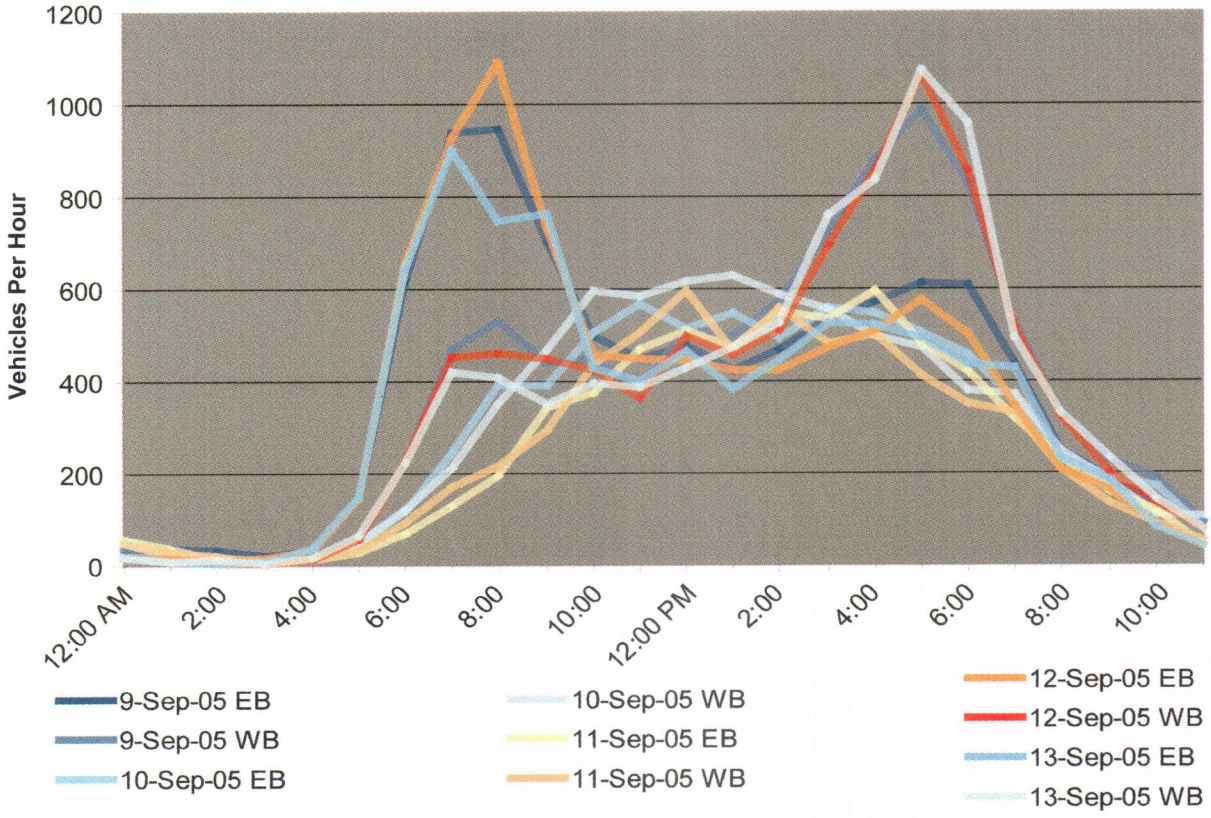
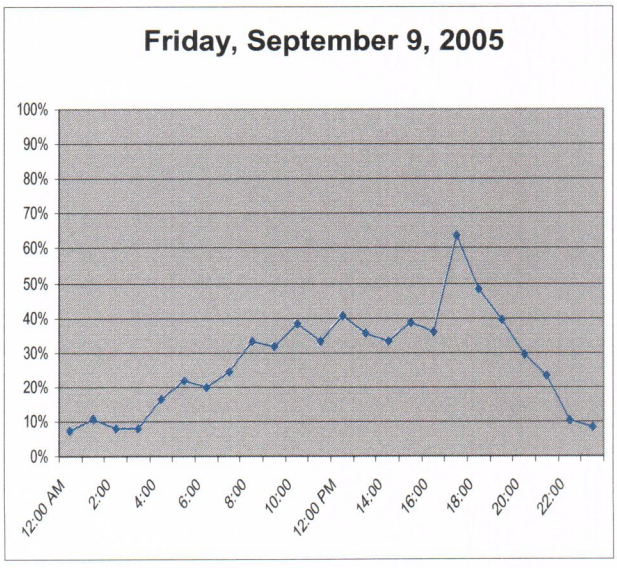
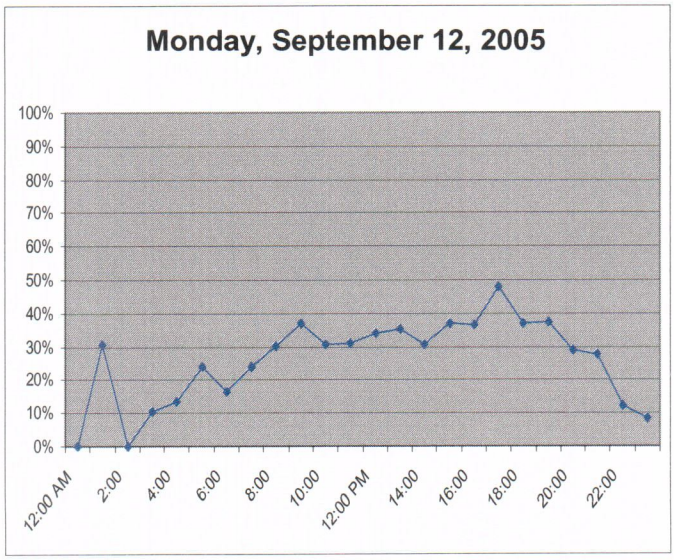


Figure 7: Great Road, Stow Lower Village -% of Traffic Traveling at or Below 30 MPH



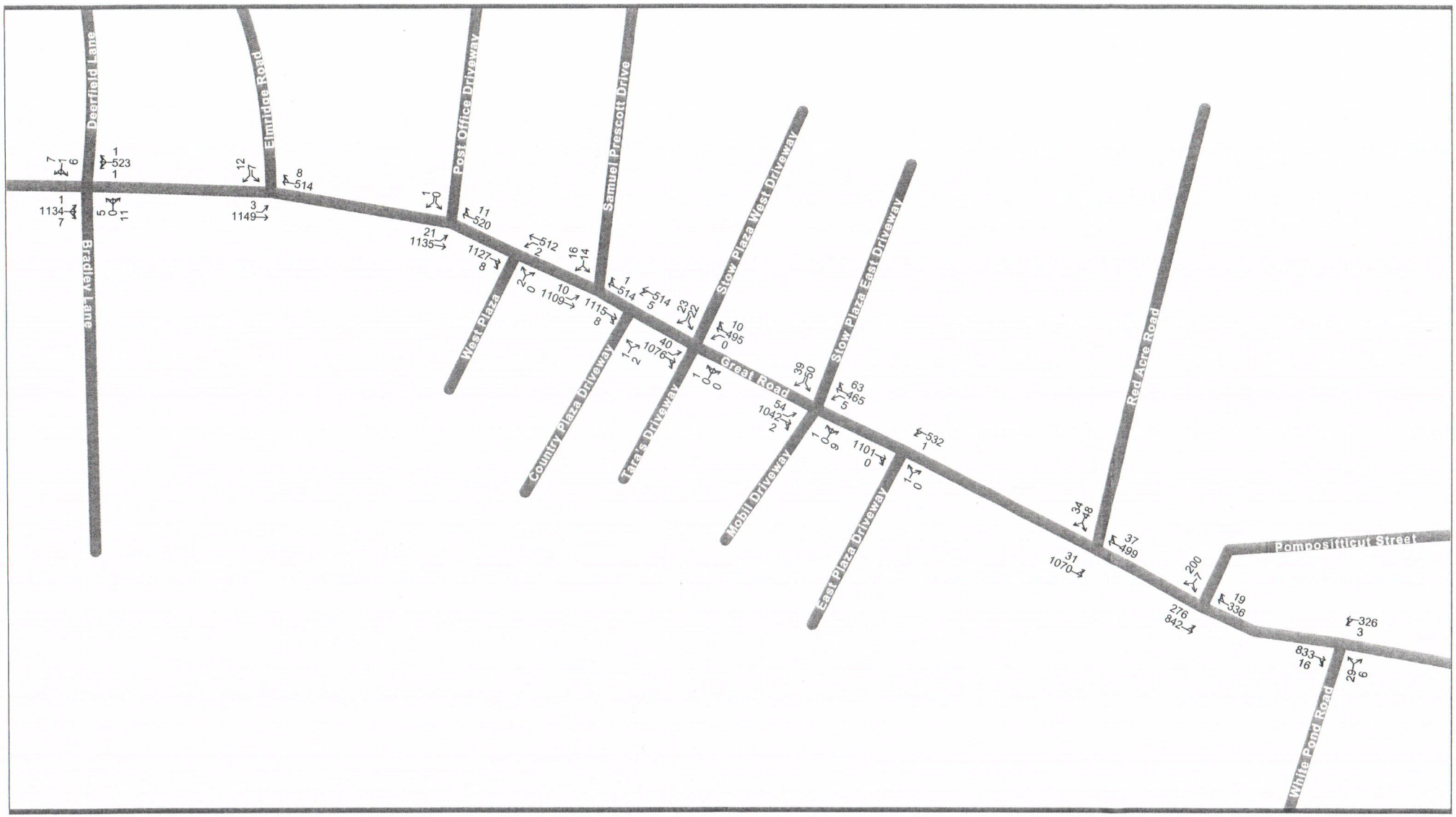


4.3.2 *Manual Turning Movement and Vehicle Classification Counts and Volumes*

Weekday AM and PM peak hour volumes and turning movements were recorded manually on September 14, 2005 at 11 separate locations within the study area. Figures 8 and 9 illustrate the AM and PM peak hour volumes for these locations. While little pedestrian and bicycle activity was observed directly, there was evidence of regular pedestrian and bicycle use. Along Great Road, particularly on the south side of the street where there is no sidewalk, patches where the grass has been worn down by frequent use were observed. Additionally, as shown on the photo to the right, there is a pedestrian path connecting the south side of Great Road to residential areas off Bradley Lane. This could be a possible indicator of Great Road's potential to generate higher levels of pedestrian and bicycle traffic, should the proper infrastructure be provided to encourage such non-motorized vehicle traffic.

Informal path running north to Great Road

Also notable is the relatively large amount of trucks that travel along Great Road. The presence of these trucks must be taken into account when developing alternative concepts for how Great Road will function through Lower Village.



Stow Lower Village Traffic Study
Town of Stow, Massachusetts

2005 Existing AM Peak Hour Traffic Volumes

Figure 8

Schematic Diagram:
Not to Scale

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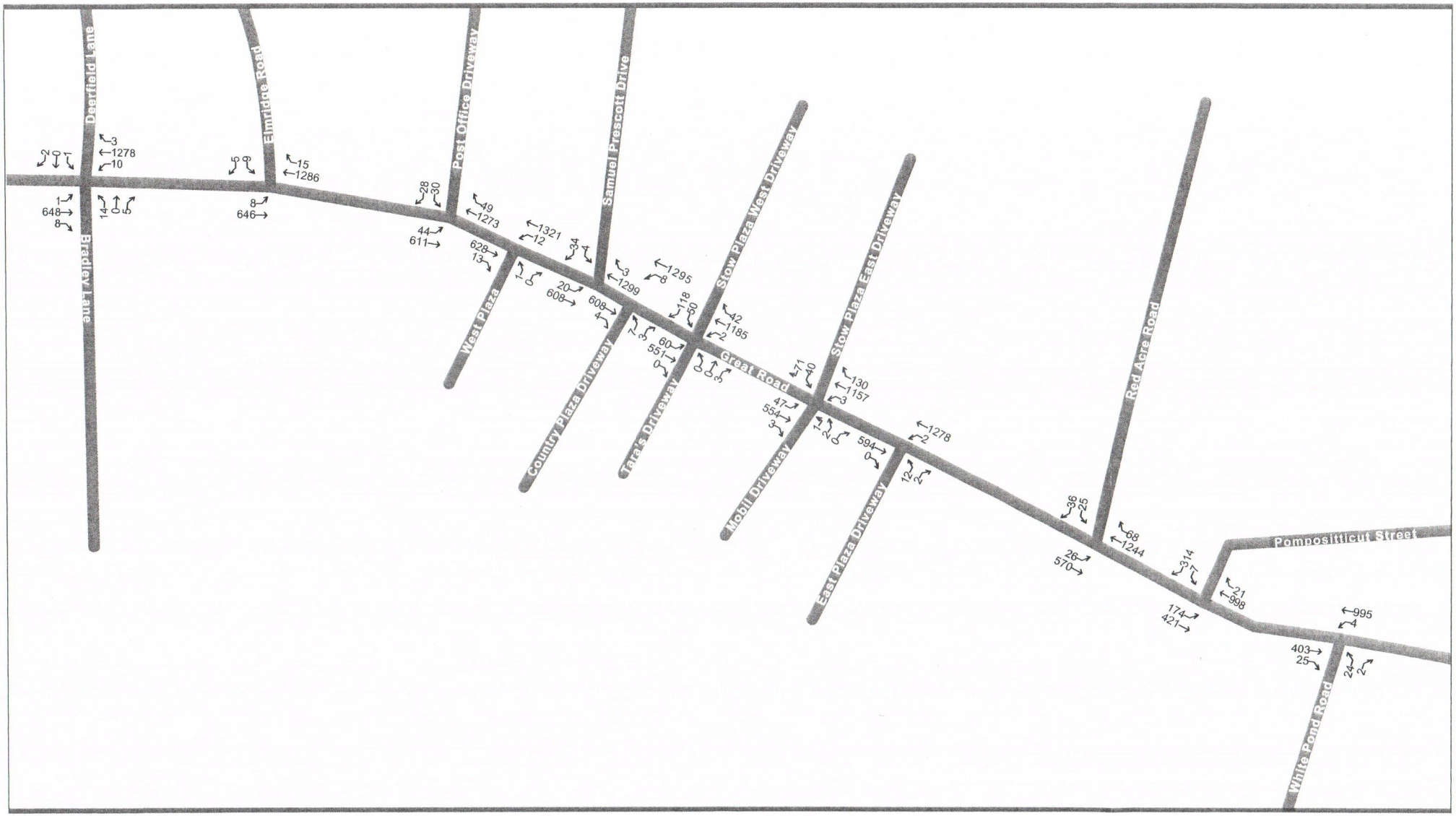

Stow Lower Village Traffic Study
Town of Stow, Massachusetts

2005 Existing PM Peak Hour Traffic Volumes

Figure 9

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Schematic Diagram:
Not to Scale

4.3.3 Intersection Capacity Analysis

Peak hour intersection capacity analyses were performed in accordance with the Highway Capacity Manual (HCM2000) methodology. The Synchro® computer analysis program was used to analyze, evaluate and simulate AM and PM peak hour conditions. Levels of service (LOS) were calculated for each of the intersections where counts were performed. A level of service is assigned based on the average amount of delay each motorist experiences entering the intersection during the peak 15-minute period of the peak hour. This is then translated into a simple scorecard-like rating from A to F. LOS A is optimal, with no or very little delay. LOS E is considered to represent capacity or near capacity conditions. LOS F is the least desirable condition, representing average motorist delays of 50 seconds or more at un-signalized locations and 80 seconds or more at signalized locations. Approach levels of service at signalized and un-signalized intersections from A-D are considered acceptable for rural locations such as Stow.

The criteria for un-signalized intersections are provided in Table 1. At un-signalized intersections, the volume/capacity (V/C) ratio is generally more critical than the level of service. If the V/C exceeds 1 with an LOS of F, it means that there are an insufficient number of gaps in traffic to allow traffic to complete desired turning or crossing movements (e.g., a left or right turn) from a stop-controlled intersection, which could present a hazardous condition. When LOS is calculated for an individual movement where the V/C is less than 1, it means the motorist has sufficient traffic gaps to make the movement, but with delay greater than 50 seconds, on average.

Table 1: Level of Service Criteria for Un-signalized Intersections[1]

Level of Service	Average Delay per Vehicle (sec/veh)[2]
A	≤10
B	> 10 and ≤15
C	> 15 and ≤25
D	> 25 and ≤35
E	>35 and ≤50
F	> 50

[1] *Highway Capacity Manual* (HCM2000), Transportation Research Board
[2] Seconds per vehicle

Table 2 on the next page summarizes existing levels of service at the eleven un-signalized intersections counted within the study area. For every intersection analyzed, at least one approach has an LOS lower than C during at least one of the peak hours. Pompositicutt Road and the two Stow Plaza driveways have the most significant traffic problems as they are over capacity (volume/capacity ratio greater than 1) during the afternoon peak hours. This means that traffic is slowing to let traffic in or traffic is accepting gaps in the stream that are less than desirable for conflicting turning movements at these intersections. Where it is LOS D-F at other locations, the relatively small number of motorists affected are delayed significantly, but sufficient capacity is available to allow them to merge into the through traffic stream without taking gaps shorter than needed for a safe merge into the traffic stream.

Table 2: Peak Hour Intersection Capacity Analysis – Great Road

Intersection by Approach	AM Peak Hour				PM Peak Hour			
	Avg. Delay (sec/veh)[1]	V/C ratio[2]	LOS[3]	Queue Length[4]	Avg. Delay (sec/veh)	V/C ratio	LOS	Queue* Length
Great Road at Bradley Lane and Deerfield Lane								
Great Road Eastbound	<1	0%	A	0	<1	0%	A	0
Great Road Westbound	<1	0%	A	0	<1	1%	A	<1
Bradley Lane Northbound	**41**	**14%**	**E**	**<1**	**123**	**42%**	**F**	**2**
Deerfield Lane Southbound	**41**	**13%**	**E**	**<1**	**53**	**4%**	**F**	**<1**
Great Road at Elmridge								
Great Road Eastbound	9	0%	A	0	<1	2%	B	<1
Elmridge Southbound	**46**	**8%**	**E**	**<1**	**64**	**18%**	**F**	**<1**
Elmridge Southbound	**12**	**2%**	**B**	**<1**	**N/C**	**3%**	**D**	**<1**
Great Road at the Post Office Driveway								
Great Road Eastbound	9	2%	A	<1	<1	9%	B	<1
Post Office Driveway Southbound	**0**	**0%**	**A**	**0**	**117.7**	**83%**	**F**	**4**
Post Office Driveway Southbound	**12**	**0%**	**B**	**0**	**N/C**	**22%**	**D**	**1**
Great Road at West Plaza								
Great Road Westbound	0	0%	B	0	<1	1%	A	<1
West Plaza Driveway Northbound	**42**	**2%**	**E**	**<1**	**66.3**	**2%**	**F**	**<1**
Great Road at Samuel Prescott Drive								
Great Road Eastbound	<1	1%	A	<1	<1	5%	B	<1
Samuel Prescott Drive Southbound	**31**	**18%**	**D**	**<1**	**46**	**33%**	**E**	**1**
Great Road at Country Plaza								
Great Road Westbound	**<1**	**1%**	**A**	**<1**	**<1**	**1%**	**A**	**<1**
Country Plaza Driveway Northbound	**30**	**2%**	**D**	**<1**	**59**	**14%**	**F**	**<1**
Great Road at Stow Plaza's West Driveway								
Great Road Eastbound	<1	4%	A	<1	1	13%	B	<1
Great Road Westbound	0	0%	N/A	0	0	0%	A	0
Tara's Driveway Northbound	**61**	**2%**	**F**	**<1**	**12**	**1%**	**B**	**0**
Stow Plaza Driveway Southbound	**44**	**32%**	**F**	**1**	**191**	**152%**	**F**	**6**
Stow Plaza Driveway Southbound	**N/C**	**4%**	**B**	**<1**	**N/C**	**68%**	**F**	**4**
Great Road at Stow Plaza's East Driveway								
Great Road Eastbound	<1	5%	A	<1	1	11%	B	<1
Great Road Westbound	<1	1%	B	<1	0	0%	A	0
Gas Station Driveway Northbound	**24**	**5%**	**C**	**<1**	**141**	**11%**	**F**	**<1**
Stow Plaza Driveway Southbound	**94**	**78%**	**F**	**4**	**193**	**136%**	**F**	**5**
Stow Plaza Driveway Southbound	**N/C**	**7%**	**B**	**<1**	**N/C**	**44%**	**E**	**2**
Great Road at East Plaza								
Great Road Westbound	0	0%	A	0	<1	0%	A	0
East Plaza Driveway Northbound	**40**	**2%**	**E**	**<1**	**63**	**29%**	**F**	**1**
Great Road at Red Acre Road								
Great Road Eastbound	1	3%	A	<1	2	6%	A	<1
Red Acre Road Southbound	**54**	**55%**	**F**	**3**	**105**	**70%**	**F**	**4**
Great Road at Pompositticut Road								
Great Road Eastbound	5	24%	A	1	8	30%	A	1.5
Pompositticut Southbound	**17**	**41%**	**C**	**2**	**265**	**146%**	**F**	**21**
Great Road at White Pond Road								
Great Road Westbound	<1	0%	A	0	<1	0	A	0
White Pond Road Northbound	**26**	**17%**	**D**	**1**	**36**	**19%**	**E**	**<1**

[1] *Average Delay, expressed in seconds per vehicle*
[2] *Volume to Capacity Ratio*
[3] *Level of Service*
[4] *Queue Length reported as nearest number of car lengths. AASHTO defines one car length as 25 feet.*
N/C = Data not calculated
N/A = Not applicable – no volumes recorded.
Levels of Service D or worse are highlighted.

4.4 Historical Crash Data Review

FST obtained historical crash data from two sources; MassHighway's statewide crash data record system for crash data between 2001 and 2003, and the Town of Stow Police Department for the period between 2002 and 2005. The Town of Stow Police Department also provided crash data that was more current than the MassHighway crash data summaries, but did not contain site-specific location data contained in the MassHighway database.

From the data obtained, of the 35 total crashes reported in Lower Village during the three-year period, 12 or 34% were at unspecified locations.

Of the total reported crashes, 31% involved personal injuries. By type, approximately 46% involved rear-end crashes, while 31% involved angle collisions. Only two intersections had one or more reported crashes annually-- the intersection of Great Road with the Stow Plaza driveways and the intersection of Great Road with Red Acre Road. MassHighway crash rate forms were prepared for these two locations. We note that the crash reported near the daycare center may be opposite the Pompositticut Road intersection, so there could conceivably be three crashes within the Pompositticut Road intersection.

Table 3: Lower Village Historical Crash Data Summaries

Intersection	Severity		Type			Reported Crashes				
	Injury	Property	Angle	Rear	Other	2001	2002	2003	Total	Rate
Great Road/Rt 117/Rt 62 (unspecified locations)	3	9	3	7	2	10	1	1	**12**	**N/C**
Great Road at Stow Plaza	3	8	4	4	2	1	2	7	**10**	**0.39**
Great Road at Red Acre Road	2	1	1	1	1	0	2	1	**3**	**0.13**
Great Road at Beef and Ale	1	1	0	1	1	0	0	2	**2**	**N/C**
Great Road at Pompositticut	0	2	0	2	0	1	0	1	**2**	**N/C**
Great Road/Bradley Lane	1	1	1	0	1	0	2	0	**2**	**N/C**
Great Road at Daycare Center*	0	1	0	1	0	0	0	1	**1**	**N/C**
Great Road at Elmridge Road	0	1	1	0	0	0	0	1	**1**	**N/C**
Great Road at Post Office Drive	1	0	1	0	0	1	0	0	**1**	**N/C**
Great Road at Samuel Prescott Drive	0	1	0	0	1	0	1	0	**1**	**N/C**
TOTAL	**11**	**25**	**11**	**16**	**8**	**13**	**8**	**14**	**35**	

* Could be considered within the Pompositticut Road intersection with Great Road.

Perhaps most significantly, none of the intersections exceed the statewide crash rate for un-signalized intersections of 0.66 crashes per million entering vehicles.

MassHighway
CRASH RATE WORKSHEET

CITY/TOWN : Stow, Massachusetts COUNT DATE : Sep-05

DISTRICT : UNSIGNALIZED : X SIGNALIZED :

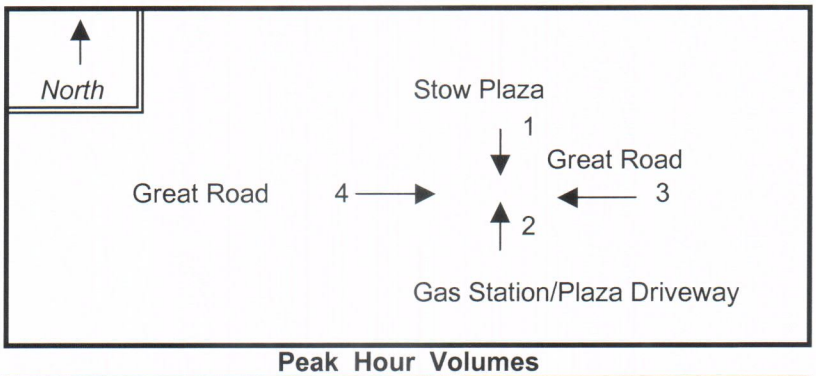
~ INTERSECTION DATA ~

MAJOR STREET : Great Road / Route 117

MINOR STREET(S) : Stow Plaza Driveways (East and West combined)

Mobile Gas Station and Plaza Driveway (combined)

INTERSECTION DIAGRAM (Label Approaches)



Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total
DIRECTION :	SB	NB	WB	EB		Entering
VOLUMES (AM/**PM**) :	279	6	1,290	611		2,186

" K " FACTOR : 0.094 APPROACH ADT : 23,255 **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF CRASHES : 10 # OF YEARS : 3 AVERAGE # OF CRASHES (**A**) : 3.33

CRASH RATE CALCULATION : 0.39 RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Lower than the statewide average of 0.63 crashes per unsignalized int.
Project Title & Date: Stow Lower Village Traffic Analysis, 10/05

MassHighway
CRASH RATE WORKSHEET

CITY/TOWN : Stow, Massachusetts COUNT DATE : Sep-05

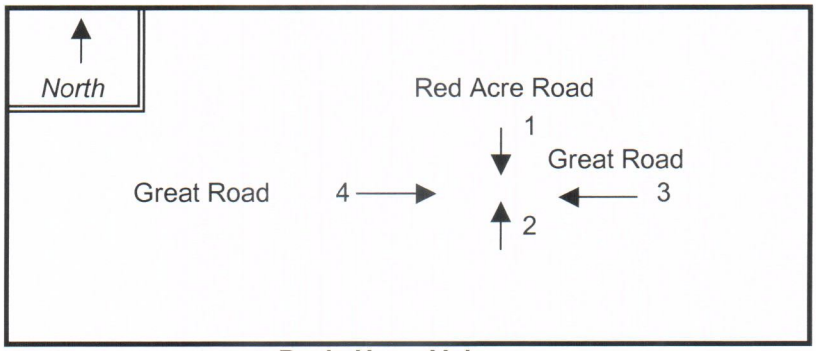
DISTRICT : UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Great Road / Route 117

MINOR STREET(S) : Red Acre Road

INTERSECTION DIAGRAM (Label Approaches)



Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total
DIRECTION :	SB	NB	WB	EB		Entering
VOLUMES (AM/**PM**) :	61	N/A	1,312	596		1,969

" K " FACTOR : 0.094 APPROACH ADT : 20,947 **ADT** = TOTAL VOL/"K" FACT.

TOTAL # OF CRASHES : 3 # OF YEARS : 3 AVERAGE # OF CRASHES (**A**) : 1.00

CRASH RATE CALCULATION : 0.13 RATE = $\frac{(A * 1{,}000{,}000)}{(ADT * 365)}$

Comments : Lower than the statewide average of 0.63 crashes per unsignalized int.
Project Title & Date: Stow Lower Village Traffic Analysis, 10/05