Route 9 at South Maple Street

Transportation Safety Study

April 2005

Prepared by:
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089

Final Report

Prepared in cooperation with th Massachusetts Executive Office of Transportation, the Massachusetts Highway Department and the U.S. Department of Transportation–Federal Highway Administration and the Federal Transit Administration.

Route 9 at South Maple Street Transportation Safety Study

Final Report

January 2005

Prepared for:
Town of Hadley

Prepared by:
Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089

Prepared in cooperation with the Massachusetts Executive Office of Transportation, the Massachusetts Highway Department and the U.S. Department of Transportation - Federal Highway Administration and the Federal Transit Administration.

TABLE OF CONTENTS

SUMMARY OF TABLES

SUMMARY OF FIGURES

I. INTRODUCTION

The Pioneer Valley Planning Commission (PVPC) identified the intersection of Russell Street (Route 9) with South Maple Street as a candidate for a safety study as part of the 2003 Update to the Regional Transportation Plan for the Pioneer Valley Metropolitan Planning Organization (RTP). Improving safety is an emphasis area of the Federal Highway Administration. The RTP identifies areas with high crash rates that can be incorporated with the Pioneer Valley Unified Planning Work Program (UPWP) to develop recommendations for improvement.

The Massachusetts Highway Department (MassHighway) develops a list of the top 1000 high crash locations in the Commonwealth on a regular basis. The intersection of Russell Street (Route 9) with South Maple Street appeared on the 2001 version of this list with a total of 82 police reported crashes from 1997 to 1999.

This study will review the recent crash history of the intersection of Route 9 with South Maple Street to identify the factors which contribute to safety problems in this area. Potential improvement alternatives will be identified and analyzed in order to give the Massachusetts Highway Department (MassHighway) and the Town of Hadley a variety of options on how to reduce the number of crashes at this intersection.

A. Study Area

Russell Street (Route 9) serves as a principle arterial roadway serving a wide variety of commercial businesses and providing access to Interstate 91 and the University of Massachusetts in Amherst, Massachusetts. In the vicinity of its intersection with South Maple Street, Russell Street (Route 9) provides two through lanes, an exclusive left lane and an exclusive right lane going in each direction. The speed limit on Russell Street is posted at 35 miles per hour in both directions. Russell Street (Route 9) also provides a U-Turn lane east of the intersection. A paved median and guardrail are provided on Route 9 east of the intersection and triangular islands define the exclusive right turn lanes. U-turns are prohibited from the exclusive left turn lane in the eastbound direction.

South Maple Street serves a variety of commercial and residential land uses and provides secondary access to the University of Massachusetts in Amherst north of the intersection. This street is also widely used for access to the Hampshire and Mountain Farms Malls. The northbound approach of South Maple Street provides one exclusive left turn lane and one shared through movement and right lane. The speed limit posted at 35 miles per hour in both directions. Exclusive turn lanes are provided for each movement on the southbound approach to the intersection. The northbound approach of South Maple Street has a “No Turn on Red” sign posted. Lane measurements were not taken at this intersection due to the high traffic volumes.

II. EXISTING TRANSPORTATION CONDITIONS

This section provides a technical evaluation of the transportation components for the intersection of Russell Street (Route 9) with South Maple Street. It includes a presentation of the data collected, analysis of traffic operations, and a series of short-term recommendations to the overall performance and safety of the corridor.

A. Data Collection

Comprehensive data collection activity was conducted for this study to identify existing deficiencies. This activity consisted of obtaining traffic volumes, and accident information. PVPC staff collected a large portion of the data used in this report. Additional data was obtained from the Massachusetts Highway Department (MassHighway) and the Town of Hadley.

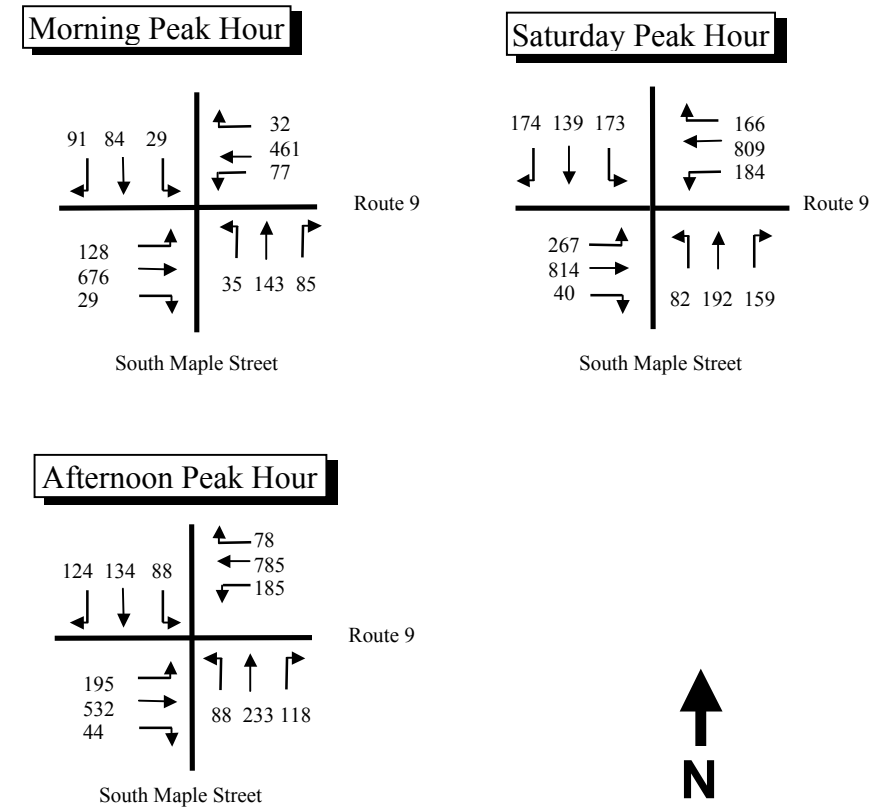
1. Hourly Vehicle Volume

Manual Turning Movement Counts were conducted for the intersection of Russell Street (Route 9) with South Maple Street. TMC's were conducted during the peak commuter periods. The weekday peak commuter period occurs during the morning hours of 7:00 AM to 9:00 AM and the afternoon hours of 4:00 PM to 6:00 PM. A TMC was also conducted on Saturday from 11:00 A.M. to 1:00 P.M. The TMC's were conducted 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 number of heavy vehicles and pedestrians on the roadway. Heavy vehicles include trucks, recreational vehicles and buses. The percentage 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.

The TMC data were obtained during weekday peak periods. 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 at the intersection of Russell Street (Route 9) with South Maple Street compares to average month conditions. Turning movement count data for the AM, PM and Saturday Peak Hours are summarized on Figures II-1 – II-3.

Figure II-1 – 2004 Peak Hour Traffic Volumes at Route 9 with South Maple Street



Source: PVPC

2. Crash Experience

A crash history of the intersection of Russell Street (Route 9) with South Maple Street was provided by the Hadley Police Department. The crash history from January of 2001 to December of 2003 is summarized in Table II-1. This intersection averaged 16 accidents a year over this three-year period.

Table II-1 - Crash History of Russell Street (Route 9) with South Maple Street

	Total	Crash Type					Property	Personal
	Crashes	Rear-End	Sideswipe	Backing	Fixed Object	Angle	Damage	Injury
2003	21	14	4	0	0	3	20	1
2002	12	6	1	0	0	5	8	4
2001	16	7	2	1	1	5	14	2
Total	**49**	**27**	**7**	**1**	**1**	**13**	**42**	**7**

As can be seen from Table II-1, 55% of the crashes were rear-end type crashes, and 48% of the rear end-type crashes involved a vehicle colliding with a vehicle stopped at a red light. A total of 40% of the rear-end type crashes occurred on Russell Street (Route 9) going in the eastbound direction, and 37% of the same type of crashes occurred on the same street but going in the westbound direction. Only 14% of the crashes in the three-year period resulted in a personal injury, and there were no fatalities reported. Similarly 14% of the crashes occurred under wet, snowy or icy roadway conditions.

The crash rate per million entering vehicles was calculated for the intersection. In theory, the number of crashes can increase as traffic volumes and the potential for conflict is increased. The crash rate per million entering vehicles considers the daily entering volumes at an intersection and the average number of annual crashes. The crash rate, which is presented in Table II-2 at the intersection of Route 9 with South Maple Street was calculated to be 1.56, which is significantly higher than the 1.02 average for District 2 as well as the 0.87 state average for signalized intersections. Figure II-4 presents a collision diagram of the crashes that occurred over the most recent three year period.

Table II-2 - Crash Rate Summary

	Dist. 2 Average	State Average	Intersection
Crash Rate	1.02	0.87	1.56

B. Analysis Procedures

1. Capacity Analysis

The intersection of Russell Street (Route 9) with South Maple Street was examined with regard to capacity and delay characteristics to determine the existing Level of Service (LOS). LOS is an indicator of the operating conditions which occur on a roadway under different volumes of traffic and is defined in the 2000 Highway Capacity Manual by six levels, "A" through "F". A number of operational factors can influence the LOS including geometry, travel speeds, delay, and the number of pedestrians.

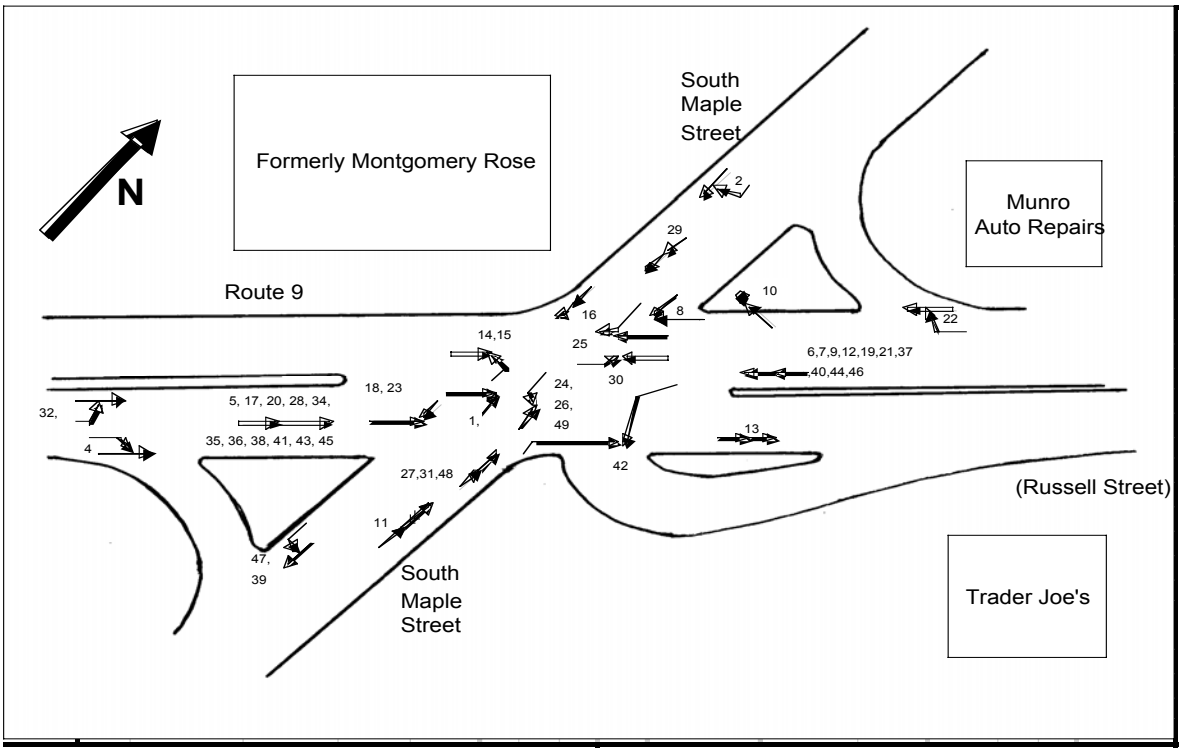
Depending on the time of day and year, a roadway may operate at varying levels. Level of Service "A" represents the best operating conditions and is an indicator of ideal travel conditions with vehicles operating at or above posted speed limits with little or no delays. Conversely, LOS "F", or failure, generally indicates forced flow conditions illustrated by long delays and vehicle queues. Level of Service "C" indicates a condition of stable flow and is generally considered satisfactory in rural areas. Under LOS "D" conditions, delays are considerably longer than under LOS "C", but are considered acceptable in urban areas. At LOS "E" the roadway begins to operate at unstable flow conditions as the facility is operating at or near its capacity. Using Synchro software, the LOS for the Russell Street (Route 9) with South Maple Street was determined. Table II-3 presents the LOS for the morning, afternoon and Saturday peak hours

Table II-3 - Intersection Level of Service Summary

	AM Peak		PM Peak		Sat. Peak	
Movement	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
Route 9 EB Left Turn	29.5	C	49.4	D	54.5	D
Route 9 EB Through Traffic	12.5	B	21.6	C	26.4	C
Route 9 EB Right Turn	7.4	A	13.1	B	15.0	B
Route 9 WB Left Turn	32.0	C	44.6	D	60.0	E
Route 9 WB Through Traffic	13.9	B	25.0	C	32.7	C
Route 9 WB Right Turn	11.9	B	18.7	B	24.7	C
South Maple NB Left Turn	18.8	B	18.1	B	21.4	C
South Maple NB Through/Right	21.9	C	22.2	C	25.0	C
South Maple SB Left Turn	26.9	C	32.4	C	63.5	E
South Maple SB Through Traffic	27.3	C	27.9	C	31.1	C
South Maple SB Right Turn	25.3	C	25.6	C	29.2	C
Overall	19.3	B	27.8	C	34.4	C

Figure II-2 Collision Diagram

Intersection: Route 9 (Russell Street)/South Maple Street



Symbols

Fixed Object
Angle
Rear End
Backing
Head-on
Pedestrian
Side Swipe
Lane Change

Light Condition (L)
1. Daylight
2. Dawn/Dusk
3. Darkness
4. Unknown

Road Condition (R)
1. Dry
2. Wet
3. Snow/Ice

Fatality	F
Personal Injury	PI
Property Damage	PD

	DATE	TIME	SEV.	L	R		DATE	TIME	SEV.	L	R
1*	1/5/2001	2:17 PM	PD	1	1	26	9/9/2002	5:31 PM	PD	2	1
2	1/12/2001	3:07 PM	PD	1	1	27	9/27/2002	9:01 PM	PD	3	2
3	1/28/2001	3:33 PM	PD	1	1	28	11/9/2002	9:29 PM	PI	3	1
4	3/2/2001	3:00 PM	PD	1	1	29	1/26/2003	3:45 PM	PD	2	3
5	4/10/2001	10:00 AM	PD	1	1	30	1/30/2003	7:36 PM	PD	3	1
6	5/24/2001	1:11 PM	PD	1	2	31	2/24/2003	8:25 PM	PD	3	1
7	5/25/2001	3:44 PM	PD	1	1	32	3/3/2003	4:08 PM	PD	1	1
8*	6/11/2001	7:17 PM	PI	3	1	33	3/6/2003	8:00 AM	PD	3	1
9	7/13/2001	9:49 AM	PI	1	1	34	3/7/2003	8:05 AM	PI	2	1
10	8/4/2001	8:03 AM	PD	2	1	35	3/7/2003	7:30 PM	PD	3	1
11	9/4/2001	6:43 PM	PD	2	1	36	3/8/2003	5:44 PM	PD	2	1
12	10/19/01	2:40 PM	PD	1	1	37	3/19/2003	1:15 PM	PD	1	1
13	11/5/2001	3:33 PM	PD	1	2	38	3/25/2003	1:11 PM	PD	1	1
14	12/4/2001	7:00 PM	PD	3	1	39	4/9/2003	6:48 PM	PD	2	1
15	12/10/2001	6:53 PM	PD	3	3	40	4/18/2003	9:25 AM	PD	1	1
16	12/30/2001	9:08 AM	PD	1	1	41	4/21/2003	1:45 AM	PD	3	1
17	2/7/2002	4:51 PM	PD	2	1	42	8/21/2003	3:23 PM	PD	1	1
18	2/27/2002	1:35 PM	PD	1	2	43	9/2/2003	11:54 PM	PD	1	1
19	3/8/2002	10:08 AM	PD	1	1	44	9/17/2003	12:25 PM	PD	1	1
20	4/29/2002	6:12 PM	PI	1	2	45	10/21/2003	7:15 PM	PD	3	1
21	5/3/2002	2:41 PM	PD	1	1	46	11/6/2003	9:45 PM	PD	3	1
22	5/22/2002	10:07 AM	PD	1	1	47	11/22/2003	9:30 PM	PD	3	1
23	7/4/2002	6:29 AM	PI	2	1	48	12/17/2003	10:33 AM	PD	1	1
24	9/1/2002	12:09 PM	PI	1	1	49	12/23/2003	4:03 PM	PD	2	1
25	9/7/2002	6:10 PM	PD	2	1						

* Accidents 1 and 8 resulted in citations for running a red light.

The westbound through traffic movement was calculated to operate at Level of Service of "D" during the afternoon peak hour and a Level of Service of "E" during the Saturday peak hour. Left turns from On Russell Street (Route 9) traveling operate at Level of Service "D"during the Saturday peak hour. Southbound left turns from South Maple Street also operates at Level of Service of "E" during the Saturday peak hour. Overall, the intersection was found to operate at acceptable levels of service based on its high volume of traffic.

C. Proposed Home Depot Development

The Town of Hadley has proposed a new home improvement shopping center on the northwesterly corner of the intersection of Russell Street (Route 9) with South Maple Street. The proposed site will consist of 323,000 square feet of business-zoned land use. Montgomery-Rose, Inc., the original owners of the land use, agreed to sell the land and rezone it from residential/commercial to business. This 52 acre land will have more than 1,700 parking spaces and is expected to generate 7,904 new vehicle trips during the week and 10,286 vehicle trips on Saturday. During the weekday peak hour the projected trip generation is expected to increase to almost 700 additional vehicle trips and 1,088 additional vehicle trips during peak hour on Saturday.

The project proponent has committed to the reconfiguration of the intersection of Route 9 with South Maple Street as part of its mitigation for the project. As currently proposed, the southbound approach of South Maple Street will be restriped to provide one exclusive left turn lane, one through travel lane and one shared through and right turn lane. Minor widening will be performed on the southern side of the intersection to accommodate two travel lanes and improvements will be made to the existing signal timing plan.

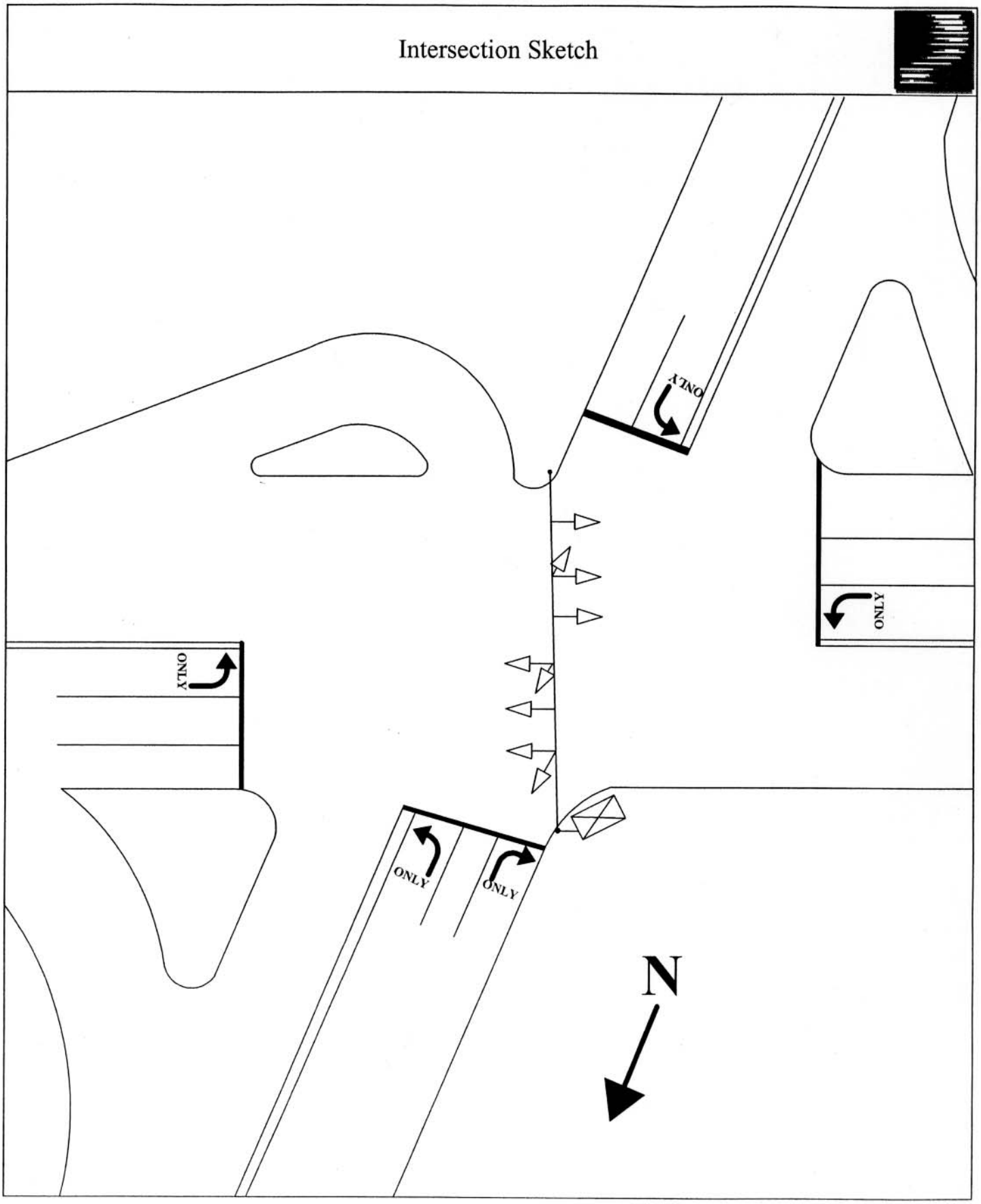
III. - CONCLUSIONS

Based on the results of this safety study there is not a predominant theory on the main contributing factor to the high rate of crashes at the intersection of Route 9 with South Maple Street. Certainly, there is a high volume of traffic at this location, however the high number of rear-end collisions on Route 9 does not appear to be caused by improper signal timings or visibility problems. It is recommended that the Massachusetts Highway Department District 2 Office consider installing backplates on all of the traffic lights to reduce glare and further improve visibility. Informational guide signs and advance street signs should also be considered to assist travelers that are unfamiliar with the area and might get trapped in the wrong travel lane. Recently, traffic signals along the Route 9 corridor were coordinated to provide more uniform traffic flow. This, in conjunction with a Route 9 repaving project could assist in reducing the number of rear-end crashes at the intersection.

It is also recommended that the crash rate at this intersection continue to be monitored after the construction of the proposed retail development. A new collision diagram should be developed as part of this study and compared to the conditions from 2001-2003 to determine the potential changes that may have occurred as a result in changes in traffic volumes and the improvements to the Route 9 corridor.

Appendix

Intersection Sketch



P[illegible]VEER VALLEY PLANNING COMMISSION
2[illegible] CENTRAL STREET WEST SPRINGFIELD MA 01089
(413)781-6045 fax(413)732-2593 www.pvpc.org

TURNING MOVEMENT COUNT INVENTORY

trans.server:\intern\tmc\forms\tmclog.doc

NAME Neil Olinski

DATE 2/11/04

LOCATION:(city) Hadley

BOARD NUMBER 0944

STREET Route 9

SITE CODE 5266 AM 7-9

CROSS STREET North and South Maple Streets

NORTH KEY (circle one) (3) 7 11 15

TMC INSTRUCTIONS

- FILL OUT THIS FORM COMPLETELY
- COMPLETE AN INTERSECTION SKETCH SHEET ON BACK
- ENTER THE 8-DIGIT SITE CODE ASSIGNED TO THE COUNT
- USE BUTTONS 1, 5, 9, 13 FOR TRUCKS, U-TURNS, OR PEDESTRIANS
- ONLY COUNT TRUCKS ON APPROACH BUTTON (1, 5, 9, 13) **DO NOT** COUNT MOVEMENT
- DO NOT TURN OFF COUNTER UNTIL AFTER THE LAST INTERVAL HAS EXPIRED
- DUMP DATA INTO PETRA-LITE SOFTWARE, FORMAT, SAVE, AND PRINT
- RETURN ALL SHEETS TO THE INTERN MANAGER
- RETURN COUNTER TO THE STORAGE CASE

NOTES: Bikes: 1

U-Turns: |||| |||| |||| |||| |||| from RTE 9 WB

Peds: |||

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
(413) 781-6045

Location : Hadley
Counter # : 0944
Operator : NO
Fun. Class : U2

File Name : 5266am
Site Code : 00005266
Start Date : 02/11/2004
Page No : 1

Groups Printed- Unshifted

	North Maple Street From North				Route 9 From East				South Maple Street From South				Route 9 From West				
Start Time	Right	Thru	Left	Trucks, Buses	Right	Thru	Left	Trucks, Buses	Right	Thru	Left	Trucks, Buses	Right	Thru	Left	Trucks, Buses	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	17	11	5	0	1	79	8	4	14	14	4	1	2	75	3	6	244
07:15 AM	11	14	4	0	3	75	9	4	10	11	5	3	2	121	15	3	290
07:30 AM	22	5	1	3	3	94	17	3	16	18	5	1	3	129	18	9	347
07:45 AM	21	12	4	2	6	108	12	6	19	31	11	1	2	149	30	5	419
Total	71	42	14	5	13	356	46	17	59	74	25	6	9	474	66	23	1300
08:00 AM	25	28	4	1	9	118	15	4	17	21	11	6	3	141	36	6	445
08:15 AM	28	18	9	0	8	118	23	5	25	28	7	3	6	173	30	3	484
08:30 AM	20	17	9	1	9	107	14	6	27	42	9	3	7	165	31	4	471
08:45 AM	16	19	6	1	5	109	23	10	14	49	7	2	12	184	28	7	492
Total	89	82	28	3	31	452	75	25	83	140	34	14	28	663	125	20	1892
Grand Total	160	124	42	8	44	808	121	42	142	214	59	20	37	1137	191	43	3192
Apprch %	47.9	37.1	12.6	2.4	4.3	79.6	11.9	4.1	32.6	49.2	13.6	4.6	2.6	80.8	13.6	3.1	
Total %	5.0	3.9	1.3	0.3	1.4	25.3	3.8	1.3	4.4	6.7	1.8	0.6	1.2	35.6	6.0	1.3	

	North Maple Street From North					Route 9 From East					South Maple Street From South					Route 9 From West					
Start Time	Right	Thru	Left	Trucks, Buses	App. Total	Right	Thru	Left	Trucks, Buses	App. Total	Right	Thru	Left	Trucks, Buses	App. Total	Right	Thru	Left	Trucks, Buses	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	08:00 AM																				
Volume	89	82	28	3	202	31	452	75	25	583	83	140	34	14	271	28	663	125	20	836	1892
Percent	44.1	40.6	13.9	1.5		5.3	77.5	12.9	4.3		30.6	51.7	12.5	5.2		3.3	79.3	15.0	2.4		
08:45 Volume	16	19	6	1	42	5	109	23	10	147	14	49	7	2	72	12	184	28	7	231	492
Peak Factor																					0.961
High Int.	08:00 AM					08:15 AM					08:30 AM					08:45 AM					
Volume	25	28	4	1	58	8	118	23	5	154	27	42	9	3	81	12	184	28	7	231	
Peak Factor					0.871					0.946					0.836					0.905	

PI ER VALLEY PLANNING COMMISSION
26 CENTRAL STREET WEST SPRINGFIELD MA 01089
(413)781-6045 fax(413)732-2593 www.pvpc.org

TURNING MOVEMENT COUNT INVENTORY

trans.server:\intern\tmc\invntory.doc

NAME Kim + Matt Caron

DATE 2/25/04

LOCATION:(city) Hadley

BOARD NUMBER 0945

STREET Rte 9

SITE CODE 5000 - PM 4-6

CROSS STREET North / South Maple St.

NORTH KEY (circle one) 3 7 11 15

TMC INSTRUCTIONS

- FILL OUT THIS FORM COMPLETELY
- COMPLETE AN INTERSECTION SKETCH SHEET
- ENTER THE 8-DIGIT SITE CODE ASSIGNED TO THE COUNT
- USE BUTTONS 1, 5, 9, 13 FOR TRUCKS, U-TURNS, OR PEDESTRIANS
- DOUBLE COUNT TRUCKS ONE FOR MOVEMENT ONE FOR A TRUCK (1, 5, 9, 13)
- DO NOT TURN OFF COUNTER UNTIL AFTER THE LAST INTERVAL HAS EXPIRED
- DUMP DATA INTO PETRA-LITE SOFTWARE, FORMAT, SAVE, AND PRINT
- RETURN ALL SHEETS TO THE INTERN MANAGER
- RETURN COUNTER TO THE STORAGE CASE

NOTES: Bikes: 11

Peds: 1

red light: 111

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
(413) 781-6045

Location : Hadley
Counter # : 0945
Operator : MC
Fun. Class : U2

File Name : 5266pm
Site Code : 00005266
Start Date : 02/25/2004
Page No : 1

Groups Printed- Unshifted

	North Maple Street From North				Route 9 From East				South Maple Street From South				Route 9 From West				
Start Time	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	31	29	22	1	17	166	37	2	23	48	14	2	7	132	51	1	583
04:15 PM	18	20	20	3	21	164	31	2	24	45	12	1	6	135	54	2	558
04:30 PM	32	28	25	2	16	191	47	2	17	57	22	2	12	134	57	5	649
04:45 PM	40	39	17	4	18	193	46	4	29	52	12	0	12	129	42	2	639
Total	121	116	84	10	72	714	161	10	93	202	60	5	37	530	204	10	2429
05:00 PM	32	35	29	2	15	192	50	3	31	59	24	0	10	113	47	0	642
05:15 PM	18	29	15	1	27	194	38	2	39	60	28	1	9	146	45	3	655
05:30 PM	30	33	21	2	19	201	30	0	38	41	27	0	7	138	56	1	644
05:45 PM	22	28	21	2	23	196	41	4	19	59	13	0	7	127	60	4	626
Total	102	125	86	7	84	783	159	9	127	219	92	1	33	524	208	8	2567
Grand Total	223	241	170	17	156	1497	320	19	220	421	152	6	70	1054	412	18	4996
Apprch %	34.3	37.0	26.1	2.6	7.8	75.2	16.1	1.0	27.5	52.7	19.0	0.8	4.5	67.8	26.5	1.2	
Total %	4.5	4.8	3.4	0.3	3.1	30.0	6.4	0.4	4.4	8.4	3.0	0.1	1.4	21.1	8.2	0.4	

	North Maple Street From North					Route 9 From East					South Maple Street From South					Route 9 From West					
Start Time	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	122	131	86	9	348	76	770	181	11	1038	116	228	86	3	433	43	522	191	10	766	2585
Percent	35.1	37.6	24.7	2.6		7.3	74.2	17.4	1.1		26.8	52.7	19.9	0.7		5.6	68.1	24.9	1.3		
05:15 Volume	18	29	15	1	63	27	194	38	2	261	39	60	28	1	128	9	146	45	3	203	655
Peak Factor																					0.987
High Int.	04:45 PM					04:45 PM					05:15 PM					04:30 PM					
Volume	40	39	17	4	100	18	193	46	4	261	39	60	28	1	128	12	134	57	5	208	
Peak Factor					0.870					0.994					0.846					0.921	

2[illegible] CENTRAL STREET WEST SPRINGFIELD MA 01089
(413)781-6045 fax(413)732-2593 www.pvpc.org

TURNING MOVEMENT COUNT INVENTORY

trans.server:\intern\tmc\forms\tmclog.doc

NAME Neil Olinski

LOCATION:(city) Hadley

STREET RTE 9 (Russell st.)

CROSS STREET N. Maple / S. Maple

DATE 2/24/04

BOARD NUMBER 0944 Sat. 11-1

SITE CODE 52666

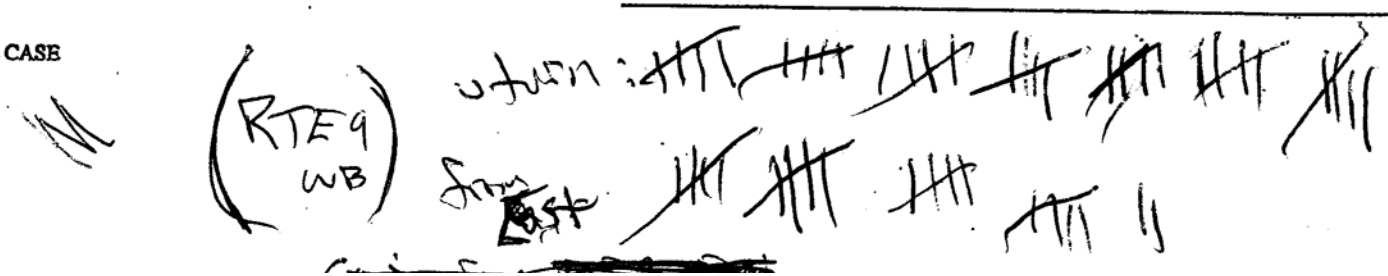
NORTH KEY (circle one) (3) 7 11 15

TMC INSTRUCTIONS

- FILL OUT THIS FORM COMPLETELY
- COMPLETE AN INTERSECTION SKETCH SHEET ON BACK
- ENTER THE 8-DIGIT SITE CODE ASSIGNED TO THE COUNT
- USE BUTTONS 1, 5, 9, 13 FOR TRUCKS, U-TURNS, OR PEDESTRIANS
- ONLY COUNT TRUCKS ON APPROACH BUTTON (1, 5, 9, 13) **DO NOT** COUNT MOVEMENT
- DO NOT TURN OFF COUNTER UNTIL AFTER THE LAST INTERVAL HAS EXPIRED
- DUMP DATA INTO PETRA-LITE SOFTWARE, FORMAT, SAVE, AND PRINT
- RETURN ALL SHEETS TO THE INTERN MANAGER
- RETURN COUNTER TO THE STORAGE CASE

NOTES: peds: 11

Bikes: 11



Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
(413) 781-6045

Location : Hadley
Counter # : 0944
Operator : NO
Fun. Class : U2

File Name : 5266 SAT (11-1)
Site Code : 00005266
Start Date : 02/28/2004
Page No : 1

Groups Printed- Unshifted

	North Maple Street From North				Route 9 From East				South Maple Street From South				Route 9 From West				
Start Time	Right	Thru	Left	trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Right	Thru	Left	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
11:00 AM	33	23	28	2	34	162	34	0	29	37	15	1	8	159	60	4	629
11:15 AM	39	21	36	0	36	187	21	1	36	48	12	0	13	195	54	4	703
11:30 AM	40	22	36	1	39	193	46	1	34	44	15	0	15	178	65	3	732
11:45 AM	35	29	29	1	42	179	35	2	38	44	15	0	6	193	67	2	717
Total	147	95	129	4	151	721	136	4	137	173	57	1	42	725	246	13	2781
12:00 PM	47	31	36	0	38	199	53	5	41	41	21	1	9	194	71	5	792
12:15 PM	40	34	42	1	45	180	43	2	36	46	19	0	11	210	64	3	776
12:30 PM	42	29	48	0	46	185	43	1	38	45	26	0	10	205	64	3	785
12:45 PM	42	42	44	1	34	229	41	1	41	56	14	0	9	189	63	2	808
Total	171	136	170	2	163	793	180	9	156	188	80	1	39	798	262	13	3161
Grand Total	318	231	299	6	314	1514	316	13	293	361	137	2	81	1523	508	26	5942
Apprch %	37.2	27.0	35.0	0.7	14.6	70.2	14.6	0.6	36.9	45.5	17.3	0.3	3.8	71.2	23.8	1.2	
Total %	5.4	3.9	5.0	0.1	5.3	25.5	5.3	0.2	4.9	6.1	2.3	0.0	1.4	25.6	8.5	0.4	

	North Maple Street From North					Route 9 From East					South Maple Street From South					Route 9 From West					
Start Time	Right	Thru	Left	trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Int. Total
Peak Hour From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Intersection	12:00 PM																				
Volume	171	136	170	2	479	163	793	180	9	1145	156	188	80	1	425	39	798	262	13	1112	3161
Percent	35.7	28.4	35.5	0.4		14.2	69.3	15.7	0.8		36.7	44.2	18.8	0.2		3.5	71.8	23.6	1.2		
12:45 Volume	42	42	44	1	129	34	229	41	1	305	41	56	14	0	111	9	189	63	2	263	808
Peak Factor																					0.978
High Int.	12:45 PM					12:45 PM					12:45 PM					12:15 PM					
Volume	42	42	44	1	129	34	229	41	1	305	41	56	14	0	111	11	210	64	3	288	
Peak Factor					0.928					0.939					0.957					0.965	