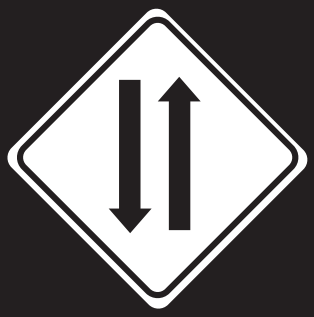
Effects of Two-Way Traffic Flow on High and Maple Street in the City of Holyoke



March 2002

Prepared by the Pioneer Valley Planning Commission

Effects of Two-Way Traffic Flow on High and Maple Streets in the City of Holyoke

Final Report

April 2002

Prepared for:
City of Holyoke

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

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

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Introduction

The City of Holyoke requested the Pioneer Valley Planning Commission (PVPC) to perform a traffic study to determine the impact of converting High Street and Maple Street from one-way to two-way traffic flow between Appleton Street and Lyman Street. Currently, High Street operates as a one-way roadway providing two lanes of traffic in the northbound direction. Maple Street operates parallel to High Street as a one-way street providing two lanes of traffic in the southbound direction. Both roadways serve the residents and land uses in the heart of downtown Holyoke, while providing convenient access to and from Interstates 91 and 391.

Recent studies have shown that converting one-way streets to two-way traffic flow can play a positive role in a program to make downtown areas more livable and economically successful. In theory, two-way streets are more pedestrian friendly as vehicle travel speeds are reduced and smaller gaps in traffic are required to cross the street. This study will analyze the effects of two-way traffic flow on downtown Holyoke. The advantages and disadvantages of one-way streets are discussed and the transportation issues that would need to be addressed prior to implementing this change are summarized.

Study Area

The study area defined within this downtown location of Holyoke consists of ten intersections in the northern section of the Holyoke Business and Municipal district. The study area consists of High Street and Maple Street from their intersections with Lyman Street to their intersections with Appleton Street. Table-1 lists the intersections within this study area that were included in this analysis.

Table-1
Holyoke Study Area Intersections

Type	Location
Signalized	High Street / Appleton Street
	High Street / Suffolk Street
	High Street / Dwight Street
	Maple Street / Appleton Street
	Maple Street / Suffolk Street
	Maple Street / Dwight Street
	Maple Street / Lyman Street
Unsignalized	High Street / Hampden Street
	High Street / Lyman Street
	Maple Street / Hampden Street

Data Collection

Both manual and automatic traffic counts were performed in this study area during the months of August and September 2001. Manual turning movement counts were performed by PVPC staff during the afternoon (4-6 PM) peak hours. The 48-hour automatic traffic recorder counts were performed on each approach of the intersecting side streets as well as along High Street and Maple Street at key locations. Copies of all traffic counts are included in the appendix to this report.

The Massachusetts Highway Department (MassHighway) develops traffic volume adjustment factors to reflect monthly variations, as traffic volumes tend to fluctuate over the course of the year. These factors were examined to determine how traffic conditions during the different months compare to average month conditions. For example, based on the MassHighway data, traffic volumes during the month of August were found to be slightly higher than the annual average. Therefore, all traffic count volumes were adjusted to reflect average month conditions. The adjusted weekday afternoon peak hour traffic volumes for all intersections are shown in Figure-1. Daily traffic volume information is summarized in Table-2.

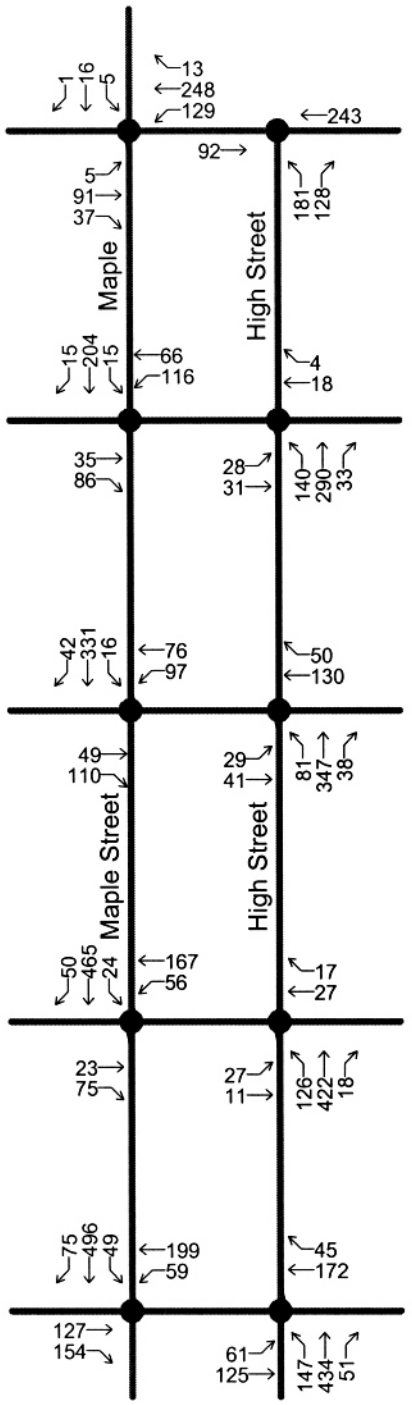
Table-2
Average Daily Traffic Volumes

Roadway	Total
High Street South of Dwight Street	6,289
High Street North of Dwight Street	7,245
Maple Street North of Dwight Street	5,509
Maple Street South of Dwight Street	10,396
Appleton Street between High and Maple Street	6,432
Suffolk Street between High and Maple Street	3,004
Dwight Street between High and Maple Street	4,862
Hampden Street between High and Maple Street	2,601
Lyman Street between High and Maple Street	8,152

Source: PVPC traffic counts, August and September 2001

Holyoke
Existing PM Peak Hour

Figure 1



Pioneer Valley Planning Commission

Two-Way Scenario Analysis

The PVPC maintains a regional transportation model comprised of the 43 cities and towns within the Pioneer Valley region. This model consists of a roadway network constructed using current roadway inventory files that contain specific data for each segment of the roadway. Travel demand for this network is generated using socioeconomic data such as household size, auto availability and employment and is generated for each of the Traffic Analysis Zones (TAZ) within the region. Once existing travel flow is estimated, it is then assigned to the existing roadway network and calibrated to reflect actual daily volumes. PVPC currently uses the TransCad modeling software to operate the regional transportation model.

To reflect two-way travel along High Street and Maple Street, the appropriate roadway segments within the regional transportation model were adjusted between Appleton Street and Lyman Street. It was assumed that one lane of travel would be provided in each direction along both roadways and that no changes would be imposed on the existing on-street parking layout. All other roadway segments in the study area were left unchanged.

A map of the study area showing the daily traffic volume data collected by PVPC under existing one-way conditions in blue is presented in Figure-2. The estimated two-way volumes generated from the regional transportation model are located below each segment in red. The arrows depict the travel direction of the corresponding traffic volumes.

As seen in Figure-2, traffic volumes along High Street increased an average of 23%. The traffic flow north of Dwight Street along High Street, Lyman Street and Maple Street show a decrease in volume, suggesting that shorter trips are now required as a result of the conversion. As expected, traffic volumes on High Street decreased in the northbound direction, but were offset by the new traffic in the southbound direction. Conversely, Maple Street volumes decreased in the southbound direction and did not experience a substantial northbound increase. This data suggests that a more direct route to southbound locations along High Street may account for the limited use of Maple Street and side streets north of Dwight Street.

The minor street traffic volumes showed significant fluctuations in both the eastbound and westbound directions from which the following observations were made:

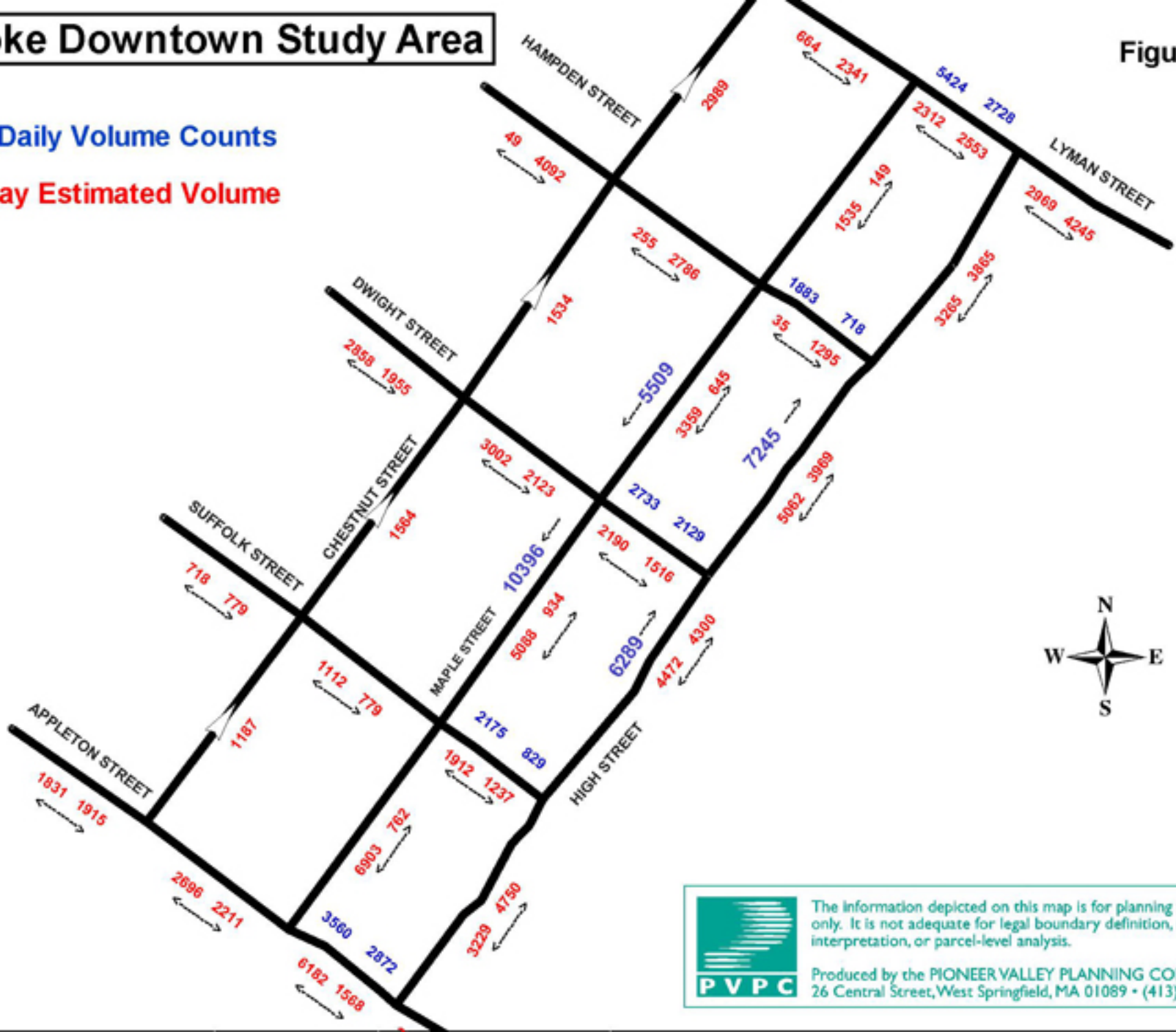
- Appleton Street westbound volumes increased by 73% while all other side street volumes in the westbound direction decreased.
- Increases on Suffolk Street and Hampden Street ranged from 50% to 80% in the eastbound direction.
- Dwight Street volumes decreased in both directions reducing the total flow along the segment between High Street and Maple Street by 24%.

Holyoke Downtown Study Area

Figure-2

PVPC Daily Volume Counts

TwoWay Estimated Volume



The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analysis.

Produced by the PIONEER VALLEY PLANNING COMMISSION
26 Central Street, West Springfield, MA 01089 • (413) 781-6045.

Appleton Street serves as the most direct route to Interstate-91 from the study area. The new southbound travel flow along High Street may be responsible for a direct increase in westbound volumes along Appleton Street reflecting a time savings in order to access Interstate-91. The remaining minor street fluctuations in traffic volumes could be a result of reduced volumes along Maple Street due to the ease of southbound travel along High Street or travel time savings resulting from the conversion to two-way flow.

Based on information taken from the regional transportation model, the average vehicle travel speed was not significantly affected by the change to two-way flow. The number of vehicle miles of travel (VMT) along Maple Street was reduced by 35%, however, VMT on High Street subsequently increased by 34%.

Additional Two-Way Flow Scenarios

In addition to the previous two-way scenario, two alternative scenarios were also analyzed based on comments received from the City of Holyoke and local business owners. The second scenario consists of converting High Street to two-way traffic flow with Maple Street remaining one-way in the southbound direction. A third scenario considers the two-way conversion as detailed under Scenario 1 except for the segment of Maple Street between Hampden and Dwight Street which would be closed to vehicular traffic. This closed segment reflects a desire to revamp this area into a transit and pedestrian mall to serve a proposed new Intermodal Center on Maple Street at the old fire station.

Scenario 2 One-Way Conversion of High Street to Two-Way Flow, Maple Street Remains One-Way in Southbound Direction.

In this scenario High Street was converted to a two-way roadway for the entire study area while Maple Street remained in its current one-way southbound condition. This alternative was requested after a presentation of preliminary results of Scenario 1 to downtown businesses. Many business owners felt this could be a viable alternative as it would reduce the cost of converting to two-way traffic flow while serving the needs of existing businesses along High Street.

Results under this scenario were similar to the results of Scenario 1. Reductions in traffic along Maple Street occurred while traffic volumes increased along High Street and Appleton Street. One noticeable difference was that traffic volumes were observed to increase on minor streets in the northern portion of the study area. An increase in the eastbound traffic volumes on Dwight, Suffolk and Lyman Streets suggests that traffic could be seeking alternate routes to Appleton Street in order to access Interstate 391. Appleton and High Street volumes continued to remain high under this scenario.

Scenario 3 One-Way Conversion to Two-Way Traffic Flow in Study Area with Transit Mall (Hampden Street to Dwight Street along Maple Street) Closed to Vehicular Traffic.

Scenario 3 analyzed the traffic flow patterns within the study area resulting from closing a segment of Maple Street from Hampden Street to Dwight Street to vehicular traffic. This section of Maple Street could then be utilized to develop a Transit Mall in conjunction with the redevelopment of the old fire station as an Intermodal Center. As expected, closing this section of Maple Street while changing High Street and Maple Street to two-way traffic flow did not significantly alter traffic flow patterns from

Scenario 1. High Street and Maple Street flows were similar to those experienced under Scenario 1, however, the minor street volumes along Dwight Street and Hampden Street increased significantly. This could have negative impacts on the LOS at the intersections of Maple Street with Dwight Street and Maple Street with Hampden Street. Travel along High Street was still attractive verses Maple Street for southbound locations as well as the Appleton Street connection to Interstate-91 and 391.

Capacity Analysis

The intersections included within this study area were 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" to "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. A summary of the existing LOS at these intersections is shown in Table-3.

Table-3
Level of Service Summary

Location	2001		Two Way Flow	
	Afternoon Peak		Afternoon Peak	
	Delay*	LOS**	Delay*	LOS**
High Street with Appleton Street	10.2	B	35.5	D
High Street with Suffolk Street	19.7	B	51.9	D
High Street with Dwight Street	9.9	A	11.6	B
High Street with Hampden Street	19.0	C	25.6	D
High Street with Lyman Street	11.5	B	12.7	B
Maple Street with Appleton Street	8.0	A	43.5	D
Maple Street with Suffolk Street	10.4	B	11.6	B
Maple Street with Dwight Street	9.0	A	10.2	B
Maple Street with Hampden Street	9.4	A	8.4	A
Maple Street with Lyman Street	4.3	A	4.6	A

** Measured in seconds per vehicle, ** LOS - Level of Service*

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 gage to determine the operations at an unsignalized intersection.

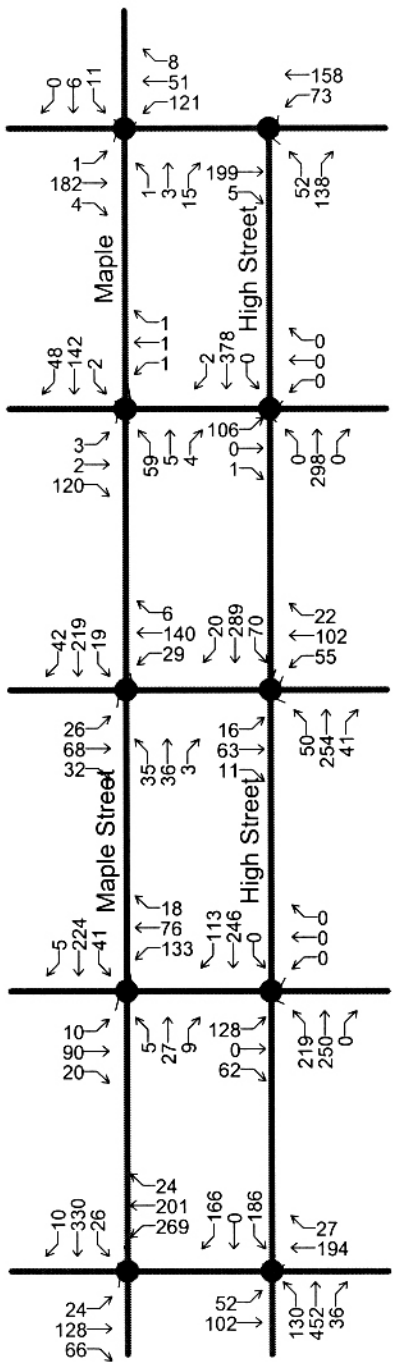
In addition to current conditions, the projected two-way traffic volumes were also analyzed at each of the study area intersections. Using TransCad, the turning movements of the PM peak hour were estimated for the two-way scenario in order to analyze the impact of this scenario on intersection operation. It was assumed that current timing and signalization plans were still in place and that no updates were done to the intersection locations. Figure-3 contains the calculated turning movement counts for the projected two-way scenario.

As seen in Table-3 the LOS for most signalized intersections decreases as a result of this change. The delay experienced at each of the intersections was observed to increase, dropping the LOS in the High and Suffolk area from "B" to "D". The intersections of Appleton Street with High Street and Appleton Street with Maple Street experience the largest decrease in LOS. Traffic volumes along this segment of Appleton Street increased substantially especially in the westbound direction causing large delays for the westbound approach to both High Street and Maple Street. Appleton Street's westbound approach to Maple Street experiences a 79 second delay and was calculated to operate at a LOS "F". The southbound approach of High Street at it's intersection with Appleton Street also was calculated to operate at a LOS "F" with a total delay of 107 seconds. Additionally opposing traffic from the existing one-way flows south of Appleton Street may also cause confusion to motorists and increase the likelihood of crashes.

It is clear that some intersections will require modifications to the existing timing and phasing plan to accommodate the increased number of vehicular conflicts created by two-way traffic flow. These intersections should be examined further in order to determine the effect of the expected decreased in LOS on safety.

Holyoke Projected Two-Way Flow
PM Peak Hour

Figure 3



Pioneer Valley Planning Commission

Advantages and Disadvantages of One-Way Streets

Many cities and towns are considering conversion of the one-way streets in their downtown locations to two-way streets, in an effort to revitalize downtown business. A recent study[1] shows that one-way traffic can discourage pedestrian traffic and restrict the amount of store frontage viewed by passing motorists. This can result in an overall decrease in business along a one-way street network.

The one-way network system was originally designed to assist the downtown worker in a quicker commute time exiting the city to suburban neighborhoods. While a shorter travel time is generally the case with the one-way traffic flow network, some benefits of two-way traffic flow may outweigh the one-way reduced travel time. Some of the advantages and disadvantages of one-way streets are summarized in Table-4

Table-4
Advantages and Disadvantages of One-Way Streets

Advantages	Disadvantages
Increased Traffic Flow	Creates Longer, Circuitous Routes
Reduces Congestion	Can Increases Traffic Volumes
Minimizes Vehicle Conflicts	Can Result in Higher Travel Speeds
Facilitate Good Signal Progression	Discourages Pedestrian Traffic
Loading Zones and Bus Stops are Less Disruptive to Traffic	Transit Stops for Opposing Directions are Located on Separate Streets.
	Restrict Storefront Views to Motorists
	Can Be Confusing for Visitors

The one-way advantage of time savings may prove beneficial in reducing the congestion within a downtown location, however, it may also allow vehicles to move away from the city too quickly, reducing opportunities for impulse or pass-by trips. In addition the number of vehicle miles traveled tends to be higher in a one-way network due to restrictions on travel and the need to make more turning movements.

[1] G. Wade Walker, Walter M. Kulash and Brian T. McHugh, *Downtown Streets - Are We Strangling Ourselves on One-Way Networks?*, TRB Circular E-C019: Urban Street Symposium.

Summary of Transportation Impacts of Two-Way Flow

The following transportation impacts should be considered prior to converting this location to two-way traffic flow.

- New traffic signal heads, posts and mastarms will be required at each of the six signalized intersections. Existing mastarms may not be able to support the additional loads associated with the new signal heads.

- The existing signal timing plans will need to be modified to accommodate two-way traffic flow. Changes to the existing fire pre-emption sequence could also be required.

- The upgrade of the existing traffic signal equipment may require new traffic signal control units.

- A new pavement marking plan would be required throughout the study area.

- Additional study should be done on the unsignalized intersections of Hampden Street with High Street, Hampden Street with Maple Street as well as Lyman Street with Maple Street. Lyman Street with Maple Street is an unsignalized one way stop intersection and special consideration should be placed on left hand turning movements at this location from both Maple Street and High Street approaches. Additional traffic volumes could cause problems at this location.

- The location of parking meters and no parking signs and zones will need to be changed along western side of High Street and the eastern side of Maple Street. Double parking issues and loading zone blockage concerns along these streets should also be studied for impacts on traffic flow.

- More congestion and slower travel speeds could increase the service time of existing transit routes in the study area.

- Crashes can be expected to increase in the short term as drivers adjust to two-way traffic flow patterns.

- The intersections of Appleton with High Street should be studied further to evaluate the impact of an increase in volumes at these intersections and the resulting confusion to motorists as they encounter opposing movements.

Conclusions and Recommendations

Based on the results of the Pioneer Valley Regional Transportation Model, both High Street and Maple Street are capable of accommodating two-way traffic flow between Appleton and Lyman Streets. Two-way traffic flow could assist in reducing vehicle travel speeds through downtown Holyoke, encouraging pedestrian traffic, and in conjunction with ongoing redevelopment efforts make downtown more economically successful.

In total, three different one-way scenarios were analyzed as part of this study as summarized below:

Scenario 1 Convert High Street and Maple Street to two-way traffic flow from Appleton Street to Lyman Street.

Scenario 2 Convert High Street to two-way traffic flow from Appleton Street to Lyman Street and leave Maple Street one-way in the southbound direction.

Scenario 3 Convert High Street and Maple Street to two-way traffic flow from Appleton Street to Lyman Street with a dedicated Transit and Pedestrian Mall on Maple Street between Hampden Street and Dwight Street.

Scenario 2 offers the advantage of a lower initial cost to implement two-way traffic flow in downtown Holyoke, but does not work well with the City's plans to develop an Intermodal Center on Maple Street. Scenario 3 would improve pedestrian and transit flow in the vicinity of the new Intermodal Center, however, it would be confusing to motorists and have an adverse impact on the surrounding intersections. The first scenario should be considered as the preferred alternative as it works the best from an operational standpoint and can best accommodate future development plans for the downtown area.

It is also important to note that this study addresses the traffic flow patterns in the downtown study area. The study does not address the cost issues of the proposed change or its impact on existing parking and concerns of vehicle blockage for downtown merchants in any of the three scenarios. It is recommended that the following issues should be explored in more detail prior to implementation of a two-way street network by the City of Holyoke.

Cost

The City of Holyoke should consider hiring a qualified professional engineering firm to develop a preliminary cost estimate to convert High and Maple Streets from one-way to two-way traffic flow. Information on the cost to upgrade existing traffic signal equipment, signs, pavement markings, and parking meters should be included as part of this estimate.

Intersection Capacity

The proposed change to two-way traffic flow is expected to have a dramatic impact on existing travel patterns in the downtown area. As a result, it is likely that the existing traffic signal timing and phasing plan will not be as efficient in managing traffic. It will be important to closely monitor traffic after any flow changes are made. New timing plans should be developed for the existing signalized intersection while all unsignalized intersections should be studied to determine if traffic signals are warranted.

Local Deliveries and Load Zones

Currently, many deliveries to downtown businesses are made on-street, sometimes blocking one lane of traffic. Under the existing one-way street layout, this temporary lane blockage can be handled by the second travel lane. This is not practical on a two-way street. The City of Holyoke is encouraged to meet with local business owners to devise a plan to accommodate deliveries in the downtown area. One option would be to use existing side streets and alleyways for delivery purposes. This may not be feasible for larger delivery vehicles and additional options such as temporary loading zones during certain hours may need to be considered.

On-Street Parking

This analysis assumed that no changes would occur to the existing on-street parking supply on High Street and Main Street. The location of existing parking spaces, handicapped parking spaces and no parking zones should be reviewed to determine what changes would be necessary in order to accommodate the additional turning movements permitted on a two-way street.

Safety

Prior to any change from one-way to two-way traffic flow, it recommended that the City of Holyoke conduct a comprehensive analysis of the impact of two-way flow on existing safety. The location of existing streetlights, benches, and trash cans should be reviewed to determine if they obscure sight distance in the direction of opposing traffic and turning movements. Particular attention will be required at the intersection of High Street with Appleton Street where southbound traffic on High Street must be directed to Appleton Street and northbound traffic on High Street must taper down to one travel lane. The City should also consider an extensive media campaign to alert residents and motorists of the time and location of any upcoming changes to traffic flow in the downtown area.

Transit

The redevelopment of the Maple Street Fire Station as an Intermodal Center is currently under study by a private consulting firm. An Intermodal Center operates best with two-way traffic flow on Maple Street. This also requires the elimination of some on-street parking in this area. The implementation of two-way traffic flow on High Street and Maple Street from Appleton Street to Lyman Street would provide more flexible transit route options in the vicinity of the proposed Intermodal Center.

APPENDIX

Location : Holyoke
Operator : RM, DS
Counter#: 0996
Func. Class : U4
Street name :Appleton St. Cross street:Btwn. Maple & High Sts. ,

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Site Code : 000000008817
Start Date: 08/06/2001
File I.D. : 8817

Begin Time	Mon. 08/06 SB	Mon. 08/06 NB	Tues. SB	Tues. NB	Wed. SB	Wed. NB	Thur. SB	Thur. NB	Fri. SB	Fri. NB	Weekday Avg. SB	Weekday Avg. NB	Sat. SB	Sat. NB	Sun. SB	Sun. NB
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Avg. Day	.0%	.0%	43.1%	51.1%	99.8%	98.7%	57.1%	50.1%	.0%	.0%			.0%	.0%	.0%	.0%
AM Peaks					11:00	11:00	08:00	11:00			08:00	11:00				
Volume					219	221	242	302			228	262				
PM Peaks			03:00	03:00	12:00	03:00	01:00	12:00			01:00	03:00				
Volume			233	310	231	343	222	314			224	326				

ADTs

Location : Holyoke
Operator : RM, DS
Counter#: 1221
Func. Class : U5
Street name :Dwight St. Cross street:Btwn. High & Maple St. ,

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Site Code : 000000008822
Start Date: 08/27/2001
File I.D. : 8822
Page : 1

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09:00	*	*	74	35	67	47	*	*	*	*	70	41	*	*	*	*
10:00	*	*	51	22	50	37	*	*	*	*	50	30	*	*	*	*
11:00	*	*	40	25	36	23	*	*	*	*	38	24	*	*	*	*
Totals	0	0	1588	1007	2640	2216	1239	1039	0	0	2733	2129	0	0	0	0
	0		2595		4856		2278		0		4862		0		0	
Avg. Day	.0%	.0%	58.1%	47.3%	96.6%	104.0%	45.3%	48.8%	.0%	.0%			.0%	.0%	.0%	.0%
AM Peaks					10:00	11:00	10:00	11:00			10:00	11:00				
Volume					209	332	240	206			224	269				
PM Peaks			02:00	02:00	01:00	12:00	12:00	12:00			02:00	12:00				
Volume			252	173	271	261	179	219			261	240				

ADTs

Location : Holyoke
Operator : RM, DS
Counter#: 1223
Func. Class : U0

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Site Code : 000000008823
Start Date: 08/27/2001
File I.D. : 8823

Street name :Hampden St. Cross street:Btwn. High & Maple St.

Begin Time	Mon. 08/27 WB	Mon. 08/27 EB	Tues. WB	Tues. EB	Wed. WB	Wed. EB	Thur. WB	Thur. EB	Fri. WB	Fri. EB	Weekday Avg. WB	Weekday Avg. EB	Sat. WB	Sat. EB	Sun. WB	Sun. EB
12:00 am	*	*	*	*	13	2	24	12	*	*	18	7	*	*	*	*
01:00	*	*	*	*	9	2	12	4	*	*	10	3	*	*	*	*
02:00	*	*	*	*	4	1	13	6	*	*	8	4	*	*	*	*
03:00	*	*	*	*	1	4	2	1	*	*	2	2	*	*	*	*
04:00	*	*	*	*	3	3	5	0	*	*	4	2	*	*	*	*
05:00	*	*	*	*	14	2	26	1	*	*	20	2	*	*	*	*
06:00	*	*	*	*	34	12	23	7	*	*	28	10	*	*	*	*
07:00	*	*	*	*	40	22	47	30	*	*	44	26	*	*	*	*
08:00	*	*	*	*	84	35	93	40	*	*	88	38	*	*	*	*
09:00	*	*	*	*	74	35	114	48	*	*	94	42	*	*	*	*
10:00	*	*	*	*	117	54	121	46	*	*	119	50	*	*	*	*
11:00	*	*	*	*	346	100	102	74	*	*	224	87	*	*	*	*
12:00 pm	*	*	154	70	235	78	117	79	*	*	169	76	*	*	*	*
01:00	*	*	151	70	146	49	*	*	*	*	148	60	*	*	*	*
02:00	*	*	135	45	146	57	*	*	*	*	140	51	*	*	*	*
03:00	*	*	127	46	168	54	*	*	*	*	148	50	*	*	*	*
04:00	*	*	150	42	176	46	*	*	*	*	163	44	*	*	*	*
05:00	*	*	126	40	128	29	*	*	*	*	127	34	*	*	*	*
06:00	*	*	79	33	101	45	*	*	*	*	90	39	*	*	*	*
07:00	*	*	77	25	73	36	*	*	*	*	75	30	*	*	*	*
08:00	*	*	43	25	49	28	*	*	*	*	46	26	*	*	*	*
09:00	*	*	47	22	54	17	*	*	*	*	50	20	*	*	*	*
10:00	*	*	28	6	46	10	*	*	*	*	37	8	*	*	*	*
11:00	*	*	32	7	30	7	*	*	*	*	31	7	*	*	*	*
Totals	0	0	1149	431	2091	728	699	348	0	0	1883	718	0	0	0	0
	0		1580		2819		1047		0		2601		0		0	
Avg. Day	.0%	.0%	61.0%	60.0%	111.0%	101.3%	37.1%	48.4%	.0%	.0%			.0%	.0%	.0%	.0%
AM Peaks					11:00	11:00	10:00	11:00			11:00	11:00				
Volume					346	100	121	74			224	87				
PM Peaks			12:00	12:00	12:00	12:00	12:00	12:00			12:00	12:00				
Volume			154	70	235	78	117	79			169	76				

ADTs

Location :Holyoke
Operator :DS,RM
Counter#:0996
Func. Class :U2
Street name :Lyman Street Cross street:Btwn. High & Maple Streets ,

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Site Code : 000000008820
Start Date: 08/27/2001
File I.D. : 8820
Page : 1

Begin	Mon.	08/27	Tues.		Wed.		Thur.		Fri.		Weekday	Avg.	Sat.		Sun.	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 am	*	*	*	*	37	63	33	66	*	*	35	64	*	*	*	*
01:00	*	*	*	*	14	30	24	48	*	*	19	39	*	*	*	*
02:00	*	*	*	*	8	21	19	37	*	*	14	29	*	*	*	*
03:00	*	*	*	*	11	18	7	23	*	*	9	20	*	*	*	*
04:00	*	*	*	*	12	12	11	17	*	*	12	14	*	*	*	*
05:00	*	*	*	*	27	48	19	30	*	*	23	39	*	*	*	*
06:00	*	*	*	*	115	131	108	117	*	*	112	124	*	*	*	*
07:00	*	*	*	*	122	202	174	198	*	*	148	200	*	*	*	*
08:00	*	*	*	*	199	278	152	250	*	*	176	264	*	*	*	*
09:00	*	*	*	*	146	297	140	307	*	*	143	302	*	*	*	*
10:00	*	*	*	*	141	299	157	305	*	*	149	302	*	*	*	*
11:00	*	*	*	*	172	375	169	312	*	*	170	344	*	*	*	*
12:00 pm	*	*	186	368	182	379	172	275	*	*	180	341	*	*	*	*
01:00	*	*	196	365	201	375	*	*	*	*	198	370	*	*	*	*
02:00	*	*	200	404	170	380	*	*	*	*	185	392	*	*	*	*
03:00	*	*	187	471	219	466	*	*	*	*	203	468	*	*	*	*
04:00	*	*	210	488	203	455	*	*	*	*	206	472	*	*	*	*
05:00	*	*	152	461	186	407	*	*	*	*	169	434	*	*	*	*
06:00	*	*	183	315	139	284	*	*	*	*	161	300	*	*	*	*
07:00	*	*	68	328	180	282	*	*	*	*	124	305	*	*	*	*
08:00	*	*	87	202	117	223	*	*	*	*	102	212	*	*	*	*
09:00	*	*	73	161	91	184	*	*	*	*	82	172	*	*	*	*
10:00	*	*	74	128	70	134	*	*	*	*	72	131	*	*	*	*
11:00	*	*	39	84	33	87	*	*	*	*	36	86	*	*	*	*
Totals	0	0	1655	3775	2795	5430	1185	1985	0	0	2728	5424	0	0	0	0
	0		5430		8225		3170		0		8152		0		0	
Avg. Day	.0%	.0%	60.6%	69.6%	102.4%	100.1%	43.4%	36.6%	.0%	.0%			.0%	.0%	.0%	.0%
AM Peaks					08:00	11:00	07:00	11:00			08:00	11:00				
Volume					199	375	174	312			176	344				
PM Peaks			04:00	04:00	03:00	03:00	12:00	12:00			04:00	04:00				
Volume			210	488	219	466	172	275			206	472				

ADTs

Location :Holyoke
Operator :AM,DS
Counter#:0996
Func. Class :LO
Street name :Suffolk Street Cross street:Btwn Maple & High Streets ,

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA. 01089-2787
(413) 781-6045 Email: www.PVPC.org

Site Code : 000000008821
Start Date: 09/17/2001
File I.D. : 8821

Begin Time	Mon. 09/17 WB	EB	Tues. WB	EB	Wed. WB	EB	Thur. WB	EB	Fri. WB	EB	Weekday Avg. WB	EB	Sat. WB	EB	Sun. WB	EB
12:00 am	*	*	*	*	11	1	16	1	*	*	14	1	*	*	*	*
01:00	*	*	*	*	6	2	11	5	*	*	8	4	*	*	*	*
02:00	*	*	*	*	5	1	8	1	*	*	6	1	*	*	*	*
03:00	*	*	*	*	8	4	6	3	*	*	7	4	*	*	*	*
04:00	*	*	*	*	7	1	9	2	*	*	8	2	*	*	*	*
05:00	*	*	*	*	15	3	16	2	*	*	16	2	*	*	*	*
06:00	*	*	*	*	39	5	57	9	*	*	48	7	*	*	*	*
07:00	*	*	*	*	93	30	98	28	*	*	96	29	*	*	*	*
08:00	*	*	*	*	141	69	145	91	*	*	143	80	*	*	*	*
09:00	*	*	*	*	172	36	156	75	*	*	164	56	*	*	*	*
10:00	*	*	*	*	153	70	73	214	*	*	113	142	*	*	*	*
11:00	*	*	*	*	175	63	372	75	*	*	274	69	*	*	*	*
12:00 pm	*	*	*	*	157	57	*	*	*	*	157	57	*	*	*	*
01:00	*	*	135	72	162	74	*	*	*	*	148	73	*	*	*	*
02:00	*	*	172	70	172	65	*	*	*	*	172	68	*	*	*	*
03:00	*	*	188	66	185	61	*	*	*	*	186	64	*	*	*	*
04:00	*	*	177	48	168	52	*	*	*	*	172	50	*	*	*	*
05:00	*	*	127	31	146	39	*	*	*	*	136	35	*	*	*	*
06:00	*	*	98	23	97	27	*	*	*	*	98	25	*	*	*	*
07:00	*	*	65	24	77	12	*	*	*	*	71	18	*	*	*	*
08:00	*	*	51	11	45	17	*	*	*	*	48	14	*	*	*	*
09:00	*	*	50	9	36	17	*	*	*	*	43	13	*	*	*	*
10:00	*	*	24	7	22	7	*	*	*	*	23	7	*	*	*	*
11:00	*	*	22	8	26	8	*	*	*	*	24	8	*	*	*	*
Totals	0	0	1109	369	2118	721	967	506	0	0	2175	829	0	0	0	0
	0		1478		2839		1473		0		3004		0		0	
Avg. Day	.0%	.0%	50.9%	44.5%	97.3%	86.9%	44.4%	61.0%	.0%	.0%			.0%	.0%	.0%	.0%
AM Peaks					11:00	10:00	11:00	10:00			11:00	10:00				
Volume					175	70	372	214			274	142				
PM Peaks			03:00	01:00	03:00	01:00					03:00	01:00				
Volume			188	72	185	74					186	73				

ADTs

Location : Holyoke
Operator : RM, DS
Counter#: 1220
Func. Class : U4
Street name :High St. Cross street:S/O Dwight St.

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA. 01089-2787
(413) 781-6045 Email: www.PVPC.org

Site Code : 000000008815
Start Date: 07/30/2001
File I.D. : 8815

Begin Time	Mon. 07/30	Tues. 07/31	Wed. 08/01	Thur. 08/02	Fri. 08/03	Weekday Avg.	Sat. 08/04	Sun. 08/05	Week Avg.	Each * Equals 25 Vehicles
12:00 am	*	*	67	108	*	88	*	*	88	****
01:00	*	*	37	54	*	46	*	*	46	**
02:00	*	*	25	27	*	26	*	*	26	*
03:00	*	*	15	11	*	13	*	*	13	*
04:00	*	*	18	24	*	21	*	*	21	*
05:00	*	*	41	55	*	48	*	*	48	**
06:00	*	*	112	100	*	106	*	*	106	****
07:00	*	*	210	169	*	190	*	*	190	********
08:00	*	*	322	359	*	340	*	*	340	**************
09:00	*	*	359	499	*	429	*	*	429	******************
10:00	*	*	372	562	*	467	*	*	467	********************
11:00	*	*	438	242	*	340	*	*	340	**************
12:00 pm	*	452	498	*	*	475	*	*	475	********************
01:00	*	440	480	*	*	460	*	*	460	********************
02:00	*	436	479	*	*	458	*	*	458	********************
03:00	*	515	510	*	*	512	*	*	512	**********************
04:00	*	506	543	*	*	524	*	*	524	**********************
05:00	*	381	430	*	*	406	*	*	406	*****************
06:00	*	317	335	*	*	326	*	*	326	**************
07:00	*	287	281	*	*	284	*	*	284	************
08:00	*	238	283	*	*	260	*	*	260	**********
09:00	*	189	219	*	*	204	*	*	204	********
10:00	*	133	167	*	*	150	*	*	150	******
11:00	*	100	132	*	*	116	*	*	116	*****
Totals	0	3994	6373	2210	0	6289	0	0	6289	
% Avg. WkDa	.0%	63.5%	101.3%	35.1%	.0%					
% Avg. Day	.0%	63.5%	101.3%	35.1%	.0%		.0%	.0%		
AM Peak			11:00	10:00		10:00			10:00	
Volume			438	562		467			467	
PM Peak		03:00	04:00			04:00			04:00	
Volume		515	543			524			524	

ADTs

Location :Holyoke
Operator :DS,RM
Counter#:0996
Func. Class :U4
Street name :High Street Cross street:N/O Dwight Street

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA. 01089-2787
(413) 781-6045 Email: www.PVPC.org

Site Code : 000000008816
Start Date: 07/30/2001
File I.D. : 8816

Begin Time	Mon. 07/30 NB		Tues. NB		Wed. NB		Thur. NB		Fri. NB		Weekday NB	Avg.	Sat. NB		Sun. NB	
12:00 am	*	*	*	*	62	0	110	0	*	*	86	0	*	*	*	*
01:00	*	*	*	*	44	0	62	0	*	*	53	0	*	*	*	*
02:00	*	*	*	*	25	0	34	0	*	*	30	0	*	*	*	*
03:00	*	*	*	*	13	0	22	0	*	*	18	0	*	*	*	*
04:00	*	*	*	*	20	0	19	0	*	*	20	0	*	*	*	*
05:00	*	*	*	*	44	0	47	0	*	*	46	0	*	*	*	*
06:00	*	*	*	*	117	0	119	0	*	*	118	0	*	*	*	*
07:00	*	*	*	*	207	0	233	0	*	*	220	0	*	*	*	*
08:00	*	*	*	*	410	0	420	0	*	*	415	0	*	*	*	*
09:00	*	*	*	*	508	0	511	0	*	*	510	0	*	*	*	*
10:00	*	*	*	*	506	0	509	0	*	*	508	0	*	*	*	*
11:00	*	*	*	*	522	0	518	0	*	*	520	0	*	*	*	*
12:00 pm	*	*	556	0	582	0	570	0	*	*	569	0	*	*	*	*
01:00	*	*	520	0	579	0	*	*	*	*	550	0	*	*	*	*
02:00	*	*	522	0	597	0	*	*	*	*	560	0	*	*	*	*
03:00	*	*	578	0	617	0	*	*	*	*	598	0	*	*	*	*
04:00	*	*	568	0	591	0	*	*	*	*	580	0	*	*	*	*
05:00	*	*	417	0	444	0	*	*	*	*	430	0	*	*	*	*
06:00	*	*	326	0	370	0	*	*	*	*	348	0	*	*	*	*
07:00	*	*	290	0	296	0	*	*	*	*	293	0	*	*	*	*
08:00	*	*	239	0	330	0	*	*	*	*	284	0	*	*	*	*
09:00	*	*	204	0	217	0	*	*	*	*	210	0	*	*	*	*
10:00	*	*	135	0	164	0	*	*	*	*	150	0	*	*	*	*
11:00	*	*	117	0	141	0	*	*	*	*	129	0	*	*	*	*
Totals	0	0	4472	0	7406	0	3174	0	0	0	7245	0	0	0	0	0
	0		4472		7406		3174		0		7245		0		0	
Avg. Day	.0%	*	61.7%	*	102.2%	*	43.8%	*	.0%	*			.0%	*	.0%	*
AM Peaks					11:00		11:00				11:00					
Volume					522		518				520					
PM Peaks			03:00		03:00		12:00				03:00					
Volume			578		617		570				598					

ADTs

Location : Holyoke
Operator : RM, DS
Counter#: 0997
Func. Class :U4
Street name :Maple St. Cross street:S/O Dwight St.

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Site Code : 000000008813
Start Date: 07/30/2001
File I.D. : 8813
Page : 1

Begin Time	Mon. 07/30	Tues. 07/31	Wed. 08/01	Thur. 08/02	Fri. 08/03	Weekday Avg.	Sat. 08/04	Sun. 08/05	Week Avg.	Each * Equals 25 Vehicles
12:00 am	*	*	57	93	*	75	*	*	75	***
01:00	*	*	55	88	*	72	*	*	72	***
02:00	*	*	35	40	*	38	*	*	38	**
03:00	*	*	17	31	*	24	*	*	24	*
04:00	*	*	43	42	*	42	*	*	42	**
05:00	*	*	103	129	*	116	*	*	116	*****
06:00	*	*	299	303	*	301	*	*	301	************
07:00	*	*	474	425	*	450	*	*	450	******************
08:00	*	*	677	678	*	678	*	*	678	***************************
09:00	*	*	717	675	*	696	*	*	696	****************************
10:00	*	*	700	720	*	710	*	*	710	****************************
11:00	*	*	884	677	*	780	*	*	780	********************************>
12:00 pm	*	*	888	817	*	852	*	*	852	********************************>
01:00	*	743	804	*	*	774	*	*	774	********************************>
02:00	*	772	816	*	*	794	*	*	794	********************************>
03:00	*	795	846	*	*	820	*	*	820	********************************>
04:00	*	787	796	*	*	792	*	*	792	********************************>
05:00	*	551	609	*	*	580	*	*	580	**********************
06:00	*	379	527	*	*	453	*	*	453	******************
07:00	*	391	403	*	*	397	*	*	397	****************
08:00	*	302	345	*	*	324	*	*	324	************
09:00	*	297	253	*	*	275	*	*	275	***********
10:00	*	186	256	*	*	221	*	*	221	*********
11:00	*	104	161	*	*	132	*	*	132	*****
Totals	0	5307	10765	4718	0	10396	0	0	10396	
% Avg. WkDa	.0%	51.0%	103.5%	45.3%	.0%					
% Avg. Day	.0%	51.0%	103.5%	45.3%	.0%		.0%	.0%		
AM Peak			11:00	10:00		11:00			11:00	
Volume			884	720		780			780	
PM Peak		03:00	12:00	12:00		12:00			12:00	
Volume		795	888	817		852			852	

ADTs

Location : Holyoke
Operator : RM, DS
Counter#: 1221
Func. Class : U4
Street name :Maple St. Cross street:N/O Dwight St.

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Site Code : 000000008814
Start Date: 07/30/2001
File I.D. : 8814
Page : 1

Begin Time	Mon. 07/30	Tues. 07/31	Wed. 08/01	Thur. 08/02	Fri. 08/03	Weekday Avg.	Sat. 08/04	Sun. 08/05	Week Avg.	Each * Equals 25 Vehicles
12:00 am	*	*	35	61	*	48	*	*	48	**
01:00	*	*	28	43	*	36	*	*	36	*
02:00	*	*	26	25	*	26	*	*	26	*
03:00	*	*	7	14	*	10	*	*	10	
04:00	*	*	18	20	*	19	*	*	19	*
05:00	*	*	70	79	*	74	*	*	74	***
06:00	*	*	170	187	*	178	*	*	178	*******
07:00	*	*	321	314	*	318	*	*	318	************
08:00	*	*	387	359	*	373	*	*	373	**************
09:00	*	*	333	381	*	357	*	*	357	*************
10:00	*	*	316	397	*	356	*	*	356	*************
11:00	*	*	415	340	*	378	*	*	378	**************
12:00 pm	*	*	464	*	*	464	*	*	464	******************
01:00	*	369	398	*	*	384	*	*	384	***************
02:00	*	374	365	*	*	370	*	*	370	**************
03:00	*	387	405	*	*	396	*	*	396	****************
04:00	*	378	366	*	*	372	*	*	372	**************
05:00	*	271	336	*	*	304	*	*	304	************
06:00	*	232	299	*	*	266	*	*	266	**********
07:00	*	227	213	*	*	220	*	*	220	*********
08:00	*	173	195	*	*	184	*	*	184	*******
09:00	*	174	181	*	*	178	*	*	178	*******
10:00	*	104	129	*	*	116	*	*	116	*****
11:00	*	56	108	*	*	82	*	*	82	***
Totals	0	2745	5585	2220	0	5509	0	0	5509	
% Avg. WkDa	.0%	49.8%	101.3%	40.3%	.0%					
% Avg. Day	.0%	49.8%	101.3%	40.3%	.0%		.0%	.0%		
AM Peak			11:00	10:00		11:00			11:00	
Volume			415	397		378			378	
PM Peak		03:00	12:00			12:00			12:00	
Volume		387	464			464			464	

ADTs

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

Location: Holyoke
Counter #: 0944
Operator: TT
Fun. Class: U4

File Name : 5170PM
Site Code : 00005170
Start Date : 08/22/2001
Page No : 1

Groups Printed- Unshifted

	Appleton Street From East			High Street From South				Appleton Street From West			
End Time	Right	Thru	Trucks	Right	Thru	Left	Trucks	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	
04:15 PM	6	51	0	14	133	43	4	37	19	0	307
04:30 PM	14	44	0	17	123	41	4	37	16	0	296
04:45 PM	9	42	0	13	128	37	0	38	17	2	286
05:00 PM	20	52	0	12	93	40	0	25	15	0	257
Total	49	189	0	56	477	161	8	137	67	2	1146
05:15 PM	13	43	0	10	117	31	1	29	12	2	258
05:30 PM	6	42	2	8	86	38	0	28	15	1	226
05:45 PM	16	19	0	12	122	37	1	22	5	1	235
06:00 PM	8	24	0	12	95	23	1	30	7	1	201
Total	43	128	2	42	420	129	3	109	39	5	920
Grand Total	92	317	2	98	897	290	11	246	106	7	2066
Apprch %	22.4	77.1	0.5	7.6	69.2	22.4	0.8	68.5	29.5	1.9	
Total %	4.5	15.3	0.1	4.7	43.4	14.0	0.5	11.9	5.1	0.3	

	Appleton Street From East				High Street From South					Appleton Street From West				
End Time	Right	Thru	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Thru	Left	Trucks	App. Total	Int. Total
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1														
Intersection	04:15 PM													
→ Volume	49	189	0	238	56	477	161	8	702	137	67	2	206	1146
Percent	20.6	79.4	0.0		8.0	67.9	22.9	1.1		66.5	32.5	1.0		
04:15 Volume	6	51	0	57	14	133	43	4	194	37	19	0	56	307
Peak Factor														0.933
High Int.	05:00 PM				04:15 PM					04:45 PM				
Volume	20	52	0	72	14	133	43	4	194	38	17	2	57	
Peak Factor				0.826					0.905				0.904	

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

Location: Holyoke
Counter #:0944
Operator: AM
Fun. Class: U4

File Name : 5173
Site Code : 00005173
Start Date : 09/25/2001
Page No : 1

Groups Printed- Unshifted

	Suffolk Street From East				High Street From South				Suffolk Street From West				
End Time	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	
04:15 PM	3	3	0	0	5	108	38	2	0	2	8	0	169
04:30 PM	9	6	0	0	6	118	29	5	0	3	7	0	183
04:45 PM	0	8	0	0	4	122	35	2	0	4	4	0	179
05:00 PM	6	12	0	0	5	111	35	1	0	3	10	0	183
Total	18	29	0	0	20	459	137	10	0	12	29	0	714
05:15 PM	3	4	0	0	3	96	25	1	0	1	7	0	140
05:30 PM	0	2	0	0	5	87	32	5	0	3	7	0	141
05:45 PM	1	0	0	0	3	94	24	4	0	0	7	0	133
06:00 PM	1	2	0	0	1	77	22	1	0	1	5	1	111
Total	5	8	0	0	12	354	103	11	0	5	26	1	525
Grand Total	23	37	0	0	32	813	240	21	0	17	55	1	1239
Apprch %	38.3	61.7	0.0	0.0	2.9	73.5	21.7	1.9	0.0	23.3	75.3	1.4	
Total %	1.9	3.0	0.0	0.0	2.6	65.6	19.4	1.7	0.0	1.4	4.4	0.1	

	Suffolk Street From East					High Street From South					Suffolk Street From West					
End Time	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Int. Total
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1																
Intersection	04:15 PM															
→ Volume	18	29	0	0	47	20	459	137	10	626	0	12	29	0	41	714
Percent	38.3	61.7	0.0	0.0		3.2	73.3	21.9	1.6		0.0	29.3	70.7	0.0		
05:00 Volume	6	12	0	0	18	5	111	35	1	152	0	3	10	0	13	183
Peak Factor																0.975
High Int.	05:00 PM					04:45 PM					05:00 PM					
Volume	6	12	0	0	18	4	122	35	2	163	0	3	10	0	13	
Peak Factor					0.653					0.960					0.788	

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

Location: Holyoke
Counter #: 0846
Operator: DS
Fun. Class: U4

File Name : 5171
Site Code : 00005171
Start Date : 09/11/2001
Page No : 1

Groups Printed- Unshifted

	Dwight Street From East			High Street From South				Dwight Street From West			
Start Time	Right	Thru	Trucks	Right	Thru	Left	Trucks	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	
04:00 PM	9	36	1	13	88	30	3	11	8	1	200
04:15 PM	11	49	0	14	76	22	8	7	9	1	197
04:30 PM	7	29	0	6	98	16	1	14	11	0	182
04:45 PM	11	27	1	8	77	20	7	13	3	1	168
Total	38	141	2	41	339	88	19	45	31	3	747
05:00 PM	14	29	0	9	95	11	1	8	7	1	175
05:15 PM	7	23	0	8	75	15	5	8	7	1	149
05:30 PM	7	14	0	11	65	16	4	8	8	0	133
05:45 PM	6	15	0	7	76	11	9	15	6	0	145
Total	34	81	0	35	311	53	19	39	28	2	602
Grand Total	72	222	2	76	650	141	38	84	59	5	1349
Apprch %	24.3	75.0	0.7	8.4	71.8	15.6	4.2	56.8	39.9	3.4	
Total %	5.3	16.5	0.1	5.6	48.2	10.5	2.8	6.2	4.4	0.4	

	Dwight Street From East				High Street From South					Dwight Street From West				
Start Time	Right	Thru	Trucks	App. Total	Right	Thru	Left	Trucks	App. Total	Thru	Left	Trucks	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1														
Intersection	04:00 PM													
→ Volume	38	141	2	181	41	339	88	19	487	45	31	3	79	747
Percent	21.0	77.9	1.1		8.4	69.6	18.1	3.9		57.0	39.2	3.8		
04:00 Volume	9	36	1	46	13	88	30	3	134	11	8	1	20	200
Peak Factor														0.934
High Int.	04:15 PM				04:00 PM					04:30 PM				
Volume	11	49	0	60	13	88	30	3	134	14	11	0	25	
Peak Factor				0.754					0.909				0.790	

Pioneer Valley Planning Commission
26 Central Street
West Springfield, MA 01089
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Location: Holyoke
Counter #: 0846
Operator: LW
Fun. Class: U4

File Name : 5137
Site Code : 00005137
Start Date : 03/28/2001
Page No : 1

Groups Printed- Unshifted

	High Street Southbound	Hampden Street Westbound			High Street Northbound					Hampden Street Eastbound				
Start Time	Peds	Right	Thru	Peds	Right	Thru	Left	Truck	Peds	Truck	Thru	Left	Peds	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	
04:00 PM	0	1	7	4	5	68	27	0	7	0	6	11	1	137
04:15 PM	0	1	3	0	5	84	33	5	8	0	12	7	5	163
04:30 PM	0	0	7	0	10	110	49	2	13	2	9	12	0	214
04:45 PM	0	0	3	2	7	90	33	3	10	1	5	3	0	157
Total	0	2	20	6	27	352	142	10	38	3	32	33	6	671
05:00 PM	1	3	5	6	11	80	42	1	22	0	5	6	2	184
05:15 PM	3	6	3	7	7	83	29	3	8	0	4	6	2	161
05:30 PM	6	1	0	4	8	53	21	1	7	0	4	7	1	113
05:45 PM	9	4	4	3	5	57	30	3	3	0	4	8	2	132
Total	19	14	12	20	31	273	122	8	40	0	17	27	7	590
Grand Total	19	16	32	26	58	625	264	18	78	3	49	60	13	1261
Apprch %	100.0	21.6	43.2	35.1	5.6	59.9	25.3	1.7	7.5	2.4	39.2	48.0	10.4	
Total %	1.5	1.3	2.5	2.1	4.6	49.6	20.9	1.4	6.2	0.2	3.9	4.8	1.0	

	High Street Southbound		Hampden Street Westbound				High Street Northbound						Hampden Street Eastbound					
Start Time	Peds	App. Total	Right	Thru	Peds	App. Total	Right	Thru	Left	Truck	Peds	App. Total	Truck	Thru	Left	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Intersection	04:15 PM																	
Volume	1	1	4	18	8	30	33	364	157	11	53	618	3	31	28	7	69	718
Percent	100.0		13.3	60.0	26.7		5.3	58.9	25.4	1.8	8.6		4.3	44.9	40.6	10.1		
04:30 Volume	0	0	0	7	0	7	10	110	49	2	13	184	2	9	12	0	23	214
Peak Factor																		0.839
High Int.	05:00 PM		05:00 PM				04:30 PM						04:15 PM					
Volume	1	1	3	5	6	14	10	110	49	2	13	184	0	12	7	5	24	
Peak Factor		0.250				0.536						0.840					0.719	

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

Location: Holyoke
Counter #: 0846
Operator: TT
Fun. Class: U4

File Name : 5172PM
Site Code : 00005172
Start Date : 08/28/2001
Page No : 1

Groups Printed- Unshifted

	Lyman Street From East		High Street From South			Lyman Street From West		
End Time	Thru	Trucks	Right	Left	Trucks	Thru	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	69	0	41	52	3	27	0	192
04:30 PM	63	2	33	57	1	24	0	180
04:45 PM	66	2	34	47	0	21	0	170
05:00 PM	69	0	33	43	1	29	0	175
Total	267	4	141	199	5	101	0	717
05:15 PM	73	0	43	47	0	23	1	187
05:30 PM	76	0	32	47	1	20	0	176
05:45 PM	54	1	26	46	0	12	0	139
06:00 PM	46	0	33	41	0	25	0	145
Total	249	1	134	181	1	80	1	647
Grand Total	516	5	275	380	6	181	1	1364
Apprch %	99.0	1.0	41.6	57.5	0.9	99.5	0.5	
Total %	37.8	0.4	20.2	27.9	0.4	13.3	0.1	

	Lyman Street From East			High Street From South				Lyman Street From West			
End Time	Thru	Trucks	App. Total	Right	Left	Trucks	App. Total	Thru	Trucks	App. Total	Int. Total
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1											
Intersection	04:15 PM										
→ Volume	267	4	271	141	199	5	345	101	0	101	717
Percent	98.5	1.5		40.9	57.7	1.4		100.0	0.0		
04:15 Volume	69	0	69	41	52	3	96	27	0	27	192
Peak Factor											0.934
High Int.	04:15 PM			04:15 PM				05:00 PM			
Volume	69	0	69	41	52	3	96	29	0	29	
Peak Factor			0.982				0.898			0.871	

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

Location: Holyoke
Counter #: 0945
Operator: JL
Fun. Class: U4

File Name : 5169PMA
Site Code : 00005169
Start Date : 08/22/2001
Page No : 1

Groups Printed- Unshifted

	Maple Street From North				Lyman Street From East				Lyman Street From West				
Start Time	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	
04:00 PM	0	6	0	0	5	58	41	4	12	29	2	1	158
04:15 PM	1	7	2	0	2	63	38	2	6	24	1	0	146
04:30 PM	0	1	1	0	3	58	38	3	9	21	2	1	137
04:45 PM	0	4	3	0	4	93	25	2	14	26	1	1	173
Total	1	18	6	0	14	272	142	11	41	100	6	3	614
05:00 PM	0	5	3	0	2	58	44	1	6	23	1	0	143
05:15 PM	1	5	0	0	5	60	21	1	8	20	1	0	122
05:30 PM	2	0	0	0	6	42	23	1	17	11	2	1	105
05:45 PM	0	3	0	0	1	60	29	0	6	23	1	0	123
Total	3	13	3	0	14	220	117	3	37	77	5	1	493
Grand Total	4	31	9	0	28	492	259	14	78	177	11	4	1107
Apprch %	9.1	70.5	20.5	0.0	3.5	62.0	32.7	1.8	28.9	65.6	4.1	1.5	
Total %	0.4	2.8	0.8	0.0	2.5	44.4	23.4	1.3	7.0	16.0	1.0	0.4	

	Maple Street From North					Lyman Street From East					Lyman Street From West					
Start Time	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	04:00 PM															
→ Volume	1	18	6	0	25	14	272	142	11	439	41	100	6	3	150	614
Percent	4.0	72.0	24.0	0.0		3.2	62.0	32.3	2.5		27.3	66.7	4.0	2.0		
04:45 Volume	0	4	3	0	7	4	93	25	2	124	14	26	1	1	42	173
Peak Factor																0.887
High Int.	04:15 PM					04:45 PM					04:00 PM					
Volume	1	7	2	0	10	4	93	25	2	124	12	29	2	1	44	
Peak Factor					0.625					0.885					0.852	

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

Location: Holyoke
Counter #: 1009
Operator: JL
Fun. Class: U4

File Name : 5165PM
Site Code : 00005165
Start Date : 08/20/2001
Page No : 1

Groups Printed- Unshifted

	Maple Street From North				Suffolk Street From East			Suffolk Street From West			
End Time	Right	Thru	Left	Trucks	Thru	Left	Trucks	Right	Thru	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	11	146	10	4	19	15	1	36	8	0	250
04:30 PM	21	74	4	1	82	10	0	11	3	0	206
04:45 PM	12	99	5	4	57	22	1	17	3	1	221
05:00 PM	11	137	7	3	26	15	0	18	11	0	228
Total	55	456	26	12	184	62	2	82	25	1	905
05:15 PM	14	164	5	4	21	16	0	15	7	0	246
05:30 PM	3	106	2	4	20	19	0	21	8	0	183
05:45 PM	7	110	1	2	21	12	0	20	4	0	177
06:00 PM	3	89	1	0	12	6	0	15	1	0	127
Total	27	469	9	10	74	53	0	71	20	0	733
Grand Total	82	925	35	22	258	115	2	153	45	1	1638
Apprch %	7.7	86.9	3.3	2.1	68.8	30.7	0.5	76.9	22.6	0.5	
Total %	5.0	56.5	2.1	1.3	15.8	7.0	0.1	9.3	2.7	0.1	

	Maple Street From North					Suffolk Street From East				Suffolk Street From West				
End Time	Right	Thru	Left	Trucks	App. Total	Thru	Left	Trucks	App. Total	Right	Thru	Trucks	App. Total	Int. Total
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1														
Intersection	04:15 PM													
Volume	55	456	26	12	549	184	62	2	248	82	25	1	108	905
Percent	10.0	83.1	4.7	2.2		74.2	25.0	0.8		75.9	23.1	0.9		
04:15 Volume	11	146	10	4	171	19	15	1	35	36	8	0	44	250
Peak Factor														0.905
High Int.	04:15 PM					04:30 PM				04:15 PM				
Volume	11	146	10	4	171	82	10	0	92	36	8	0	44	
Peak Factor					0.803				0.674				0.614	

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

Location: Holyoke
Counter #: 0944
Operator: TT
Fun. Class: U4

File Name : 5168PM
Site Code : 00005168
Start Date : 08/21/2001
Page No : 1

Groups Printed- Unshifted

	Maple Street From North				Hampden Street From East			Hampden Street From West			
End Time	Right	Thru	Left	Trucks	Thru	Left	Trucks	Right	Thru	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	3	56	8	0	19	29	0	26	9	0	150
04:30 PM	8	57	3	1	16	42	0	27	9	0	163
04:45 PM	2	61	1	0	15	27	1	18	6	0	131
05:00 PM	3	50	4	1	22	30	1	24	14	0	149
Total	16	224	16	2	72	128	2	95	38	0	593
05:15 PM	3	47	1	0	17	26	0	23	8	0	125
05:30 PM	12	65	4	1	26	27	0	36	9	0	180
05:45 PM	7	48	3	0	26	24	0	15	5	0	128
06:00 PM	3	35	1	0	26	18	0	18	8	1	110
Total	25	195	9	1	95	95	0	92	30	1	543
Grand Total	41	419	25	3	167	223	2	187	68	1	1136
Apprch %	8.4	85.9	5.1	0.6	42.6	56.9	0.5	73.0	26.6	0.4	
Total %	3.6	36.9	2.2	0.3	14.7	19.6	0.2	16.5	6.0	0.1	

	Maple Street From North					Hampden Street From East				Hampden Street From West				
End Time	Right	Thru	Left	Trucks	App. Total	Thru	Left	Trucks	App. Total	Right	Thru	Trucks	App. Total	Int. Total
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1														
Intersection	04:15 PM													
Volume	16	224	16	2	258	72	128	2	202	95	38	0	133	593
Percent	6.2	86.8	6.2	0.8		35.6	63.4	1.0		71.4	28.6	0.0		
04:30 Volume	8	57	3	1	69	16	42	0	58	27	9	0	36	163
Peak Factor														0.910
High Int.	04:30 PM					04:30 PM				05:00 PM				
Volume	8	57	3	1	69	16	42	0	58	24	14	0	38	
Peak Factor					0.935				0.871				0.875	

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

Location: Holyoke
Counter #: 0846
Operator: JL
Fun. Class: U4

File Name : 5167PMA
Site Code : 00005167
Start Date : 08/21/2001
Page No : 1

Groups Printed- Unshifted

	Maple Street From North				Dwight Street From East			Dwight Street From West			
Start Time	Right	Thru	Left	Trucks	Thru	Left	Trucks	Thru	Right	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	8	102	9	6	20	26	0	19	26	0	216
04:15 PM	8	87	5	0	27	20	0	12	30	0	189
04:30 PM	13	94	5	6	13	36	0	14	32	1	214
04:45 PM	9	70	1	0	25	24	0	15	32	1	177
Total	38	353	20	12	85	106	0	60	120	2	796
05:00 PM	16	113	7	5	18	27	1	13	27	6	233
05:15 PM	8	81	4	2	24	11	1	9	28	0	168
05:30 PM	7	66	4	4	15	11	0	7	26	0	140
05:45 PM	10	62	3	0	8	14	0	13	18	0	128
Total	41	322	18	11	65	63	2	42	99	6	669
Grand Total	79	675	38	23	150	169	2	102	219	8	1465
Apprch %	9.7	82.8	4.7	2.8	46.7	52.6	0.6	31.0	66.6	2.4	
Total %	5.4	46.1	2.6	1.6	10.2	11.5	0.1	7.0	14.9	0.5	

	Maple Street From North					Dwight Street From East				Dwight Street From West				
Start Time	Right	Thru	Left	Trucks	App. Total	Thru	Left	Trucks	App. Total	Thru	Right	Trucks	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1														
Intersection	04:15 PM													
Volume	46	364	18	11	439	83	107	1	191	54	121	8	183	813
Percent	10.5	82.9	4.1	2.5		43.5	56.0	0.5		29.5	66.1	4.4		
05:00 Volume	16	113	7	5	141	18	27	1	46	13	27	6	46	233
Peak Factor														0.872
High Int.	05:00 PM					04:30 PM				04:45 PM				
Volume	16	113	7	5	141	13	36	0	49	15	32	1	48	
Peak Factor					0.778				0.974				0.953	

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

Location: Holyoke
Counter #: 0944
Operator: TT
Fun. Class: U4

File Name : 5166PM
Site Code : 00005166
Start Date : 08/20/2001
Page No : 1

Groups Printed- Unshifted

	Maple St. From North				Appleton St. From East			Appleton St. From West			
End Time	Right	Thru	Left	Trucks	Thru	Left	Trucks	Right	Thru	Trucks	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:15 PM	23	173	15	0	72	15	1	39	29	2	369
04:30 PM	20	142	17	1	40	18	0	55	50	0	343
04:45 PM	22	166	9	2	57	11	1	34	32	0	334
05:00 PM	17	152	13	1	50	21	1	41	29	0	325
Total	82	633	54	4	219	65	3	169	140	2	1371
05:15 PM	19	162	11	0	60	23	0	30	32	1	338
05:30 PM	10	128	12	0	51	14	1	34	25	2	277
05:45 PM	15	106	11	0	50	14	2	28	24	1	251
06:00 PM	16	96	8	2	39	11	1	28	16	1	218
Total	60	492	42	2	200	62	4	120	97	5	1084
Grand Total	142	1125	96	6	419	127	7	289	237	7	2455
Apprch %	10.4	82.2	7.0	0.4	75.8	23.0	1.3	54.2	44.5	1.3	
Total %	5.8	45.8	3.9	0.2	17.1	5.2	0.3	11.8	9.7	0.3	

	Maple St. From North					Appleton St. From East				Appleton St. From West				
End Time	Right	Thru	Left	Trucks	App. Total	Thru	Left	Trucks	App. Total	Right	Thru	Trucks	App. Total	Int. Total
Peak Hour From 04:15 PM to 06:00 PM - Peak 1 of 1														
Intersection	04:15 PM													
→ Volume	82	633	54	4	773	219	65	3	287	169	140	2	311	1371
Percent	10.6	81.9	7.0	0.5		76.3	22.6	1.0		54.3	45.0	0.6		
04:15 Volume	23	173	15	0	211	72	15	1	88	39	29	2	70	369
Peak Factor														0.929
High Int.	04:15 PM					04:15 PM				04:30 PM				
Volume	23	173	15	0	211	72	15	1	88	55	50	0	105	
Peak Factor					0.916				0.815				0.740	