

Technical Memorandum
Pleasant Valley Hamlet Traffic Analysis
Dutchess County, New York
CME Project No. 07-078d

Prepared for:



27 High St., 2nd floor
Poughkeepsie, NY 12601

Prepared by:



17 Computer Drive West
Albany, New York 12205-1683
(518) 446-0396

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17 COMPUTER DRIVE WEST ❖ ALBANY, NY 12205
PHONE 518-446-0396 ❖ FAX 518-446-0397

Memo

To: Kealy Salomon (PDCTC) / Mark Debald (PDCTC)
From: Mark Sargent and Mark Nadolny
CC:
Date: October 18, 2007
Re: Pleasant Valley Hamlet Traffic Analysis
Project: Pleasant Valley Hamlet Traffic Analysis, Dutchess County, New York,
CME Project No. 07-078d

Introduction and Project Description

This memorandum summarizes various traffic engineering evaluations for the Hamlet of Pleasant Valley located in Dutchess County, New York. The purpose of this work is to provide technical support for ongoing planning efforts by the community, Dutchess County and the New York State Department of Transportation (NYSDOT). Two primary transportation alternatives are currently being considered for the area – 1) Access Management Improvements including driveway modifications and shared parking to improve traffic flow (shown in Attachment A) and 2) The extension of Maggiacomo Lane from US Route 44 to County Route (CR) 47 across the Wappinger Creek.

It should be noted that the extension of Maggiacomo Lane was previously analyzed by NYSDOT as part of their *US Route 44 Corridor Study* completed in March of 1996 due to concerns regarding traffic flow in the area. The purpose of the study was to identify alternatives to improve the traffic operating conditions and increase safety through the center of town. The study questioned the cost effectiveness of the improvement for a relatively small overall benefit, and concluded that some improvements in operation would result, but did not recommend the alternative as a feasible solution to the Town's traffic deficiencies.

Methodology

The *Pleasant Valley Hamlet Traffic Analysis* consists of various technical studies throughout the US Route 44 corridor between CR 71 (West Road) and CR 47 (South Avenue), including an origin-destination study, existing conditions analysis, conflict point analysis, alternative conditions analyses, traffic simulation modeling, and a travel speed and delay study. The evaluations were conducted to observe existing traffic flow patterns and operations throughout the corridor, and to quantify traffic operational benefits of the two primary alternatives. The study area for this analysis includes the following intersections.

- US Route 44 / CR 71 (West Road)
- US Route 44 / CR 72 (North Ave) / Maggiacomo Lane
- US Route 44 / CR 47 (South Ave)
- US Route 44 / Quaker Hill Road
- CR 72 / Quaker Hill Road
- CR 72 / Milestone Plaza

The following diagram shows the study area location.

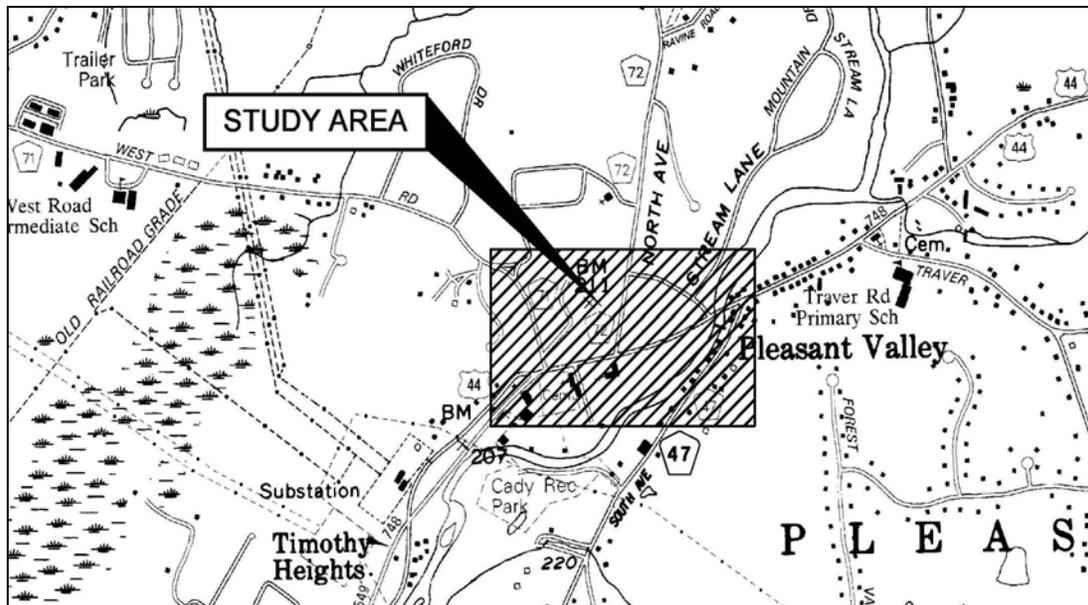


Figure 1. Project Study Area

Existing Conditions

a. Existing Roadways Serving the Site

US Route 44 provides east/west travel through the Hamlet of Pleasant Valley and is classified as a rural principal arterial. US Route 44 generally consists of one 12-foot travel lane in each direction separated by a two way left turn lane throughout the study area with paved shoulders varying in width from 0-8 feet. According to the 2005 *Highway Sufficiency Ratings* published by the NYSDOT,

the pavement is rated in good condition in the vicinity of the project. The posted speed limit on US Route 44 between CR 71 and CR 47 is 30 mph.

b. Study Area Intersections

Intersection traffic control and geometry in the study area are as follows:

- US Route 44 / CR 71 (West Road) – This is a three-way intersection operating under signal control. The southbound CR 71 approach provides exclusive right- and left-turn lanes. The eastbound US Route 44 approach provides a single through lane and a left-turn lane. The westbound US Route 44 approach provides a single lane for shared right-turn and through movements.
- US Route 44 / CR 72 (North Ave) / Maggiacomo Lane – This is a four-way intersection operating under signal control. The northbound Maggiacomo Lane approach provides a single lane for shared travel movements. The southbound CR 72 approach provides one through/right-turn lane and a separate left-turn lane. The eastbound US Route 44 approach provides an exclusive right-turn, left-turn and through lane, while the westbound US Route 44 approach provides an exclusive left-turn lane and a shared through/right-turn lane.
- US Route 44 / CR 47 (South Ave) – This is a three-way intersection operating under signal control. The northbound CR 47 approach intersects US Route 44 at a skew and provides a shared right- and left-turn lane. The eastbound US Route 44 approach provides one lane for shared right-turn and through travel movements. The westbound US Route 44 approach provides exclusive left-turn and through lanes.
- US Route 44 / Quaker Hill Road – This is a three-way intersection operating under stop sign control on the southbound Quaker Hill Road approach. The southbound approach provides a single lane for shared right- and left-turn movements. The eastbound US Route 44 approach provides exclusive left-turn and through travel lanes. The westbound US Route 44 approach provides a single lane for shared right-turn and through movements.
- CR 72 / Quaker Hill Road – This is a three-way intersection operating under stop sign control on the westbound Quaker Hill Road approach. All approaches provide one travel lane for shared travel movements.
- CR 72 / Milestone Plaza – This is a three-way intersection operating under stop sign control on the eastbound Milestone Plaza driveway approach. The eastbound approach provides one lane for shared travel movements. The northbound and southbound CR 72 approaches provide one right-turn/through lane and one left-turn lane.

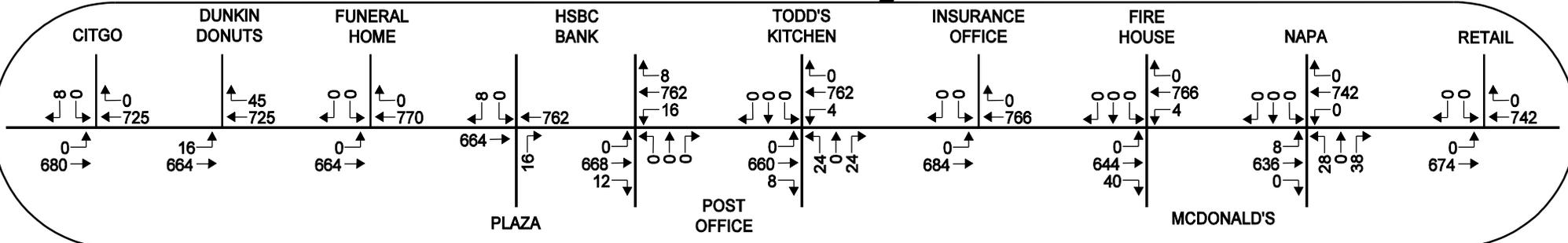
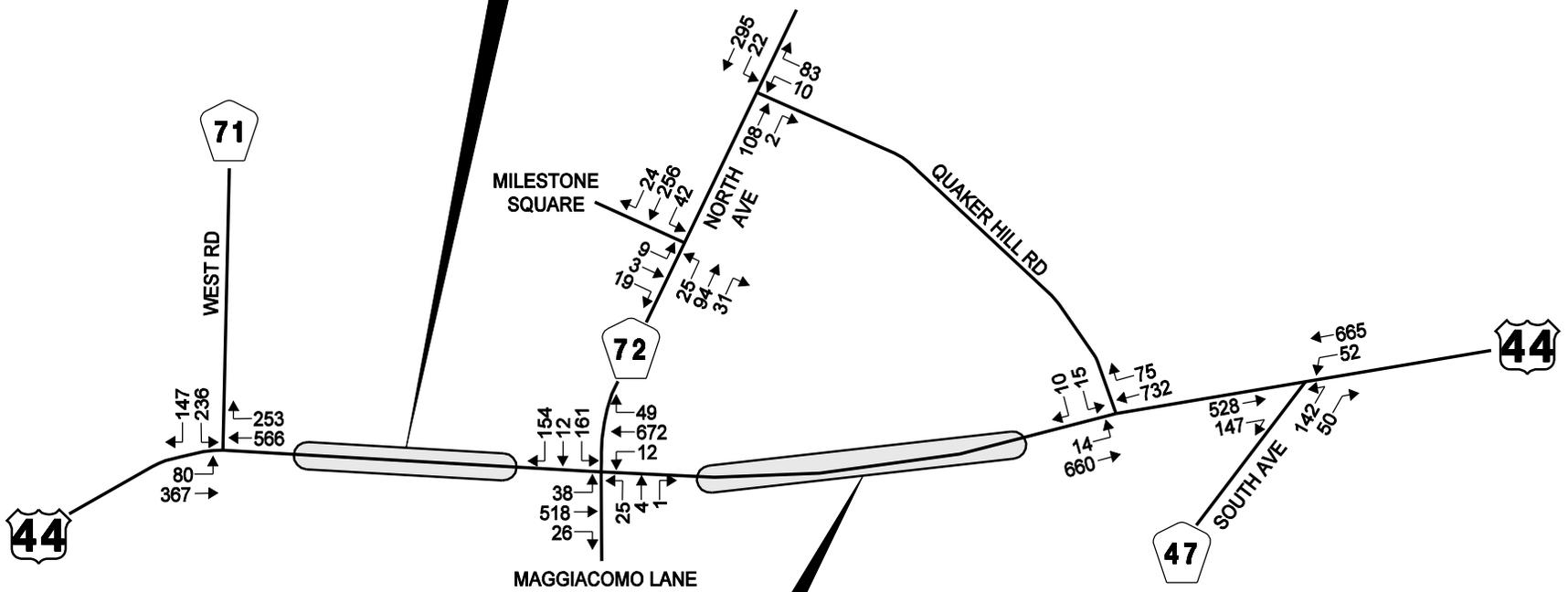
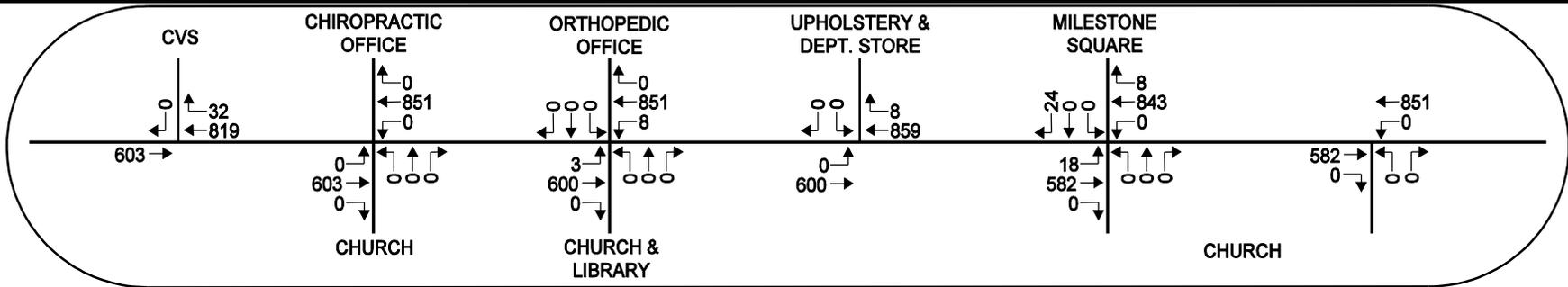
c. Existing Traffic Data

Intersection turning movement counts were obtained from NYSDOT for the following locations for the AM and PM peak hours.

- US Route 44 / CR 71 (West Road)
- US Route 44 / CR 72 (North Ave) / Maggiacomo Lane

- US Route 44 / CR 47 (South Ave)

The NYSDOT counts were conducted during May 2006. Additional counts were conducted by CME at the intersections of US Route 44/Quaker Hill Road, CR 72/Quaker Hill Road and CR 72/Milestone Plaza on Monday, June 11, 2007, from 4:00 to 6:00 p.m. and on Tuesday, June 12, 2007, from 7:00 to 9:00 a.m. These time periods represent the typical weekday commuter peak hours. Spot 15-minute counts were also conducted by CME at the driveways on US Route 44 between CR 71 (West Road) and CR 47 (South Ave). The volumes were factored and balanced to represent 2007 conditions. The resulting AM and PM peak hour traffic volumes are shown on Figures 2 and 3.



2007 EXISTING
 TRAFFIC VOLUMES
 AM PEAK HOUR

PLEASANT VALLEY
 HAMLET TRAFFIC ANALYSIS
 PLEASANT VALLEY, NEW YORK

CME
 CREIGHTON MANNING ENGINEERING, LLP

PDCTC
 Poughkeepsie-Dutchess County Transportation Council

PROJECT: 07-078d | DATE: 8/07 | FIGURE: 2

d. Origin – Destination Study

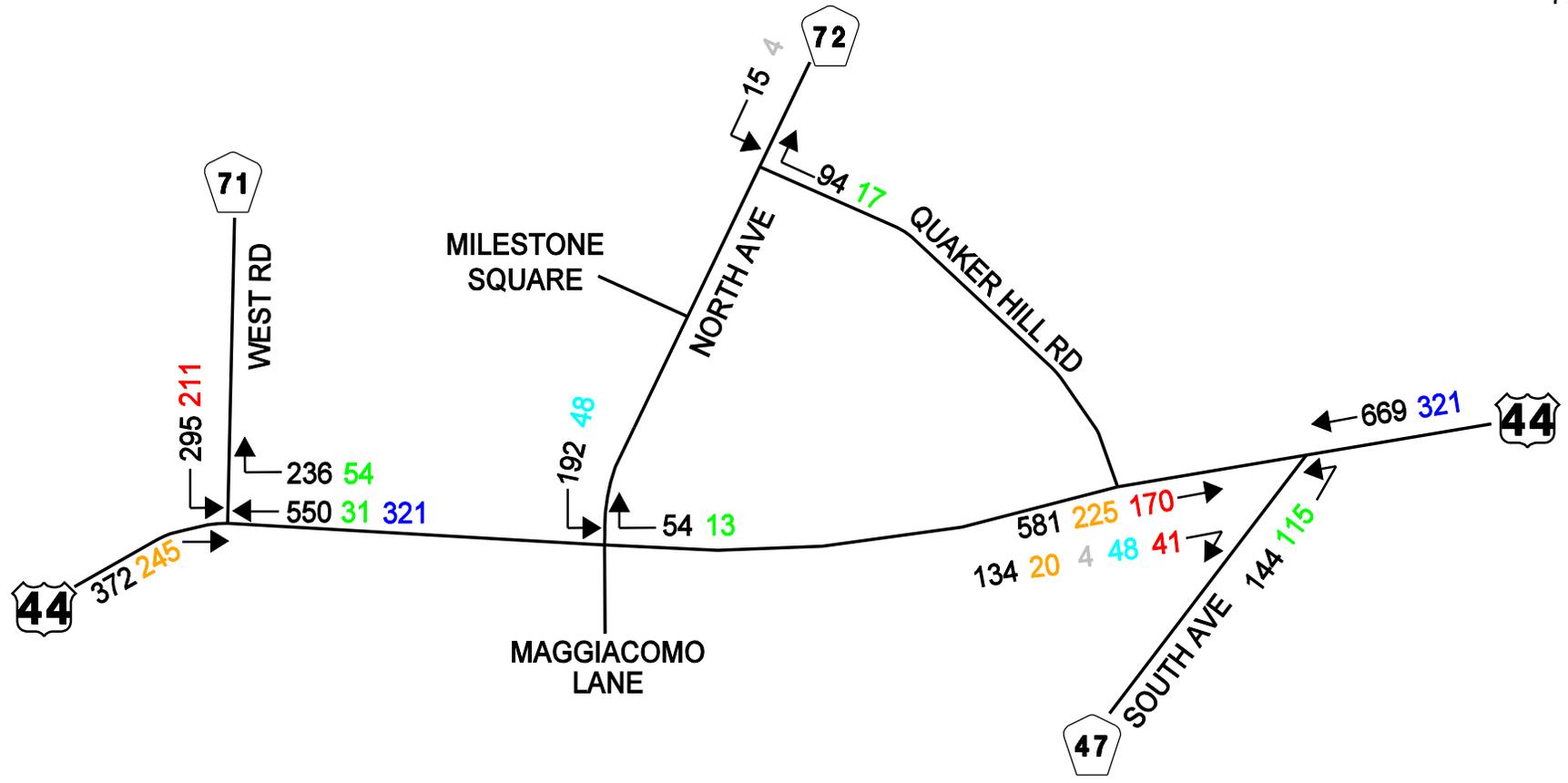
An origin-destination study was conducted to identify major traffic patterns and through traffic within the study area. One of the primary objectives of the study was to determine how much traffic would potentially divert to the Maggiacomo Lane extension if a new bridge was built. The results showed that approximately 212 trips will divert to the new bridge during the AM peak hour and 254 trips will divert to the new bridge during the PM peak hour.

The study was conducted on June 6th and 7th 2007 during the AM peak period from 7:00 to 9:00 a.m. and during the PM peak period from 4:00 to 6:00 p.m. The detailed methodology and results of the O-D study are documented in a separate technical memo titled “Origin Destination Survey”, dated July 13, 2007 and revised July 26, 2007, and is included in Attachment B.

The study resulted in the following additional conclusions:

- 79 to 80 percent of the traffic turning left from CR 47 passes through the study area without stopping.
- In the reverse direction, 78 to 84 percent of the right turning traffic from US Route 44 to CR 47 passes through the study area without stopping.
- The majority of through traffic from CR 47 to CR 72 utilizes Quaker Hill Road as compared to CR 72 (49 trips versus 20 trips during the PM peak hour).
- 18 to 25 percent of the right turns from Quaker Hill Road onto CR 72 originate from CR 47.
- In the reverse direction, the majority of the traffic to CR 47 originated from CR 72 as compared to Quaker Hill Road (42 trips versus 2 trips during the PM peak hour).

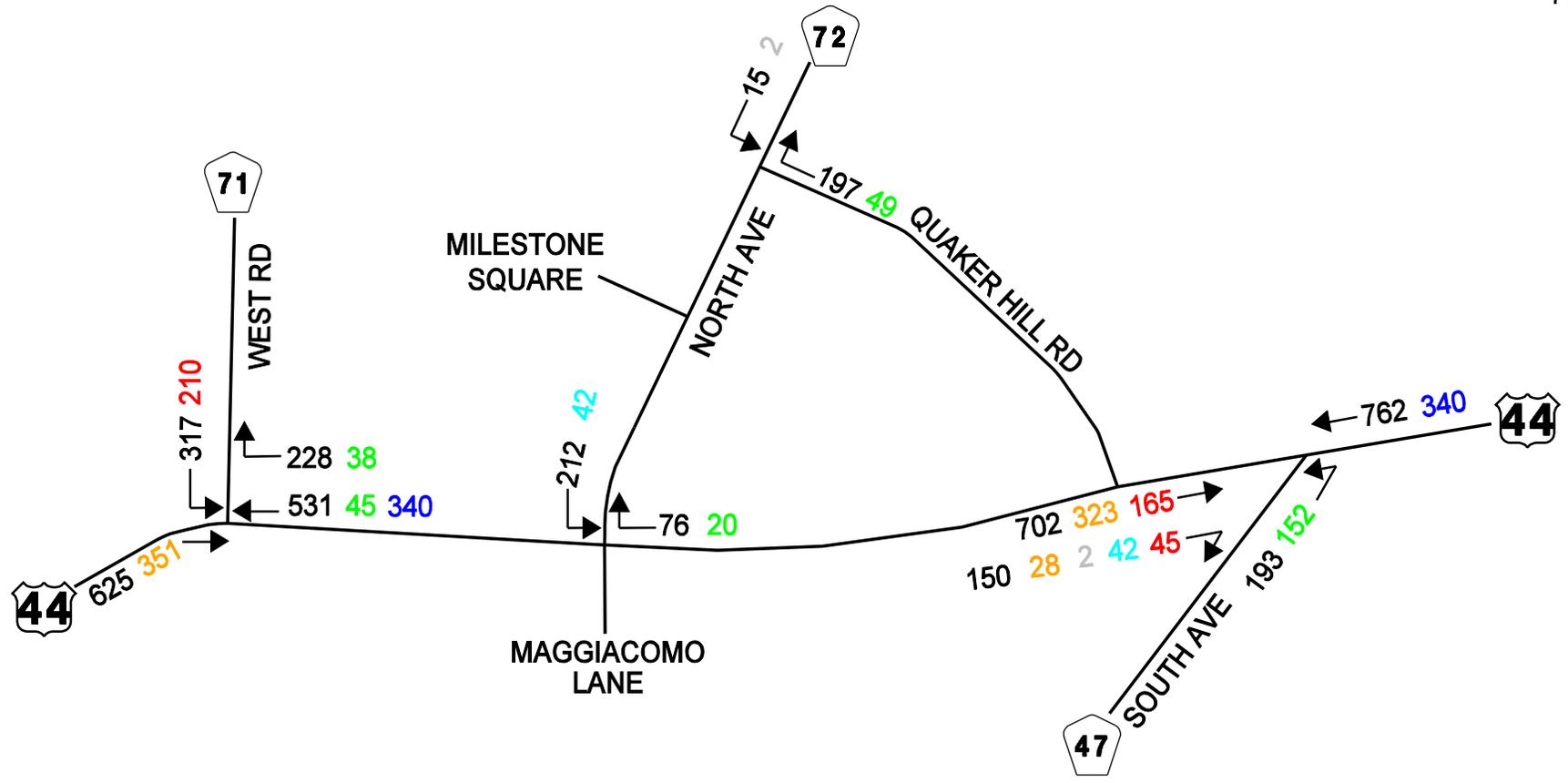
Figures 4 and 5 depict the origin-destination traffic patterns during the AM and PM peak hours respectively. These color-coded diagrams illustrate the traffic patterns as follows: The black numbers represent the total vehicles counted at a specific intersection movement. Of the total vehicles counted, some vehicles were observed to travel a specific route (i.e. from CR 71 to CR 47 via US Route 44, etc.). These vehicles are represented by the color numbers. For example, during the AM peak hour, a total of 372 vehicles (black) approached the US Route 44 / CR 71 intersection from the west. Of the 372 vehicles, 245 vehicles (orange) continued along US Route 44 to the intersection of US Route 44/CR 47, where 225 vehicles (orange) continued eastbound on US Route 44 and 20 vehicles (orange) made right turns onto CR 47. Other traffic patterns can be determined in the same manner. The technical memo in Attachment B provides a matrix of the origin-destination pairs.



LEGEND:
 XXX BLACK NUMBERS = TOTAL PEAK HOUR TRAFFIC VOLUME ON SPECIFIC MOVEMENT
 XXX COLOR NUMBERS = TOTAL THROUGH VOLUME BETWEEN LIKE COLORED ORIGIN DESTINATION POINTS

2007 EXISTING ORIGIN DESTINATION TRAFFIC PATTERNS AM PEAK HOUR
 PLEASANT VALLEY HAMLET TRAFFIC ANALYSIS
 PLEASANT VALLEY, NEW YORK

PROJECT: 07-078d	DATE: 7/07	FIGURE: 4



LEGEND:
 XXX BLACK NUMBERS = TOTAL PEAK HOUR TRAFFIC VOLUME ON SPECIFIC MOVEMENT
 XXX COLOR NUMBERS = TOTAL THROUGH VOLUME BETWEEN LIKE COLORED ORIGIN DESTINATION POINTS

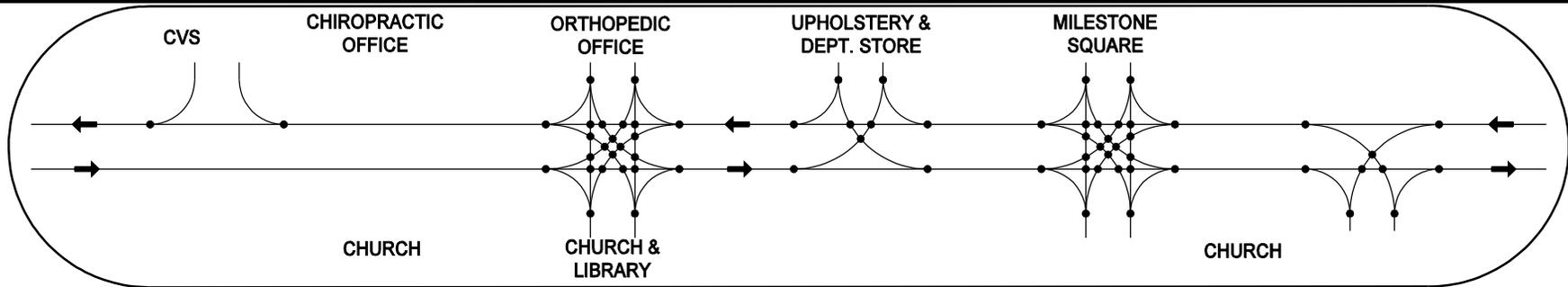
2007 EXISTING ORIGIN DESTINATION TRAFFIC PATTERNS PM PEAK HOUR
 PLEASANT VALLEY HAMLET TRAFFIC ANALYSIS PLEASANT VALLEY, NEW YORK

 Poughkeepsie-Dutchess County Transportation Council		
PROJECT: 07-078d	DATE: 7/07	FIGURE: 5

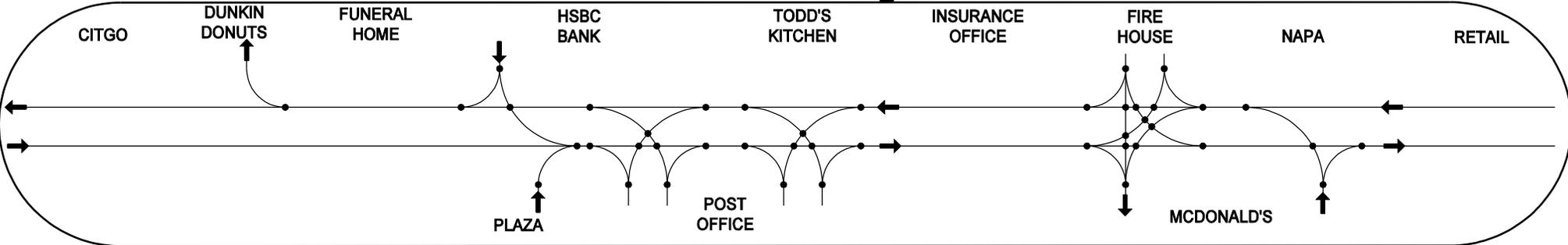
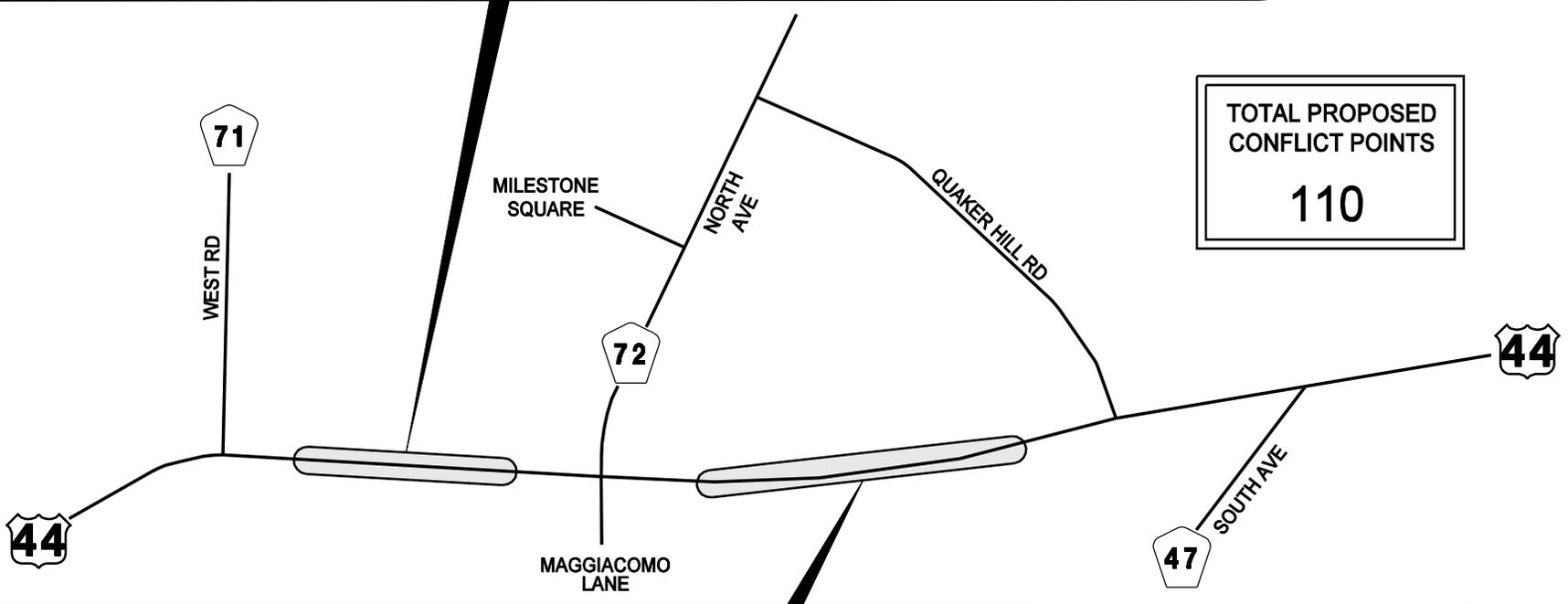
e. Conflict Point Analysis

A conflict point is any point where vehicles cross, merge, or diverge from the path of another vehicle using the same road or driveway. The number of conflict points along a roadway can affect safety and operations as motorists often need to accelerate, decelerate, and/or change direction at conflict points to maintain safe operations. Efforts to reduce and separate conflict points can enhance the overall safety and efficiency of a roadway, by providing better guidance and clarity to the driver, improving mobility for through traffic, and providing safe and reasonable access to and from adjacent land.

A standard T-intersection has nine (9) conflict points and a standard 4-way intersection has 24 conflict points. The section of US Route 44 in Pleasant Valley between CR 71 (West Road) and CR 47 (South Ave) has a total of 204 existing conflict points associated with the driveways alone. The existing conflict points are shown on Figure 6. This number of conflict points would be greater if the public road intersections were also counted. By comparison, a proposed concept plan for the area has a total of 110 conflict points. This reduction of conflict points is a measure that describes improved traffic operations along US Route 44. The concept plan proposes to eliminate, channelize and combine several driveways to improve overall traffic operations. The access management concept plan is included in Attachment A. The proposed conflict points after implementation of the access management concept plan are shown on Figure 7.



<p>TOTAL PROPOSED CONFLICT POINTS</p> <p style="font-size: 24pt; text-align: center;">110</p>



**PROPOSED CONFLICT POINTS
AFTER ACCESS MANAGEMENT
PLAN IMPROVEMENTS**

**PLEASANT VALLEY
HAMLET TRAFFIC ANALYSIS
PLEASANT VALLEY, NEW YORK**




Poughkeepsie-Dutchess County Transportation Council

PROJECT: 07-078d	DATE: 8/07	FIGURE: 7
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f. Speed & Delay Study

A speed and delay study was conducted along US Route 44 between the intersections of CR 71 and CR 47 on Tuesday, August 14, 2007. Travel time information was collected during the AM peak period from 7:00 to 9:00 a.m. and during the PM peak period from 4:00 to 6:00 p.m. The objective of the survey was to identify the existing average travel speed and average delay experienced by drivers passing through the US Route 44 corridor during both peak commuter periods.

The methodology for the speed and delay study involved a driver and a data collector equipped with a stop watch who drove the length of the corridor several times during the AM and PM peak periods. During each run, the data collector documented three conditions:

- The time that the vehicle stopped at the back of a queue, if it stopped.
- The time that the vehicle started rolling again.
- The time that the vehicle crossed the stop line at the traffic signal.

Resulting travel times were converted to speed.

For this study, the recorder documented the time on US Route 44 at three locations: the CR 71 stop line, the CR 72 stop line, and the CR 47 stop line. A total of 27 trial runs were completed in the eastbound and westbound directions during the AM peak period. However, complete time recordings were only obtained for 13 runs in the eastbound direction and 12 runs in the westbound direction. A total of 22 trial runs were completed in the eastbound and westbound directions during the PM peak period, with only 19 runs in the eastbound direction and 20 runs in the westbound direction having complete time data. Figure 8 summarizes the *total* number of trial runs during the AM and PM peak two hour period with the number of stops made per run.

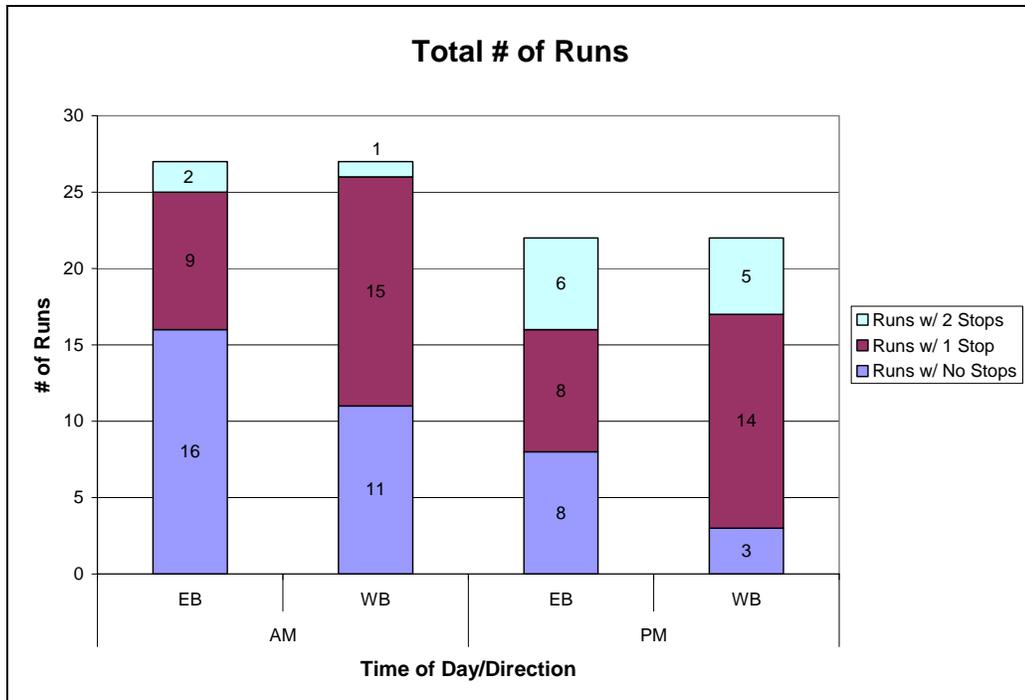


Figure 8. Total Number of Runs

There were very few instances when two stops were made in a single run. The number of runs with zero to one stop verifies that vehicles typically make it through the network without excessive stopping at the intersections during both peak periods.

The complete time data was used to determine the total amount of time (stopped and moving) it takes a vehicle to travel through the study area. These overall times were then averaged (directionally) for the AM and PM peak hours. Knowing the distance between the points where times were recorded (intersection stop bars), the average travel times were converted to travel speed on US Route 44. Table 1 summarizes the results of the analysis and shows that average peak hour travel speeds range from 15 mph to 23 mph, including stopped delay, depending on the peak hour and direction.

Table 1 – Speed & Delay Study Summary

	AM		PM	
	Eastbound	Westbound	Eastbound	Westbound
Average Stopped Time / Run (sec)	9	16	10	29
Average Moving Time / Run (sec)	50	50	53	65
Average Total Time / Run (sec)	59	66	63	94
Average Total Speed (mph)	23	22	23	15

According to the *2000 Highway Capacity Manual*, US Route 44 is classified as an intermediate urban minor arterial and falls within functional category IV. Urban street levels of service (LOS) can be determined based on the street's functional category and average travel speeds. Figure 9 summarizes the average total speeds and corresponding levels of service on US Route 44 over the two hour peak periods.

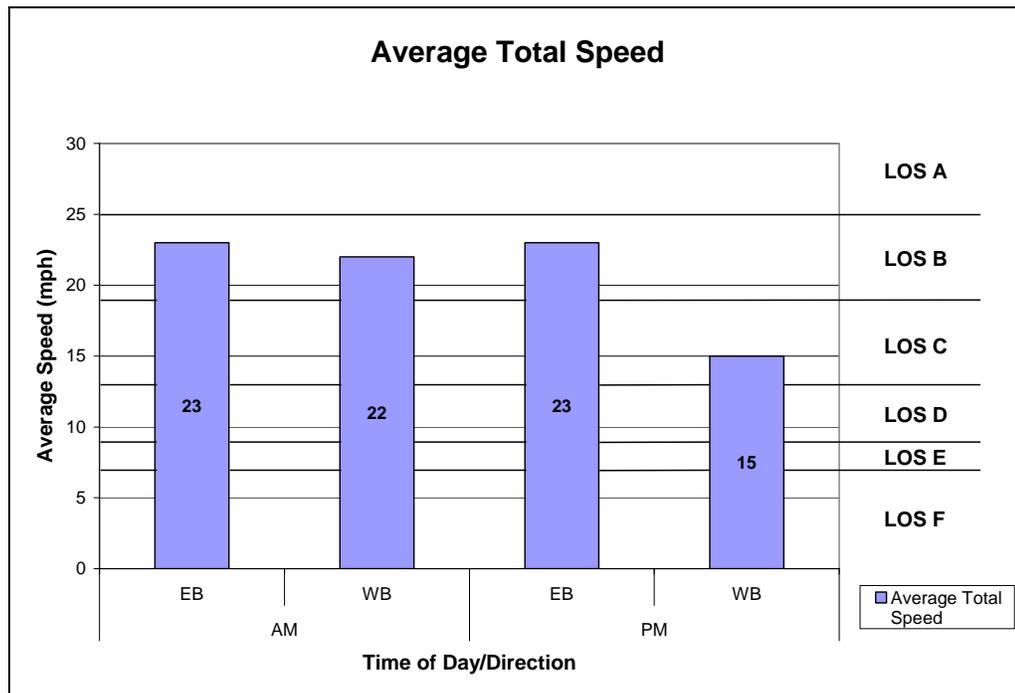


Figure 9. Average Total Speed on US Route 44

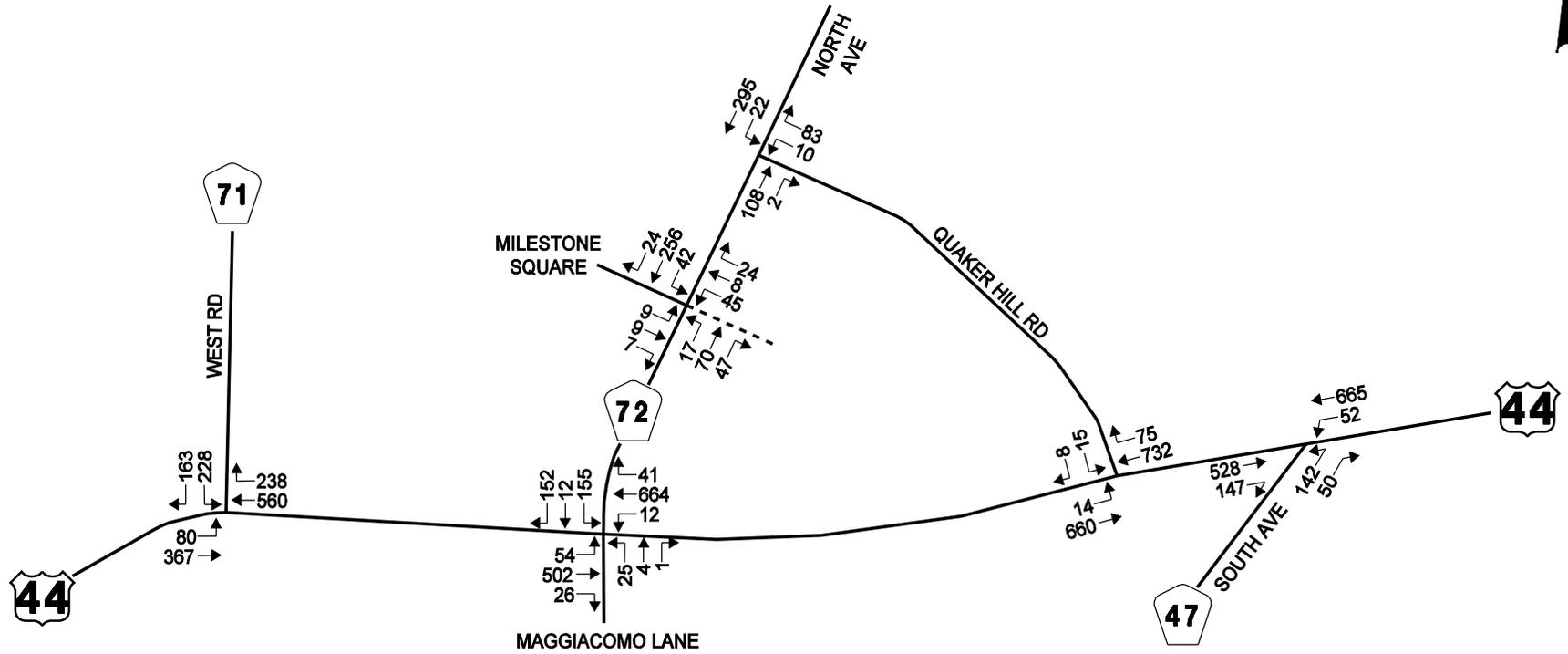
Figure 9 shows that typical arterial travel speeds on US Route 44 fall within LOS B/C ranges, which are characteristic of relatively short delays and few to no vehicular stops. The worst case LOS occurs westbound during the PM peak hour. Based on the street classification and average travel speeds, US Route 44 currently operates under good conditions.

Alternative Conditions

As discussed, two proposed alternatives were developed to alleviate congestion and delays on US Route 44. The first alternative consists of access management improvements along US Route 44 which were based on input from the Poughkeepsie-Dutchess County Transportation Council (PDCTC), NYSDOT, and the Town. The access management concept plan is shown in Attachment A. The second alternative involves the extension of Maggiacomo Lane over Wappinger Creek to CR 47.

Traffic forecasts were prepared for the two alternative conditions by re-distributing the existing volumes throughout the roadway network. For the access management alternative, the volumes were re-distributed based on existing volumes and in consideration of the changes in access and are shown on Figures 10 and 11. For the

Maggiacomo Lane extension alternative, the volumes were re-distributed based on results from the origin-destination study and are shown on Figures 12 and 13. It was determined that approximately 212 and 254 trips will divert to the new Maggiacomo Lane bridge during the AM and PM peak hours, respectively under this alternative condition.



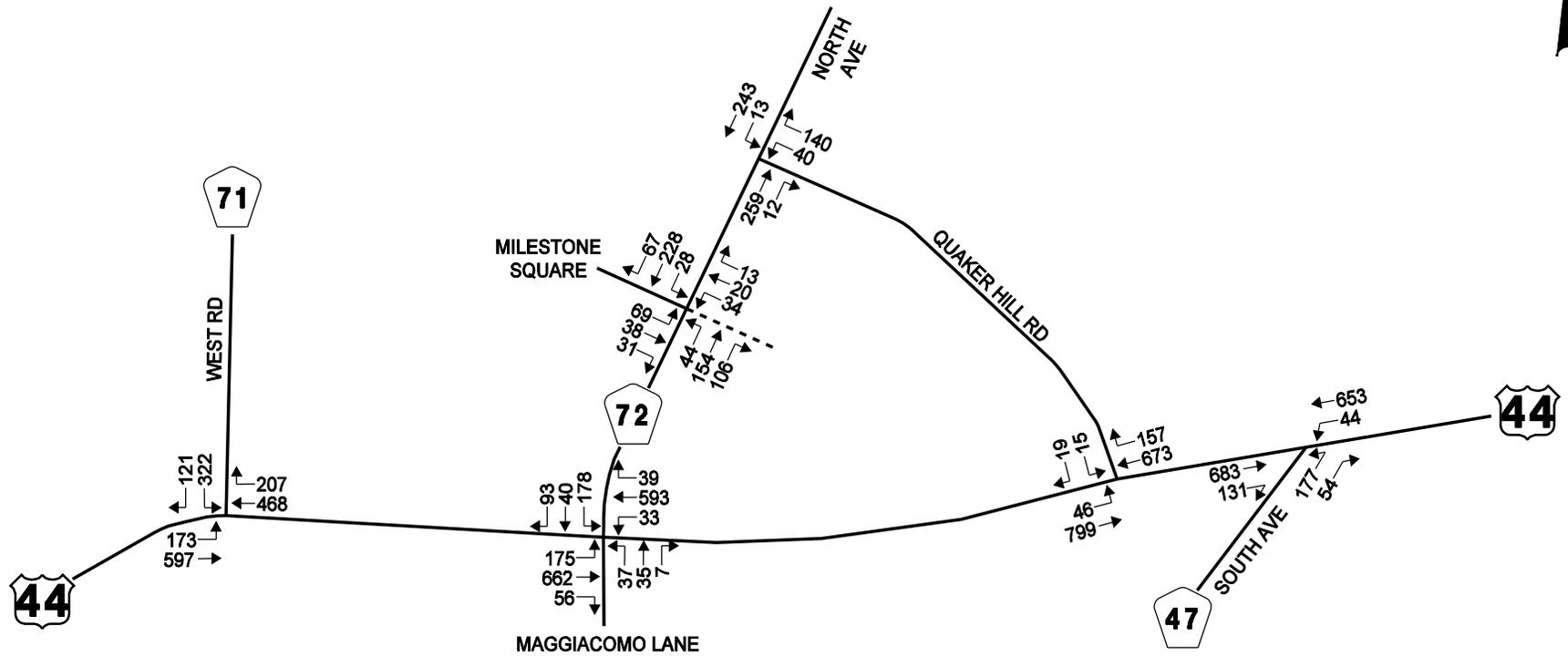
2007 EXISTING TRAFFIC VOLUMES
AM PEAK HOUR
ACCESS MANAGEMENT ALTERNATIVE

PLEASANT VALLEY
HAMLET TRAFFIC ANALYSIS
PLEASANT VALLEY, NEW YORK





PROJECT: 07-078d	DATE: 8/07	FIGURE: 10
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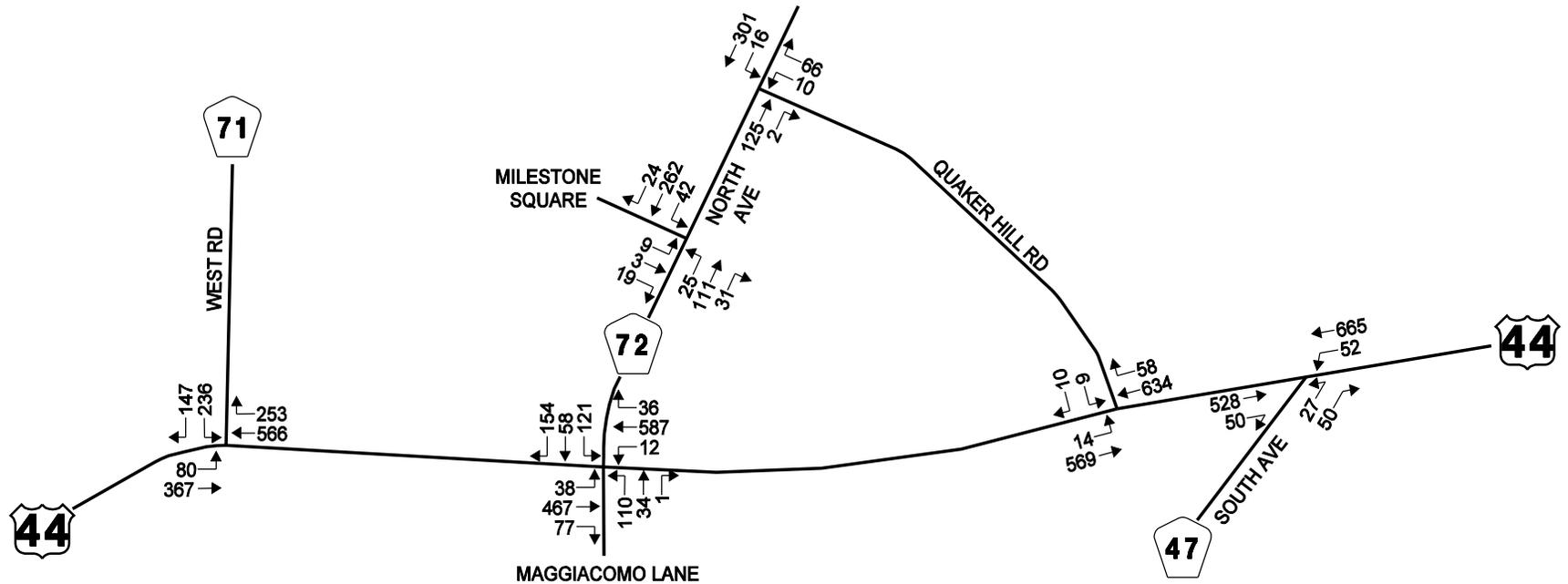
2007 EXISTING TRAFFIC VOLUMES
PM PEAK HOUR
ACCESS MANAGEMENT ALTERNATIVE

PLEASANT VALLEY
HAMLET TRAFFIC ANALYSIS
PLEASANT VALLEY, NEW YORK



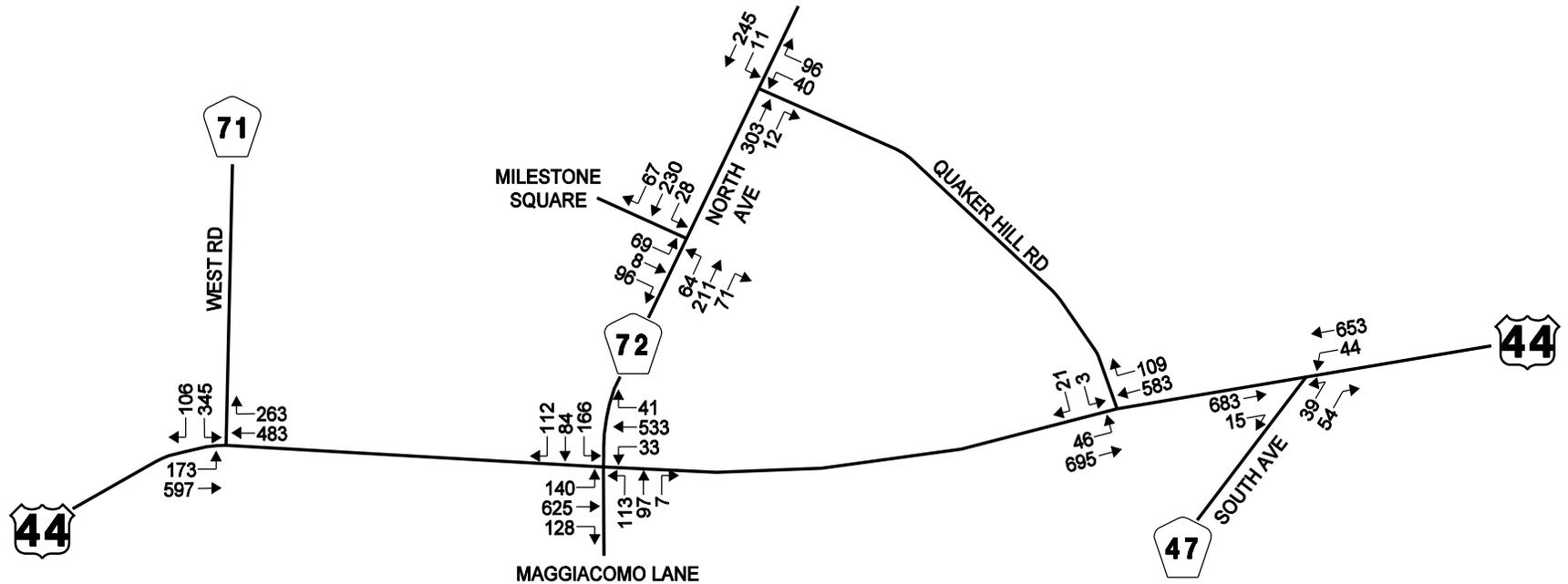


PROJECT: 07-078d	DATE: 8/07	FIGURE: 11
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2007 EXISTING TRAFFIC VOLUMES
 AM PEAK HOUR
 MAGGIACOMO LANE EXTENSION ALTERNATIVE
 PLEASANT VALLEY
 HAMLET TRAFFIC ANALYSIS
 PLEASANT VALLEY, NEW YORK

PROJECT: 07-078d	DATE: 8/07	FIGURE: 12



2007 EXISTING TRAFFIC VOLUMES
 PM PEAK HOUR
 MAGGIACOMO LANE EXTENSION ALTERNATIVE
 PLEASANT VALLEY
 HAMLET TRAFFIC ANALYSIS
 PLEASANT VALLEY, NEW YORK



Traffic Analysis

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using the *Synchro-7 / Simtraffic* software which automates the procedures contained in the *2000 Highway Capacity Manual* (HCM). Intersection LOS ranges from LOS A (little delay) to LOS F (excessive delay) and is a measure of the quality of traffic flow. Traffic simulation models were developed for the following scenarios:

- 2007 Existing Conditions – This scenario represents existing (June 2007) traffic operations based on current traffic volumes, highway network, lane geometry and traffic control conditions. The results provide a basis for comparing the effects of the improvement scenarios.
- 2007 Access Management - The 2007 Access Management alternative proposes to eliminate, channelize and combine several driveways to improve overall traffic operations (see Attachment A). Existing traffic volumes were re-distributed based on the proposed access changes throughout the network, and the study area intersections were analyzed to show the effect of the improvements.
- 2007 Alternative 1 – This alternative involves extending Maggiacomo Lane to CR 47 via a new bridge over the Wappinger Creek. Existing traffic volumes were re-distributed based on results from the origin – destination study. The re-distributed volumes were used to determine the resulting levels of service at the study area intersections.
- 2007 Alternative 1 with Improvements – This alternative utilizes the same re-distributed traffic volumes as Alternative 1 however the signal timing was modified slightly to improve operations at the NY Route 44/CR 72/Maggiacomo Lane intersection. Specifically, exclusive left-turn phasing on the north-south approaches to the NY Route 44/CR 72 intersection was added.

The relative benefit of the access management and Maggiacomo Lane extension alternatives on the study area intersections can be determined by comparing the LOS for each alternative with the 2007 existing conditions. Tables 2 and 3 summarize the results of the level of service calculations and other performance measures.

Overall, traffic simulations revealed that the study area intersections currently operate fairly well – predominantly LOS B/C. The perception in the area however is that delay is much more prevalent. It is possible that the numerous conflict points and resulting driver confusion along the corridor contribute to the longer delays.

In general, the access management alternative provides small but measurable improvements. Network-wide delays are reduced by approximately 12 percent during the PM peak hour (36 veh/hr to 32 veh/hr). Additional benefits include improved parking, improved walkability and improved access (choices) to/from adjacent land.

The results of the alternative analysis indicates that the US Route 44/CR 72 intersection is capable of accommodating traffic associated with the Maggiacomo Lane extension with negligible changes in LOS, however worst-case LOS E will occur in a few lane groups during both peak hours. Alternative 1 with Improvements ameliorates the LOS E

conditions at the US Route 44/CR 72 intersection by adding protected left-turn phasing. Very small changes in delay are apparent at the adjacent intersections due to the effect of this signal timing change.

Overall operations in the study area are improved slightly with both the access management and Maggiacomo Lane extension alternatives. The “Performance Index” (PI) shown at the bottom of Table 3 is from the *Synchro-7* software. It represents a combination of the delays, stops and queuing penalty. A lower PI indicates better overall operations.

A sensitivity analysis was also conducted for the intersection of US Route 44/CR 71. The Dutchess County Department of Planning and Development (DCDPD) indicated that the community has requested a westbound right-turn lane be added to the intersection. The intersection was modeled with a westbound right-turn lane using *Synchro-7* for existing conditions. The level of service analysis indicates that overall intersection operations will improve from a LOS C to a LOS B during the AM and PM peak hours, with a decrease in average vehicle delay of approximately 4 to 7 seconds per vehicle. While a westbound right-turn lane would result in improved operations at the US Route 44/CR 71 intersection, NYSDOT has indicated that separate right-turn lanes are not favorable to pedestrian traffic and a balance must be established between competing vehicular, pedestrian, and bicycle interests throughout the corridor.

Table 2 – Intersection Level of Service Summary

Intersection Approach	Control	AM Peak Hour				PM Peak Hour			
		2007 Existing	2007 Access Manage	2007 Alt. 1	2007 Alt. 1 w/lmp	2007 Existing	2007 Access Manage	2007 Alt. 1	2007 Alt.1 w/lmp
Rt 44/County Route 71	S	B (17.7)	B (15.8)	B (17.7)	B (17.7)	B (18.4)	B (13.0)	B (18.4)	B (18.4)
NY Route 44 EB L		A (6.4)	A (6.2)	A (6.4)	A (6.4)	B (10.6)	A (9.9)	B (10.6)	B (10.6)
NY Route 44 WB TR		B (18.7)	B (14.7)	C (26.2)	C (24.3)	B (14.7)	B (11.3)	C (25.3)	C (22.6)
County Route 71 SB L		D (47.3)	D (46.3)	D (47.3)	D (47.3)	D (47.3)	D (46.3)	D (47.3)	D (47.3)
R		C (28.6)	C (29.0)	C (28.6)	C (28.6)	C (27.8)	C (28.7)	C (27.8)	C (27.8)
Overall		C (21.0)	B (18.8)	C (24.7)	C (23.8)	C (20.3)	B (18.3)	C (24.3)	C (23.2)
Rt 44/County Route 72/ Maggiacomo Ln	S	A (5.3)	A (5.4)	A (4.7)	A (6.0)	B (12.0)	B (10.9)	A (5.9)	A (7.7)
NY Route 44 EB L		A (6.4)	A (6.1)	A (7.8)	B (10.1)	B (13.6)	B (11.6)	B (11.1)	B (13.6)
T		A (1.7)	A (1.5)	A (1.6)	A (2.5)	A (5.2)	A (4.8)	A (4.2)	A (4.4)
NY Route 44 WB L		A (8.1)	A (8.2)	A (7.2)	A (8.4)	B (13.6)	B (11.7)	A (9.6)	B (12.1)
TR		C (25.4)	C (24.7)	B (19.2)	C (24.8)	C (27.9)	C (21.2)	B (18.9)	C (23.9)
Maggiacomo Ln NB L		C (30.8)	C (31.1)	E (77.5)	D (43.1)	C (29.3)	C (31.2)	E (73.7)	D (40.0)
TR		C (29.2)	C (29.5)	C (28.2)	D (41.0)	C (28.1)	C (30.0)	C (30.9)	D (39.2)
County Route 72 SB L		D (46.7)	D (45.8)	C (32.6)	C (27.9)	D (53.3)	D (49.7)	E (55.6)	D (38.5)
TR		C (30.2)	C (30.6)	C (30.3)	D (41.8)	C (29.2)	C (30.9)	C (32.9)	D (47.8)
Overall		C (21.1)	C (20.5)	C (21.4)	C (23.1)	C (24.7)	C (21.2)	C (24.1)	C (24.6)
Rt 44/Quaker Hill Rd	U	B (11.6)	B (11.6)	B (10.2)	B (10.2)	B (11.4)	B (11.4)	A (10.0)	A (10.0)
NY Route 44 EB L		C (19.9)	C (19.9)	C (15.9)	C (16.0)	C (20.4)	C (23.6)	C (15.5)	C (15.6)
Quaker Hill Rd SB LR									
Rt 44/County Route 47	S	B (11.2)	B (11.3)	A (4.1)	A (4.0)	B (12.4)	B (13.3)	A (4.3)	A (4.4)
NY Route 44 EB TR		A (8.1)	A (8.1)	A (2.8)	A (2.8)	B (11.7)	B (11.7)	A (3.2)	A (3.2)
NY Route 44 WB L		A (9.5)	A (9.5)	A (4.0)	A (4.0)	A (8.5)	A (8.5)	A (3.3)	A (3.3)
T		D (43.6)	D (43.6)	D (39.9)	D (39.9)	D (47.0)	D (47.0)	D (45.0)	D (45.0)
County Route 47 NB LR		B (14.6)	B (14.6)	A (6.2)	A (6.1)	B (15.5)	B (15.9)	A (6.4)	A (6.4)
Overall									
County Route 72/Milestone Plaza	U	A (8.0)	A (8.0)	A (8.1)	A (8.1)	A (8.1)	A (8.1)	A (8.1)	A (8.1)
County Route 72 NB L		A (7.6)	A (7.6)	A (7.7)	A (7.7)	A (7.8)	A (7.9)	A (8.0)	A (8.0)
County Route 72 SB L		B (14.1)	B (14.2)	B (14.5)	B (14.5)	C (18.7)	C (21.5)	C (20.4)	C (20.5)
Milestone Plaza EB LT		B (10.0)	A (9.9)	B (10.1)	B (10.1)	B (10.6)	A (10.0)	B (10.6)	B (10.6)
R		--	B (13.6)	--	--	--	C (18.0)	--	--
Shared Access WB LTR									
County Route 72/Quaker Hill Rd	U	A (0.7)	A (0.7)	A (0.5)	A (0.5)	A (0.5)	A (0.5)	A (0.4)	A (0.4)
County Route 72 SB L		A (10.0)	A (10.0)	A (9.9)	A (9.9)	B (13.5)	B (13.5)	B (13.7)	B (13.7)
Quaker Hill Rd WB LR									

Key: X (Y.Y) = Level of Service (Delay, seconds per vehicle)
 NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
 L = Left-Turn, T = Through, R = Right-Turn;
 U = Unsignalized Intersection, S = Signalized Intersection

Table 3 – Overall Measure of Effectiveness Summary

Intersection Approach	AM Peak Hour				PM Peak Hour			
	2007 Existing	2007 Access Manage	2007 Alt. 1	2007 Alt. 1 w/lmp	2007 Existing	2007 Access Manage	2007 Alt. 1	2007 Alt.1 w/lmp
Total Delay (hr)	26	25	23	24	36	32	31	31
Total Delay / Vehicle (s/v)	13	12	12	12	14	13	13	13
Average Speed (mph)	17	17	17	17	16	17	17	17
Fuel Used (gal)	77	76	70	71	98	94	89	90
VOC Emissions (kg)	1.24	1.23	1.13	1.15	1.59	1.52	1.44	1.46
CO Emissions (kg)	5.37	5.31	4.87	4.96	6.87	6.54	6.23	6.28
NOx Emissions (kg)	1.04	1.03	0.95	0.96	1.34	1.27	1.21	1.22
Rt 44 EB Arterial Speed (mph)	22	22	24	24	19	20	21	21
Rt 44 WB Arterial Speed (mph)	16	16	16	17	16	18	16	16
Performance Index	33.8	32.8	29.8	31.2	46.5	42.0	40.2	40.9

Conclusion

This memo provides technical support for the PDCTC, NYSDOT and the Town as they consider implementing access management improvements and/or the Maggiacomo Lane Extension to improve traffic operations in the Hamlet of Pleasant Valley. Both alternatives were shown to reduce delays experienced by drivers on US Route 44. Existing conditions however showed intersections operating at good levels of service with acceptable delays. Therefore lower cost access management improvements should be pursued to improve safety and optimize the existing network. The Maggiacomo Lane extension project is not currently necessary, however future increases in traffic volumes within the Hamlet of Pleasant Valley may warrant such a project.

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Attachment A



Attachment B

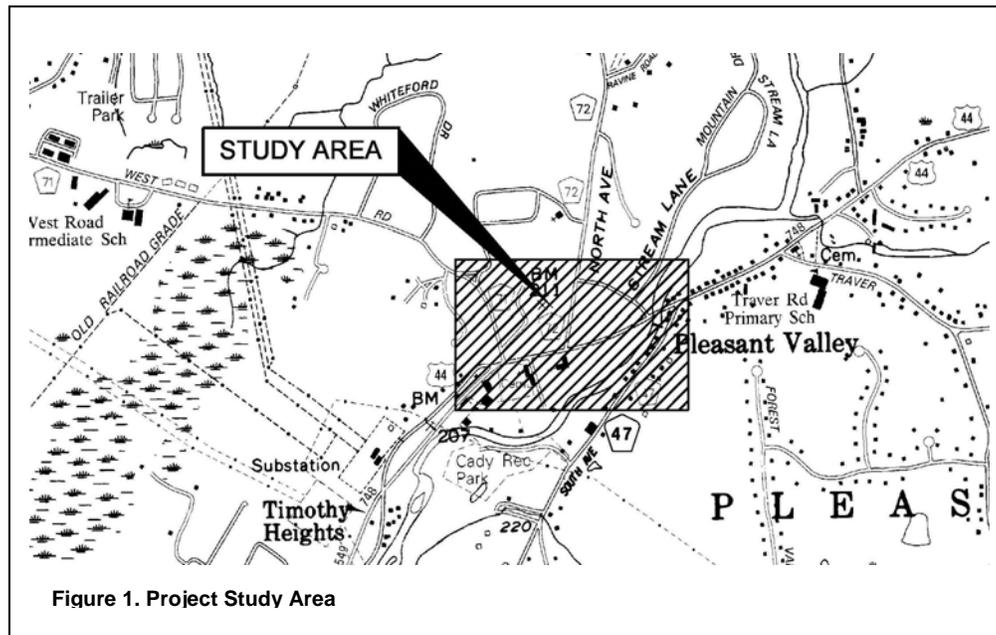


17 COMPUTER DRIVE WEST ❖ ALBANY, NY 12205
PHONE 518-446-0396 ❖ FAX 518-446-0397

Memo

To: Ms. Kealy Salomon
From: Mark Sargent
Date: July 13, 2007 *Revised July 26, 2007*
Re: Origin Destination Survey
Project: Pleasant Valley Hamlet Traffic Analysis, Dutchess County, CME Project No. 07-078d

This memo summarizes the results of an origin destination survey conducted in the Hamlet of Pleasant Valley, Dutchess County, New York. The survey was conducted on June 6th and 7th 2007 during the morning period from 7:00 to 9:00 a.m. and during the evening period from 4:00 to 6:00 p.m. The objective of the survey was to identify major traffic patterns and through traffic within the study area for use in evaluating traffic circulation improvement alternatives. The following diagram shows the study area location.



The methodology for the origin destination study was a license plate survey. License plate information was obtained for select turning movements at four intersections. The last four digits of each plate were recorded. Table 1 and Figure 2 describe the four intersections that were studied.

Table 1 – Origin Destination license plate survey observation locations

June 6 th Eastbound and Southbound Survey			June 7 th Westbound and Northbound Survey		
Movement Number	Intersection	Movement	Movement Number	Intersection	Movement
Movement 1	CR 72/Q. Hill Rd	Southbound left	Movement 7	CR 72/Q. Hill Rd	Westbound right
Movement 2	Route 44/CR 71	Southbound left	Movement 8	Route 44/CR 71	Westbound right
Movement 3	Route 44/CR 71	Eastbound through	Movement 9	Route 44/CR 71	Westbound through
Movement 4	Route 44/CR 72	Southbound left	Movement 10	Route 44/CR 72	Westbound right
Movement 5	Route 44/CR 47	Eastbound through	Movement 11	Route 44/CR 47	Westbound through
Movement 6	Route 44/CR 47	Eastbound right	Movement 12	Route 44/CR 47	Northbound left

At the high volume through movement locations on Route 44 the data was collected by two staff; a reader and a recorder. Plate information at the lower volume turning movement locations required only one data collector at each location. Table 2 summarizes the total traffic volumes at each intersection and the percent of plates observed for the two-hour AM and PM count periods.

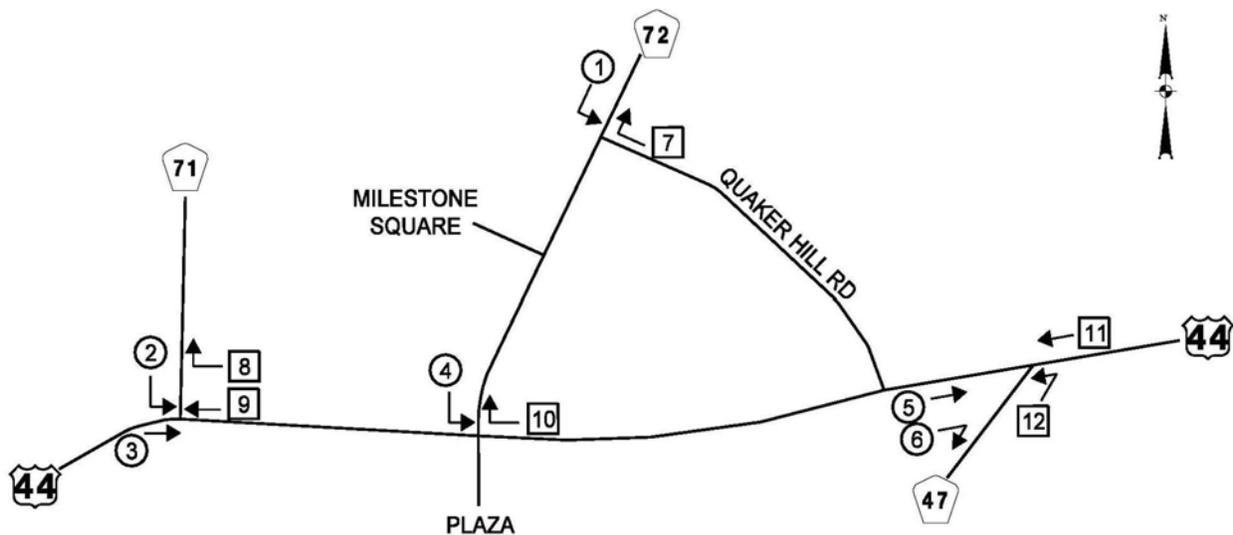


Figure 2. Origin Destination Observation Locations

Table 2 – Summary of Volumes and Capture Rates

Movement Number	Road/Directional Movement		Total Vehicles	Plates Missed	% of Captured Plates	Total Vehicles	Plates Missed	% of Captured Plates
			AM			PM		
1	CR72/Quaker Hill Rd Southbound left	2-Hour	57	0	100%	33	0	100%
		Peak Hour	15	0	100%	15	0	100%
2	Route 44/CR 71 Southbound left	2-Hour	531	5	99.1%	632	13	97.9%
		Peak Hour	295	1	99.7%	317	3	99.1%
3	Route 44/CR 71 Eastbound through	2-Hour	709	3	99.6%	1,153	5	99.6%
		Peak Hour	372	2	99.5%	625	4	99.4%
4	Route 44/CR 72 Southbound left	2-Hour	353	1	99.7%	398	1	99.7%
		Peak Hour	192	1	99.5%	212	0	100%
5	Route 44/CR 47 Eastbound through	2-Hour	1,090	16	98.5%	1,328	15	98.9%
		Peak Hour	581	7	98.8%	702	8	98.9%
6	Route 44/CR 47 Eastbound right	2-Hour	293	12	95.9%	298	5	98.3%
		Peak Hour	134	6	95.5%	150	2	98.7%
7	CR72/Quaker Hill Rd Westbound right	2-Hour	162	1	99.4%	345	4	98.8%
		Peak Hour	94	1	98.9%	197	2	99.0%
8	Route 44/CR 71 Westbound right	2-Hour	435	4	99.1%	451	3	99.3%
		Peak Hour	236	2	99.2%	228	1	99.6%
9	Route 44/CR 71 Westbound through	2-Hour	1,071	8	99.3%	1,074	9	99.2%
		Peak Hour	550	6	98.9%	531	6	98.9%
10	Route 44/CR 72 Westbound right	2-Hour	83	0	100%	166	1	99.4%
		Peak Hour	54	0	100%	76	1	98.7%
11	Route 44/CR 47 Westbound through	2-Hour	1,290	16	98.8%	1,437	5	99.7%
		Peak Hour	669	6	99.1%	762	2	99.7%
12	Route 44/CR 47 Northbound left	2-Hour	266	3	98.9%	361	1	99.7%
		Peak Hour	144	1	99.3%	193	0	100%
Total		2-Hour	6,340	69	98.9%	7,676	62	99.2%
		Peak Hour	3,336	33	99.0%	4,008	29	99.3%

Table 2 shows that a total of 6,340 license plates were recorded during the 2-hour morning survey with 53 percent (3,336 plates) being collected during the peak hour (7:45-8:45 a.m.). Overall, more than 99 percent of the license plate numbers were recorded.

The table also shows that a total of 7,676 license plates were recorded during the 2-hour evening count period with 52 percent (4,008 plates) collected during the peak hour (4:45-5:45 p.m.). Overall, more than 99 percent of the plates were observed during the peak hour.

A Microsoft Access database was created containing over 14,000 license plate entries. The data was then reduced and analyzed in order to match vehicle movements within the corridor. Tables 3 and 4 summarize the number of license plates matched, the peak hour origin volume, and the peak hour destination volume for both the AM and PM timeframe. The tables also show the percentage of peak hour volume for the point of origin and destination point in parenthesis and brackets.

The following conclusions are evident:

- 79 to 80 percent of the traffic turning left from CR 47 passes through the study area without stopping.
- In the reverse direction, 78 to 84 percent of the right turning traffic from Route 44 on CR 47 is through traffic.
- The majority of through traffic from CR 47 to CR 72 utilizes Quaker Hill Road as compared to CR 72 (49 trips versus 20 trips during the PM peak hour).
- 18 to 25 percent of the right turns from Quaker Hill Road onto CR 72 originate from CR 47.

- In the reverse direction, the majority of the traffic to CR 47 originated from CR 72 as compared to Quaker Hill Road (42 trips versus 2 trips during the PM peak hour).
- East-west through traffic on Route 44 ranges from 31 to 48 percent of the total traffic volume depending on the specific peak hour, location and direction.

Other patterns are apparent by reviewing the individual matches within Tables 3 and 4 and Figures 3 and 4, and will be used in the assessment of traffic circulation alternatives being considered for the area.

Table 3 – AM Peak Hour Origin Destination Analysis

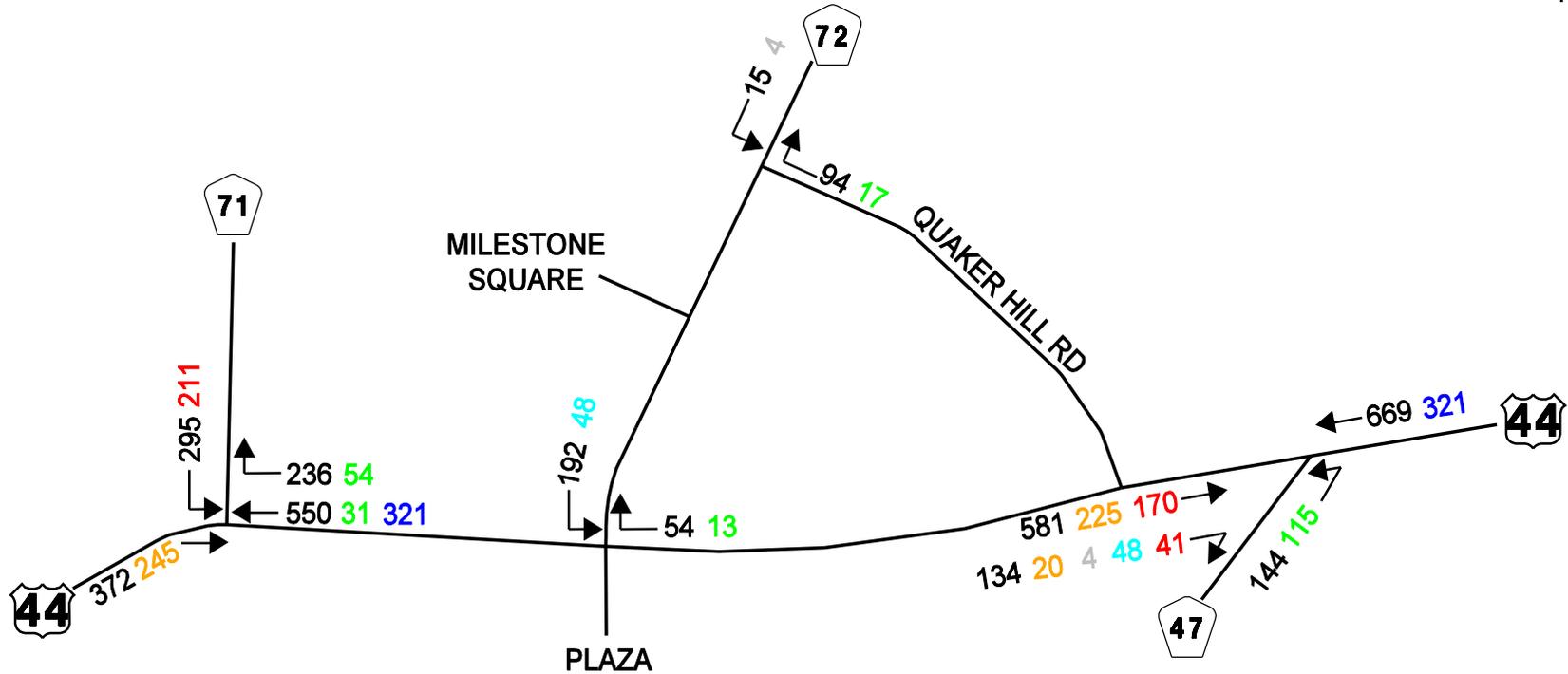
From		To						Through Volume & Percent
		CR 47 SB (MVT 6)	Route 44 EB (MVT 5)	CR 72 NB via CR 72 (MVT 10)	CR 72 NB via Quaker Hill (MVT 7)	CR 71 NB (MVT 8)	Route 44 WB (MVT 9)	
	Total Volume	134	581	54	94	236	550	
CR 71 SB (MVT 2)	295	41 (14%) [31%]	170 (58%) [29%]					211 (72%)
CR 72SB via CR 72 (MVT 4)	192	48 (25%) [36%]						48 (25%)
CR 72SB via Quaker Hill (MVT 1)	15	4 (27%) [3%]						4 (27%)
CR 47 NB (MVT 12)	144			13 (9%) [24%]	17 (12%) [18%]	54 (38%) [23%]	31 (22%) [6%]	115 (80%)
Route 44 EB (MVT 3)	372	20 (5%) [15%]	225 (60%) [39%]					245 (65%)
Route 44 WB (MVT 11)	669						321 (48%) [58%]	321 (48%)
Through Volume & Percent		113 [84%]	395 [68%]	13 [24%]	17 [18%]	54 [23%]	352 [64%]	

Footnote: Number of license plates matched (Percent of peak hour volume of Point of Origin) [Percent of peak hour Volume of Destination Point]
MVT = Movement

Table 4 – PM Peak Hour Origin Destination Analysis

From		To						Through Volume & Percent
		CR 47 SB (MVT 6)	Route 44 EB (MVT 5)	CR 72 NB via CR 72 (MVT 10)	CR 72 NB via Quaker Hill (MVT 7)	CR 71 NB (MVT 8)	Route 44 WB (MVT 9)	
	Total Volume	150	702	76	197	228	531	
CR 71 SB (MVT 2)	317	45 (14%) [30%]	165 (52%) [24%]					210 (66%)
CR 72SB via CR 72 (MVT 4)	212	42 (20%) [28%]						42 (20%)
CR 72SB via Quaker Hill (MVT 1)	15	2 (13%) [1%]						2 (13%)
CR 47 NB (MVT 12)	193			20 (10%) [26%]	49 (25%) [25%]	38 (20%) [17%]	45 (23%) [8%]	152 (79%)
Route 44 EB (MVT 3)	625	28 (4%) [19%]	323 (52%) [46%]					351 (56%)
Route 44 WB (MVT 11)	762						340 (45%) [64%]	340 (45%)
Through Volume & Percent		117 [78%]	488 [70%]	20 [26%]	49 [25%]	38 [17%]	385 [73%]	

Footnote: Number of license plates matched (Percent of peak hour volume of Point of Origin) [Percent of peak hour Volume of Destination Point]
MVT = Movement



LEGEND:

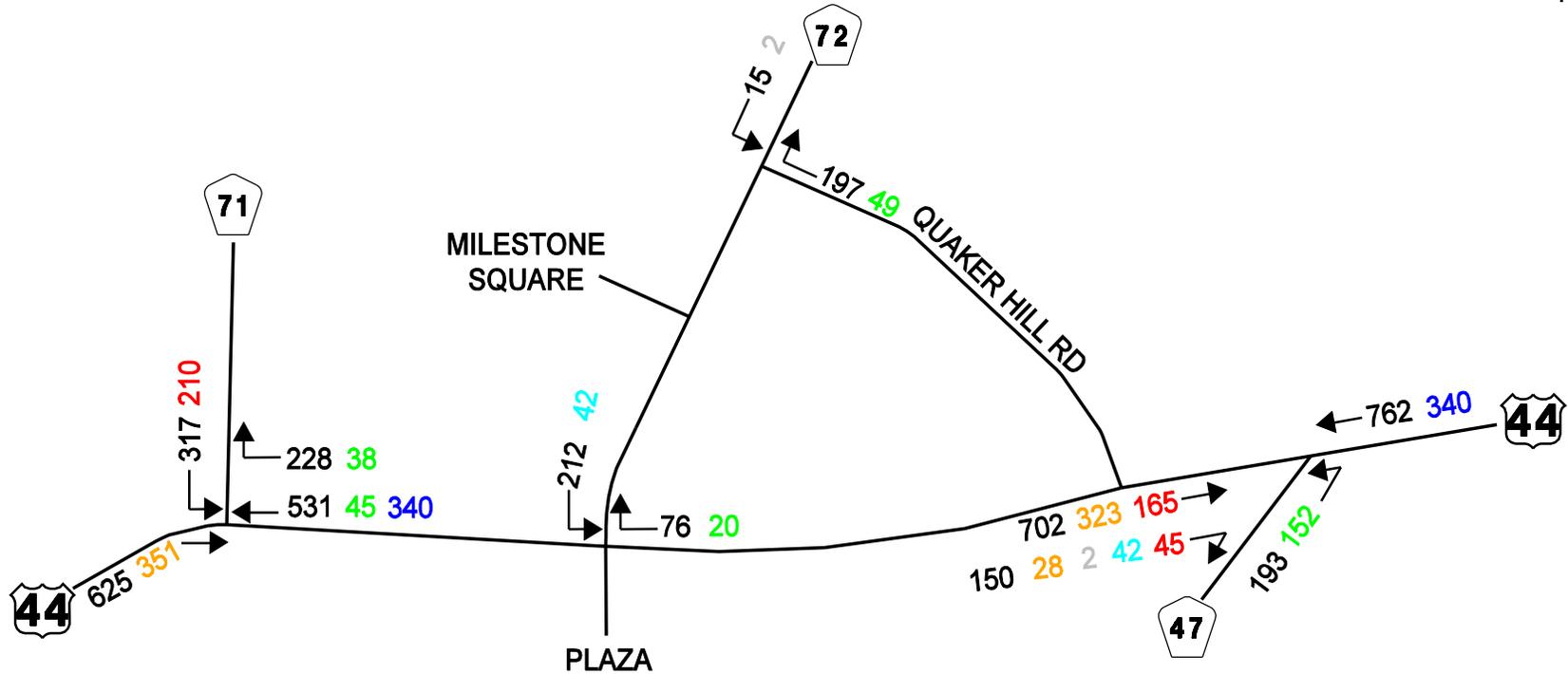
XXX BLACK NUMBERS = TOTAL PEAK HOUR TRAFFIC VOLUME ON SPECIFIC MOVEMENT

XXX COLOR NUMBERS = TOTAL THROUGH VOLUME BETWEEN LIKE COLORED ORIGIN DESTINATION POINTS

2007 EXISTING ORIGIN DESTINATION TRAFFIC PATTERNS AM PEAK HOUR

PLEASANT VALLEY HAMLET TRAFFIC ANALYSIS PLEASANT VALLEY, NEW YORK





LEGEND:

XXX BLACK NUMBERS = TOTAL PEAK HOUR TRAFFIC VOLUME ON SPECIFIC MOVEMENT

XXX COLOR NUMBERS = TOTAL THROUGH VOLUME BETWEEN LIKE COLORED ORIGIN DESTINATION POINTS

2007 EXISTING ORIGIN DESTINATION TRAFFIC PATTERNS PM PEAK HOUR

PLEASANT VALLEY HAMLET TRAFFIC ANALYSIS PLEASANT VALLEY, NEW YORK

