

# Intersection Improvement Analysis

## Evaluation of Six Selected Intersections

Cumberland County  
New Jersey

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**CUMBERLAND COUNTY  
INTERSECTION IMPROVEMENT ANALYSIS  
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## **EXECUTIVE SUMMARY**

Six intersections in Cumberland County, New Jersey were studied as part of an intersection improvement analysis. The evaluation at each intersection will include a field investigation, traffic data collection, crash evaluation, road condition analysis, and signal warrant evaluation and development of conceptual improvements to assist Cumberland County in developing projects that will qualify for federal funding.

The following intersections were selected for study:

1. CR 553 (South Woodruff Road) and CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road)
2. CR 606 (Old Deerfield Pike) and CR 704 (Silver Lake Road)
3. CR 606 (Old Deerfield Pike) and CR 617 (Finley Road)
4. CR 625 (Hogbin Road) and CR 670 (Buckshutem Road)
5. CR 634 (Morton Avenue) and CR 654 (Lebanon Road)
6. CR 621 (West Park Drive) and Mayor Aitken Drive

Turning movement counts, including heavy vehicles and pedestrian counts, were conducted on Tuesday, December 16, 2014 between the hours of 7:00 - 9:30 A.M. and 4:00 - 6:00 P.M. at the study intersections. Automatic Traffic Recorder (ATR) data, including speed and class information, was collected during the same time period and supplemented with ATR obtained from the NJDOT website. Additional turning movement counts were also conducted at the intersection of CR 625 (Hogbin Road) and CR 670 (Buckshutem Road) on June 5, 2015 to determine the impact of seasonal traffic at that location.

The performance of the study intersections under existing conditions was evaluated through a qualitative measure of operating conditions called Levels of Service (LOS) determined through analysis procedures outlined in the 2010 *Highway Capacity Manual* (Transportation Research Board, Washington, D.C.) utilizing using the *Synchro* Version 8.0 software.

Crash data for the study intersections for the three year period from 2011 to 2013 was obtained through the Rutgers Center for Advanced Infrastructure and Transportation "Plan4Safety" program. Crashes are broken down by type, location, time of day, month and year, roadway conditions and severity.

The intersection of South Woodruff Road (CR 553) and Rosenhayn Avenue (CR 659) and Woodruff-Carmel Road (CR 705) is two four-leg intersections in Upper Deerfield Township. Between 2011 and 2013, there were fourteen crashes at the intersection. The minimum sight distance requirements at the intersection are met for passenger cars but the sight distances for the north approach of Rosenhayn Avenue (CR 659) are less than the minimum sight distances for Single Unit and Semi-trucks. A grade differential along Rosenhayn Avenue (CR 659) vegetation at the corner, and utility poles along Rosenhayn Avenue (CR 659) are factors affecting the sight distance. A roundabout was considered feasible at this time when considering the costs and impact on adjacent properties. The intersection meets the crash history warrants for a multiway stop. Pennoni is recommending the phased implementation of the following improvements:

- Phase 1 - Install a multi-way stop at CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road). (Approx. \$3,600)
- Phase 2 -Simplify the intersection(s) through the closing of the segment of Woodruff Road between Rosenhayn Avenue and Woodruff-Carmel Road. (Approx. \$57,300)

The intersection of Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704) is a four-leg intersection in Upper Deerfield Township with stop control on Silver Lake Road. Between 2011 and 2013, there were eight crashes at the intersection. The minimum sight distance requirements are not met for passenger cars or trucks for the Silver Lake Road (CR 704) approaches. On the southeast corner of the intersection is a house that blocks the left vision of westbound vehicles. Trees block both the left/right eastbound and right

westbound sight distance. The intersection meets the vehicular volume warrants for a multi-way stop. Based on the intersection evaluation Pennoni is recommending the following improvements:

- Trim the vegetation within the right-of-way to improve sight distance.
- Install a multi-way stop at Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704). (Approx. \$4,800)

The intersection of Old Deerfield Pike (CR 606) and Finley Road (CR 617) is a four-leg intersection in Upper Deerfield Township with stop control on Finley Road. Between 2011 and 2013, there were thirteen crashes at the intersection. The minimum sight distance requirements are not met for passenger cars for the Finley Road (CR 617) approaches. There are trees along both sides of Old Deerfield Pike (CR 606) that contribute to the sight distance limitations. The intersection meets the crash history warrants for a multiway stop. Based on the intersection evaluation, Pennoni is recommending the following improvements:

- Trim the vegetation within the right-of-way to improve sight distance.
- Install a multi-way stop at Old Deerfield Pike (CR 606) and Finley Road (CR 617). (Approx. \$4,800)

The intersection of Hogbin Road (CR 625) and Buckshutem Road (CR 670) is a four-leg intersection located in the City of Millville with stop control on Hogbin Road. Between 2011 and 2013, there were five crashes at the intersection. The minimum sight distance requirements are met for all vehicles on all approaches. The intersection meets the vehicular volume warrants for a multi-way stop. Pennoni is recommending the following improvements:

- Install a multi-way stop at Hogbin Road (CR 625) and Buckshutem Road (CR 670). (Approx. \$4,800)

The intersection of Morton Avenue and Lebanon Road is a four-leg intersection in Deerfield Township with stop control on Lebanon Road. Between 2011 and 2013, there were four crashes at the intersection of Morton Avenue and Lebanon Road. The minimum sight distance requirements are met for all vehicles on all approaches. There is a flashing beacon on the existing stop sign located on the southwest corner of the intersection and it is recommended that a flashing beacon also be added to the stop sign northeast corner of the intersection (Approx. \$1,700).

The intersection of West Park Drive and Mayor Aitken Road is comprised of two three legged intersections in the City of Bridgeton. Between 2011 and 2013, there were ten crashes at the intersection of West Park Drive and Mayor Aitken Drive. Of the ten crashes, six (60%) were rear end crashes. The intersection does not meet the warrants for multi-stop control, however does meet the four hour warrant for a traffic signal. Pennoni is recommending the phased implementation of the following improvements:

- Phase 1 - Simplify the intersection by eliminating the fork on Mayor Aitken Drive and creating a four-way intersection with the amphitheater driveway on the north side of West Park Drive. (Approx. \$187,000)
- Phase 2 - Install a traffic signal at the intersection of West Park Drive (CR 621) and Mayor Aitken Drive. (Approx. \$118,000)

It is recommended that the consolidation of the intersection be undertaken initially and that that the effects of the improvement be evaluated prior to considering the implementation of Phase 2.

## **INTRODUCTION**

This report documents the results of an intersection improvement analysis of six unsignalized intersections in Cumberland County, New Jersey. The evaluation at each intersection will include a field investigation, traffic data collection, crash evaluation, road condition analysis, and signal warrant evaluation and development of conceptual improvements to assist Cumberland County in developing projects that will qualify for federal funding.

The following intersections were selected by Cumberland County for study:

1. CR 553 (South Woodruff Road) and CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road) in Upper Deerfield Township
2. CR 606 (Old Deerfield Pike) and CR 704 (Silver Lake Road) in Upper Deerfield Township
3. CR 606 (Old Deerfield Pike) and CR 617 (Finley Road) in Upper Deerfield Township
4. CR 625 (Hogbin Road) and CR 670 (Buckshutem Road) in the City of Millville
5. CR 634 (Morton Avenue) and CR 654 (Lebanon Road) in Deerfield Township
6. CR 621 (West Park Drive) and Mayor Aitken Drive in the City of Bridgeton

**FIGURE 1** shows the overall study area. **FIGURES 2-7** are 2013 aerials of the individual intersections from the NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS).

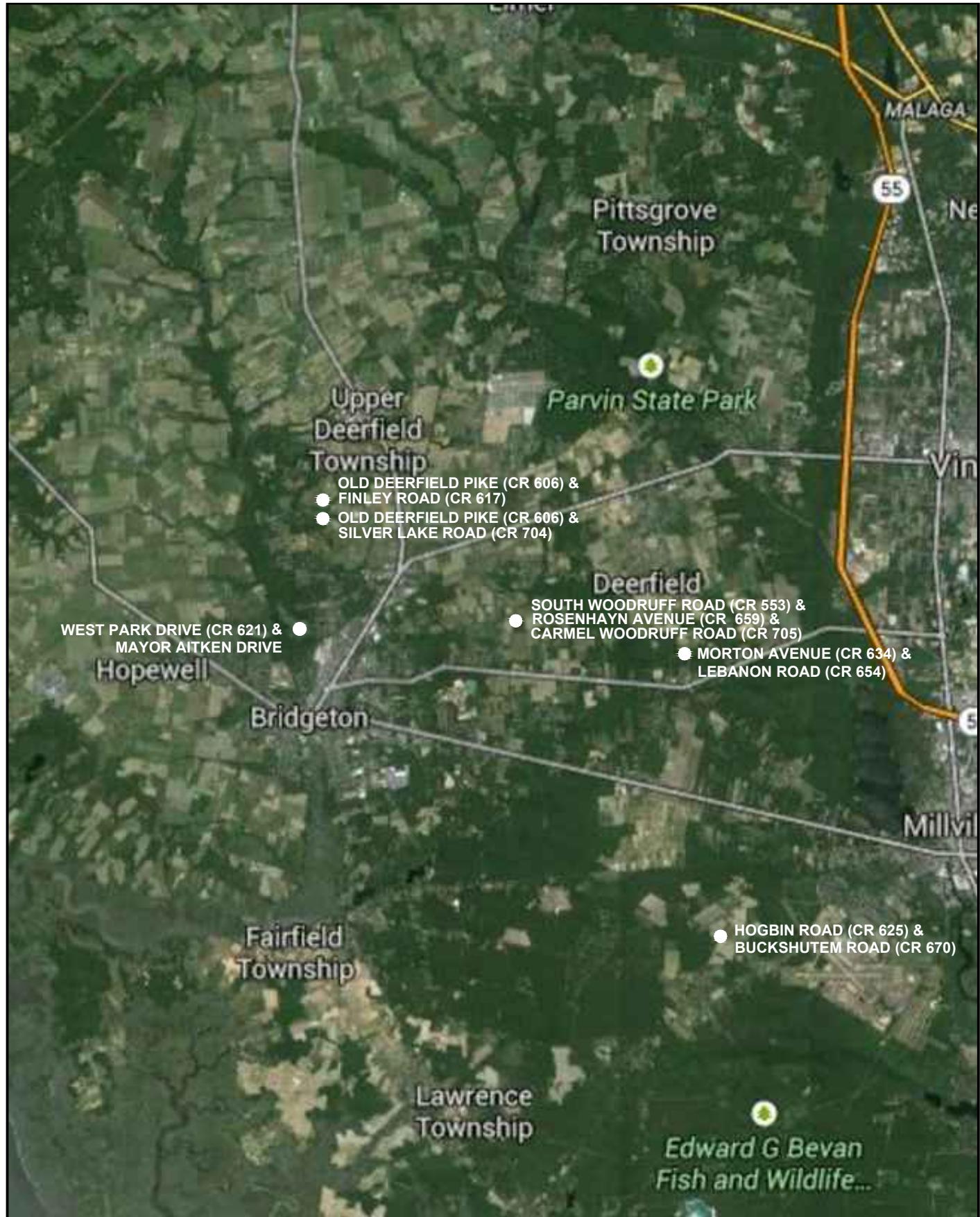
## **METHODOLOGY**

The project intersections are evaluated based on the operation of the intersection, the crash history, whether it meets traffic Signal Warrants, the roadway condition, and the existing of cultural or environmental constraints. Based on the evaluations recommendations regarding possible intersection improvements were developed. Specific elements include:

- An inventory of the roadway facilities in the vicinity of this project, including the existing physical and traffic operating characteristics.
- Manual turning movement counts performed at the study intersections during weekday morning and afternoon peak traffic hours.
- Capacity analysis of existing conditions
- Crash analysis for the study area roadways.
- Multi-way stop/Signal warrant evaluation for the study intersections
- Analysis of improvement Options
- Presentation of Recommendations

## **Existing Traffic Volumes**

Turning movement counts, including heavy vehicles and pedestrian counts, were conducted on Tuesday, December 16, 2014 between the hours of 7:00 - 9:30 A.M. and 4:00 -6:00 P.M. at the study intersections. The existing traffic volumes and pedestrian volumes are shown on **FIGURES 8-12**. Automatic Traffic Recorder (ATR) data, including speed and class information, was collected during the same time period and supplemented with ATR obtained from the NJDOT website. Additional turning movement counts were conducted at the intersection of CR 625 (Hogbin Road) and CR 670 (Buckshutem Road) on June 5, 2015 to determine the impact of seasonal traffic. The June peak hour traffic volumes for CR 625 (Hogbin Road) and CR 670 (Buckshutem Road) are illustrated in **FIGURE 13**. The manual count and ATR data is provided in **APPENDIX B**.



**Pennoni Associates Inc.**  
Consulting Engineers

FIGURE 1  
PROJECT LOCATION



SOUTH WOODRUFF ROAD (CR 553) &  
ROSENHAYN AVENUE (CR 659) &  
CARMEL WOODRUFF ROAD (CR 705)



FIGURE 2  
2013 AERIAL ORTHOGRAPHY



OLD DEERFIELD PIKE (CR 606) &  
FINLEY ROAD (CR 617)



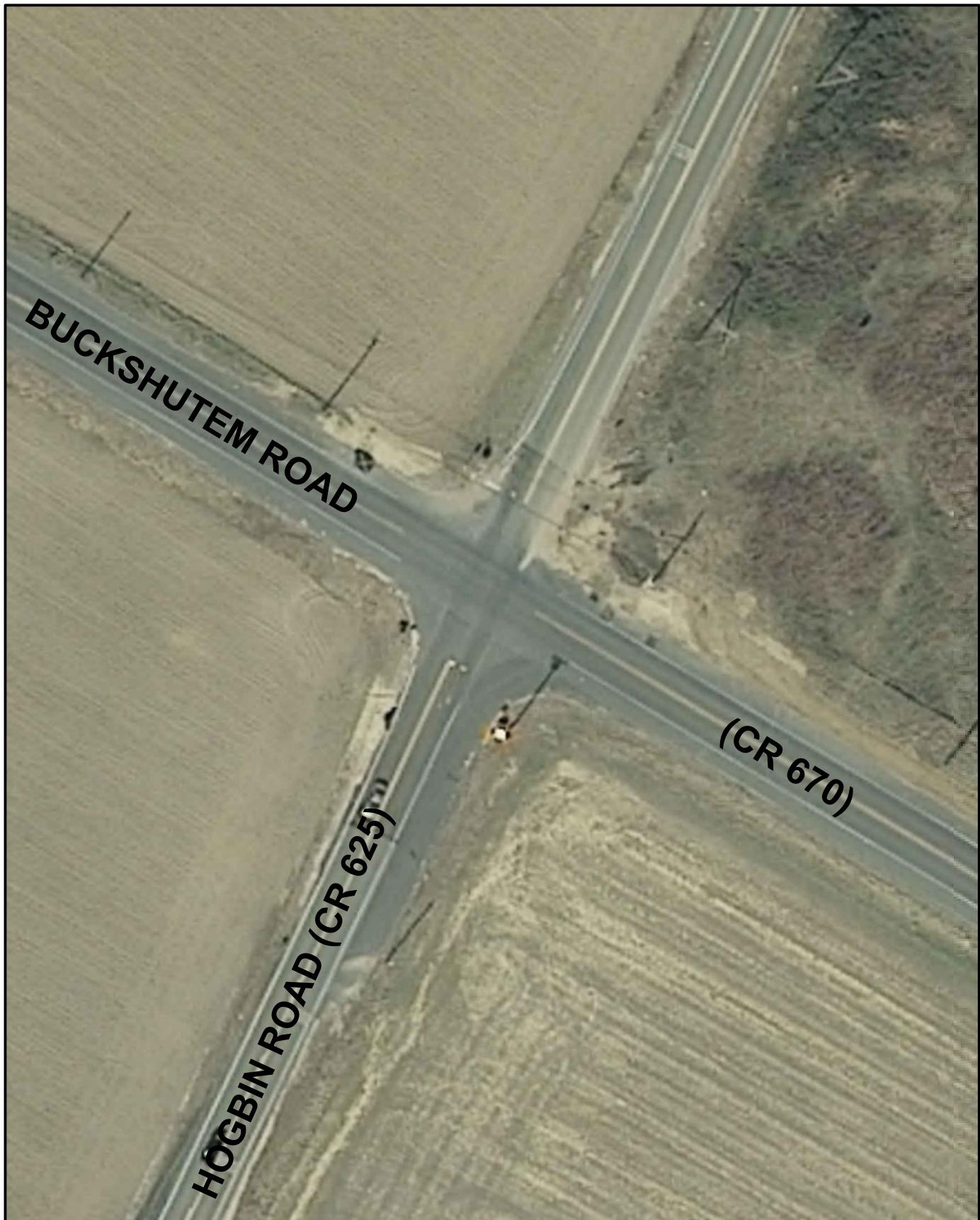
FIGURE 3  
2013 AERIAL ORTHOGRAPHY



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OLD DEERFIELD PIKE (CR 606) &  
SILVER LAKE ROAD (CR 704)

FIGURE 4  
2013 AERIAL ORTHOGRAPHY



HOGBIN ROAD (CR 625) &  
BUCKSHUTEM ROAD (CR 670)

FIGURE 5  
2013 AERIAL ORTHOGRAPHY



MORTON AVENUE (CR 634) &  
LEBANON ROAD (CR 654)



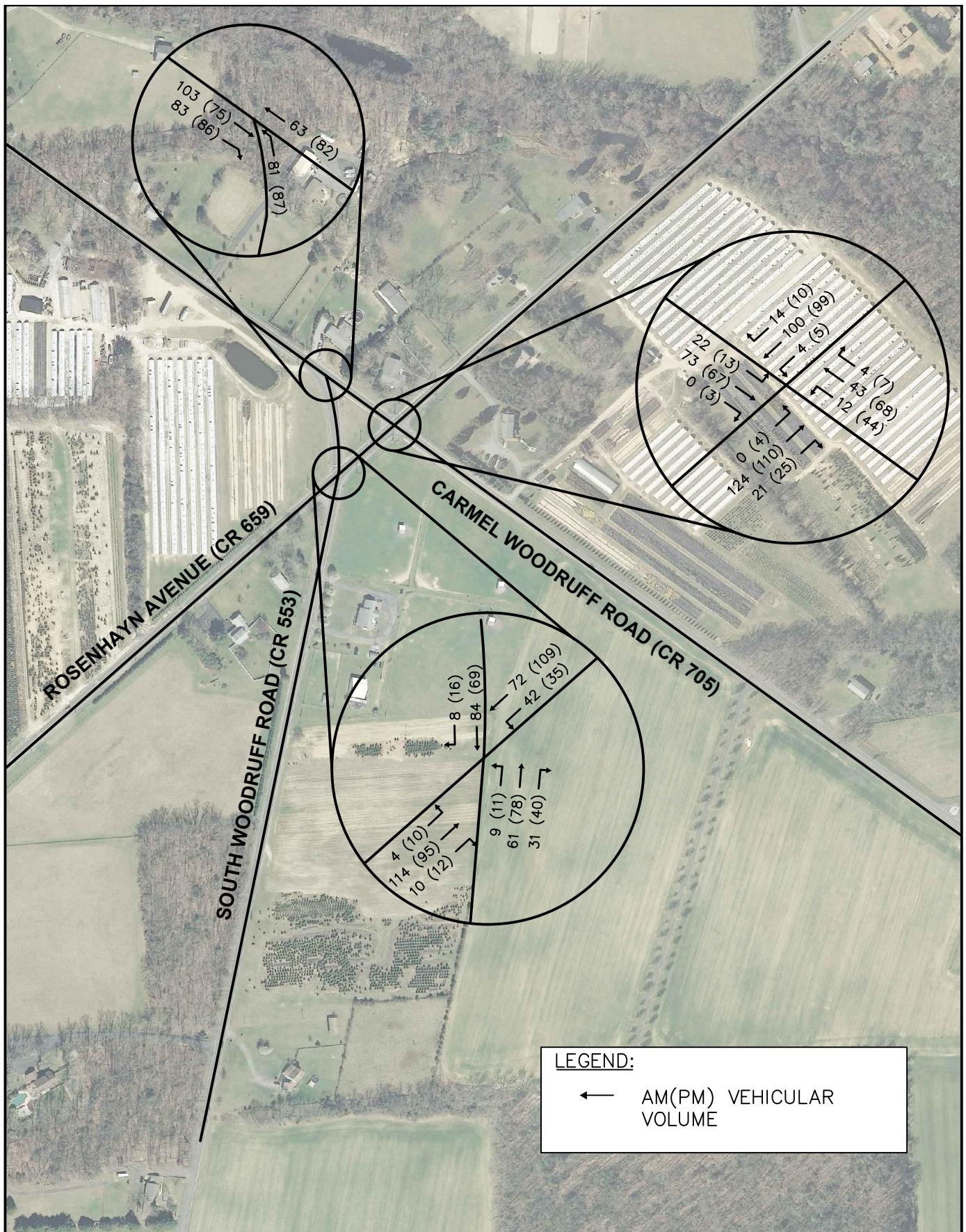
FIGURE 6  
2013 AERIAL ORTHOGRAPHY



**WEST PARK DRIVE (CR 621) &  
MAYOR AITKEN DRIVE**

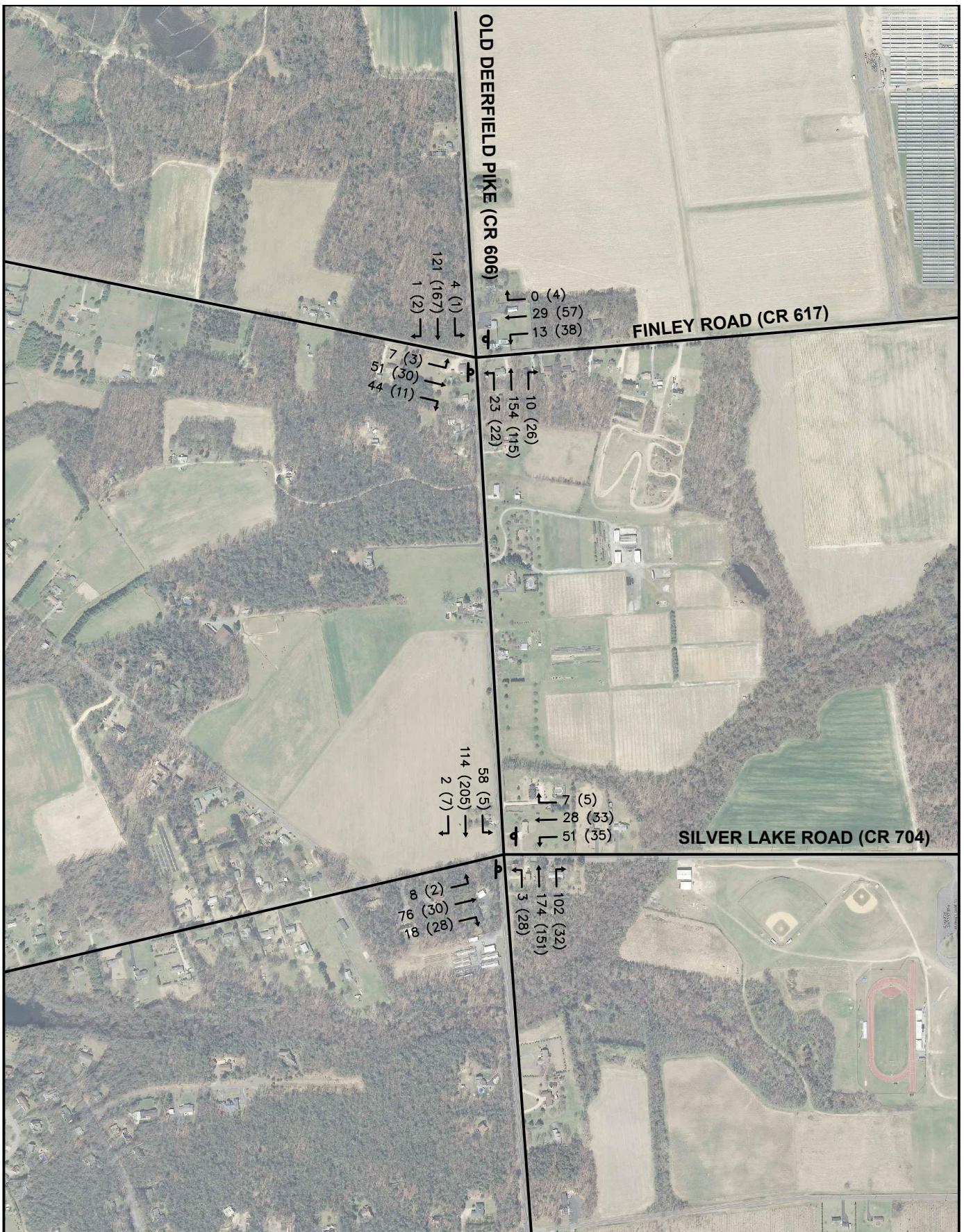


**FIGURE 7  
201AERIAL OTHOGRAPHY**



**SOUTH WOODRUFF ROAD (CR 553) &  
ROSENHAYN AVENUE (CR 659) &  
CARMEL WOODRUFF ROAD (CR 705)**

**FIGURE 8**  
**2014 EXISTING PEAK HOUR**  
**WEEKDAY TRAFFIC VOLUMES**



**OLD DEERFIELD PIKE (CR 606) &  
FINLEY ROAD (CR 617)**

**OLD DEERFIELD PIKE (CR 606) &  
SILVER LAKE ROAD (CR 704)**

**FIGURE 9  
2014 EXISTING PEAK HOUR  
WEEKDAY TRAFFIC VOLUMES**



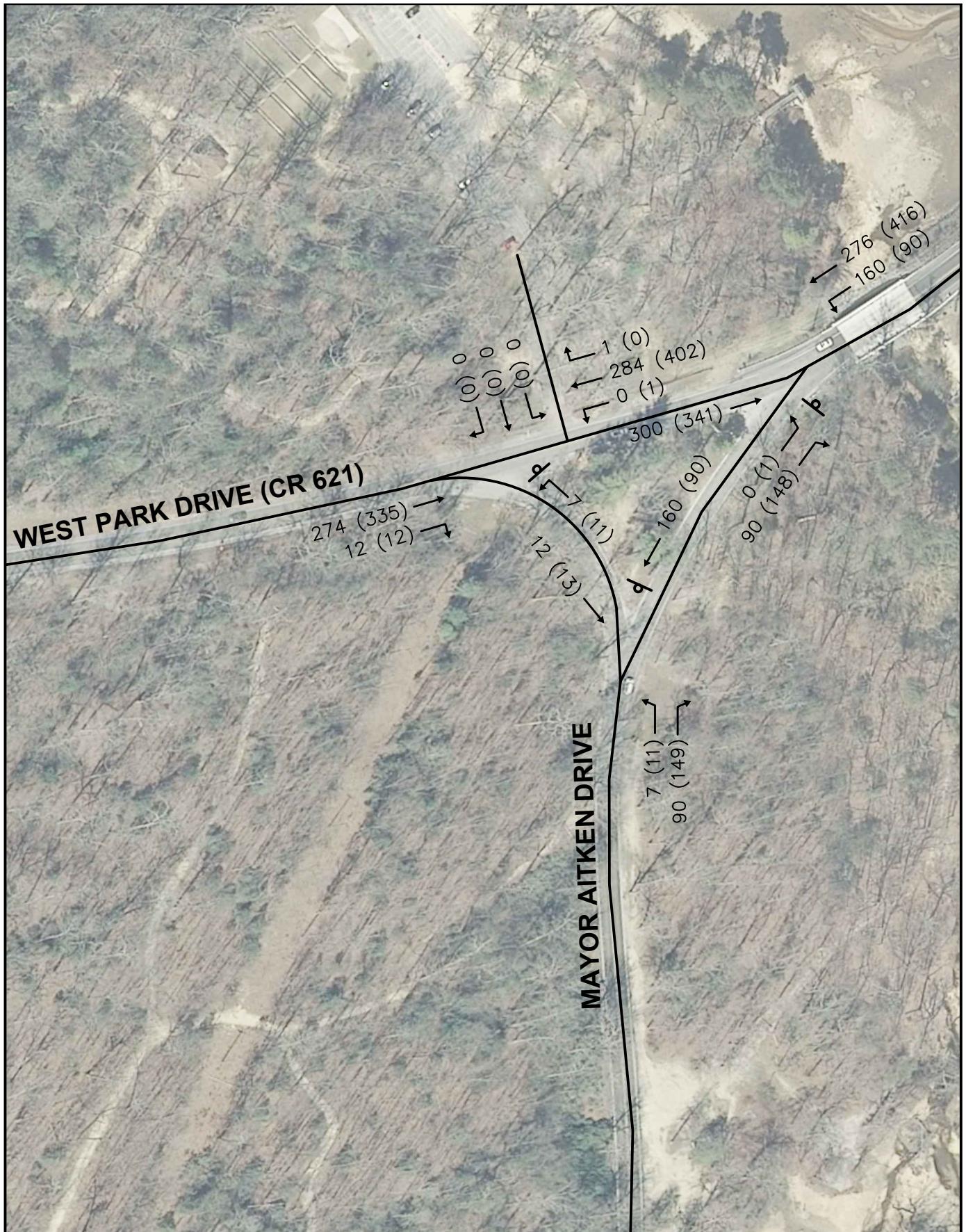
HOGGIN ROAD (CR 625) &  
BUCKSHUTEM ROAD (CR 670)

FIGURE 11  
2014 EXISTING PEAK HOUR  
WEEKDAY TRAFFIC VOLUMES



**MORTON AVENUE (CR 634) &  
LEBANON ROAD (CR 654)**

**FIGURE 11  
2014 EXISTING PEAK HOUR  
WEEKDAY TRAFFIC VOLUMES**



**WEST PARK DRIVE (CR 621) &  
MAYOR AITKEN DRIVE**



**FIGURE 12  
2014 EXISTING PEAK HOUR  
WEEKDAY TRAFFIC VOLUMES**



**HOGBIN ROAD (CR 625) &  
BUCKSHUTEM ROAD (CR 670)**

**FIGURE 13**  
JUNE 2015 PEAK HOUR  
WEEKDAY TRAFFIC VOLUMES

## **Capacity Analysis of Existing Conditions**

The performance of the study intersections under existing conditions was evaluated through a qualitative measure of operating conditions called Levels of Service (LOS). Six levels of Service (LOS) are defined with letter designations from 'A' to 'F', with Level of Service 'A' representing delays up to ten seconds and Level of Service 'F' indicating delays exceeding eighty seconds. Level of Service 'C' or better is considered acceptable, with a threshold of Level of Service 'D' in urban areas. Levels of Service are determined through analysis procedures outlined in the 2010 *Highway Capacity Manual* (Transportation Research Board, Washington, D.C.) utilizing using the *Synchro* Version 8.0 software.

Levels of Service for unsignalized intersections are defined in terms of delay to vehicles entering from the side road and turning left from a major road. Delay is a function of the capacity of the approach and degree of saturation. The capacity is based on the distribution of gaps in the major street traffic stream, driver judgment in selecting a gap through which to execute the desired maneuver, and follow-up time required by each driver in a queue. The Level of Service Criteria for unsignalized intersections is provided in **APPENDIX A**.

## **Crash Analysis**

Crash data for the study intersections for the three year period from 2011 to 2013 was obtained through the Rutgers Center for Advanced Infrastructure and Transportation "Plan4Safety" program. Crashes are broken down by type, location, time of day, month and year, roadway conditions and severity.

## **Multi-way Stop/Signal Warrant Analysis**

All of the study intersections have the minor road stop controlled. The intersections were evaluated for multi-way stop control and/or traffic signal control.

Chapter 2B of the MUTCD identifies the following criteria for the consideration of a multi-way stop control:

- Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation.
- The vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour.
- Where the previous two criteria are not satisfied but where the crash and volume criteria are both satisfied to 80 % of the minimum volumes.
- Need to control left-turn conflicts
- Need to control vehicle/pedestrian conflicts
- Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless cross traffic cis also required to stop.

Chapter 4C of the *Manual on Uniform Traffic Control Devices* (MUTCD) contains guidelines for situations in which it may be appropriate to install a traffic signal. These guidelines are summarized as eight traffic signal warrants, which consider vehicular/pedestrian traffic volumes, safety and coordinated traffic signal systems. The list of warrants is as follows:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak-Hour Vehicular Volume
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing

- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network

## **SOUTH WOODRUFF ROAD (CR 553) AND ROSENHAYN AVENUE (CR 659) AND WOODRUFF-CARMEL ROAD (CR 705)**

### **Existing Roadway Facilities**

The intersection of South Woodruff Road (CR 553) and Rosenhayn Avenue (CR 659) and Woodruff-Carmel Road (CR 705) is two four-leg intersections in Upper Deerfield Township. Southbound South Woodruff Road forks to the east and intersects Rosenhayn Avenue twice. The eastern intersection of South Woodruff Road and Rosenhayn Avenue has stop control on South Woodruff Road. There is a channelized right turn lane to turn onto South Woodruff Road from eastbound Rosenhayn Avenue. The western intersection of South Woodruff Road/Woodruff-Carmel Road and Rosenhayn Avenue has stop control on South Woodruff Road and Woodruff-Carmel Road. All approaches contain one left/thru/right lane and one receiving lane.



Photo 1: South Woodruff Road south of Rosenhayn Avenue, east intersection



Photo 2: Woodruff-Carmel Road south of Rosenhayn Avenue, west intersection



Photo 3: Rosenhayn Avenue west of Woodruff-Carmel Road

The following roadways make up the intersection:

- **South Woodruff Road (CR 553)** is a north south minor arterial highway. Within the study area, South Woodruff Road is 26' wide and designated two-way with one travel lane and a shoulder in each direction. On portions of South Woodruff Road, passing is allowed. The speed limit on South Woodruff Road is 35 mph.

- **Rosenhayn Avenue (CR 659)** is an east-west oriented major collector roadway. Within the study area, Rosenhayn Avenue is 26' wide and designated two-way with one travel lane and a shoulder in each direction. On portions of Rosenhayn Avenue, passing is allowed. The posted speed limit on Rosenhayn Avenue is 45 mph.
- **Woodruff-Carmel Road (CR 705)** is a north-south oriented minor collector roadway. Within the study area, Woodruff-Carmel Road is 26' wide and designated two-way with one travel lane and a shoulder in each direction. On portions of Woodruff-Carmel Road, passing is allowed. The speed limit on Woodruff-Carmel Road is 25 mph.

### **Existing Levels of Service and Queue Analysis**

Under the existing conditions, all movements operate at LOS C or better, and none of the queues exceed the available storage. Results of the 2015 existing condition Level of Service and queue analysis are summarized in **TABLE 1**. The *Synchro* output summaries are provided in **APPENDIX C**.

**TABLE 1**  
**EXISTING LEVEL OF SERVICE SUMMARY**  
**ROSENHAYN AVENUE & SOUTH WOODRUFF ROAD & WOODRUFF CARMEL ROAD**

MOVEMENT	EXISTING 2015 CONDITIONS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
ROSENHAYNE AVE (CR 659) (EB LEFT AT SOUTH WOODRUFF RD)	A	7.6	0.0	A	7.6	0.0
ROSENHAYNE AVE (CR 659) (WB LEFT AT SOUTH WOODRUFF RD)	A	7.6	0.1	A	7.5	0.1
ROSENHAYNE AVE (CR 659) (WB LEFT AT CARMEL RD)	A	7.8	0.0	A	7.8	0.0
SOUTH WOODRUFF RD (CR 553) (NB AT ROSENHAYNE AVE)	B	12.3	0.7	B	12.3	0.9
SOUTH WOODRUFF RD (CR 553) (NB AT CARMEL RD)	B	10.9	0.5	B	10.4	0.4
SOUTH WOODRUFF RD (CR 553) (SB AT ROSENHAYNE AVE)	B	12.7	0.7	B	12.0	0.5
CARMEL RD (CR 705) (NB AT ROSENHAYNE AVE)	B	12.0	0.4	B	12.4	0.8
CARMEL RD (CR 705) (SB AT ROSENHAYNE AVE)	B	12.9	0.8	B	11.9	0.5

### **Crash Analysis**

Between 2011 and 2013, there were fourteen crashes at the intersection of South Woodruff Road and Rosenhayn Avenue and Woodruff-Carmel Road. Six (43%) of the crashes occurred at the intersection of Rosenhayn Avenue and Woodruff-Carmel Road, and eight (57%) crashes occurred at the intersection of Rosenhayn Avenue and South Woodruff Road. Three crashes occurred in the months of December and October, two crashes occurred in the months of April and September, and one crash occurred in the months of January, March, May, and July.

Of the eight crashes at South Woodruff Road and Rosenhayn Avenue, four (50%) were right angle crashes, one (12.5%) crash was a same direction sideswipe, one (12.5%) crash was a rear end, one (12.5%) crash was with a fixed object, and one (12.5%) crash was a left turn crash. Six (75%) crashes resulted in minor

injuries, and two (25%) crashes resulted in property damage only. Six (75%) of the crashes occurred in dry conditions, while one (12.5%) crash occurred in wet conditions and one (12.5%) crash occurred in snowy conditions. Five (62.5%) crashes occurred during daylight hours, one (12.5%) crash occurred at dawn, one (12.5%) crash occurred at dusk, and one (12.5%) crash occurred at night with street lights turned on. Four crashes occurred in 2013, two crashes occurred in 2012, and two crashes occurred in 2011.

Of the six crashes at Rosenhayn Avenue and Woodruff-Carmel Road four (67%) were right angle crashes and two (33%) were crashes with fixed objects. Five (83%) crashes resulted in property damage only, and one (17%) resulted in a severe injury. Five (83%) of the crashes occurred in dry conditions, and one crash occurred in wet conditions. Five (83%) crashes occurred during daylight hours, and one (17%) crash occurred when it was dark and no street lights were present. Two crashes occurred in 2013, three crashes occurred in 2012, and one crash occurred in 2011.

#### **Multi-way Stop Warrant Analysis (MUTCD – Warrant 2B.07 – Multi-way Stop Evaluation)**

Condition A: Where traffic signal control is justified, the multi-way stop is an interim measure to quickly control traffic while arrangements are being made.

Result: Not Applicable

Condition B: 5 or more reported crash in a 12-month period that is susceptible to correction by a multi-way stop installation.

As stated above, there were 3 crashes in 2011, 5 crashes in 2012, and 6 crashes in 2013 at the study intersection. Of the 14 crashes over the last 3 years, 9 were considered susceptible to correction by a multi-way stop (right turn, left turn, and angle). A Summary of the crashes provided in the attached **TABLE 2**.

Result: There were 5 or more crashes that are susceptible to correction reported in a 12-month period (May, 2012 to April, 2013), **Condition B is met**

**TABLE 2**  
**CRASH SUMMARY**  
**ROSENHAYN AVENUE & SOUTH WOODRUFF ROAD & WOODRUFF CARMEL ROAD**

Location	Month	Time	Type	Year	Cross Street	Severity	Light Condition	Surface Condition
Rosenhayn Avenue (CR 659)	Dec	12:24 PM	Right Angle	2011	Woodruff Carmel Road (CR 705)	Property Damage	daylight	wet
Rosenhayn Avenue (CR 659)	May	7:14 PM	Right Angle	2012	Woodruff Carmel Road (CR 705)	Property Damage	daylight	dry
Rosenhayn Avenue (CR 659)	Oct	3:04 PM	Fixed Object	2012	Woodruff Carmel Road (CR 705)	Property Damage	daylight	dry
Rosenhayn Avenue (CR 659)	Oct	6:48 AM	Right Angle	2012	South Woodruff Road (CR 553)	Minor Injury	dawn	dry
Rosenhayn Avenue (CR 659)	Dec	11:09 PM	Fixed Object	2012		Property Damage	dark (no street lights)	dry
Rosenhayn Avenue (CR 659)	Jan	4:37 PM	Right Angle	2013	South Woodruff Road (CR 553)	Minor Injury	dusk	wet
Rosenhayn Avenue (CR 659)	Apr	12:20 PM	Right Angle	2013	Woodruff Carmel Road (CR 705)	Property Damage	daylight	dry
Rosenhayn Avenue (CR 659)	Sep	12:37 PM	Right Angle	2013	Woodruff Carmel Road (CR 705)	Incapacitating Injury	daylight	dry
South Woodruff Road (CR 553)	Mar	8:28 AM	Right Angle	2011	Rosenhayn Avenue (CR 659)	Minor Injury	daylight	dry
South Woodruff Road (CR 553)	Sep		Same Direction - Rear End					
South Woodruff Road (CR 553)	Sep	5:36 PM	Rear End	2011	Rosenhayn Avenue (CR 659)	Minor Injury	daylight	dry
South Woodruff Road (CR 553)	Jul		Same Direction - Side Swipe					
South Woodruff Road (CR 553)	Jul	6:53 PM	Side Swipe	2012	Rosenhayn Avenue (CR 659)	Minor Injury	daylight	dry
South Woodruff Road (CR 553)	Apr		Left Turn / U Turn					
South Woodruff Road (CR 553)	Apr	2:44 PM	Left Turn / U Turn	2013	Rosenhayn Avenue (CR 659)	Minor Injury	daylight	dry
South Woodruff Road (CR 553)	Oct		Right Angle				dark (street lights on/spot)	
South Woodruff Road (CR 553)	Oct	9:28 PM	Right Angle	2013	Rosenhayn Avenue (CR 659)	Property Damage	lights on/spot)	dry
South Woodruff Road (CR 553)	Dec	1:11 PM	Fixed Object	2013	Rosenhayn Avenue (CR 659)	Property Damage	daylight	snowy

#### **Condition C: Minimum Volumes & Delay**

In order to meet minimum volume criteria for a multi-way stop vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and

the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour. Where the 85<sup>th</sup> percentile approach speed of the major street exceeds 40 mph, the minimum volume warrants are reduced by 30%. The posted speed on the major street Rosenhayn Avenue (CR 659) is 45 mph and the measured 85<sup>th</sup> percentile speed is 52 mph thus meeting the requirement for reduced minimum volumes. A summary of the volume evaluation is shown in **TABLE 3**.

Count Date: 12/16/2014

Qualifiers:

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes

(Posted Speed Limit: 45mph, 85<sup>th</sup> Percentile Speed: 52 mph)

40 mph speed exceeded criteria applicable: Yes

**TABLE 3**  
**MULTI-WAY STOP EVALUATION**  
**MINIMUM VOLUME REQUIREMENTS**

	Required Hourly Volume	Average 8 Hour Volume
Rosenhayn Avenue (CR 659)	210*	169*
South Woodruff Road (CR 553)	140**	165**
Woodruff-Carmel Road (CR 705)	140**	148**

\*Vehicular volume entering the intersection from the major street (total of both approaches)

\*\*The combined vehicular, pedestrian & bicycle volume entering the intersection from the minor street (total of both approaches)

Requirement: Average volumes for common Eight (8) hours above minimums.

Result: Condition C is not met for the major approaches.

Optional Criteria:

A multi-way stop control can be installed at a two-way stop controlled intersection where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless the conflicting cross street is required to stop.

A sight distance evaluation was conducted at the study intersection in accordance with the guidelines contained in the NJDOT Roadway Design Manual. **TABLE 4** details the findings of the sight distance evaluation.

**TABLE 4**  
**MULTI-WAY STOP EVALUATION**  
**SIGHT DISTANCE**

Approach	Speed Limit (mph)	Sight Distance (ft)				
		Minimum			Actual	
		P	SU	WB	Left	Right
Woodruff-Carmel Road (CR 705) eastbound	45*	500'/430'	630'/565'	760'/695'	550'	760'+
		500'/430'	630'/565'	760'/695'	760'+	540'

#### = Left-Turn/Right-Turn or Cross

\*Speed Limit on Rosenhayn Avenue (CR 659) used to calculate minimum sight distance

Result: As shown on Table 4, the minimum sight distance requirements are met for passenger cars but the sight distances for the north approach of Rosenhayn Avenue (CR 659) are less than the minimum sight distances for Single Unit and Semi-trucks. A grade differential along Rosenhayn Avenue (CR 659) vegetation at the corner, and utility poles along Rosenhayn Avenue (CR 659) are factors affecting the sight distance.

### Roadway Evaluation

The roadway surface at South Woodruff Road (CR 553) and Rosenhayn Avenue (CR 659) and Woodruff-Carmel Road (CR 705) is in good condition. The intersection was part of a County repaving project in 2012 on South Woodruff Road (CR 553) and Rosenhayn Avenue (CR 659).

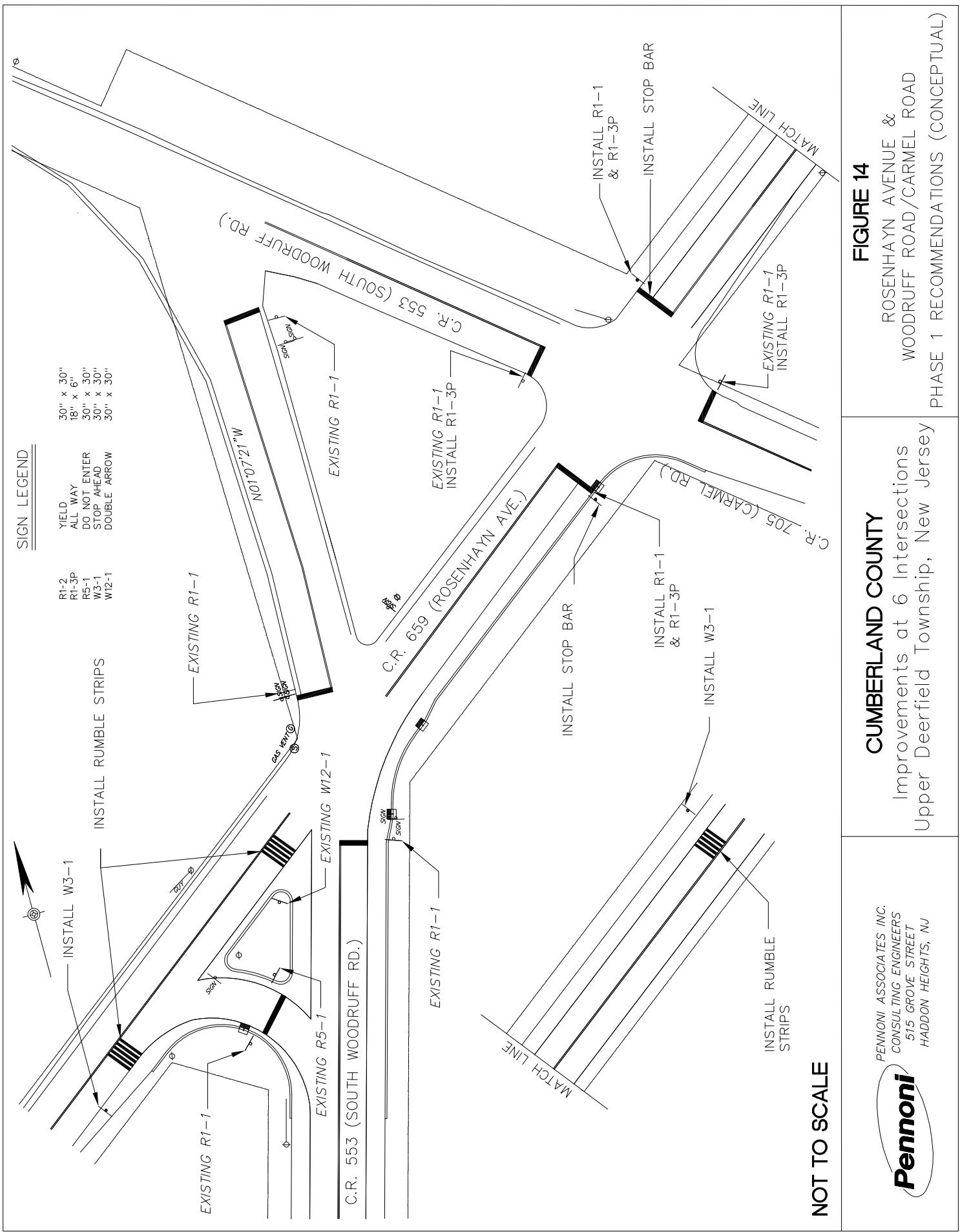
### Recommended Improvements

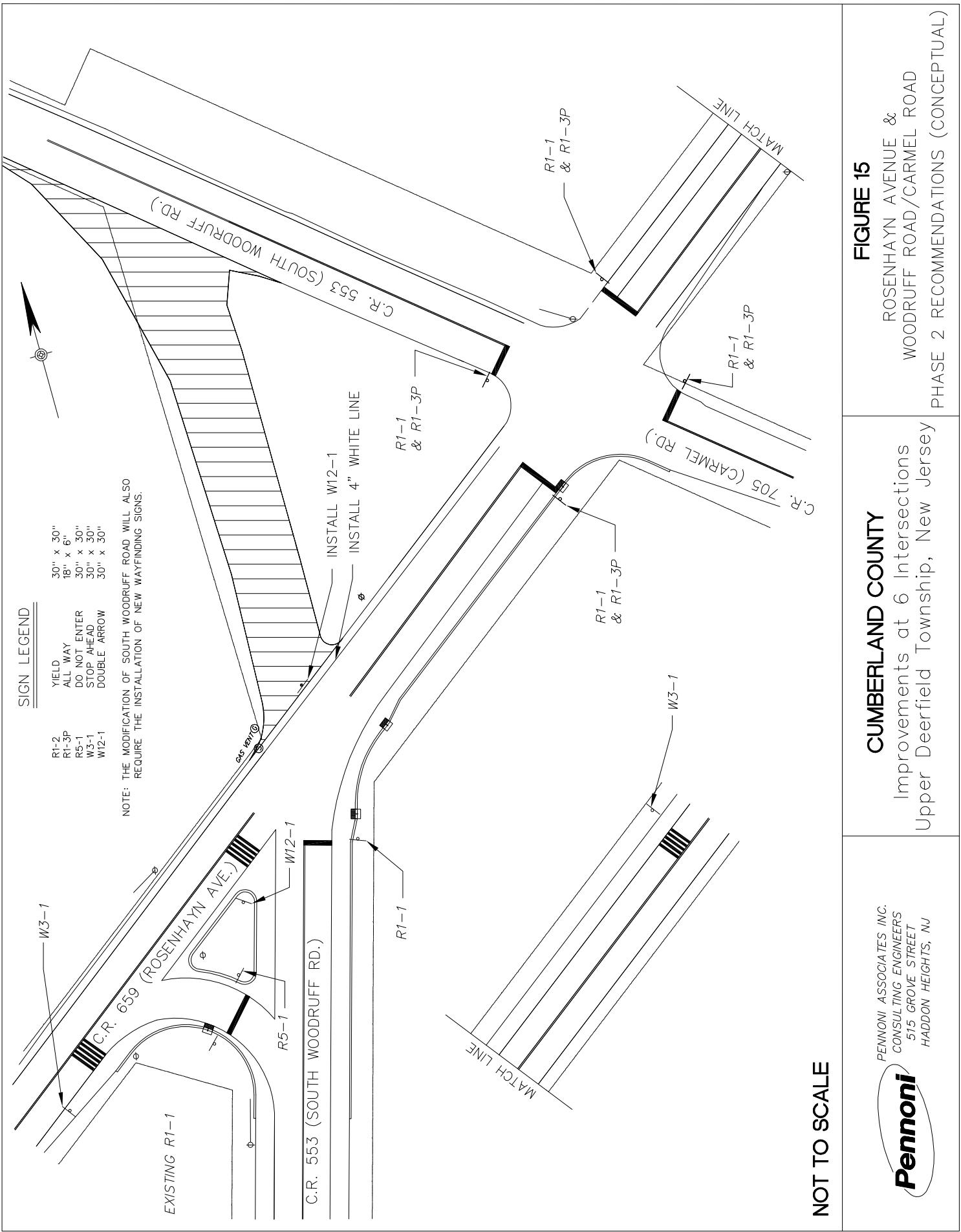
In developing improvements for this intersection, several options were considered including use of a roundabout to consolidate the intersection. After evaluating several roundabout configurations it was determined that the improvement of the intersection through the construction of a roundabout was not feasible at this time. There are other options that improve safety without the significant Right-of-Way impacts and construction costs that would be associated with a roundabout at this location.

Based on the multi-way stop evaluation, examination of the crash data and site observations Pennoni is recommending the phased implementation of the following improvements:

- **Phase 1 - Install a multi-way stop at CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road).** The implementation of the multi-way stop at CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road) will address the sight distance issue on Rosenhayn Avenue and provide the additional effect of reducing the speed on Rosenhayn Avenue. The recommended improvements will include the installation of new regulatory and warning signs and the installation of stop lines and rumble strips on CR 659 (Rosenhayn Avenue). The Phase 1 improvement is illustrated in **FIGURE 14**. The estimated cost of this recommended improvement is approximately \$3,600. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.
- **Phase 2 -Simplify the intersection(s) through the closing of the segment of Woodruff Road between Rosenhayn Avenue and Woodruff-Carmel Road.** This will consolidate some of the turning movements and result T-intersection at CR 659 (Rosenhayn Avenue) and CR 553 (Woodruff- Road). This recommendation will require roadway construction and is considered a long-term improvement. Along with the roadway construction, this improvement will include the installation of new regulatory, warning signs, and way finding signs. The Phase 2 improvement is illustrated in **FIGURE 15**. The estimated cost of this recommended improvement is approximately \$57,300. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.

It is recommended that the multi-way stop sign (Phase 1) be implemented and that the effects of the multi-way stop be evaluated prior to considering the implementation of Phase 2.





## **OLD DEERFIELD PIKE (CR 606) AND SILVER LAKE ROAD (CR 704)**

### **Existing Roadway Facilities**

The intersection of Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704) is a four-leg intersection with stop control on Silver Lake Road. Each approach contains one left/thru/right lane and one receiving lane. The intersection is located in Upper Deerfield Township and located approximately 2,500 feet west of the Cumberland Regional High School.



Photo 4: Old Deerfield Pike south of Silver Lake Road



Photo 5: Silver Lake Road east of Old Deerfield Pike

The following roadways make up the intersection:

- **Old Deerfield Pike (CR 606)** is a north-south oriented minor arterial highway and major collector roadway. Between Silver Lake Road (CR 704) and Finley Road (CR 617) Old Deerfield Pike is classified as a major collector roadway, and classified as a minor arterial highway south of Silver Lake Road. Within the study area, Old Deerfield Pike is 41' wide and designated two-way with one travel lane and a shoulder in each direction. On portions of Old Deerfield Pike, passing is allowed. The posted speed limit on Old Deerfield Pike is 50 mph.
- **Silver Lake Road (CR 704)** is an east-west oriented minor arterial highway. Within the study area, Silver Lake Road is 42' wide and designated two-way with one travel lane in each direction. On portions of Silver Lake Road, passing is allowed. The posted speed limit on Silver Lake Road is 45 mph.

### **Existing Levels of Service and Queue Analysis**

Under the existing conditions, all movements operate at LOS C or better except for the westbound Silver Lake Road approach during the AM peak, which operates at LOS E with 35.8 seconds of delay. This could be attributed to traffic for Cumberland Regional High School, located east of the intersection. None of the queues exceed the available storage. Results of the 2015 existing condition Level of Service and queue analysis are summarized in **TABLE 5**. The **Synchro** output summaries are provided in **APPENDIX C**.

**TABLE 5**  
**EXISTING LEVEL OF SERVICE SUMMARY**  
**OLD DEERFIELD PIKE & SILVER LAKE ROAD**

MOVEMENT	EXISTING 2015 CONDITIONS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
SILVER LAKE RD (CR 704) (EB AT OLD DEERFIELD PK)	C	23.8	2.2	B	12.2	0.4
SILVER LAKE RD (CR 704) (WB AT OLD DEERFIELD PK)	E	35.8	2.8	B	14.9	0.7
OLD DEERFIELD PK (CR 606) (NB LEFT AT SILVER LAKE RD)	A	7.5	0	A	7.8	0.1
OLD DEERFIELD PK (CR 606) (SB LEFT AT SILVER LAKE RD)	A	8.5	0.2	A	7.6	0.0
OVERALL INTERSECTION	A	9.4	-	A	3.7	-

### Crash Analysis

Between 2011 and 2013, there were eight crashes at the intersection of Old Deerfield Pike and Silver Lake Road. Of the eight crashes, six (75%) were right angle crashes, one crash was a rear end, and one crash was with an animal. Four (50%) of the crashes involved property damage only, two (25%) resulted with minor injuries, one (12.5%) resulted in moderate injuries, and there was one fatality. All of the crashes occurred in dry conditions. Six (75%) of the crashes occurred during daylight hours, and the only month with more than one crash occurring was October, which had two. Five of the crashes occurred in 2012, two occurred in 2013, and one occurred in 2011.

### Multi-way Stop Warrant Analysis (MUTCD – Warrant 2B.07 – Multi-way Stop Evaluation)

Condition A: Where traffic signal control is justified, the multi-way stop is an interim measure to quickly control traffic while arrangements are being made.

Result: Not Applicable

Condition B: 5 or more reported crash in a 12-month period that is susceptible to correction by a multi-way stop installation.

As stated above, there was 1 crash in 2011, 5 crashes in 2012, and 2 crashes in 2013 at the study intersection. Of the 8 crashes over the last 3 years, 6 are considered susceptible to correction by a multi-way stop (right turn, left turn, and angle) but no more than 4 occurred within a 12 month period. A Summary of the crashes provided in the attached **TABLE 6**.

Result: There were not 5 or more crashes that are susceptible to correction reported in a 12-month period, Condition B is not met.

**TABLE 6**  
**CRASH SUMMARY**  
**OLD DEERFIELD PIKE & SILVER LAKE ROAD**

Location	Month	Time	Type	Year	Cross Street	Severity	Light Condition	Surface Condition
Old Deerfield Pike (CR 606)	Jan	7:01 AM	Right Angle	2011	Silver Lake Road (CR 704)	Fatal	daylight	dry
Old Deerfield Pike (CR 606)	Apr	6:53 AM	Right Angle	2012	Silver Lake Road (CR 704)	Minor Injury	daylight	dry
Old Deerfield Pike (CR 606)	Jun	6:54 PM	Right Angle	2012	Silver Lake Road (CR 704)	Property Damage	daylight	dry
							dark(street lights on/continuous)	
Old Deerfield Pike (CR 606)	Feb	6:36 PM	Right Angle	2012	Silver Lake Road (CR 704)	Property Damage	daylight	dry
Old Deerfield Pike (CR 606)	Oct	4:43 PM	Right Angle	2013	Silver Lake Road (CR 704)	Moderate Injury	daylight	dry
Silver Lake Road (CR 704)	Oct	7:20 AM	Same Direction - Rear End	2012	Old Deerfield Pike (CR 606)	Property Damage	daylight	dry
Silver Lake Road (CR 704)	Nov	5:23 PM	Animal	2012	Old Deerfield Pike (CR 606)	Property Damage	dark(no street lights)	dry
Silver Lake Road (CR 704)	Sep	8:41 AM	Right Angle	2013	Old Deerfield Pike (CR 606)	Minor Injury	daylight	dry

Condition C: Minimum Volumes & Delay

In order to meet minimum volume criteria for a multi-way stop vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour. Where the 85<sup>th</sup> percentile approach speed of the major street exceeds 40 mph, the minimum volume warrants are reduced by 30%. The posted speed on the major street Old Deerfield Pike (CR 606) is 50 mph and the measured 85<sup>th</sup> percentile speed is 59 mph thus meeting the requirement for reduced minimum volumes. A summary of the volume evaluation is shown in **TABLE 7**.

Count Date: 12/16/2014

Qualifiers:

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes

(Posted Speed Limit: 50mph, 85<sup>th</sup> Percentile Speed: 59 mph)

40 mph speed exceeded criteria applicable: Yes

**TABLE 7**  
**MULTI-WAY STOP EVALUATION**  
**MINIMUM VOLUME REQUIREMENTS**

	Required Hourly Volume	Average 8 Hour Volume
Old Deerfield Pike (CR 606)	210*	265*
Silver Lake Road (CR 704)	140**	151**

\*Vehicular volume entering the intersection from the major street (total of both approaches)

\*\*The combined vehicular, pedestrian & bicycle volume entering the intersection from the minor street (total of both approaches)

Requirement: Average volumes for common Eight (8) hours above minimums.

Result: **Condition C is met.**

Optional Criteria:

A multi-way stop control can be installed at a two-way stop controlled intersection where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless the conflicting cross street is required to stop.

A sight distance evaluation was conducted at the study intersection in accordance with the guidelines contained in the NJDOT Roadway Design Manual. Table 8 details the findings of the evaluation.

**TABLE 8**  
**MULTI-WAY STOP EVALUATION**  
**SIGHT DISTANCE**

Approach	Speed Limit (mph)	Sight Distance (ft)				
		Minimum			Actual	
		P	SU	WB	Left	Right
Silver Lake Road (CR 704) eastbound	50*	555'/480'	700'/625'	845'/775'	535'	170'
Silver Lake Road (CR 704) westbound		555'/480'	700'/625'	845'/775'	130'	240'

##### = Left-Turn/Right-Turn or Cross

\*Speed Limit on Old Deerfield Pike (CR 606) used to calculate minimum sight distance

Result: As shown on Table 8, the minimum sight distance requirements are not met for passenger cars or trucks for the Silver Lake Road (CR 704) approaches. On the southeast corner of the intersection is a house that blocks the left vision of westbound vehicles. Trees block both the left/right eastbound and right westbound sight distance.

### Roadway Evaluation

The pavement is in good condition. The stop bars on Silver Lake Road are visibly worn, but in average overall condition.

### Improvement Analysis

Based on the warrant evaluation, examination of the crash data and site observations evaluated the installation of a multi-way stop at the intersection. During the AM peak period, the overall intersection delay increases from 4.7 seconds of delay (LOS A) with a two-way stop to 13.1 seconds of delay (LOS B) with a four-way stop. During the PM peak period, the overall intersection delay increases from 3.7 seconds of delay (LOS A) with a two-way stop to 9.3 seconds of delay (LOS A) with a four-way stop. However, in the AM peak period the delay on the westbound approach of Silver Lake Road will improve from 35.8 seconds of delay (LOS E) with a two-way stop to 11.6 seconds of delay (LOS B) with a four-way stop. The Installation of the multi-way stop at the intersection will also mitigate the sight distance deficiency that exists on the on the Silver Lake approaches.

Results of the 2015 improved condition Level of Service and queue analysis are summarized in **TABLE 9**. The Synchro output summaries are provided in **APPENDIX C**.

**TABLE 9**  
**LEVEL OF SERVICE SUMMARY WITH IMPROVEMENTS**  
**OLD DEERFIELD PIKE & SILVER LAKE ROAD**

MOVEMENT	2015 CONDITIONS W/ IMPROVEMENTS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
SILVER LAKE RD (CR 704) (EB AT OLD DEERFIELD PK)	B	11.5	1.0	A	8.3	0.3
SILVER LAKE RD (CR 704) (WB AT OLD DEERFIELD PK)	B	11.6	0.9	A	8.9	0.4
OLD DEERFIELD PK (CR 606) (NB AT SILVER LAKE RD)	B	14.5	3.6	A	9.5	1.2
OLD DEERFIELD PK (CR 606) (SB AT SILVER LAKE RD)	B	12.4	1.9	A	9.5	1.3
OVERALL INTERSECTION	B	13.1	-	A	9.3	-

### **Recommended Improvements**

Based on the multi-way stop evaluation, examination of the crash data and site observations Pennoni is recommending the following improvements:

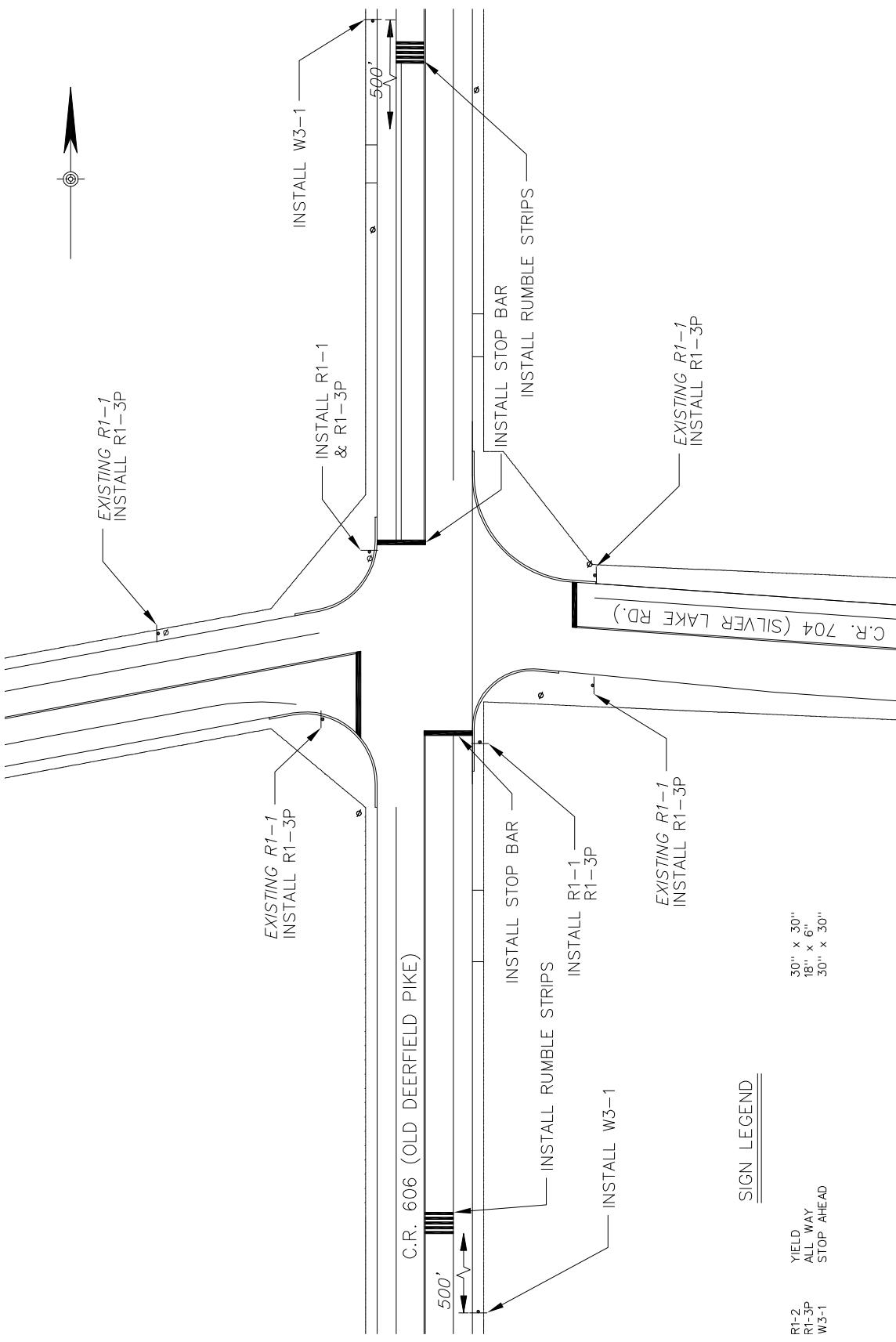
- Install a multi-way stop at Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704). The implementation of the multi-way stop at Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704) will address the sight distance issue on Old Deerfield Pike (CR 606) and provide the additional effect of reducing the speed on Old Deerfield Pike (CR 606). Implementation of the multi-way stop will also reduce the amount of correctable crashes at the intersection. This improvement can be implemented quickly.

The recommended improvement is illustrated in **FIGURE 16**. The estimated cost of this recommended improvement is approximately \$4,800. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.

### **OLD DEERFIELD PIKE (CR 606) AND FINLEY ROAD (CR 617)**

#### **Existing Roadway Facilities**

The intersection of Old Deerfield Pike (CR 606) and Finley Road (CR 617) is a four-leg intersection in Upper Deerfield Township with stop control on Finley Road. Each approach contains one left/thru/right lane and one receiving lane.



NOT TO SCALE

**CUMBERLAND COUNTY**  
Improvements at 6 Intersections  
Upper Deerfield Township, New Jersey

**FIGURE 16**

OLD DEERFIELD PIKE &  
SILVER LAKE ROAD  
RECOMMENDATIONS (CONCEPTUAL)

**Pennoni**



Photo 6: Old Deerfield Pike south of Finley Road



Photo 7: Finley Road east of Old Deerfield Pike

The following roadways make up the intersection:

- **Old Deerfield Pike (CR 606)** is a north-south oriented minor arterial highway and major collector roadway. Between Silver Lake Road (CR 704) and Finley Road (CR 617) Old Deerfield Pike is classified as a major collector roadway, and classified as a minor arterial highway south of Silver Lake Road. Within the study area, Old Deerfield Pike is 41' wide and designated two-way with one travel lane and a shoulder in each direction. On portions of Old Deerfield Pike, passing is allowed. The posted speed limit on Old Deerfield Pike is 50 mph.
- **Finley Road (CR 617)** is an east-west oriented minor arterial highway. Within the study area, Finley Road is 25' wide and designated two-way with one travel lane in each direction. On portions of Finley Road, passing is allowed. The speed limit on Finley Road is not posted. The NJDOT Straight Line Diagram indicates a speed limit of 25 MPH but speed data collected but reports an 85<sup>th</sup> percentile speed of 45 MPH.

#### Existing Levels of Service and Queue Analysis

Under the existing conditions, all movements operate at LOS C or better, and none of the queues exceed the available storage. Results of the 2015 existing condition Level of Service and queue analysis are summarized in **TABLE 10**.

**TABLE 10**  
**EXISTING LEVEL OF SERVICE SUMMARY**  
**OLD DEERFIELD PIKE & FINLEY ROAD**

MOVEMENT	EXISTING 2015 CONDITIONS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
FINLEY RD (CR 617) (EB AT OLD DEERFIELD PK)	B	12.0	0.7	B	11.8	0.3
FINLEY RD (CR 617) (WB AT OLD DEERFIELD PK)	B	13.0	0.3	B	13.3	0.8
OLD DEERFIELD PK (CR 606) (NB LEFT AT FINLEY RD)	A	7.6	0.1	A	7.7	0.1
OLD DEERFIELD PK (CR 606) (SB LEFT AT FINLEY RD)	A	7.6	0.0	A	7.6	0.0
OVERALL INTERSECTION	A	4.3	-	A	4.2	-

## Crash Analysis

Between 2011 and 2013, there were thirteen crashes at the intersection of Old Deerfield Pike and Finley Road. Of the thirteen crashes, six (46.5%) were right angle crashes, three (23.5%) were same direction side swipes, two (15%) were with fixed objects, and two (15%) were left turn crashes. Seven (54%) of the crashes involved property damage only, two (15%) resulted with minor injuries, and four (31%) resulted in moderate injuries. Ten (77%) of crashes occurred in dry conditions, two (15%) crashes occurred in wet conditions, and one crash occurred when the road was covered in slush. All of the crashes occurred during daylight hours, and there were three months when more than one crash occurred, with two crashes occurring in the months of April, May and September. Six of the crashes occurred in 2013, four occurred in 2012, and three occurred in 2011.

### Multi-way Stop Warrant Analysis (MUTCD – Warrant 2B.07 – Multi-way Stop Evaluation)

Condition A: Where traffic signal control is justified, the multi-way stop is an interim measure to quickly control traffic while arrangements are being made.

Result: Not Applicable

Condition B: 5 or more reported crash in a 12-month period that is susceptible to correction by a multi-way stop installation.

As stated above, there were 3 crashes in 2011, 4 crashes in 2012, and 6 crashes in 2013 at the study intersection. Of the 13 crashes over the last 3 years, 8 were considered susceptible to correction by a multi-way stop (right turn, left turn, and angle). . A Summary of the crashes provided in the attached **TABLE 11**.

Result: There were 5 or more crashes that are susceptible to correction reported in a 12-month period (May, 2012 to April, 2013) **Condition B is met**

**TABLE 11**  
**CRASH SUMMARY**  
**OLD DEERFIELD PIKE & FINLEY ROAD**

Location	Month	Time	Type	Year	Cross Street	Severity	Light Condition	Surface Condition
Old Deerfield Pike (CR 606)	Dec	2:34 PM	Same Direction - Side Swipe	2011	Finley Road (CR 617)	Property Damage	daylight	dry
Old Deerfield Pike (CR 606)	Jan	7:31 AM	Fixed Object	2011	Finley Road (CR 617)	Property Damage	daylight	slush
Old Deerfield Pike (CR 606)	Aug	3:42 PM	Same Direction - Side Swipe	2011	Finley Road (CR 617)	Property Damage	daylight	dry
Old Deerfield Pike (CR 606)	Jun	3:41 PM	Right Angle	2012	Finley Road (CR 617)	Property Damage	daylight	wet
Old Deerfield Pike (CR 606)	Jul	3:18 PM	Right Angle	2012	Finley Road (CR 617)	Moderate Injury	daylight	wet
Old Deerfield Pike (CR 606)	Nov	6:56 AM	Fixed Object	2012	Finley Road (CR 617)	Property Damage	daylight	dry
Old Deerfield Pike (CR 606)	May	2:09 PM	Left Turn / U Turn	2012	Finley Road (CR 617)	Minor Injury	daylight	dry
Old Deerfield Pike (CR 606)	Apr	5:16 PM	Left Turn / U Turn	2013	Finley Road (CR 617)	Moderate Injury	daylight	dry
Old Deerfield Pike (CR 606)	Apr	7:14 AM	Same Direction - Side Swipe	2013	Finley Road (CR 617)	Property Damage	daylight	dry
Old Deerfield Pike (CR 606)	May	1:37 PM	Right Angle	2013	Finley Road (CR 617)	Property Damage	daylight	dry
Old Deerfield Pike (CR 606)	Sep	2:00 PM	Right Angle	2013	Finley Road (CR 617)	Moderate Injury	daylight	dry
Old Deerfield Pike (CR 606)	Sep	12:57 PM	Right Angle	2013	Finley Road (CR 617)	Minor Injury	daylight	dry
Old Deerfield Pike (CR 606)	Oct	1:47 PM	Right Angle	2013	Finley Road (CR 617)	Moderate Injury	daylight	dry

### Condition C: Minimum Volumes & Delay

In order to meet minimum volume criteria for a multi-way stop vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and

the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour. Where the 85<sup>th</sup> percentile approach speed of the major street exceeds 40 mph, the minimum volume warrants are reduced by 30%. The posted speed on the major street Old Deerfield Pike (CR 606) is 50 mph and the measured 85<sup>th</sup> percentile speed is 59 mph thus meeting the requirement for reduced minimum volumes. A summary of the volume evaluation is shown in **TABLE 12**.

Count Date: 12/16/2014

Qualifiers:

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes

(Posted Speed Limit: 50mph, 85<sup>th</sup> Percentile Speed: 59 mph)

40 mph speed exceeded criteria applicable: Yes

**TABLE 12**  
**MULTI-WAY STOP EVALUATION**  
**MINIMUM VOLUME REQUIREMENTS**

	Required Hourly Volume	Average 8 Hour Volume
Old Deerfield Pike (CR 606)	210*	210*
Finley Road (CR 617)	140**	124**

\*Vehicular volume entering the intersection from the major street (total of both approaches)

\*\*The combined vehicular, pedestrian & bicycle volume entering the intersection from the minor street (total of both approaches)

Requirement: Average volumes for common Eight (8) hours above minimums.

Result: Condition C is not met for the major and minor approaches.

Optional Criteria:

A multi-way stop control can be installed at a two-way stop controlled intersection where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless the conflicting cross street is required to stop.

A sight distance evaluation was conducted at the study intersection in accordance with the guidelines contained in the NJDOT Roadway Design Manual. **TABLE 13** details the findings of the evaluation.

**TABLE 13**  
**MULTI-WAY STOP EVALUATION**  
**SIGHT DISTANCE**

Approach	Speed Limit (mph)	Sight Distance (ft)				
		Minimum			Actual	
		P	SU	WB	Left	Right
Finley Road (CR 617) eastbound	50*	555'/480'	700'/625'	845'/775'	305'	130'+
Finley Road (CR 617) westbound		555'/480'	700'/625'	845'/775'	325'	365'

#### = Left-Turn/Right-Turn or Cross

\*Speed Limit on Old Deerfield Pike (CR 606) used to calculate minimum sight distance

Result: As shown on Table 13, the minimum sight distance requirements are not met for passenger cars for the Finley Road (CR 617) approaches. There are trees along both sides of Old Deerfield Pike (CR 606) that contribute to the sight distance limitations.

### Roadway Evaluation

The pavement is in good condition. The stop bars on Finley Road are visibly worn, but in average condition overall.

### Improvement Analysis

Changing the intersection from a two-way stop to a four-way stop does result in some increase in overall intersection delay but does not result in a change in LOS. The multi-way stop will improve the delay on both approaches of Finley Road and result in an improved LOS (from LOS B to LOS A) in both the AM and PM peak periods while mitigating the sight distance deficiency that exists on the Finley Road approaches.

Results of the 2015 improved condition Level of Service and queue analysis are summarized in **TABLE 14**.

**TABLE 14**  
**LEVEL OF SERVICE SUMMARY WITH IMPROVEMENTS**  
**OLD DEERFIELD PIKE & FINLEY ROAD**

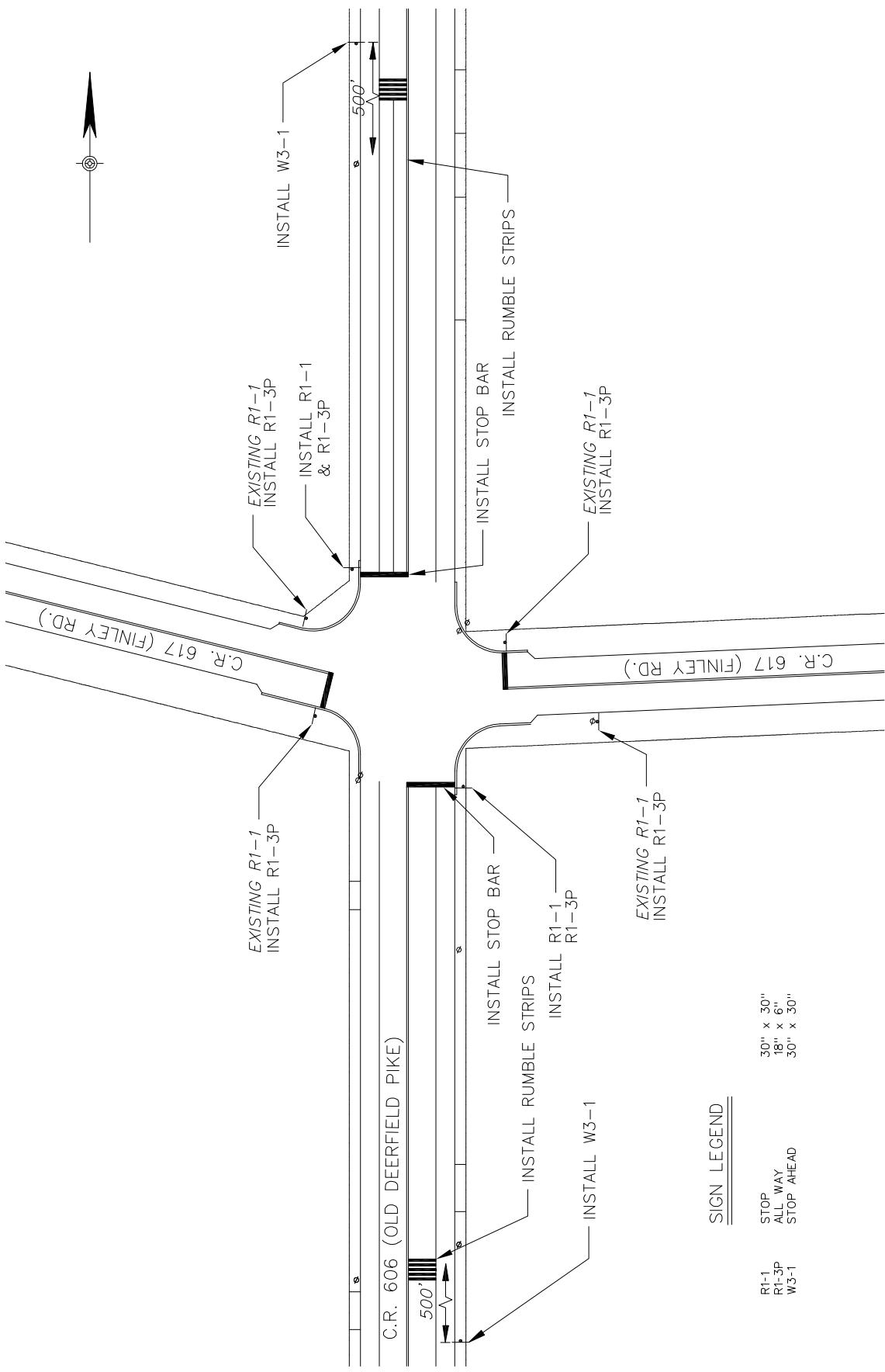
MOVEMENT	2015 CONDITIONS W/ IMPROVEMENTS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
FINLEY RD (CR 617) (EB AT OLD DEERFIELD PK)	A	9.4	1.1	A	8.1	0.2
FINLEY RD (CR 617) (WB AT OLD DEERFIELD PK)	A	8.5	0.7	A	8.7	0.5
OLD DEERFIELD PK (CR 606) (NB AT FINLEY RD)	A	9.4	0.6	A	8.9	0.9
OLD DEERFIELD PK (CR 606) (SB AT FINLEY RD)	A	8.6	0.2	A	8.9	0.9
OVERALL INTERSECTION	A	9.1	-	A	8.8	-

### Recommended Improvements

Based on the multi-way stop evaluation, examination of the crash data and site observations Pennoni is recommending the following improvements:

- Install a multi-way stop at Old Deerfield Pike (CR 606) and Finley Road (CR 617). The implementation of the multi-way stop at Old Deerfield Pike (CR 606) and Finley Road (CR 617) will address the sight distance issue on Old Deerfield Pike (CR 606) and provide the additional effect of reducing the speed on Old Deerfield Pike (CR 606). Implementation of the multi-way stop will also reduce the amount of correctable crashes at the intersection. This improvement can be implemented quickly.

The recommended improvement is illustrated in **FIGURE 17**. The estimated cost of this recommended improvement is approximately \$4,800. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.



NOT TO SCALE

**Pennoni**

**CUMBERLAND COUNTY**  
Improvements at 6 Intersections  
Upper Deerfield Township, New Jersey

**FIGURE 17**

OLD DEERFIELD PIKE &  
FINLEY ROAD  
RECOMMENDATIONS (CONCEPTUAL)

## **HOGBIN ROAD (CR 625) AND BUCKSHUTEM ROAD (CR 670)**

### **Existing Roadway Facilities**

The intersection of Hogbin Road (CR 625) and Buckshutem Road (CR 670) is a four-leg intersection located in the City of Millville with stop control on Hogbin Road. Each approach contains one left/thru/right lane and one receiving lane. The intersection is located approximately 2 miles west of the NJ Motorsports Park on Buckshutem Road. A comparison of the December 2014 ATR counts with counts performed in May, 2012 and August 2011 indicated an approximately 20% increase in traffic on Hogbin Road during the summer months when the track is operational.



Photo 8: Northbound Approach of Hogbin Road



Photo 9: Buckshutem Road east of Hogbin Road

The following roadways make up the intersection:

- **Hogbin Road (CR 625)** is a north-south oriented local road. Within the study area, Hogbin Road is 30' wide and designated two-way with one travel lane in each direction. On portions of Hogbin Road, passing is allowed. The posted speed limit on Hogbin Road is 50 mph.
- **Buckshutem Road (CR 670)** is an east-west oriented minor arterial highway. Within the study area, Buckshutem Road is 40' wide and designated two-way with one travel lane and a shoulder in each direction. On portions of Buckshutem Road, passing is allowed. The posted speed limit on Buckshutem Road is 50 mph.

### **Existing Levels of Service and Queue Analysis**

Under the existing conditions, all movements operate at LOS C or better, and none of the queues exceed the available storage. Results of the existing condition Level of Service and queue analysis are summarized in **TABLE 15**.

**TABLE 15**  
**EXISTING LEVEL OF SERVICE SUMMARY**  
**HOGBIN ROAD & BUCKSHUTEM ROAD**

MOVEMENT	EXISTING 2015 CONDITIONS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
BUCKSHUTEM RD (CR 617) (EB LEFT AT HOGBIN RD)	B	7.5	0.0	A	7.7	0.2
BUCKSHUTEM RD (CR 617) (WB LEFT AT HOGBIN RD)	B	7.4	0.0	A	7.9	0.5
HOGBIN RD (CR 606) (NB AT BUCKSHUTEM RD)	A	11.4	0.5	B	11.6	0.3
HOGBIN RD (CR 606) (SB AT BUCKSHUTEM RD)	A	11.0	0.2	B	12.8	0.8
OVERALL INTERSECTION	A	3.8	-	A	4.7	-

### Crash Analysis

Between 2011 and 2013, there were five crashes at the intersection of Hogbin Road and Buckshutem Road, all of which were right angle crashes in dry conditions. Three (60%) of the crashes resulted in moderate injuries, one (20%) resulted in minor injuries, and one (20%) resulted in property damage only. No month had more than one crash occur. Three (60%) of the crashes occurred during daylight hours, with one crash (20%) occurring at dusk and one crash (20%) occurring when it was dark out. Three crashes occurred in 2013, and two occurred in 2011. There were no reported crashes in 2012.

### Multi-way Stop Warrant Analysis (MUTCD – Warrant 2B.07 – Multi-way Stop Evaluation)

Condition A: Where traffic signal control is justified, the multi-way stop is an interim measure to quickly control traffic while arrangements are being made.

Result: Not Applicable

Condition B: 5 or more reported crash in a 12-month period that is susceptible to correction by a multi-way stop installation.

As stated above, there were 2 crashes in 2011, 0 crashes in 2012, and 3 crashes in 2013 at the study intersection. Of the 5 crashes over the last 3 years, 5 were considered susceptible to correction by a multi-way stop (right turn, left turn, and angle).

Result: While all reportable crashes were considered susceptible to correction, there were not more than 3 crashes reported in a 12-month period, therefore, Condition B is not met. A Summary of the crashes provided in the attached **TABLE 16**.

**TABLE 16**  
**CRASH SUMMARY**  
**HOGBIN ROAD & BUCKSHUTEM ROAD**

Location	Month	Time	Type	Year	Cross Street	Severity	Light Condition	Surface Condition
Hogbin Road (CR 625)	Aug	11:56 AM	Right Angle	2011	Buckshutem Road (CR 670)	Moderate Injury	daylight	dry
Buckshutem Road (CR 670)	Mar	6:28 PM	Right Angle	2011	Hogbin Road (CR 625)	Moderate Injury	dusk	dry
Buckshutem Road (CR 670)	Jul	6:11 PM	Right Angle	2013	Hogbin Road (CR 625)	Property Damage	daylight	dry
Hogbin Road (CR 625)	Sep	12:01 PM	Right Angle	2013	Buckshutem Road (CR 670)	Moderate Injury	daylight	dry
Hogbin Road (CR 625)	Dec	7:06 PM	Right Angle	2013	Buckshutem Road (CR 670)	Minor Injury	dark (no street lights)	dry

**Condition C: Minimum Volumes & Delay**

In order to meet minimum volume criteria for a multi-way stop vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour. Where the 85<sup>th</sup> percentile approach speed of the major street exceeds 40 mph, the minimum volume warrants are reduced by 30%. The posted speed on the major street Buckshutem Road (CR 670) is 50 mph and the measured 85<sup>th</sup> percentile speed is 59 mph thus meeting the requirement for reduced minimum volumes. A summary of the volume evaluation is shown in **TABLE 17**.

Count Dates: 12/16/2014 & 6/5/2015

Qualifiers:

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes

(Posted Speed Limit: 50mph, 85<sup>th</sup> Percentile Speed: 59 mph)

40 mph speed exceeded criteria applicable: Yes

**TABLE 17**  
**MULTI-WAY STOP EVALUATION**  
**MINIMUM VOLUME REQUIREMENTS**

	Required Hourly Volume	Average 8 Hour Volume
Buckshutem Road (CR 670)	230*	220*
Hogbin Road (CR 625)	145**	137**

\*Vehicular volume entering the intersection from the major street (total of both approaches)

\*\*The combined vehicular, pedestrian & bicycle volume entering the intersection from the minor street (total of both approaches)

40 mph speed exceeded criteria applicable: Yes

Requirement: Average volumes for common Eight (8) hours above minimums.

Result: Condition C is met for the minor approach.

**Optional Criteria:**

A multi-way stop control can be installed at a two-way stop controlled intersection where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless the conflicting cross street is required to stop.

A sight distance evaluation was conducted at the study intersection in accordance with the guidelines contained in the NJDOT Roadway Design Manual. **TABLE 18** details the findings of the evaluation.

**TABLE 18**  
**MULTI-WAY STOP EVALUATION**  
**SIGHT DISTANCE**

Approach	Speed Limit (mph)	Sight Distance (ft)				
		Minimum			Actual	
		P	SU	WB	Left	Right
Hogbin Road (CR 625) northbound	50*	555'/480'	700'/625'	845'/775'	845'+	775'+
Hogbin Road (CR 625) southbound		555'/480'	700'/625'	845'/775'	845'+	775'+

##### = Left-Turn/Right-Turn or Cross

\*Speed Limit on Buckshutem Road (CR 670) used to calculate minimum sight distance

Result: As shown on **Table 18**, the minimum sight distance requirements are met for all vehicles.

### Roadway Evaluation

The pavement at the intersection of Hogbin Road (CR 625) and Buckshutem Road (CR 670) is in good condition. The stop bars on Hogbin Road (CR 625) were restriped in 2014.

### Improvement Analysis

Changing the intersection from a two-way stop to a four-way stop does result in some increase in overall intersection delay but does not result in a change in LOS. The multi-way stop will improve the delay on both approaches of Hogbin Road and result in an improved LOS (from LOS B to LOS A) in the PM peak period.

Results of the 2015 improved condition Level of Service and queue analysis are summarized in **TABLE 19**.

**TABLE 19**  
**LEVEL OF SERVICE SUMMARY WITH IMPROVEMENTS**  
**HOGBIN ROAD & BUCKSHUTEM ROAD**

MOVEMENT	2015 CONDITIONS W/ IMPROVEMENTS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
BUCKSHUTEM RD (CR 617) (EB LEFT AT HOGBIN RD)	A	8.0	0.5	A	9.1	0.8
BUCKSHUTEM RD (CR 617) (WB LEFT AT HOGBIN RD)	A	8.2	0.6	A	8.6	0.7
HOGBIN RD (CR 606) (NB AT BUCKSHUTEM RD)	A	8.1	0.4	A	8.1	0.2
HOGBIN RD (CR 606) (SB AT BUCKSHUTEM RD)	A	7.9	0.2	A	8.9	0.6
OVERALL INTERSECTION	A	8.1	-	A	8.8	-

### Recommendations

Based on the multi-way stop evaluation, examination of the crash data and site observations Pennoni is recommending the following improvements:

- Install a multi-way stop at of Hogbin Road (CR 625) and Buckshutem Road (CR 670). The implementation of the multi-way stop will reduce the amount of correctable crashes at the intersection and provide the additional effect of reducing the Buckshutem Road (CR 670). This improvement can be implemented quickly.

The recommended improvement is illustrated in **FIGURE 18**. The estimated cost of this recommended improvement is approximately \$4,800. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.

### **MORTON AVENUE (CR 634) AND LEBANON ROAD (CR 654)**

#### **Existing Roadway Facilities**

- **Morton Avenue (CR 634) and Lebanon Road (CR 654).** See Photos 10 and 11. The intersection of Morton Avenue and Lebanon Road is a four-leg intersection in Deerfield Township with stop control on Lebanon Road. Each approach contains one left/thru/right lane and one receiving lane.



Photo 10: Morton Avenue north of Lebanon Road



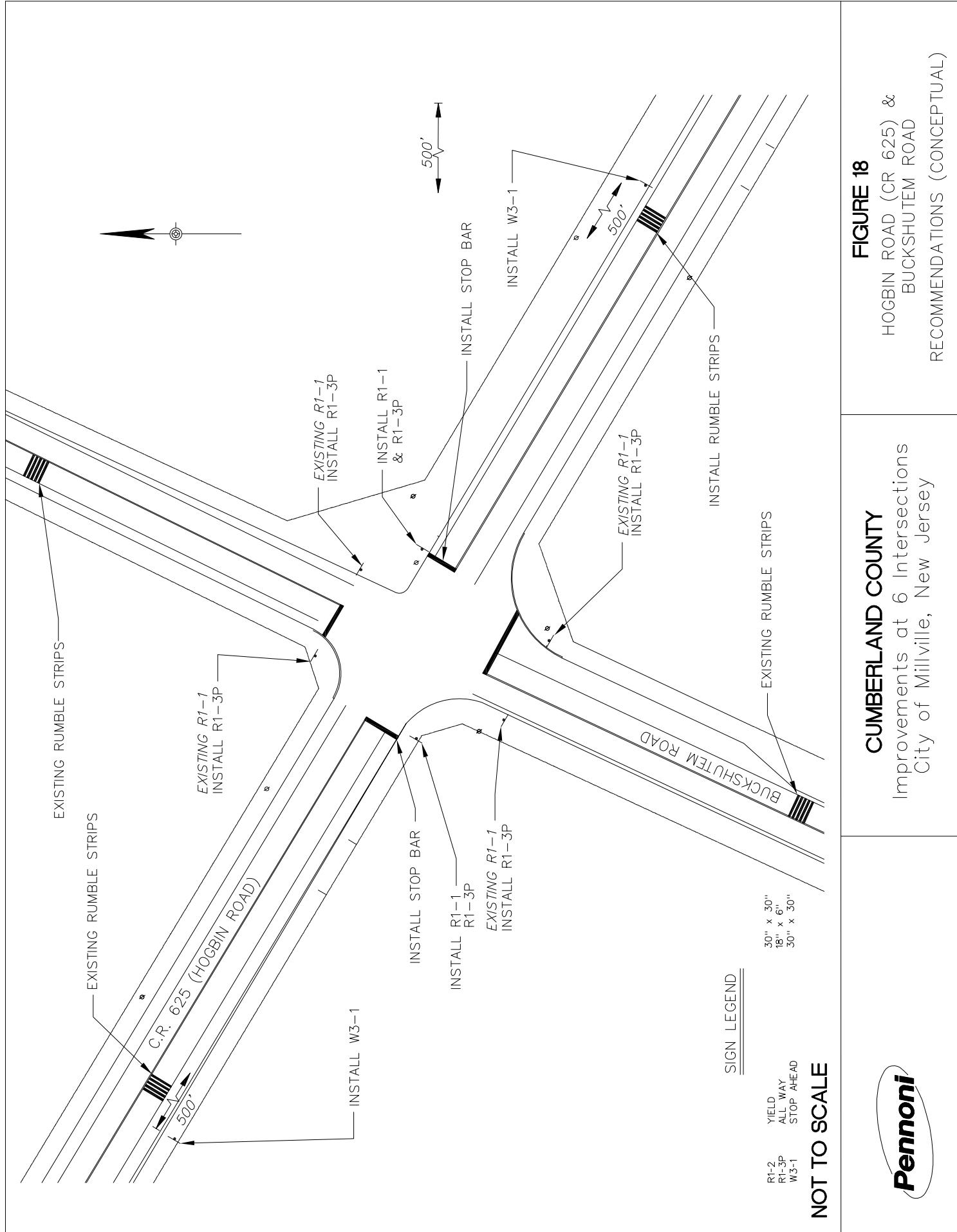
Photo 11: Lebanon Road east of Morton Avenue

The following roadways make up the intersection:

- **Morton Avenue (CR 634)** is a north-south oriented major collector roadway. Within the study area, Morton Avenue is 25' wide and designated two-way with one travel lane in each direction. On portions of Morton Road, passing is allowed. The posted speed limit on Morton Road is 50 mph.
- **Lebanon Road (CR 654)** is an east-west oriented local street. Within the study area, Lebanon Avenue is 26' wide and designated two-way with one travel lane in each direction. On portions of Lebanon Road, passing is allowed. The posted speed limit on Lebanon Road is 50 mph.

#### **Existing Levels of Service and Queue Analysis**

Under the existing conditions, all movements operate at LOS C or better, and none of the queues exceed the available storage. Results of the 2015 existing condition Level of Service and queue analysis are summarized in **TABLE 20**.



**TABLE 20**  
**EXISTING LEVEL OF SERVICE SUMMARY**  
**MORTON AVENUE & LEBANON ROAD**

MOVEMENT	EXISTING 2015 CONDITIONS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
MORTON AVE (CR 634) (EB AT LEBANON RD)	B	14.8	1.7	B	12.8	1.0
MORTON AVE (CR 634) (WB AT LEBANON RD)	B	13.1	1.1	B	12.8	1.3
AT LEBANON RD (CR 654) (NB LEFT AT MORTON AVE)	A	7.5	0.0	A	7.5	0.0
AT LEBANON RD (CR 654) (SB LEFT AT MORTON AVE)	A	7.6	0.0	A	7.5	0.0
OVERALL INTERSECTION	A	8.3	-	A	7.9	-

### Crash Analysis

Between 2011 and 2013, there were four crashes at the intersection of Morton Avenue and Lebanon Road, all of which were right angle crashes with 3 (75%) of the crashes occurring in dry conditions and one (25%) occurring in wet conditions. Two (50%) of the crashes resulted in minor injuries and two (50%) resulted in property damage only. No month had more than one crash occur. Three (75%) of the crashes occurred during daylight hours, and one crash (25%) occurred when it was dark out. Three crashes occurred in 2013, and one occurred in 2011. There were no reported crashes in 2012.

### Multi-way Stop Warrant Analysis (MUTCD – Warrant 2B.07 – Multi-way Stop Evaluation)

Condition A: Where traffic signal control is justified, the multi-way stop is an interim measure to quickly control traffic while arrangements are being made.

Result: Not Applicable

Condition B: 5 or more reported crash in a 12-month period that is susceptible to correction by a multi-way stop installation.

As stated above, there was 1 crash in 2011, 0 crashes in 2012, and 3 crashes in 2013 at the study intersection. Of the 4 crashes over the last 3 years, 4 were considered susceptible to correction by a multi-way stop (right turn, left turn, and angle).

Result: While all reportable crashes were considered susceptible to correction, there were not more than 3 crashes reported in a 12-month period, therefore, Condition B is not met. A Summary of the crashes provided in the attached **TABLE 21**.

**TABLE 21**  
**CRASH SUMMARY**  
**MORTON AVENUE & LEBANON ROAD**

Location	Month	Time	Type	Year	Cross Street	Severity	Light Condition	Surface Condition
Morton Avenue (CR 634)	Oct	6:10 PM	Right Angle	2011	Lebanon Road (CR 654)	Property Damage	daylight	dry
Morton Avenue (CR 634)	Aug	4:55 PM	Right Angle	2013	Lebanon Road (CR 654)	Property Damage	daylight	dry
Morton Avenue (CR 634)	Nov	6:48 PM	Right Angle	2013	Morton Avenue (CR 634)	Minor Injury	dark(no street lights)	wet
Morton Avenue (CR 634)	Dec	3:44 PM	Right Angle	2013	Lebanon Road (CR 654)	Minor Injury	daylight	dry

Condition C: Minimum Volumes & Delay

In order to meet minimum volume criteria for a multi-way stop vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour. Where the 85<sup>th</sup> percentile approach speed of the major street exceeds 40 mph, the minimum volume warrants are reduced by 30%. The posted speed on the major street Morton Avenue (CR 634) is 50 mph and the measured 85<sup>th</sup> percentile speed is 57 mph thus meeting the requirement for reduced minimum volumes. A summary of the volume evaluation is shown in **TABLE 22**.

Count Date: 12/16/2014

Qualifiers:

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes  
 (Posted Speed Limit: 50mph, 85<sup>th</sup> Percentile Speed: 59 mph)

40 mph speed exceeded criteria applicable: Yes

**TABLE 22**  
**MULTI-WAY STOP EVALUATION**  
**MINIMUM VOLUME REQUIREMENTS**

	Required Hourly Volume	Average 8 Hour Volume
Morton Avenue (CR 634)	210*	183*
Lebanon Road (CR 654)	140**	230**

\*Vehicular volume entering the intersection from the major street (total of both approaches)

\*\*The combined vehicular, pedestrian & bicycle volume entering the intersection from the minor street (total of both approaches)

40 mph speed exceeded criteria applicable: Yes

Requirement: Average volumes for common Eight (8) hours above minimums.

Result: Condition C is not met for the major approaches.

Optional Criteria:

A multi-way stop control can be installed at a two-way stop controlled intersection where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless the conflicting cross street is required to stop.

A sight distance evaluation was conducted at the study intersection in accordance with the guidelines contained in the NJDOT Roadway Design Manual. **Table 23** details the findings of the evaluation.

**TABLE 23**  
**MULTI-WAY STOP EVALUATION**  
**SIGHT DISTANCE**

Approach	Speed Limit (mph)	Sight Distance (ft)				
		Minimum			Actual	
		P	SU	WB	Left	Right
Lebanon Road (CR 654) eastbound		555'/480'	700'/625'	845'/775'	845'+	775'+
Lebanon Road (CR 654) westbound	50*	555'/480'	700'/625'	845'/775'	845'+	775'+

##### = Left-Turn/Right-Turn or Cross

\*Speed Limit on Morton Avenue (CR 634) used to calculate minimum sight distance

Result: As shown on Table 15, the minimum sight distance requirements are met for all vehicles.

### Roadway Evaluation

The pavement is in good condition. The stop bars on Finley Road are visibly worn, but in average condition overall.

### Recommended Improvements

While the stopping distance on Lebanon Avenue is acceptable for the posted speed limit of 50 miles per hour, vehicles often travel faster than the speed limit. The 85<sup>th</sup> percentile speed on Lebanon Road is 57 miles per hour, and the 85<sup>th</sup> percentile speed on Morton Avenue is 53 miles per hour. A flashing beacon is on the southwest corner of the intersection; it is recommended that a flashing beacon be added to the northeast corner of the intersection. The estimated cost of this recommended improvement is approximately \$1,700. The engineer's estimate is included in **APPENDIX G**.

### **WEST PARK DRIVE (CR 621) AND MAYOR AITKEN DRIVE**

#### Existing Roadway Facilities

The intersection of West Park Drive (CR 621) and Mayor Aitken Drive is comprised of two three legged intersections in the City of Bridgeton. Mayor Aitken Drive forks and intersects West Park Drive twice. Mayor Aitken Drive is stop controlled. Each approach contains one left/thru/right lane and one receiving lane. The south approach of the intersection is northern access to the City of Bridgeton Park. There is a driveway to the Donald Rainear Amphitheater at Sunset Lake on the north side of the intersection. The intersection is located approximately a half mile from Bridgeton High School.



Photo 12: West Park Drive east of Mayor Aitken Drive



Photo 13: Mayor Aitken Drive south of West Park Drive

The following roadways make up the intersection:

- **West Park Drive (CR 621)** is an east-west oriented major collector roadway. Within the study area, West Park Drive is 40' wide and designated two-way with one travel lane in each direction. Bike Lanes are provided within the study area. On portions of West Park Drive, passing is allowed. The posted speed limit on West Park Drive is 30 mph.
- **Mayor Aitken Drive** is a north-south oriented local road. The pavement surface and markings are in average condition. Within the study area, Mayor Aitken Drive is 24' wide and designated two-way with one travel lane in each direction. Bikes are permitted to share the road. The posted speed limit on Mayor Aitken Drive is 20 mph.

#### Existing Levels of Service and Queue Analysis

Under the existing conditions, all movements operate at LOS C or better, and none of the queues exceed the available storage. Results of the 2015 existing condition Level of Service and queue analysis are summarized in **TABLE 24**.

**TABLE 24**  
**EXISTING LEVEL OF SERVICE SUMMARY**  
**WEST PARK DRIVE AND MAYOR AITKEN DRIVE**

MOVEMENT	EXISTING 2015 CONDITIONS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
WEST PARK DRIVE (CR 621) (EB LEFT)	B	7.5	0.0	A	7.7	0.2
WEST PARK DRIVE (CR 621) (WB LEFT AT MAYOR AITKEN DR)	B	7.4	0.0	A	7.9	0.5
MAYOR AITKEN DR (NB WEST PARK DRIVE)	A	11.4	0.5	B	11.6	0.3
MAYOR AITKEN DR (NB L AT WEST PARK DRIVE)	A	11.0	0.2	B	12.8	0.8
OVERALL INTERSECTION	A	3.8	-	A	4.7	-

## **Crash Analysis**

Between 2011 and 2013, there were ten crashes at the intersection of West Park Drive and Mayor Aitken Drive. Of the ten crashes, six (60%) were rear end crashes, two (20%) were crashes with animals, one (10%) was with a fixed objects and one (10%) was a right angle crash. Eight (80%) of the crashes involved property damage only, one (10%) resulted with minor injuries, and one (10%) resulted in moderate injuries. Eight (80%) of crashes occurred in dry conditions, and two (20%) crashes occurred in icy conditions. Eight (80%) of the crashes occurred during daylight hours and two (20%) crashes occurred at night, though the street lights were on. Two crashes occurred in March, June, July and November, while one crash each occurred in January and April. Two of the crashes occurred in 2013, three occurred in 2012, and five occurred in 2011.

### **Multi-way Stop Warrant Analysis (MUTCD – Warrant 2B.07 – Multi-way Stop Evaluation)**

Condition A: Where traffic signal control is justified, the multi-way stop is an interim measure to quickly control traffic while arrangements are being made.

Result: Not Applicable

Condition B: 5 or more reported crash in a 12-month period that is susceptible to correction by a multi-way stop installation.

As stated above, there were 5 crashes in 2011, 3 crashes in 2012, and 2 crashes in 2013 at the study intersection. Of the 10 crashes over the last 3 years, only 1 was considered susceptible to correction by a multi-way stop (right turn, left turn, and angle).

Result: While all reportable crashes were considered susceptible to correction, there were not more than 3 crashes reported in a 12-month period, therefore, Condition B is not met. A Summary of the crashes provided in the attached **TABLE 25**.

**TABLE 25**  
**CRASH SUMMARY**  
**WEST PARK DRIVE AND MAYOR AITKEN DRIVE**

Location	Month	Time	Type	Year	Cross Street	Severity	Light Condition	Surface Condition
West Park Drive (CR 621)	Mar	7:56 PM	Animal	2011	Mayor Aitken Drive (CR 697)	Property Damage	dark(street lights on/continuous)	dry
West Park Drive (CR 621)	Nov	8:29 PM	Animal	2011	Mayor Aitken Drive (CR 697)	Property Damage	dark(street lights on/spot)	dry
West Park Drive (CR 621)	Jun	10:45 AM	Fixed Object	2012	Mayor Aitken Drive (CR 697)	Moderate Injury	daylight	dry
West Park Drive (CR 621)	Jan	7:13 AM	Right Angle	2011	Mayor Aitken Drive (CR 697)	Property Damage	daylight	icy
West Park Drive (CR 621)	Apr	2:09 PM	Same Direction - Rear End	2011	Mayor Aitken Drive (CR 697)	Minor Injury	daylight	dry
West Park Drive (CR 621)	Nov	3:09 PM	Same Direction - Rear End	2011	Mayor Aitken Drive (CR 697)	Property Damage	daylight	dry
West Park Drive (CR 621)	Jun	9:14 AM	Same Direction - Rear End	2012	Mayor Aitken Drive (CR 697)	Property Damage	daylight	dry
Mayor Aitken Drive (CR 697)	Jul	10:09 AM	Same Direction - Rear End	2012	West Park Drive (CR 621)	Property Damage	daylight	dry
West Park Drive (CR 621)	Mar	7:40 AM	Same Direction - Rear End	2013	Mayor Aitken Drive (CR 697)	Property Damage	daylight	icy
Mayor Aitken Drive (CR 697)	Jul	4:46 PM	Same Direction - Rear End	2013	West Park Drive (CR 621)	Property Damage	daylight	dry

### Condition C: Minimum Volumes & Delay

In order to meet minimum volume criteria for a multi-way stop vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any 8 hours of an average day; and the combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour. Where the 85<sup>th</sup> percentile approach speed of the major street exceeds 40 mph, the minimum volume warrants are reduced by 30%. The posted speed on the major street West Park Drive (CR 621) is 30 mph, but the measured 85<sup>th</sup> percentile speed is 47 mph thus meeting the requirement for reduced minimum volumes. A summary of the volume evaluation is shown in **TABLE 26**.

Count Date: 12/16/2014

Qualifiers:

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes

40 mph speed exceeded criteria applicable: Yes

**TABLE 26**  
**MULTI-WAY STOP EVALUATION**  
**MINIMUM VOLUME REQUIREMENTS**

	Required Hourly Volume	Average 8 Hour Volume
West Park Drive (CR 621)	210*	546*
Mayor Aitken Drive	140**	106**

\*Vehicular volume entering the intersection from the major street (total of both approaches)

\*\*The combined vehicular, pedestrian & bicycle volume entering the intersection from the minor street (total of both approaches)

85<sup>th</sup> Percentile speed on Major Street above 40 mph: Yes

(Posted Speed Limit EB: 30mph, 85<sup>th</sup> Percentile Speed: 47 mph)

40 mph speed exceeded criteria applicable: Yes

Requirement: Average volumes for common Eight (8) hours above minimums.

Result: Condition C is not met for the minor approaches.

#### **MUTCD – Chapter 4C – Traffic Signal Evaluation**

##### Warrant 1 – Eight Hour Vehicular Volume

Warrant 1 is met at West Park Drive (CR 621) and Mayor Aitken Drive if Condition A, minimum vehicular volume, or Condition B, interruption of continuous traffic is satisfied for the same 8 hour period of the 70% threshold (due to speed > 40 mph) on the major and minor streets. Warrant 1 is also met if both Condition A and B are satisfied for 8 hours of the 56% threshold (due to speed > 40 mph) on the major and minor streets. Based on the ATR data, Conditions A and B were not met individually and the combined combination of A and B are only met during 5 hours. Therefore for the purposes of this analysis, **Warrant 1 was not met**.

##### Warrant 2 – Four Hour Vehicular Volume

Warrant 2 is met if four plotted points representing vehicles per hour on the major and minor street approaches fall above the appropriate curve on Figure 4C-2 (due to speed > 40 mph) of the MUTCD. For the purposes of this evaluation of the existing conditions, the 1 major lane and 1 minor lane curve is used for the Warrant 2 analysis. The collected traffic data for the peak hour volumes were plotted on Figure 4C-2 and there are 5 plotted points that fall above the four hour warrant curve. Therefore for the purposes of this analysis, **Warrant 2 is satisfied**.

#### **Improvement Analysis**

The consolidation of the intersection to a single four-way with Mayor Aitkens Drive intersecting West Park Drive opposite the existing driveway to the amphitheater does result in some increase in overall intersection delay but does not result in a change in LOS. Results of the 2015 Level of Service with improvements and queue analysis are summarized in **TABLE 27**.

**TABLE 27**  
**LEVEL OF SERVICE SUMMARY WITH IMPROVEMENTS**  
**WEST PARK DRIVE AND MAYOR AITKEN DRIVE**

MOVEMENT	2015 CONDITIONS W/ PHASE 1 IMPROVEMENTS					
	AM PEAK HOUR			PM PEAK HOUR		
	LOS	DELAY (SEC.)	95% QUEUE (VEH.)	LOS	DELAY (SEC.)	95% QUEUE (VEH.)
WEST PARK DRIVE (CR 621) (EB LEFT)	B	0.0	0.0	A	0.0	0.0
WEST PARK DRIVE (CR 621) (WB LEFT AT MAYOR AITKEN DR)	A	8.5	0.6	A	8.4	0.3
MAYOR AITKEN DR (NB AT WEST PARK DRIVE)	B	13.3	0.8	B	12.9	1.2
MAYOR AITKEN DR (SB AT WEST PARK DRIVE)	A	0.0	0.0	A	0.0	0.0
OVERALL INTERSECTION	A	3.2	-	A	5.6	-

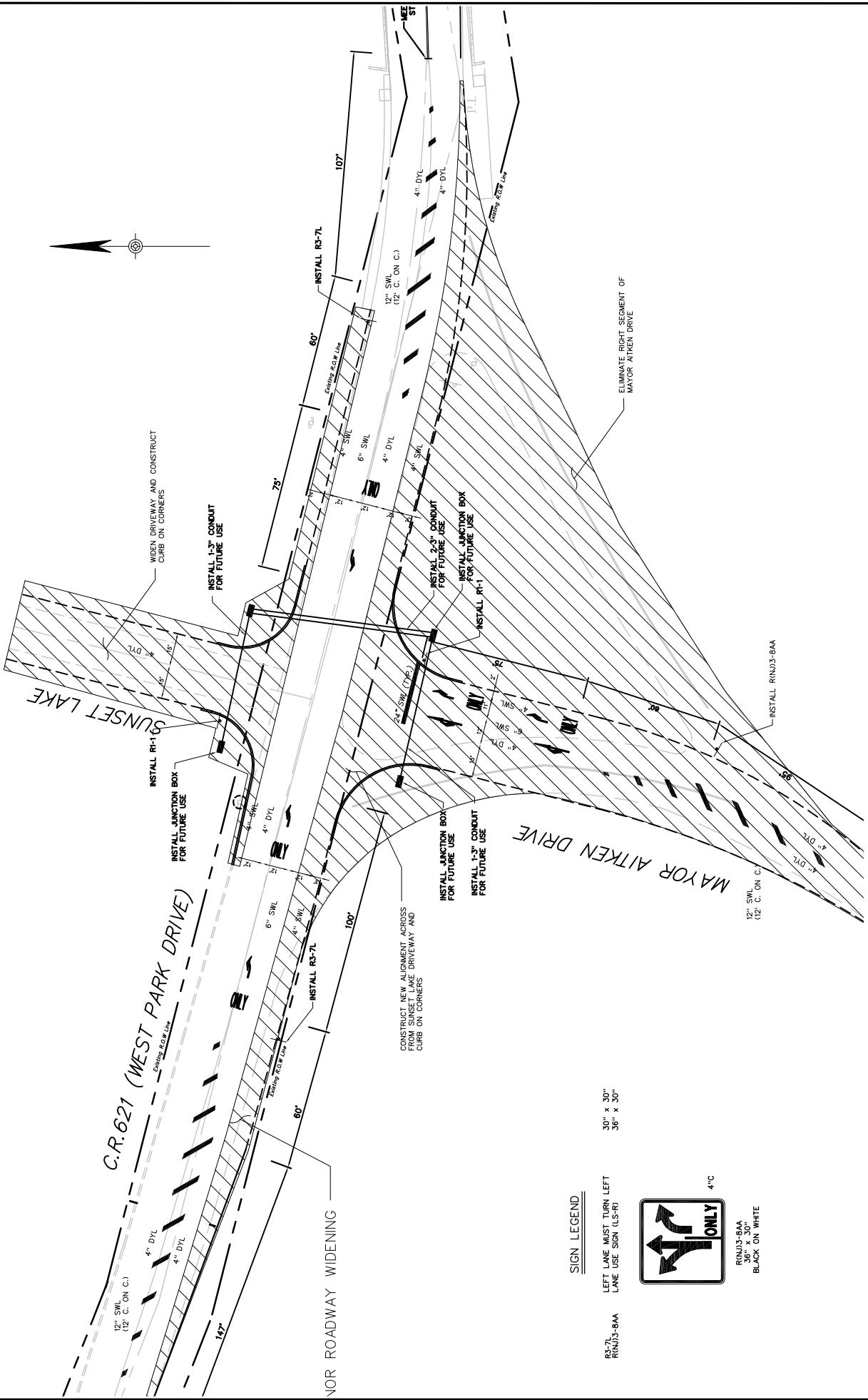
### **Recommended Improvements**

In order to reduce rear end crashes, it is recommended that the Mayor Aitken Drive fork be eliminated, creating a four way intersection with the amphitheater on the north side of West Park Drive. As part of the improvements, and as a result of the signal warrant analysis, it is recommended that a traffic signal be installed at the intersection.

Based on the multi-way stop evaluation, examination of the crash data and site observations Pennoni is recommending the phased implementation of the following improvements:

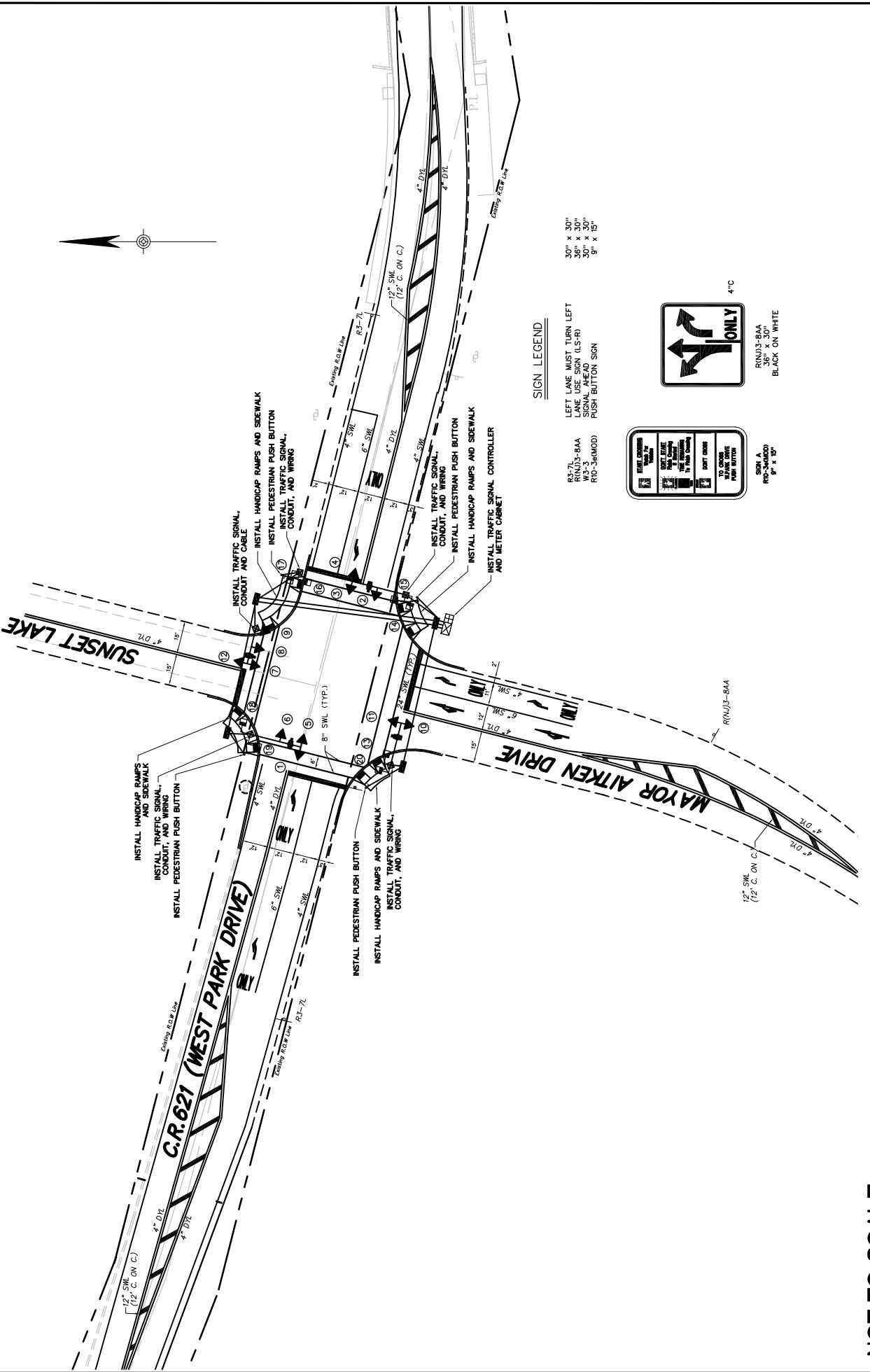
- **Phase 1 – Simplify the intersection by eliminating the fork on Mayor Aitken Drive and creating a four-way intersection with the amphitheater driveway on the north side of West Park Drive.** This will simplify the intersection and should reduce the number of rear-end crashes occurring at the intersection. The Phase 1 improvement is illustrated in **FIGURE 19**. The estimated cost of this recommended improvement is approximately \$187,000. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.
- **Phase 2 –Install a traffic signal at the intersection of West Park Drive (CR 621) and Mayor Aitken Drive.** This will improve traffic control at the intersection. The Phase 2 improvement is illustrated in **FIGURE 20**. The estimated cost of this recommended improvement is approximately \$118,000. The Conceptual Intersection Improvement Plan is included in **APPENDIX F** and the engineer's estimate is included in **APPENDIX G**.

It is recommended that the consolidation of the intersection be undertaken initially and that that the effects of the improvement be evaluated prior to considering the implementation of Phase 2.



**CUMBERLAND COUNTY**  
Improvements at 6 Intersections  
Upper Deerfield Township, New Jersey

**FIGURE 19**  
WEST PARK DRIVE &  
MAYORAITKEN DRIVE  
PHASE 1 RECOMMENDATIONS (CONCEPTUAL)



**FIGURE 20**  
**WEST PARK DRIVE &**  
**MAYORAITKEN DRIVE**  
**PHASE 2 RECOMMENDATIONS (CONCEPTUAL)**

**CUMBERLAND COUNTY**  
Improvements at 6 Intersections  
Upper Deerfield Township, New Jersey

## **CONCLUSIONS**

After analysis of the existing conditions at each of the intersection the following recommendations were developed:

### **South Woodruff Road (CR 553) and Rosenhayn Avenue (CR 659) and Woodruff-Carmel Road (CR 705)**

- Phase 1 - Install a multi-way stop at CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road). (Approx. \$3,600)
- Phase 2 -Simplify the intersection(s) through the closing of the segment of Woodruff Road between Rosenhayn Avenue and Woodruff-Carmel Road. (Approx. \$57,300)

### **Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704)**

- Trim the vegetation within the right-of-way to improve sight distance.
- Install a multi-way stop at Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704). (Approx. \$4,800)

### **Old Deerfield Pike (CR 606) and Finley Road (CR 617)**

- Trim the vegetation within the right-of-way to improve sight distance.
- Install a multi-way stop at Old Deerfield Pike (CR 606) and Finley Road (CR 617). (Approx. \$4,800)

### **Hogbin Road (CR 625) and Buckshutem Road (CR 670)**

- Install a multi-way stop at Hogbin Road (CR 625) and Buckshutem Road (CR 670). (Approx. \$4,800)

### **Morton Avenue and Lebanon Road**

- Install a flashing beacon also be added to the stop sign northeast corner of the intersection (Approx. \$1,700).

### **West Park Drive (CR 621) and Mayor Aitken Road**

- Phase 1 - Simplify the intersection by eliminating the fork on Mayor Aitken Drive and creating a four-way intersection with the amphitheater driveway on the north side of West Park Drive. (Approx. \$187,000)
- Phase 2 - Install a traffic signal at the intersection of West Park Drive (CR 621) and Mayor Aitken Drive. (Approx. \$118,000)

Although these recommendations have been developed, it is ultimately up to the County to weight the costs and benefits and determine whether to implement any or all of the proposed improvements.



# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

**Cumberland County  
New Jersey**



# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

Cumberland County  
New Jersey

### **APPENDIX A**

#### **LEVEL OF SERVICE CRITERIA FOR SIGNALIZED/UNSIGNALIZED INTERSECTIONS**



## **LEVEL OF SERVICE**

Level of Service is a term used to describe vehicle operator satisfaction with the driving experience. Research has determined that operator satisfaction is based primarily on travel speed and delay. In urban environments these factors, travel speed and delay, are primarily controlled by the operation of intersections.

By utilizing models to simulate the flow of traffic at intersections, the average delay experienced by vehicles can be estimated. These models consider such factors as traffic volumes, roadway geometry, traffic control, and driver behavior. Levels of Service designations are based on a comparison of the average delays calculated by the models with perceived acceptable delays.

The following tables illustrate the guidelines used for designated Levels of Service at intersections:

**Level of Service Criteria  
for Signalized Intersections<sup>(1)</sup>**

Level of Service	Control Delay (Seconds per Vehicle)
A	$\leq 10$
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	> 80

<sup>(1)</sup> Exhibit 18-4, Level of Service from Control Delay (2010 HCM)

**Level of Service Criteria  
for Unsignalized Intersections<sup>(2)</sup>**

Level of Service	Control Delay (Seconds per Vehicle)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	> 50

<sup>(2)</sup> Table Exhibit 19-1, Level of Service Criteria for TWSC and AWSC intersections (2010 HCM)



# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

**Cumberland County  
New Jersey**

### **APPENDIX B**

### **TRAFFIC COUNT DATA**



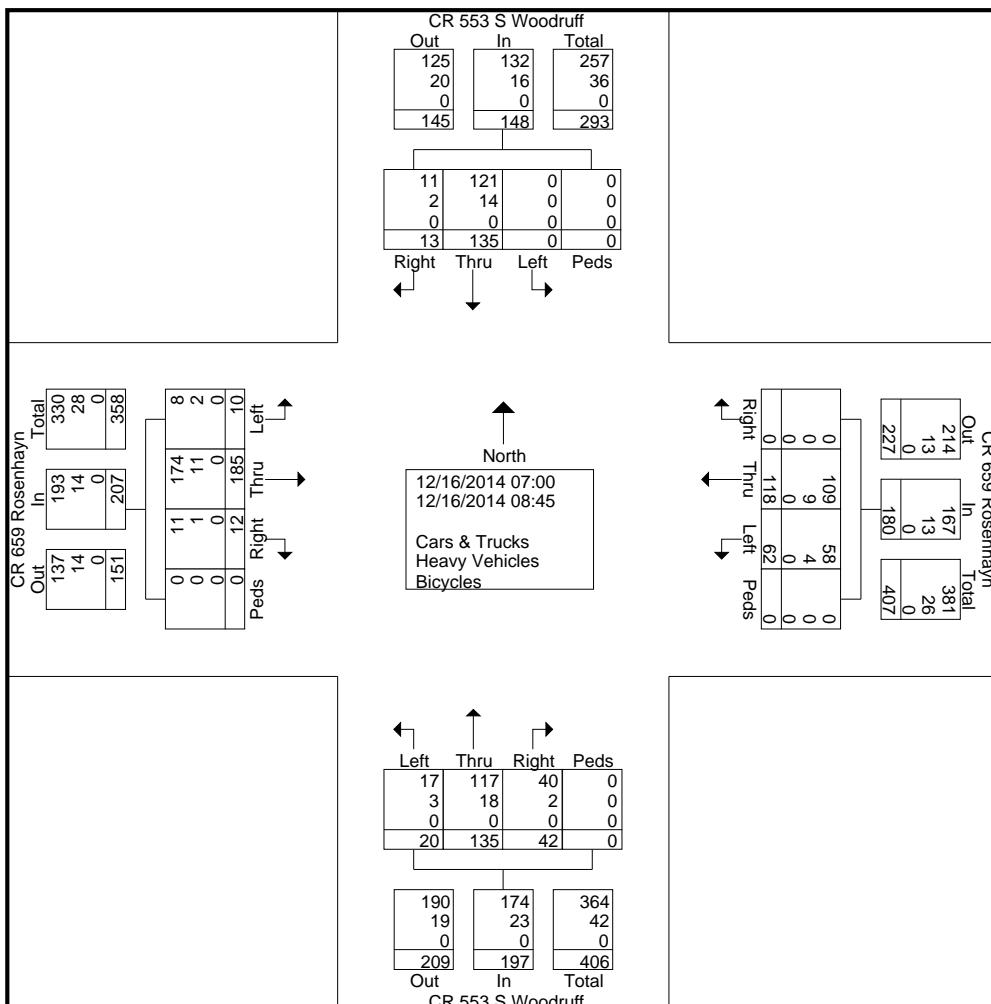
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 1 AM COUNTS  
CR 553 & CR 659  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 1 AM  
Site Code : 0001  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	CR 553 S Woodruff From North					CR 659 Rosenhayn From East					CR 553 S Woodruff From South					CR 659 Rosenhayn From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	1	13	0	0	14	0	14	5	0	19	1	17	4	0	22	0	15	4	0	19	74
07:15	1	13	0	0	14	0	8	6	0	14	1	21	2	0	24	0	23	1	0	24	76
07:30	2	15	0	0	17	0	13	8	0	21	7	21	4	0	32	3	35	0	0	38	108
07:45	3	26	0	0	29	0	17	10	0	27	14	17	1	0	32	2	38	0	0	40	128
Total	7	67	0	0	74	0	52	29	0	81	23	76	11	0	110	5	111	5	0	121	386
08:00	0	24	0	0	24	0	26	10	0	36	4	12	2	0	18	4	18	2	0	24	102
08:15	3	19	0	0	22	0	16	14	0	30	6	11	2	0	19	1	23	2	0	26	97
08:30	2	18	0	0	20	0	12	3	0	15	5	12	3	0	20	1	19	1	0	21	76
08:45	1	7	0	0	8	0	12	6	0	18	4	24	2	0	30	1	14	0	0	15	71
Total	6	68	0	0	74	0	66	33	0	99	19	59	9	0	87	7	74	5	0	86	346
Grand Total	13	135	0	0	148	0	118	62	0	180	42	135	20	0	197	12	185	10	0	207	732
Apprch %	8.8	91.2	0	0	0	0	65.6	34.4	0	0	21.3	68.5	10.2	0	0	5.8	89.4	4.8	0	0	0
Total %	1.8	18.4	0	0	20.2	0	16.1	8.5	0	24.6	5.7	18.4	2.7	0	26.9	1.6	25.3	1.4	0	28.3	
Cars & Trucks	11	121	0	0	132	0	109	58	0	167	40	117	17	0	174	11	174	8	0	193	666
% Cars & Trucks	84.6	89.6	0	0	89.2	0	92.4	93.5	0	92.8	95.2	86.7	85	0	88.3	91.7	94.1	80	0	93.2	91
Heavy Vehicles	2	14	0	0	16	0	9	4	0	13	2	18	3	0	23	1	11	2	0	14	66
% Heavy Vehicles	15.4	10.4	0	0	10.8	0	7.6	6.5	0	7.2	4.8	13.3	15	0	11.7	8.3	5.9	20	0	6.8	9
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



# Rodriguez Consulting

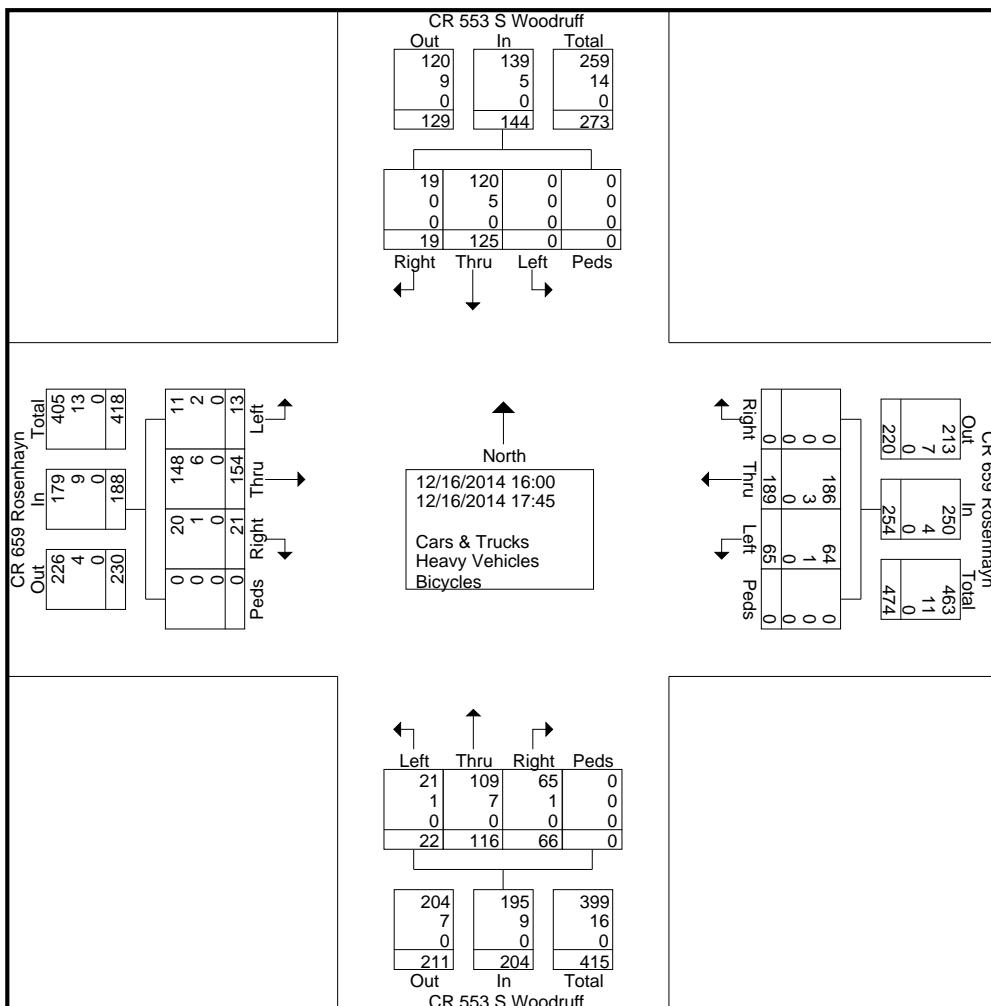
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 1 PM COUNTS  
CR 569 & CR 553  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 1 PM  
Site Code : 0001  
Start Date : 12/16/2014  
Page No : 1

## Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles

Start Time	CR 553 S Woodruff From North					CR 659 Rosenhayn From East					CR 553 S Woodruff From South					CR 659 Rosenhayn From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
16:00	3	21	0	0	24	0	27	14	0	41	10	24	3	0	37	2	23	1	0	26	128
16:15	3	18	0	0	21	0	21	3	0	24	8	19	1	0	28	2	16	4	0	22	95
16:30	8	16	0	0	24	0	23	6	0	29	13	19	4	0	36	3	24	2	0	29	118
16:45	2	14	0	0	16	0	27	12	0	39	9	16	3	0	28	4	32	2	0	38	121
Total	16	69	0	0	85	0	98	35	0	133	40	78	11	0	129	11	95	9	0	115	462
17:00	0	8	0	0	8	0	32	12	0	44	10	9	2	0	21	3	23	2	0	28	101
17:15	1	27	0	0	28	0	27	5	0	32	7	14	1	0	22	5	15	0	0	20	102
17:30	2	12	0	0	14	0	16	5	0	21	5	9	6	0	20	1	12	2	0	15	70
17:45	0	9	0	0	9	0	16	8	0	24	4	6	2	0	12	1	9	0	0	10	55
Total	3	56	0	0	59	0	91	30	0	121	26	38	11	0	75	10	59	4	0	73	328
Grand Total	19	125	0	0	144	0	189	65	0	254	66	116	22	0	204	21	154	13	0	188	790
Apprch %	13.2	86.8	0	0	0	0	74.4	25.6	0	0	32.4	56.9	10.8	0	0	11.2	81.9	6.9	0	0	0
Total %	2.4	15.8	0	0	18.2	0	23.9	8.2	0	32.2	8.4	14.7	2.8	0	25.8	2.7	19.5	1.6	0	23.8	0
Cars & Trucks	19	120	0	0	139	0	186	64	0	250	65	109	21	0	195	20	148	11	0	179	763
% Cars & Trucks	100	96	0	0	96.5	0	98.4	98.5	0	98.4	98.5	94	95.5	0	95.6	95.2	96.1	84.6	0	95.2	96.6
Heavy Vehicles	0	5	0	0	5	0	3	1	0	4	1	7	1	0	9	1	6	2	0	9	27
% Heavy Vehicles	0	4	0	0	3.5	0	1.6	1.5	0	1.6	1.5	6	4.5	0	4.4	4.8	3.9	15.4	0	4.8	3.4
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# Rodriguez Consulting

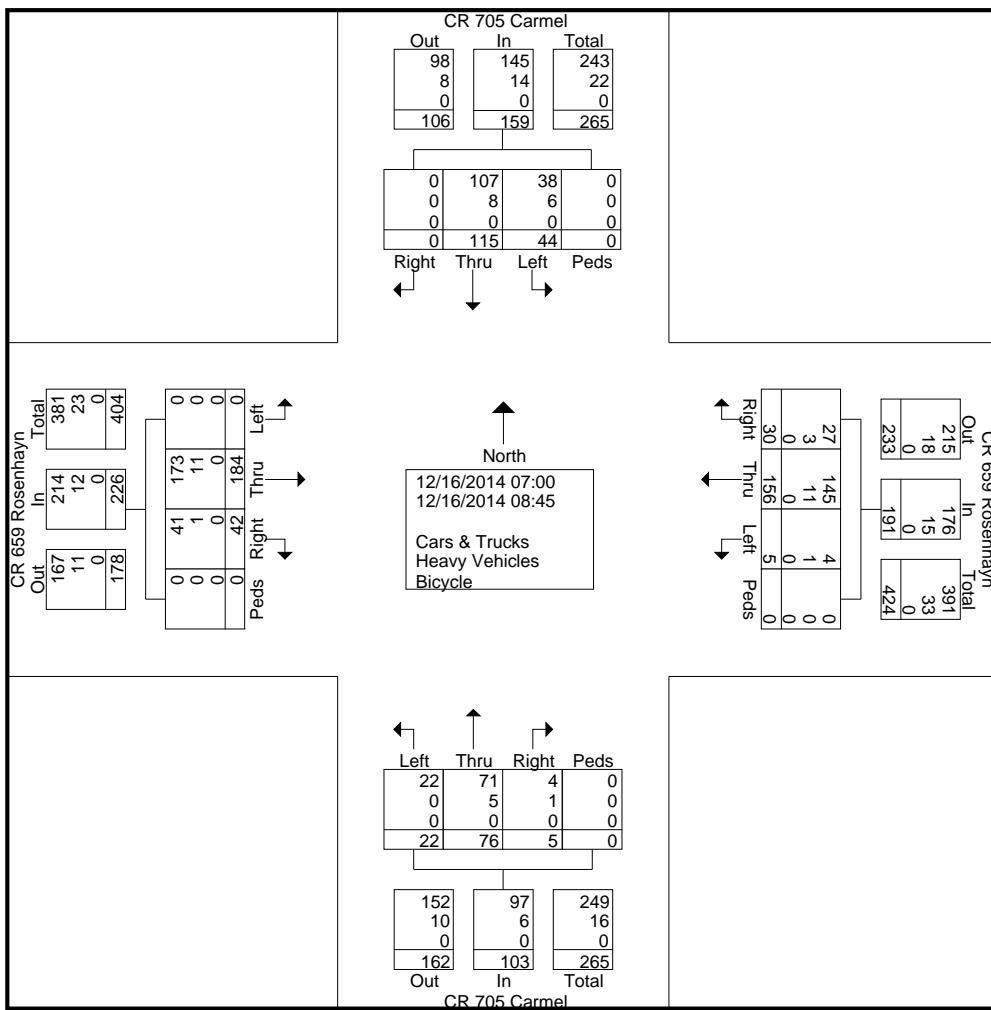
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 2 AM COUNTS  
CR 659 & CR 705  
Bridgeton, NJ  
Rodriguez Consulting LLC

File Name : Site 2 AM Data  
Site Code : 002  
Start Date : 12/16/2014  
Page No : 1

## Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycle

Start Time	CR 705 Carmel From North					CR 659 Rosenhayn From East					CR 705 Carmel From South					CR 659 Rosenhayn From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	0	16	2	0	18	5	18	1	0	24	1	17	1	0	19	3	13	0	0	16	77
07:15	0	10	13	0	23	3	11	0	0	14	0	8	3	0	11	8	15	0	0	23	71
07:30	0	16	8	0	24	2	18	2	0	22	2	11	3	0	16	10	32	0	0	42	104
07:45	0	22	9	0	31	4	23	2	0	29	0	13	3	0	16	3	49	0	0	52	128
Total	0	64	32	0	96	14	70	5	0	89	3	49	10	0	62	24	109	0	0	133	380
08:00	0	21	4	0	25	7	32	0	0	39	2	7	3	0	12	2	20	0	0	22	98
08:15	0	14	1	0	15	1	27	0	0	28	0	12	3	0	15	6	23	0	0	29	87
08:30	0	7	6	0	13	3	12	0	0	15	0	3	3	0	6	6	18	0	0	24	58
08:45	0	9	1	0	10	5	15	0	0	20	0	5	3	0	8	4	14	0	0	18	56
Total	0	51	12	0	63	16	86	0	0	102	2	27	12	0	41	18	75	0	0	93	299
Grand Total	0	115	44	0	159	30	156	5	0	191	5	76	22	0	103	42	184	0	0	226	679
Apprch %	0	72.3	27.7	0		15.7	81.7	2.6	0		4.9	73.8	21.4	0		18.6	81.4	0	0		
Total %	0	16.9	6.5	0	23.4	4.4	23	0.7	0	28.1	0.7	11.2	3.2	0	15.2	6.2	27.1	0	0	33.3	
Cars & Trucks	0	107	38	0	145	27	145	4	0	176	4	71	22	0	97	41	173	0	0	214	632
% Cars & Trucks	0	93	86.4	0	91.2	90	92.9	80	0	92.1	80	93.4	100	0	94.2	97.6	94	0	0	94.7	93.1
Heavy Vehicles	0	8	6	0	14	3	11	1	0	15	1	5	0	0	6	1	11	0	0	12	47
% Heavy Vehicles	0	7	13.6	0	8.8	10	7.1	20	0	7.9	20	6.6	0	0	5.8	2.4	6	0	0	5.3	6.9
Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 2 PM COUNTS  
CR 659 & CR 705  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 2 PM Data  
Site Code : 0002  
Start Date : 12/27/2014  
Page No : 1

# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

AM Counts  
CR 553 & CR 705  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : AM Data Carmel & Woodruff  
Site Code : \_\_\_\_\_  
Start Date : 12/16/2014  
Page No : 1

# Rodriguez Consulting

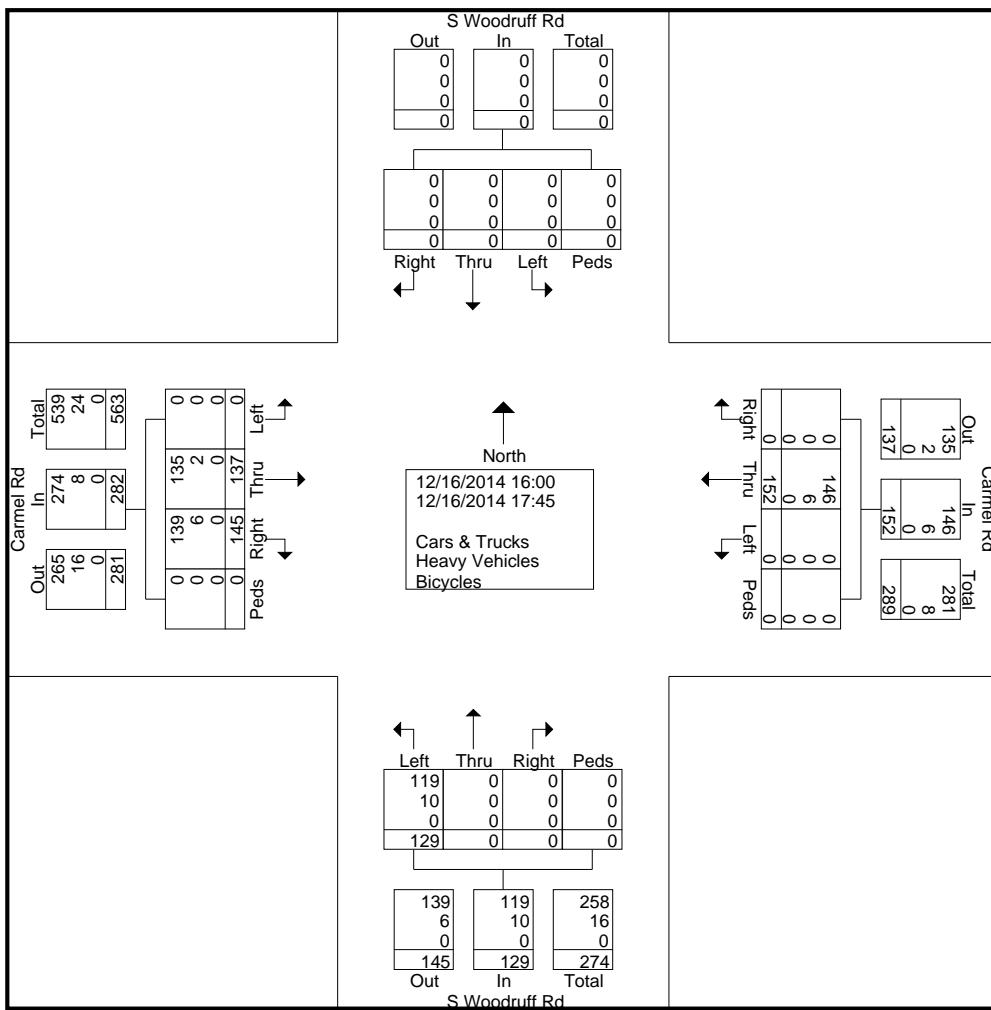
1301 N. 2nd Street  
Philadelphia, PA 19122

PM Counts  
Carmel Rd & Woodruff Rd  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : PM Data Carmel & Woodruff  
Site Code :  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles

Start Time	S Woodruff Rd From North					Carmel Rd From East					S Woodruff Rd From South					Carmel Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
16:00	0	0	0	0	0	0	22	0	0	22	0	0	24	0	24	24	10	0	0	34	80
16:15	0	0	0	0	0	0	22	0	0	22	0	0	21	0	21	22	25	0	0	47	90
16:30	0	0	0	0	0	0	20	0	0	20	0	0	24	0	24	24	21	0	0	45	89
16:45	0	0	0	0	0	0	18	0	0	18	0	0	18	0	18	16	19	0	0	35	71
Total	0	0	0	0	0	0	82	0	0	82	0	0	87	0	87	86	75	0	0	161	330
17:00	0	0	0	0	0	0	21	0	0	21	0	0	13	0	13	8	17	0	0	25	59
17:15	0	0	0	0	0	0	14	0	0	14	0	0	13	0	13	28	21	0	0	49	76
17:30	0	0	0	0	0	0	22	0	0	22	0	0	11	0	11	14	16	0	0	30	63
17:45	0	0	0	0	0	0	13	0	0	13	0	0	5	0	5	9	8	0	0	17	35
Total	0	0	0	0	0	0	70	0	0	70	0	0	42	0	42	59	62	0	0	121	233
Grand Total	0	0	0	0	0	0	152	0	0	152	0	0	129	0	129	145	137	0	0	282	563
Apprch %	0	0	0	0	0	0	100	0	0	100	0	0	100	0	100	51.4	48.6	0	0	0	0
Total %	0	0	0	0	0	0	27	0	0	27	0	0	22.9	0	22.9	25.8	24.3	0	0	50.1	0
Cars & Trucks	0	0	0	0	0	0	146	0	0	146	0	0	119	0	119	139	135	0	0	274	539
% Cars & Trucks	0	0	0	0	0	0	96.1	0	0	96.1	0	0	92.2	0	92.2	95.9	98.5	0	0	97.2	95.7
Heavy Vehicles	0	0	0	0	0	0	6	0	0	6	0	0	10	0	10	6	2	0	0	8	24
% Heavy Vehicles	0	0	0	0	0	0	3.9	0	0	3.9	0	0	7.8	0	7.8	4.1	1.5	0	0	2.8	4.3
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Dec 16 2014															Total	Pace	Number in Pace
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Speed		
12:00 AM	0	0	0	0	0	2	6	6	3	0	0	0	0	0	0	17	42-51	11
1:00 AM	0	0	0	0	0	2	1	6	6	0	0	0	0	0	0	15	46-55	11
2:00 AM	0	0	0	0	1	0	0	2	6	1	1	1	0	0	0	12	41-50	8
3:00 AM	0	0	0	1	1	0	3	4	1	1	1	0	0	0	0	12	41-50	7
4:00 AM	0	0	0	0	0	0	3	3	7	8	0	1	0	1	0	23	46-55	15
5:00 AM	0	0	0	0	0	2	6	17	16	7	3	2	3	0	0	56	41-50	33
6:00 AM	0	0	0	0	0	3	11	32	38	25	11	1	0	0	0	121	41-50	69
7:00 AM	1	0	0	0	0	5	28	47	65	32	12	2	0	0	0	192	41-50	112
8:00 AM	5	1	1	2	2	15	40	49	45	14	3	0	0	0	0	177	46-55	94
9:00 AM	2	0	1	5	6	13	31	39	20	4	1	1	0	0	0	123	41-50	70
10:00 AM	1	0	2	3	9	18	31	36	19	3	0	1	0	0	0	123	41-50	67
11:00 AM	1	1	0	0	10	20	37	30	21	3	0	1	1	0	0	125	41-50	67
12:00 PM	1	0	0	3	8	22	28	44	7	11	2	0	0	0	0	126	41-50	72
1:00 PM	2	0	1	2	10	16	49	55	32	5	8	0	0	0	0	180	41-50	104
2:00 PM	1	0	0	4	7	49	52	46	26	7	3	1	0	0	0	196	36-45	101
3:00 PM	2	0	0	3	15	57	72	63	26	7	0	0	0	0	0	245	41-50	135
4:00 PM	2	0	1	3	14	36	81	61	30	8	1	0	0	0	0	237	41-50	141
5:00 PM	1	1	0	0	4	28	60	46	17	3	1	0	0	0	0	161	41-50	105
6:00 PM	1	0	0	1	6	31	55	33	9	4	0	1	0	0	0	141	41-50	87
7:00 PM	0	0	0	3	0	13	24	30	8	1	0	0	0	0	0	79	41-50	54
8:00 PM	4	3	0	0	4	19	32	21	11	3	0	0	0	0	0	97	41-50	53
9:00 PM	0	1	0	1	3	10	27	21	11	2	1	1	0	0	0	78	41-50	48
10:00 PM	0	0	0	0	1	2	14	16	17	3	3	0	0	0	0	56	46-55	33
11:00 PM	0	0	0	0	0	2	10	10	8	0	2	0	0	0	0	32	41-50	20
Day Total	24	7	6	32	110	403	754	748	390	106	33	9	2	0	0	2624	41-50	1501
Percent	0.90%	0.30%	0.20%	1.20%	4.20%	15.40%	28.70%	28.50%	14.90%	4.00%	1.30%	0.30%	0.10%	0.00%				
ADT	2624																	
AM Peak Volume	8:00 AM	8:00 AM	10:00 AM	9:00 AM	11:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	8:00 AM	8:00 AM	5:00 AM	4:00 AM		7:00 AM			
	5	1	2	5	10	28	47	65	45	14	3	3	1		192			
PM Peak Volume	8:00 PM	8:00 PM	1:00 PM	2:00 PM	3:00 PM	3:00 PM	4:00 PM	3:00 PM	1:00 PM	12:00 PM	1:00 PM	2:00 PM			3:00 PM			
	4	3	1	4	15	57	81	63	32	11	8	1			245			

## SUMMARY:

Date: 2014 - Dec 16 2014

Location: South Woodruff Rd  
City/State: Upper Deerfield Township, NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB



#### RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Average Week Hourly	
						Hourly Traffic		
16-Dec-14								
12:00 AM		17				17		17
1:00 AM		15				15		15
2:00 AM		12				12		12
3:00 AM		12				12		12
4:00 AM		23				23		23
5:00 AM		56				56		56
6:00 AM		121				121		121
7:00 AM		192				192		192
8:00 AM		177				177		177
9:00 AM		123				123		123
10:00 AM		123				123		123
11:00 AM		125				125		125
12:00 PM		126				126		126
1:00 PM		180				180		180
2:00 PM		196				196		196
3:00 PM		245				245		245
4:00 PM		237				237		237
5:00 PM		161				161		161
6:00 PM		141				141		141
7:00 PM		79				79		79
8:00 PM		97				97		97
9:00 PM		78				78		78
10:00 PM		56				56		56
11:00 PM		32				32		32
Day Total		2624				2624		2624
ADT		2624				2624		2624
%Weekday Average		100.00%						
%Week Average		100.00%				100.00%		
AM Peak Volume		7:00 AM 192				7:00 AM 192		7:00 AM 192
PM Peak Volume		3:00 PM 245				3:00 PM 245		3:00 PM 245

Type: Speed Data  
 Specific Location: 0 ft from  
 Direction: NB/SB

Type: Speed Data  
 City/State: Upper Deerfield Township NJ  
 Date: Dec 16 2014 - Dec 16 2014  
**RODRIGUEZ CONSULTING COUNTS REPORT**

Date:	Start Time	Dec 16 2014	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	
															Number in Pace		
	12:00 AM	1	0	0	0	0	0	2	4	2	0	0	0	0	11	46-55	
	1:00 AM	0	0	0	0	0	0	4	2	1	2	0	0	0	11	41-50	
	2:00 AM	0	0	0	0	0	1	2	1	0	1	0	0	0	5	41-50	
	3:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	2	36-45	
	4:00 AM	0	0	0	0	0	0	3	5	2	3	0	0	0	13	36-45	
	5:00 AM	0	0	0	0	0	2	1	19	29	13	3	1	0	68	41-50	
	6:00 AM	0	0	0	1	1	3	20	30	24	2	2	1	0	84	46-55	
	7:00 AM	0	0	0	0	2	10	51	57	45	11	1	0	0	177	41-50	
	8:00 AM	0	0	0	0	0	3	6	25	55	40	20	1	4	0	154	46-55
	9:00 AM	2	0	0	0	0	0	15	28	33	25	9	0	0	0	112	42-51
	10:00 AM	4	0	0	0	0	2	6	32	38	38	10	0	0	0	130	46-55
	11:00 AM	2	0	0	0	0	0	6	25	46	28	12	2	1	0	122	46-55
	12:00 PM	2	0	0	0	0	3	4	25	49	33	9	6	0	0	131	46-55
	1:00 PM	3	0	0	0	0	1	9	43	44	26	14	4	0	0	144	41-50
	2:00 PM	4	0	0	0	0	0	20	63	64	36	6	2	0	1	196	41-50
	3:00 PM	2	0	1	0	2	21	51	73	29	7	1	0	0	0	187	41-50
	4:00 PM	1	0	0	0	2	22	102	60	40	5	0	0	0	0	232	41-50
	5:00 PM	0	0	0	0	0	27	62	70	14	1	0	0	0	0	174	41-50
	6:00 PM	0	0	0	1	27	24	35	9	2	0	0	0	0	0	98	41-50
	7:00 PM	0	0	0	1	2	16	32	21	9	2	1	0	0	0	84	41-50
	8:00 PM	0	0	0	0	2	13	25	22	7	0	0	0	0	0	69	41-50
	9:00 PM	0	0	0	0	0	8	17	16	7	0	0	0	0	0	48	41-50
	10:00 PM	0	0	2	0	0	2	15	6	5	0	1	0	0	0	31	41-50
	11:00 PM	0	0	0	0	0	2	4	7	5	3	0	0	0	0	21	46-55
	Day Total	21	0	3	2	23	222	678	764	440	120	24	6	1	0	2304	41-50
	Percent ADT	0.90%	0.00%	0.10%	0.10%	9.60%	29.40%	33.20%	19.10%	5.20%	1.00%	0.30%	0.00%	0.00%			1442
	AM Peak Volume	4					6:00 AM	8:00 AM	9:00 AM	7:00 AM	7:00 AM	8:00 AM	1:00 AM	8:00 AM		7:00 AM	
	PM Peak Volume	4					10:00 PM	7:00 PM	12:00 PM	5:00 PM	4:00 PM	3:00 PM	4:00 PM	1:00 PM	12:00 PM	2:00 PM	



Type: Speed Data  
City/State: Upper Deerfield Township NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB

Date:	2014 - Dec 16 2014
Grand Total	1
Percent	15
Cumulative Percent	21
ADT	0.90%
	0.00%
	0.90%
	2304

85th Percentile	52 MPH
Mean Speed(Average)	46 MPH
Median	46 MPH
Mode	48 MPH

Location: Rosenhayn Ave  
City/State: Upper Deerfield Township, NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB

RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Average Week	
						Hourly Traffic	Sat	Sun
16-Dec-14								
12:00 AM		11				11		11
1:00 AM		11				11		11
2:00 AM		5				5		5
3:00 AM		2				2		2
4:00 AM		13				13		13
5:00 AM		68				68		68
6:00 AM		84				84		84
7:00 AM		177				177		177
8:00 AM		154				154		154
9:00 AM		112				112		112
10:00 AM		130				130		130
11:00 AM		122				122		122
12:00 PM		131				131		131
1:00 PM		144				144		144
2:00 PM		196				196		196
3:00 PM		187				187		187
4:00 PM		232				232		232
5:00 PM		174				174		174
6:00 PM		98				98		98
7:00 PM		84				84		84
8:00 PM		69				69		69
9:00 PM		48				48		48
10:00 PM		31				31		31
11:00 PM		21				21		21
Day Total		2304				2304		2304
ADT		2304				2304		2304

%Weekday Average 100.00%

%Week Average 100.00% 100.00%

AM Peak 7:00 AM 7:00 AM 7:00 AM  
Volume 177 177 177

PM Peak 4:00 PM 4:00 PM 4:00 PM  
Volume 232 232 232

Location: Carmel Woodruff Rd  
 City/State: Upper Deerfield Township, NJ  
 Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
 Specific location: 0 ft from  
 Direction: EB/VB



## RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Dec 16 2014																		
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	14	36--45	11	
12:00 AM	0	0	0	0	0	2	9	1	1	1	0	0	0	0	0	0	0	0	
1:00 AM	0	0	1	5	2	2	1	5	3	0	0	0	0	0	0	19	46--55	7	
2:00 AM	1	0	0	1	0	3	2	2	6	1	0	0	0	0	0	0	16	41--50	8
3:00 AM	0	0	0	0	0	3	5	4	4	0	1	0	0	0	0	0	17	36--45	9
4:00 AM	0	0	0	0	3	0	2	11	2	2	1	0	0	0	0	0	21	41--50	12
5:00 AM	2	1	0	6	6	14	17	5	4	0	1	0	0	0	0	0	56	36--45	30
6:00 AM	1	0	1	2	17	25	66	31	11	2	0	0	0	0	0	0	156	41--50	96
7:00 AM	7	1	2	14	30	75	76	62	15	1	1	0	0	0	0	0	284	36--45	150
8:00 AM	5	0	1	8	15	57	51	58	15	5	0	0	0	0	0	0	215	41--50	108
9:00 AM	4	1	3	2	19	44	61	37	9	2	0	0	0	0	0	0	182	36--45	104
10:00 AM	0	5	2	4	18	62	56	39	6	2	0	0	0	0	0	0	194	36--45	117
11:00 AM	3	3	4	4	22	42	65	40	10	3	0	0	0	0	0	0	196	36--45	107
12:00 PM	9	2	4	8	16	49	63	47	10	1	0	0	0	0	0	0	209	38--47	111
1:00 PM	3	0	4	6	34	60	83	37	16	2	0	0	0	0	0	0	245	36--45	143
2:00 PM	13	0	16	10	46	82	87	36	6	1	0	1	0	0	0	0	298	36--45	168
3:00 PM	3	0	0	6	26	107	94	45	5	1	0	0	0	0	0	0	287	36--45	201
4:00 PM	7	0	0	0	15	37	104	117	43	4	1	0	0	0	0	0	328	36--45	220
5:00 PM	4	0	0	1	21	81	76	37	5	0	0	0	0	0	0	0	225	36--45	156
6:00 PM	9	0	1	3	27	64	54	21	4	1	0	0	0	0	0	0	184	36--45	118
7:00 PM	0	0	2	1	4	39	45	15	4	1	0	0	0	0	0	0	111	36--45	84
8:00 PM	0	0	1	2	15	32	31	10	3	0	0	0	0	0	0	0	94	36--45	63
9:00 PM	0	0	0	1	14	31	28	9	4	2	0	0	0	0	0	0	89	36--45	58
10:00 PM	1	2	0	0	8	17	15	12	2	2	1	0	0	0	0	0	60	36--45	32
11:00 PM	0	0	0	0	4	12	12	8	0	0	0	0	0	0	0	0	36	37--46	23
Day Total	72	15	43	101	387	1010	1124	610	140	30	3	1	0	0	0	0	3536	36--45	2134
Percent	2.00%	0.40%	1.20%	2.90%	10.90%	28.60%	31.80%	17.30%	4.00%	0.80%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%			
ADT	3536																		
AM Peak Volume	7	5	4	14	30	75	76	62	15	5	1								
PM Peak Volume	13	2	16	45	46	107	117	47	16	2	1	1	1	1	1	1	4:00 PM	328	
																	7:00 AM	284	



Location: Carmel Woodruff Rd  
City/State: Upper Deerfield Township, NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific location: 0 ft from  
Direction: EB/VB

#### SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
Percent	72	15	43	101	387	1010	1124	610	140	30	3	1	0	0	3536	36-45	2134
Cumulative Percent	2.00%	0.40%	1.20%	2.90%	10.90%	28.60%	31.80%	17.30%	4.00%	0.80%	0.10%	0.00%	0.00%	0.00%			
ADT	3536														100.00%	100.00%	100.00%

85th Percentile  
Mean Speed(Average)  
Median  
Mode

47 MPH  
39 MPH  
40 MPH  
43 MPH

Location: Carmel Woodruff Rd  
City/State: Upper Deerfield Township, NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: EB/WB

RODRIGUEZ CONSULTING COUNTS REPORT



Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week
						Hourly Traffic			
16-Dec-14									
12:00 AM		14				14			14
1:00 AM		19				19			19
2:00 AM		16				16			16
3:00 AM		17				17			17
4:00 AM		21				21			21
5:00 AM		56				56			56
6:00 AM		156				156			156
7:00 AM		284				284			284
8:00 AM		215				215			215
9:00 AM		182				182			182
10:00 AM		194				194			194
11:00 AM		196				196			196
12:00 PM		209				209			209
1:00 PM		245				245			245
2:00 PM		298				298			298
3:00 PM		287				287			287
4:00 PM		328				328			328
5:00 PM		225				225			225
6:00 PM		184				184			184
7:00 PM		111				111			111
8:00 PM		94				94			94
9:00 PM		89				89			89
10:00 PM		60				60			60
11:00 PM		36				36			36
Day Total		3536				3536			3536
ADT		3536				3536			3536
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		284				284			284
PM Peak		4:00 PM				4:00 PM			4:00 PM
Volume		328				328			328

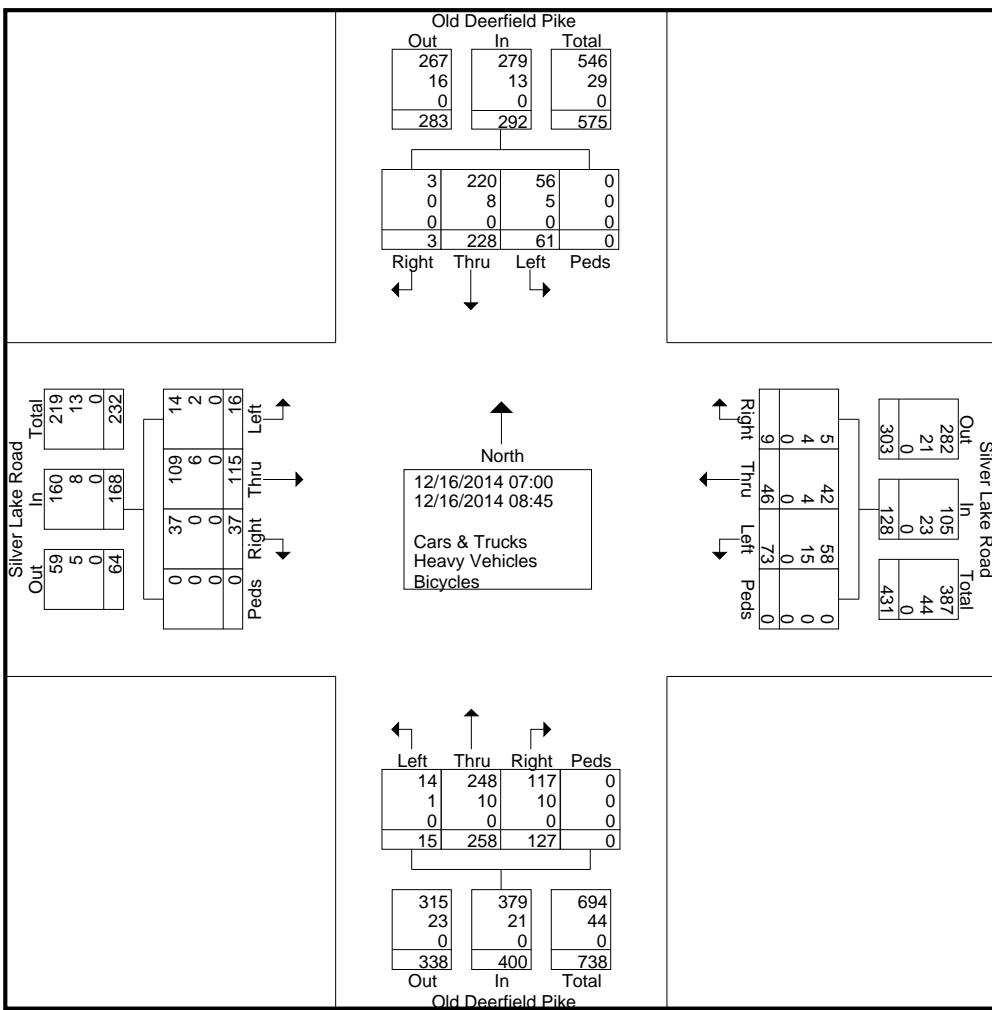
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 3 AM Counts  
Old Deerfield & Silver Lake  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 3 AM Data  
Site Code : 3  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Old Deerfield Pike From North					Silver Lake Road From East					Old Deerfield Pike From South					Silver Lake Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	0	21	35	0	56	2	5	4	0	11	41	28	0	0	69	3	24	0	0	27	163
07:15	0	23	18	0	41	5	15	29	0	49	51	64	1	0	116	3	25	1	0	29	235
07:30	1	30	1	0	32	0	4	10	0	14	4	40	1	0	45	4	13	4	0	21	112
07:45	1	40	4	0	45	0	4	8	0	12	6	42	1	0	49	8	14	3	0	25	131
Total	2	114	58	0	174	7	28	51	0	86	102	174	3	0	279	18	76	8	0	102	641
08:00	0	31	1	0	32	1	5	6	0	12	12	21	2	0	35	2	6	1	0	9	88
08:15	0	37	0	0	37	0	5	7	0	12	6	24	7	0	37	8	15	4	0	27	113
08:30	0	17	0	0	17	1	6	5	0	12	5	23	0	0	28	6	7	1	0	14	71
08:45	1	29	2	0	32	0	2	4	0	6	2	16	3	0	21	3	11	2	0	16	75
Total	1	114	3	0	118	2	18	22	0	42	25	84	12	0	121	19	39	8	0	66	347
Grand Total	3	228	61	0	292	9	46	73	0	128	127	258	15	0	400	37	115	16	0	168	988
Apprch %	1	78.1	20.9	0		7	35.9	57	0		31.8	64.5	3.8	0		22	68.5	9.5	0		
Total %	0.3	23.1	6.2	0	29.6	0.9	4.7	7.4	0	13	12.9	26.1	1.5	0	40.5	3.7	11.6	1.6	0	17	
Cars & Trucks	3	220	56	0	279	5	42	58	0	105	117	248	14	0	379	37	109	14	0	160	923
% Cars & Trucks	100	96.5	91.8	0	95.5	55.6	91.3	79.5	0	82	92.1	96.1	93.3	0	94.8	100	94.8	87.5	0	95.2	93.4
Heavy Vehicles	0	8	5	0	13	4	4	15	0	23	10	10	1	0	21	0	6	2	0	8	65
% Heavy Vehicles	0	3.5	8.2	0	4.5	44.4	8.7	20.5	0	18	7.9	3.9	6.7	0	5.2	0	5.2	12.5	0	4.8	6.6
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



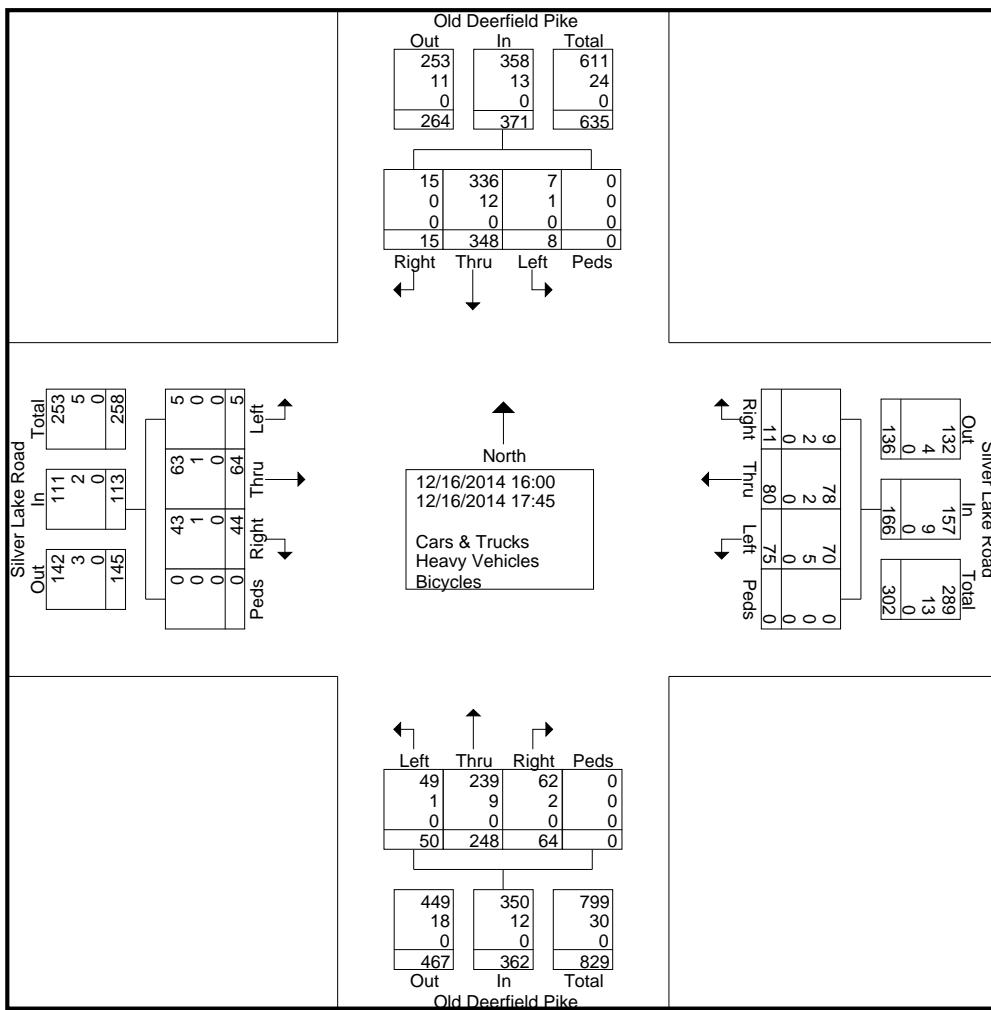
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 3 PM Counts  
Old Deerfield & Silver Lake  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 3 PM Data  
Site Code : 3  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Old Deerfield Pike From North					Silver Lake Road From East					Old Deerfield Pike From South					Silver Lake Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	1	41	0	0	42	4	8	12	0	24	2	25	5	0	32	4	6	0	0	10	108
16:15	0	60	0	0	60	1	6	10	0	17	7	35	3	0	45	6	6	1	0	13	135
16:30	0	41	2	0	43	1	11	4	0	16	13	43	9	0	65	7	7	0	0	14	138
16:45	2	54	1	0	57	2	7	9	0	18	5	44	8	0	57	11	13	0	0	24	156
Total	3	196	3	0	202	8	32	35	0	75	27	147	25	0	199	28	32	1	0	61	537
17:00	5	50	2	0	57	1	9	12	0	22	7	29	8	0	44	4	4	1	0	9	132
17:15	4	38	0	0	42	0	9	12	0	21	8	25	8	0	41	4	5	1	0	10	114
17:30	2	38	2	0	42	1	15	6	0	22	7	28	4	0	39	4	9	2	0	15	118
17:45	1	26	1	0	28	1	15	10	0	26	15	19	5	0	39	4	14	0	0	18	111
Total	12	152	5	0	169	3	48	40	0	91	37	101	25	0	163	16	32	4	0	52	475
Grand Total	15	348	8	0	371	11	80	75	0	166	64	248	50	0	362	44	64	5	0	113	1012
Apprch %	4	93.8	2.2	0		6.6	48.2	45.2	0		17.7	68.5	13.8	0		38.9	56.6	4.4	0		
Total %	1.5	34.4	0.8	0	36.7	1.1	7.9	7.4	0	16.4	6.3	24.5	4.9	0	35.8	4.3	6.3	0.5	0	11.2	
Cars & Trucks	15	336	7	0	358	9	78	70	0	157	62	239	49	0	350	43	63	5	0	111	976
% Cars & Trucks	100	96.6	87.5	0	96.5	81.8	97.5	93.3	0	94.6	96.9	96.4	98	0	96.7	97.7	98.4	100	0	98.2	96.4
Heavy Vehicles	0	12	1	0	13	2	2	5	0	9	2	9	1	0	12	1	1	0	0	2	36
% Heavy Vehicles	0	3.4	12.5	0	3.5	18.2	2.5	6.7	0	5.4	3.1	3.6	2	0	3.3	2.3	1.6	0	0	1.8	3.6
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Location: Old Deerfield Pike  
 City/State: Upper Deerfield Township, NJ  
 Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
 Specific location: 0 ft from  
 Direction: NB/SB

## RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Start Time	Dec 16 2014	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Speed	Number in Pace	
	12:00 AM	0	0	0	0	0	3	0	6	4	3	5	0	0	21	46--55	10		
	1:00 AM	0	0	0	0	0	0	1	2	1	3	1	0	0	8	51--60	4		
	2:00 AM	0	0	0	0	0	0	0	0	2	6	2	1	0	1	16	51--60	8	
	3:00 AM	0	0	0	0	0	0	0	2	0	8	4	3	0	0	0	17	51--60	
	4:00 AM	1	0	0	0	0	0	0	0	4	8	7	9	3	0	1	33	56--65	
	5:00 AM	0	1	0	0	1	0	3	5	15	23	13	3	5	0	69	51--60	38	
	6:00 AM	4	0	0	0	0	0	2	38	52	48	18	3	2	1	168	51--60	99	
	7:00 AM	6	0	0	0	0	2	7	51	110	87	23	10	0	1	297	51--60	196	
	8:00 AM	3	0	0	0	0	2	4	12	67	55	25	8	1	1	178	51--60	122	
	9:00 AM	3	0	0	0	0	0	0	6	20	51	39	18	5	1	0	143	51--60	90
	10:00 AM	3	0	0	0	0	1	0	2	24	45	23	8	6	0	0	112	46--55	69
	11:00 AM	3	2	0	0	0	0	0	8	19	50	25	14	3	0	0	124	51--60	75
	12:00 PM	1	1	0	0	0	1	5	16	52	28	9	5	3	0	121	51--60	79	
	1:00 PM	0	0	0	0	1	0	0	7	25	46	39	6	5	2	1	132	51--60	85
	2:00 PM	1	1	3	0	0	0	14	37	66	34	11	5	0	0	172	47--56	102	
	3:00 PM	11	0	0	0	1	1	21	83	115	45	14	0	0	0	291	46--55	198	
	4:00 PM	10	0	0	0	0	0	3	30	98	104	42	9	3	1	301	46--55	202	
	5:00 PM	1	0	0	0	0	0	3	18	67	74	31	1	3	0	198	46--55	141	
	6:00 PM	2	0	0	0	0	0	8	32	60	55	14	3	0	0	174	46--55	115	
	7:00 PM	0	0	0	1	0	2	12	28	26	18	2	0	0	0	89	46--55	54	
	8:00 PM	1	0	0	0	0	1	11	29	23	12	0	0	0	0	77	46--55	51	
	9:00 PM	1	0	0	0	0	5	4	18	27	8	3	0	0	0	66	46--55	45	
	10:00 PM	0	0	0	0	1	0	3	4	14	15	3	0	0	0	40	51--60	29	
	11:00 PM	0	0	0	0	0	0	0	2	8	7	3	2	0	0	24	51--60	14	
Day Total	51	5	3	2	5	31	194	651	1023	616	203	65	15	7	2871	46--55	1673		
Percent	1.80%	0.20%	0.10%	0.10%	0.20%	1.10%	6.80%	22.70%	35.60%	21.50%	7.10%	2.30%	0.50%	0.20%					
ADT	2871																		
AM Peak Volume		7:00 AM	11:00 AM																
		6	2																
PM Peak Volume		3:00 PM	12:00 PM	2:00 PM	1:00 PM	3:00 PM	6:00 PM	4:00 PM	3:00 PM	8:00 AM	7:00 AM	8:00 AM	7:00 AM	5:00 AM	2:00 AM	7:00 AM			
		11	1	3	1	1	8	32	98	115	45	14	5	3	1	1	297		



Location: Old Deerfield Pike  
City/State: Upper Deerfield Township, NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB

## SUMMARY:

Dec 16 2014 - Dec 16 2014

85th Percentile	Mean Speed(Average)	Median	Mode
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Location: Old Deerfield Pike  
City/State: Upper Deerfield Township, NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB

RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday		Average Week	
						Hourly Traffic	Sat	Sun	Hourly Traffic
16-Dec-14									
12:00 AM		21				21			21
1:00 AM		8				8			8
2:00 AM		16				16			16
3:00 AM		17				17			17
4:00 AM		33				33			33
5:00 AM		69				69			69
6:00 AM		168				168			168
7:00 AM		297				297			297
8:00 AM		178				178			178
9:00 AM		143				143			143
10:00 AM		112				112			112
11:00 AM		124				124			124
12:00 PM		121				121			121
1:00 PM		132				132			132
2:00 PM		172				172			172
3:00 PM		291				291			291
4:00 PM		301				301			301
5:00 PM		198				198			198
6:00 PM		174				174			174
7:00 PM		89				89			89
8:00 PM		77				77			77
9:00 PM		66				66			66
10:00 PM		40				40			40
11:00 PM		24				24			24
Day Total		2871				2871			2871
ADT		2871				2871			2871
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		297				297			297
PM Peak		4:00 PM				4:00 PM			4:00 PM
Volume		301				301			301

Location: Silver Lake Rd  
City/State: Upper Deerfield Township, NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific location: 0 ft from  
Direction: EB/NW

## RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Start Time	Dec 16 2014	1:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	Total	Pace	Speed	Number in Pace
		1	16	21	26	31	36	41	51	56	61	71
		15	20	25	30	35	40	45	50	55	60	75
	12:00 AM	0	0	1	1	3	1	0	0	0	0	0
	1:00 AM	0	1	0	0	0	0	0	0	0	0	2
	2:00 AM	0	0	2	1	0	0	0	0	0	0	3
	3:00 AM	0	0	1	1	2	0	0	0	0	0	3
	4:00 AM	0	0	1	1	1	0	0	0	0	0	3
	5:00 AM	0	1	2	4	6	2	0	0	0	0	16
	6:00 AM	0	0	4	13	26	9	1	0	0	0	53
	7:00 AM	0	1	7	26	56	39	10	0	0	0	139
	8:00 AM	1	1	11	37	7	1	0	0	0	0	96
	9:00 AM	0	1	5	13	29	18	8	1	0	0	0
	10:00 AM	3	1	4	20	40	29	8	1	0	0	106
	11:00 AM	0	0	5	18	37	20	8	2	0	0	90
	12:00 PM	0	1	0	13	46	30	5	1	0	0	96
	1:00 PM	2	1	4	14	44	33	5	2	1	0	0
	2:00 PM	2	1	6	20	58	55	6	2	0	0	0
	3:00 PM	0	0	2	31	44	33	6	1	0	0	0
	4:00 PM	0	1	1	25	61	23	8	1	0	0	0
	5:00 PM	0	0	4	27	60	40	3	2	0	0	0
	6:00 PM	2	1	7	34	45	25	1	0	0	0	0
	7:00 PM	0	0	1	19	26	18	1	0	0	0	0
	8:00 PM	0	0	2	11	27	16	2	0	0	0	0
	9:00 PM	0	1	3	8	26	8	1	1	0	0	0
	10:00 PM	2	0	0	5	12	11	0	0	0	0	0
	11:00 PM	0	0	0	3	3	1	1	0	0	0	0
Day Total	12	12	57	319	685	457	84	15	1	0	0	8
Percent	0.70%	0.70%	3.50%	19.40%	41.70%	27.80%	5.10%	0.90%	0.10%	0.00%	0.00%	0.00%
ADT	1642											
AM Peak Volume		10:00 AM	1:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	139
PM Peak Volume		1:00 PM	12:00 PM	6:00 PM	6:00 PM	4:00 PM	2:00 PM	4:00 PM	1:00 PM	1:00 PM	2:00 PM	150



Location: Silver Lake Rd  
City/State: Upper Deerfield Township, NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific location: 0 ft from  
Direction: EB/NW

#### SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	1642	31-40	1142
Percent	12	12	57	319	685	457	84	15	1	0	0	0	0	0	0	0	0
Cumulative Percent	0.70%	0.70%	3.50%	39.40%	41.70%	27.80%	5.10%	0.90%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ADT	0.70%	0.70%	1.50%	4.90%	24.40%	66.10%	93.90%	99.00%	99.90%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

85th Percentile	38 MPH
Mean Speed(Average)	32 MPH
Median	33 MPH
Mode	33 MPH

Location: Silver Lake Rd  
Specific Location: 0 ft from

Type: Volume Data  
Specific Location: 0 ft from  
Direction: EB/WB



## RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Average Weekday					Average Week		
			Wed	Thu	Fri	Hourly Traffic	Sat	Sun	Hourly Traffic	
		16-Dec-14								
12:00 AM		6				6			6	
1:00 AM		2				2			2	
2:00 AM		3				3			3	
3:00 AM		4				4			4	
4:00 AM		3				3			3	
5:00 AM		16				16			16	
6:00 AM		53				53			53	
7:00 AM		139				139			139	
8:00 AM		96				96			96	
9:00 AM		75				75			75	
10:00 AM		106				106			106	
11:00 AM		90				90			90	
12:00 PM		96				96			96	
1:00 PM		106				106			106	
2:00 PM		150				150			150	
3:00 PM		117				117			117	
4:00 PM		120				120			120	
5:00 PM		136				136			136	
6:00 PM		115				115			115	
7:00 PM		65				65			65	
8:00 PM		58				58			58	
9:00 PM		48				48			48	
10:00 PM		30				30			30	
11:00 PM		8				8			8	
Day Total		1642				1642			1642	
ADT		1642				1642			1642	
%Weekday Average		100.00%								
%Week Average		100.00%				100.00%				
AM Peak		7:00 AM				7:00 AM			7:00 AM	
Volume		139				139			139	
PM Peak		2:00 PM				2:00 PM			2:00 PM	
Volume		150				150			150	

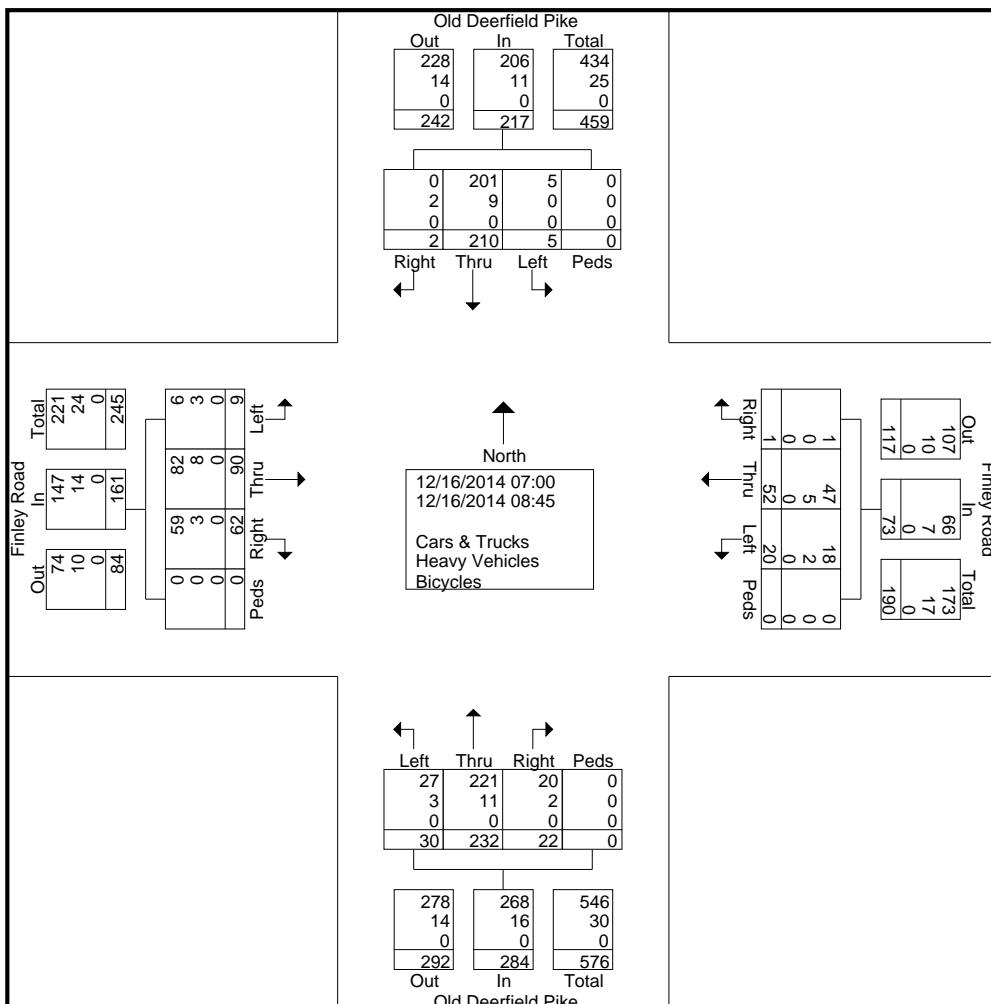
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 4 AM Counts  
Old Deerfield Pike & Finley Road  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 4 AM Data  
Site Code : 4  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Old Deerfield Pike From North					Finley Road From East					Old Deerfield Pike From South					Finley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	0	32	0	0	32	0	4	5	0	9	1	26	3	0	30	26	8	1	0	35	106
07:15	1	22	1	0	24	0	10	3	0	13	0	51	12	0	63	11	15	4	0	30	130
07:30	0	27	2	0	29	0	6	4	0	10	5	39	3	0	47	0	16	2	0	18	104
07:45	0	40	1	0	41	0	9	1	0	10	4	38	5	0	47	7	12	0	0	19	117
Total	1	121	4	0	126	0	29	13	0	42	10	154	23	0	187	44	51	7	0	102	457
08:00	0	23	0	0	23	0	6	3	0	9	2	23	3	0	28	6	11	1	0	18	78
08:15	0	28	0	0	28	1	4	1	0	6	5	23	1	0	29	5	8	1	0	14	77
08:30	0	15	0	0	15	0	5	2	0	7	3	19	2	0	24	2	8	0	0	10	56
08:45	1	23	1	0	25	0	8	1	0	9	2	13	1	0	16	5	12	0	0	17	67
Total	1	89	1	0	91	1	23	7	0	31	12	78	7	0	97	18	39	2	0	59	278
Grand Total	2	210	5	0	217	1	52	20	0	73	22	232	30	0	284	62	90	9	0	161	735
Apprch %	0.9	96.8	2.3	0		1.4	71.2	27.4	0	73	7.7	81.7	10.6	0		38.5	55.9	5.6	0		
Total %	0.3	28.6	0.7	0	29.5	0.1	7.1	2.7	0	9.9	3	31.6	4.1	0	38.6	8.4	12.2	1.2	0	21.9	
Cars & Trucks	0	201	5	0	206	1	47	18	0	66	20	221	27	0	268	59	82	6	0	147	687
% Cars & Trucks	0	95.7	100	0	94.9	100	90.4	90	0	90.4	90.9	95.3	90	0	94.4	95.2	91.1	66.7	0	91.3	93.5
Heavy Vehicles	2	9	0	0	11	0	5	2	0	7	2	11	3	0	16	3	8	3	0	14	48
% Heavy Vehicles	100	4.3	0	0	5.1	0	9.6	10	0	9.6	9.1	4.7	10	0	5.6	4.8	8.9	33.3	0	8.7	6.5
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



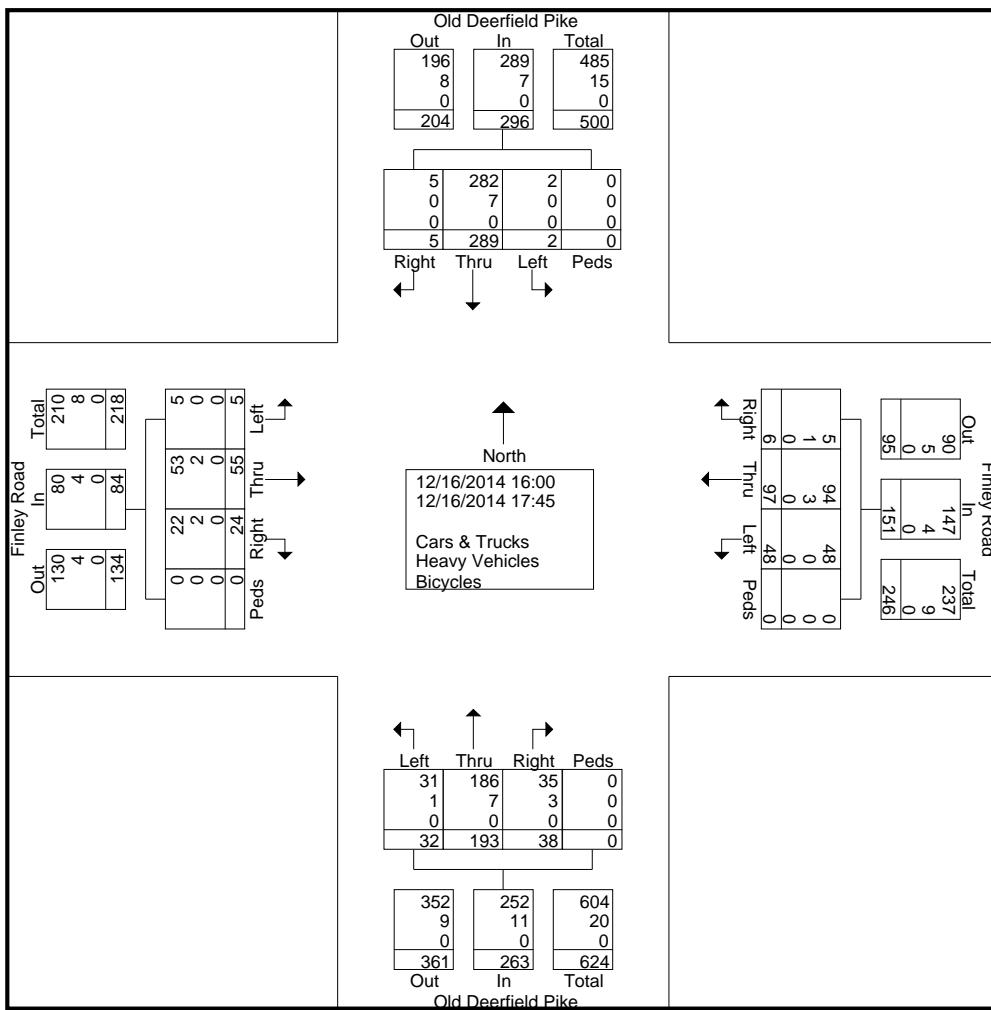
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 4 PM Counts  
Old Deerfield Pike & Finley Road  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 4 PM Data  
Site Code : 4  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Old Deerfield Pike From North					Finley Road From East					Old Deerfield Pike From South					Finley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	2	35	1	0	38	2	13	3	0	18	0	21	3	0	24	3	7	0	0	10	90
16:15	1	56	0	0	57	0	13	3	0	16	4	36	2	0	42	2	14	0	0	16	131
16:30	0	38	0	0	38	0	10	3	0	13	6	27	7	0	40	3	6	1	0	10	101
16:45	1	42	0	0	43	3	19	10	0	32	11	33	5	0	49	5	3	0	0	8	132
Total	4	171	1	0	176	5	55	19	0	79	21	117	17	0	155	13	30	1	0	44	454
17:00	0	31	1	0	32	1	15	22	0	38	5	19	8	0	32	1	7	2	0	10	112
17:15	1	35	0	0	36	0	7	3	0	10	5	20	1	0	26	5	8	1	0	14	86
17:30	0	33	0	0	33	0	10	4	0	14	2	24	2	0	28	4	3	1	0	8	83
17:45	0	19	0	0	19	0	10	0	0	10	5	13	4	0	22	1	7	0	0	8	59
Total	1	118	1	0	120	1	42	29	0	72	17	76	15	0	108	11	25	4	0	40	340
Grand Total	5	289	2	0	296	6	97	48	0	151	38	193	32	0	263	24	55	5	0	84	794
Apprch %	1.7	97.6	0.7	0		4	64.2	31.8	0		14.4	73.4	12.2	0		28.6	65.5	6	0		
Total %	0.6	36.4	0.3	0	37.3	0.8	12.2	6	0	19	4.8	24.3	4	0	33.1	3	6.9	0.6	0	10.6	
Cars & Trucks	5	282	2	0	289	5	94	48	0	147	35	186	31	0	252	22	53	5	0	80	768
% Cars & Trucks	100	97.6	100	0	97.6	83.3	96.9	100	0	97.4	92.1	96.4	96.9	0	95.8	91.7	96.4	100	0	95.2	96.7
Heavy Vehicles	0	7	0	0	7	1	3	0	0	4	3	7	1	0	11	2	2	0	0	4	26
% Heavy Vehicles	0	2.4	0	0	2.4	16.7	3.1	0	0	2.6	7.9	3.6	3.1	0	4.2	8.3	3.6	0	0	4.8	3.3
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Dec 16 2014		Start Time	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Speed	Number in Pace	
12:00 AM	0	15	20	25	30	35	40	45	50	55	60	65	70	75	999	25	46-55	13		
1:00 AM	0	0	0	0	0	0	0	1	1	0	2	1	2	1	1	1	0	8	61-70	3
2:00 AM	0	0	0	0	0	0	0	0	0	6	3	5	1	0	1	1	17	46-55	9	
3:00 AM	0	0	0	0	0	0	0	0	0	2	9	11	7	5	5	1	0	40	46-55	20
4:00 AM	1	0	0	0	0	0	0	0	1	2	2	7	8	8	8	0	3	40	61-70	16
5:00 AM	0	0	0	0	1	2	3	4	9	10	23	18	13	8	3	94	56-65	40		
6:00 AM	1	0	0	0	0	3	0	10	43	70	53	36	11	6	2	235	51-60	122		
7:00 AM	2	0	0	6	5	12	35	64	112	69	41	14	3	1	364	51-60	181			
8:00 AM	1	1	2	7	9	19	26	32	30	30	26	21	5	3	212	46-55	62			
9:00 AM	0	0	1	2	1	11	25	45	28	30	14	3	4	0	164	46-55	72			
10:00 AM	2	0	0	0	1	2	5	13	27	33	26	14	9	3	2	137	51-60	59		
11:00 AM	2	0	0	1	1	4	24	34	42	17	6	8	0	0	0	139	46-55	76		
12:00 PM	0	0	0	1	2	8	25	47	49	21	6	3	3	0	0	165	46-55	96		
1:00 PM	4	0	0	0	2	6	17	34	48	24	18	9	3	1	166	46-55	81			
2:00 PM	1	0	0	0	3	9	18	51	66	54	25	11	2	0	0	240	46-55	120		
3:00 PM	7	2	0	0	9	13	50	81	96	64	29	9	4	0	0	364	46-55	176		
4:00 PM	4	2	0	1	7	21	89	94	77	41	13	4	3	1	357	41-50	183			
5:00 PM	6	0	0	1	3	11	53	85	65	31	11	1	0	0	0	267	46-55	150		
6:00 PM	2	1	0	0	1	12	25	32	44	28	32	12	2	0	0	191	46-55	76		
7:00 PM	1	0	1	0	1	2	9	7	22	24	21	10	3	6	0	107	56-65	45		
8:00 PM	0	0	0	0	0	4	15	22	24	19	9	6	0	0	0	99	47-56	45		
9:00 PM	1	0	0	1	0	3	4	17	19	11	6	2	0	0	0	83	51-60	37		
10:00 PM	0	0	0	0	0	1	4	8	14	15	9	2	0	1	1	54	51-60	29		
11:00 PM	0	0	0	0	0	0	0	1	3	5	1	3	6	4	1	24	66-75	10		
Day Total	35	6	4	25	57	155	486	772	873	585	348	164	56	26	0	3592	46-55	1644		
Percent ADT	1.00%	0.20%	0.10%	0.70%	1.60%	4.30%	13.50%	21.50%	24.30%	16.30%	9.70%	4.60%	1.60%	0.70%	0	0	0	0	0	
AM Peak Volume	2	1	2	7	9	19	35	64	112	69	41	21	8	3	364	46-55	364			
PM Peak Volume	7	2	1	3	9	21	89	94	96	64	32	12	4	6	0	0	300 PM	3:00 PM	364	



Location: Old Deerfield Pike  
City/State: Upper Deerfield Township, N.J.  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB

## SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	85th Percentile Mean Speed(Average)	60 MPH	54 MPH	54 MPH
Grand Total	35	6	4	25
Percent	1.00%	0.20%	0.10%	0.70%
Cumulative Percent	1.00%	1.10%	1.30%	1.90%
ADT	3592	~	~	~
		155	486	772
		4.30%	13.50%	21.50%
		3.50%	7.90%	21.40%
		~	~	~
		873	585	348
		24.30%	16.30%	9.70%
		67.20%	83.50%	93.20%
		~	~	~
		164	164	56
		4.50%	4.50%	1.60%
		99.30%	97.70%	99.30%
		~	~	~
		3592	46-55	1644
		100.00%		

Location: Old Deerfield Pike  
City/State: Upper Deerfield Township, NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB



#### RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday		Average Week	
						Hourly Traffic		Sat	Sun
16-Dec-14									
12:00 AM		25				25			25
1:00 AM		8				8			8
2:00 AM		17				17			17
3:00 AM		40				40			40
4:00 AM		40				40			40
5:00 AM		94				94			94
6:00 AM		235				235			235
7:00 AM		364				364			364
8:00 AM		212				212			212
9:00 AM		164				164			164
10:00 AM		137				137			137
11:00 AM		139				139			139
12:00 PM		165				165			165
1:00 PM		166				166			166
2:00 PM		240				240			240
3:00 PM		364				364			364
4:00 PM		357				357			357
5:00 PM		267				267			267
6:00 PM		191				191			191
7:00 PM		107				107			107
8:00 PM		99				99			99
9:00 PM		83				83			83
10:00 PM		54				54			54
11:00 PM		24				24			24
Day Total		3592				3592			3592
ADT		3592				3592			3592
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		364				364			364
PM Peak		3:00 PM				3:00 PM			3:00 PM
Volume		364				364			364

Location: Finley Rd  
 City/State: Upper Deerfield Township, NJ  
 Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
 Specific location: 0 ft from  
 Direction: EB/VB



## RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Start Time	Dec 16 2014	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
	12:00 AM	0	0	0	0	0	1	1	3	0	0	0	0	0	0	0	5	36--45	4
	1:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	26--35	1
	2:00 AM	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	6	41--50	4
	3:00 AM	0	0	0	0	0	3	1	2	1	1	0	0	0	0	0	8	26--35	4
	4:00 AM	0	0	0	0	0	1	1	0	2	1	0	0	0	0	0	5	41--50	3
	5:00 AM	0	0	0	0	1	2	7	12	8	0	1	0	0	0	0	31	41--50	20
	6:00 AM	0	1	0	0	4	16	23	7	2	0	0	0	0	0	0	53	36--45	39
	7:00 AM	0	0	1	4	25	47	49	24	3	0	0	0	0	0	0	153	36--45	96
	8:00 AM	3	1	0	3	3	24	29	21	4	1	0	0	0	0	0	89	37--46	52
	9:00 AM	2	0	1	1	3	25	22	20	4	0	0	0	0	0	0	78	36--45	47
	10:00 AM	0	0	0	0	6	6	21	28	15	3	2	0	0	0	0	81	36--45	48
	11:00 AM	0	0	0	0	0	7	17	22	11	5	0	0	0	0	0	62	36--45	39
	12:00 PM	2	0	0	0	0	5	19	47	14	5	1	0	0	0	0	93	36--45	66
	1:00 PM	0	0	2	3	5	16	38	17	7	1	0	0	0	0	0	89	41--50	55
	2:00 PM	5	0	3	2	9	49	40	17	2	0	0	0	0	0	0	127	36--45	89
	3:00 PM	0	0	1	2	10	40	45	17	3	0	0	0	0	0	0	118	36--45	85
	4:00 PM	0	0	0	1	2	16	45	42	15	1	0	0	0	0	0	122	36--45	87
	5:00 PM	0	0	0	1	1	20	31	34	7	1	0	0	0	0	0	95	36--45	65
	6:00 PM	0	0	0	2	13	20	17	1	0	0	0	0	0	0	0	53	36--45	37
	7:00 PM	0	0	0	1	0	13	7	5	0	0	0	0	0	0	0	27	36--45	19
	8:00 PM	0	0	0	0	0	4	23	17	5	1	0	0	0	0	0	50	36--45	40
	9:00 PM	1	0	0	0	5	17	15	3	2	0	1	0	0	0	0	44	36--45	32
	10:00 PM	0	0	1	1	4	3	5	6	0	0	0	0	0	0	0	20	41--50	10
	11:00 PM	0	0	1	0	0	5	1	0	0	0	0	0	0	0	0	7	36--45	5
Day Total	13	2	13	34	146	441	501	218	43	6	1	0	0	0	0	0	1418	36--45	942
Percent	0.90%	0.10%	0.90%	2.40%	10.30%	31.10%	35.30%	15.40%	3.00%	0.40%	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%			
ADT	1418																		
AM Peak Volume	3	1	1	6	25	47	49	24	5	2							7:00 AM	153	
PM Peak Volume	5	3	3	20	49	47	17	7	1	1							2:00 PM	127	

Location: Finley Rd  
City/State: Upper Deerfield Township, NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific location: 0 ft from  
Direction: EB/VB



#### SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	942	942	
Percent	1.3	2	13	34	146	441	501	218	43	6	1	0	0	0	1418	36-45	
Cumulative Percent	0.90%	0.10%	0.90%	2.40%	10.30%	31.10%	35.30%	15.40%	3.00%	0.40%	0.10%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%
ADT	1418																

85th Percentile      46 MPH  
Mean Speed(Average)      40 MPH  
Median      40 MPH  
Mode      43 MPH

Location: Finley Rd  
City/State: Upper Deerfield Township, NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: EB/WB

RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday		Average Week	
						Hourly Traffic		Sat	Sun
16-Dec-14									
12:00 AM		5				5			5
1:00 AM		2				2			2
2:00 AM		6				6			6
3:00 AM		8				8			8
4:00 AM		5				5			5
5:00 AM		31				31			31
6:00 AM		53				53			53
7:00 AM		153				153			153
8:00 AM		89				89			89
9:00 AM		78				78			78
10:00 AM		81				81			81
11:00 AM		62				62			62
12:00 PM		93				93			93
1:00 PM		89				89			89
2:00 PM		127				127			127
3:00 PM		118				118			118
4:00 PM		122				122			122
5:00 PM		95				95			95
6:00 PM		53				53			53
7:00 PM		27				27			27
8:00 PM		50				50			50
9:00 PM		44				44			44
10:00 PM		20				20			20
11:00 PM		7				7			7
Day Total		1418				1418			1418
ADT		1418				1418			1418
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		153				153			153
PM Peak		2:00 PM				2:00 PM			2:00 PM
Volume		127				127			127

# Rodriguez Consulting

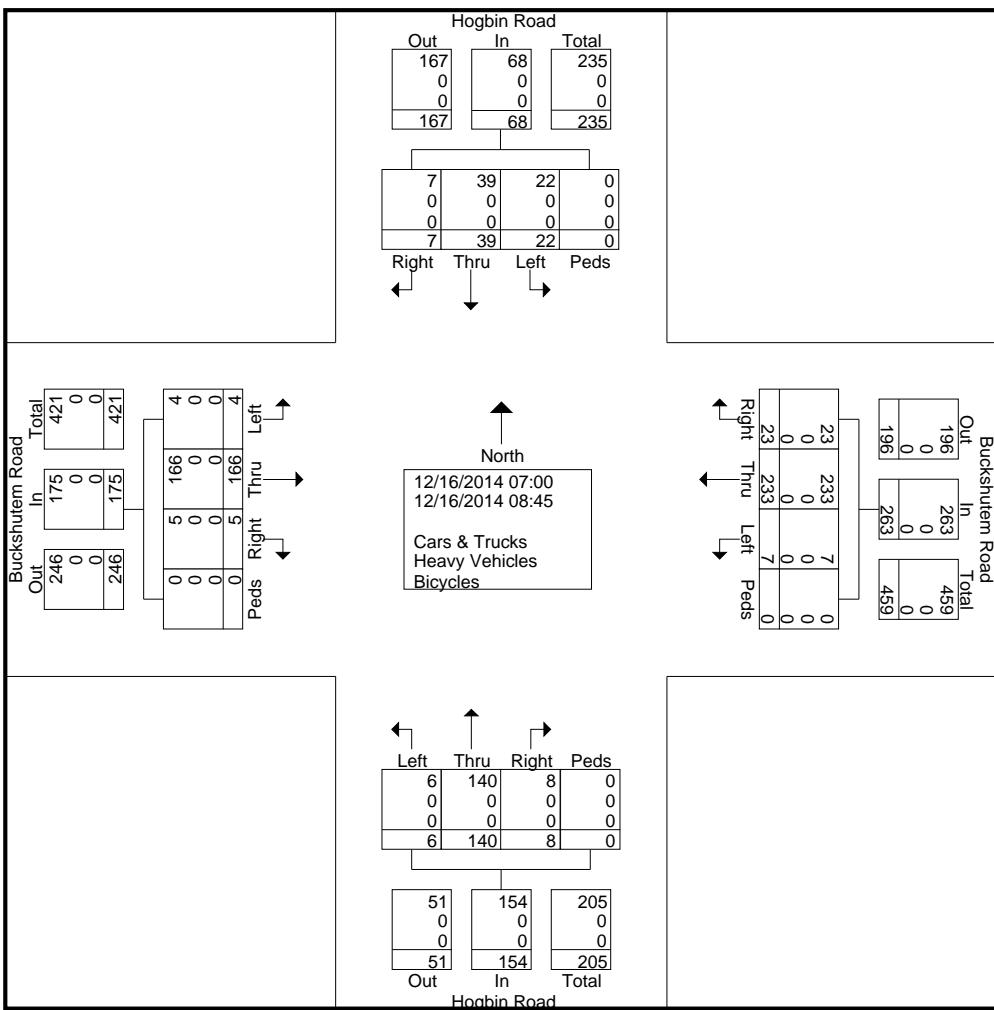
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 5 AM Counts  
Hogbin & Buckshutem  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 5 AM Data  
Site Code : 5  
Start Date : 12/16/2014  
Page No : 1

## Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles

Start Time	Hogbin Road From North					Buckshutem Road From East					Hogbin Road From South					Buckshutem Road From West					
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	1	2	1	0	4	3	34	1	0	38	2	13	0	0	15	0	31	0	0	31	88
07:15	1	6	4	0	11	2	23	0	0	25	0	14	3	0	17	1	29	0	0	30	83
07:30	0	7	3	0	10	4	34	0	0	38	0	22	2	0	24	0	19	0	0	19	91
07:45	0	7	3	0	10	3	33	2	0	38	1	24	0	0	25	1	21	1	0	23	96
Total	2	22	11	0	35	12	124	3	0	139	3	73	5	0	81	2	100	1	0	103	358
08:00	2	4	3	0	9	2	30	0	0	32	0	23	0	0	23	1	20	0	0	21	85
08:15	0	2	2	0	4	1	32	2	0	35	2	17	1	0	20	0	16	1	0	17	76
08:30	2	6	3	0	11	6	25	1	0	32	2	10	0	0	12	1	14	2	0	17	72
08:45	1	5	3	0	9	2	22	1	0	25	1	17	0	0	18	1	16	0	0	17	69
Total	5	17	11	0	33	11	109	4	0	124	5	67	1	0	73	3	66	3	0	72	302
Grand Total	7	39	22	0	68	23	233	7	0	263	8	140	6	0	154	5	166	4	0	175	660
Apprch %	10.3	57.4	32.4	0		8.7	88.6	2.7	0		5.2	90.9	3.9	0		2.9	94.9	2.3	0		
Total %	1.1	5.9	3.3	0	10.3	3.5	35.3	1.1	0	39.8	1.2	21.2	0.9	0	23.3	0.8	25.2	0.6	0	26.5	
Cars & Trucks	7	39	22	0	68	23	233	7	0	263	8	140	6	0	154	5	166	4	0	175	660
% Cars & Trucks	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



# Rodriguez Consulting

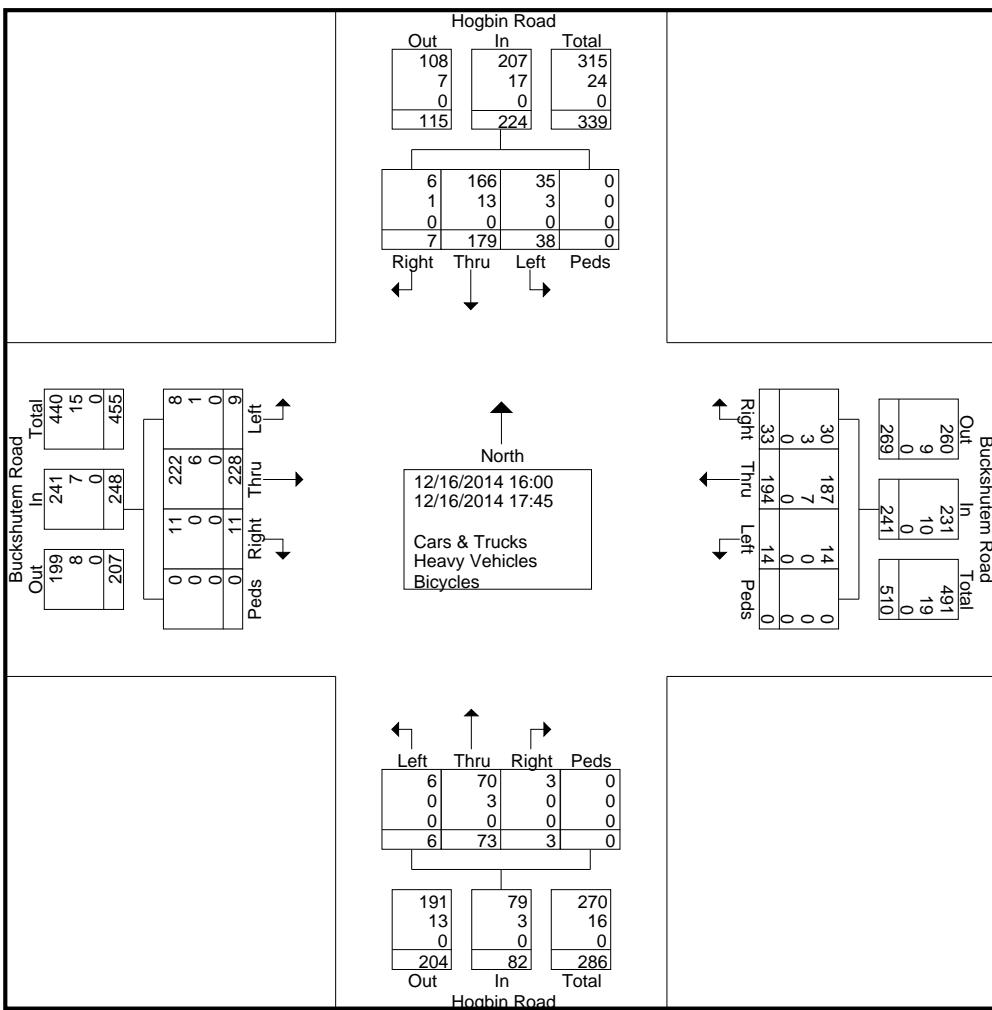
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 5 PM Counts  
Hogbin & Buckshutem  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 5 PM Data  
Site Code : 5  
Start Date : 12/16/2014  
Page No : 1

## Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles

Start Time	Hogbin Road From North					Buckshutem Road From East					Hogbin Road From South					Buckshutem Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
16:00	2	24	7	0	33	11	26	3	0	40	2	9	0	0	11	2	35	1	0	38	122
16:15	0	20	4	0	24	7	33	0	0	40	0	12	2	0	14	0	36	1	0	37	115
16:30	1	29	5	0	35	0	30	0	0	30	0	6	0	0	6	0	25	0	0	25	96
16:45	0	22	3	0	25	0	29	4	0	33	0	9	1	0	10	1	31	3	0	35	103
Total	3	95	19	0	117	18	118	7	0	143	2	36	3	0	41	3	127	5	0	135	436
17:00	1	20	5	0	26	6	26	2	0	34	1	13	0	0	14	0	25	0	0	25	99
17:15	0	30	8	0	38	3	18	2	0	23	0	13	2	0	15	3	30	0	0	33	109
17:30	3	20	2	0	25	3	13	2	0	18	0	4	1	0	5	3	19	3	0	25	73
17:45	0	14	4	0	18	3	19	1	0	23	0	7	0	0	7	2	27	1	0	30	78
Total	4	84	19	0	107	15	76	7	0	98	1	37	3	0	41	8	101	4	0	113	359
Grand Total	7	179	38	0	224	33	194	14	0	241	3	73	6	0	82	11	228	9	0	248	795
Apprch %	3.1	79.9	17	0		13.7	80.5	5.8	0		3.7	89	7.3	0		4.4	91.9	3.6	0		
Total %	0.9	22.5	4.8	0	28.2	4.2	24.4	1.8	0	30.3	0.4	9.2	0.8	0	10.3	1.4	28.7	1.1	0	31.2	
Cars & Trucks	6	166	35	0	207	30	187	14	0	231	3	70	6	0	79	11	222	8	0	241	758
% Cars & Trucks	85.7	92.7	92.1	0	92.4	90.9	96.4	100	0	95.9	100	95.9	100	0	96.3	100	97.4	88.9	0	97.2	95.3
Heavy Vehicles	1	13	3	0	17	3	7	0	0	10	0	3	0	0	3	0	6	1	0	7	37
% Heavy Vehicles	14.3	7.3	7.9	0	7.6	9.1	3.6	0	0	4.1	0	4.1	0	0	3.7	0	2.6	11.1	0	2.8	4.7
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# Pennoni Associates

Location:  
Intersection:  
Date:  
Counter:

File Name : am counts  
Site Code : 00000001  
Start Date : 6/5/2015  
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles - Pedestrians

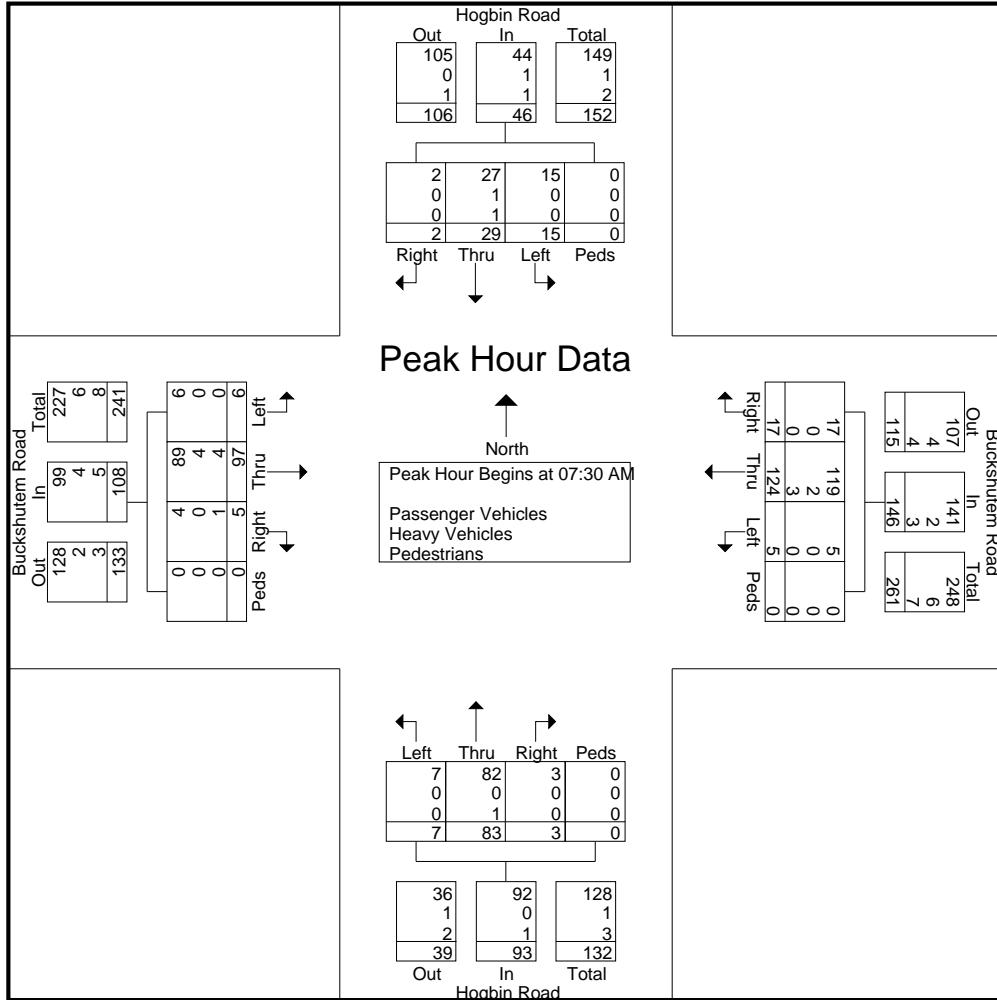
	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	13	2	0	15	1	6	0	0	7	0	37	1	0	38	0	34	1	0	35	95
07:15 AM	3	12	0	0	15	3	6	0	0	9	0	30	0	0	30	0	26	3	0	29	83
07:30 AM	2	18	0	0	20	2	11	0	0	13	0	20	2	0	22	1	32	7	0	40	95
07:45 AM	1	26	1	0	28	5	10	0	0	15	2	25	0	0	27	0	34	6	0	40	110
Total	6	69	3	0	78	11	33	0	0	44	2	112	3	0	117	1	126	17	0	144	383
08:00 AM	1	23	1	0	25	6	8	0	0	14	2	25	3	0	30	3	28	2	0	33	102
08:15 AM	3	16	1	0	20	2	0	2	0	4	2	27	0	0	29	1	30	2	0	33	86
08:30 AM	0	20	0	0	20	1	8	2	1	12	1	25	0	0	26	0	28	5	0	33	91
08:45 AM	0	11	0	0	11	8	9	2	1	20	0	18	0	0	18	0	19	7	0	26	75
Total	4	70	2	0	76	17	25	6	2	50	5	95	3	0	103	4	105	16	0	125	354
Grand Total	10	139	5	0	154	28	58	6	2	94	7	207	6	0	220	5	231	33	0	269	737
Apprch %	6.5	90.3	3.2	0		29.8	61.7	6.4	2.1		3.2	94.1	2.7	0		1.9	85.9	12.3	0		
Total %	1.4	18.9	0.7	0	20.9	3.8	7.9	0.8	0.3	12.8	0.9	28.1	0.8	0	29.9	0.7	31.3	4.5	0	36.5	
Passenger Vehicles	9	136	5	0	150	28	55	6	2	91	7	192	5	0	204	5	222	31	0	258	703
% Passenger Vehicles																					
Heavy Vehicles	0	1	0	0	1	0	1	0	0	1	0	10	0	0	10	0	4	0	0	4	16
% Heavy Vehicles	0	0.7	0	0	0.6	0	1.7	0	0	1.1	0	4.8	0	0	4.5	0	1.7	0	0	1.5	2.2
Pedestrians	1	2	0	0	3	0	2	0	0	2	0	5	1	0	6	0	5	2	0	7	18
% Pedestrians	10	1.4	0	0	1.9	0	3.4	0	0	2.1	0	2.4	16.7	0	2.7	0	2.2	6.1	0	2.6	2.4

	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	2	18	0	0	20	2	11	0	0	13	0	20	2	0	22	1	32	7	0	40	95
07:45 AM	1	26	1	0	28	5	10	0	0	15	2	25	0	0	27	0	34	6	0	40	110
08:00 AM	1	23	1	0	25	6	8	0	0	14	2	25	3	0	30	3	28	2	0	33	102
08:15 AM	3	16	1	0	20	2	0	2	0	4	2	27	0	0	29	1	30	2	0	33	86
Total Volume	7	83	3	0	93	15	29	2	0	46	6	97	5	0	108	5	124	17	0	146	393
% App. Total	7.5	89.2	3.2	0		32.6	63	4.3	0		5.6	89.8	4.6	0		3.4	84.9	11.6	0		
PHF	.583	.798	.750	.000	.830	.625	.659	.250	.000	.767	.750	.898	.417	.000	.900	.417	.912	.607	.000	.913	.893
Passenger Vehicles	7	82	3	0	92	15	27	2	0	44	6	89	4	0	99	5	119	17	0	141	376
% Passenger Vehicles																					
Heavy Vehicles	0	0	0	0	0	0	1	0	0	1	0	4	0	0	4	0	2	0	0	2	7
% Heavy Vehicles	0	0	0	0	0	0	3.4	0	0	2.2	0	4.1	0	0	3.7	0	1.6	0	0	1.4	1.8
Pedestrians	0	1	0	0	1	0	1	0	0	1	0	4	1	0	5	0	3	0	0	3	10
% Pedestrians	0	1.2	0	0	1.1	0	3.4	0	0	2.2	0	4.1	20.0	0	4.6	0	2.4	0	0	2.1	2.5

# Pennoni Associates

Location:  
Intersection:  
Date:  
Counter:

File Name : am counts  
Site Code : 00000001  
Start Date : 6/5/2015  
Page No : 2



# Pennoni Associates

Location:  
Intersection:  
Date:  
Counter:

File Name : pm counts  
Site Code : 00000001  
Start Date : 6/5/2015  
Page No : 1

Groups Printed- Passenger Vehicles

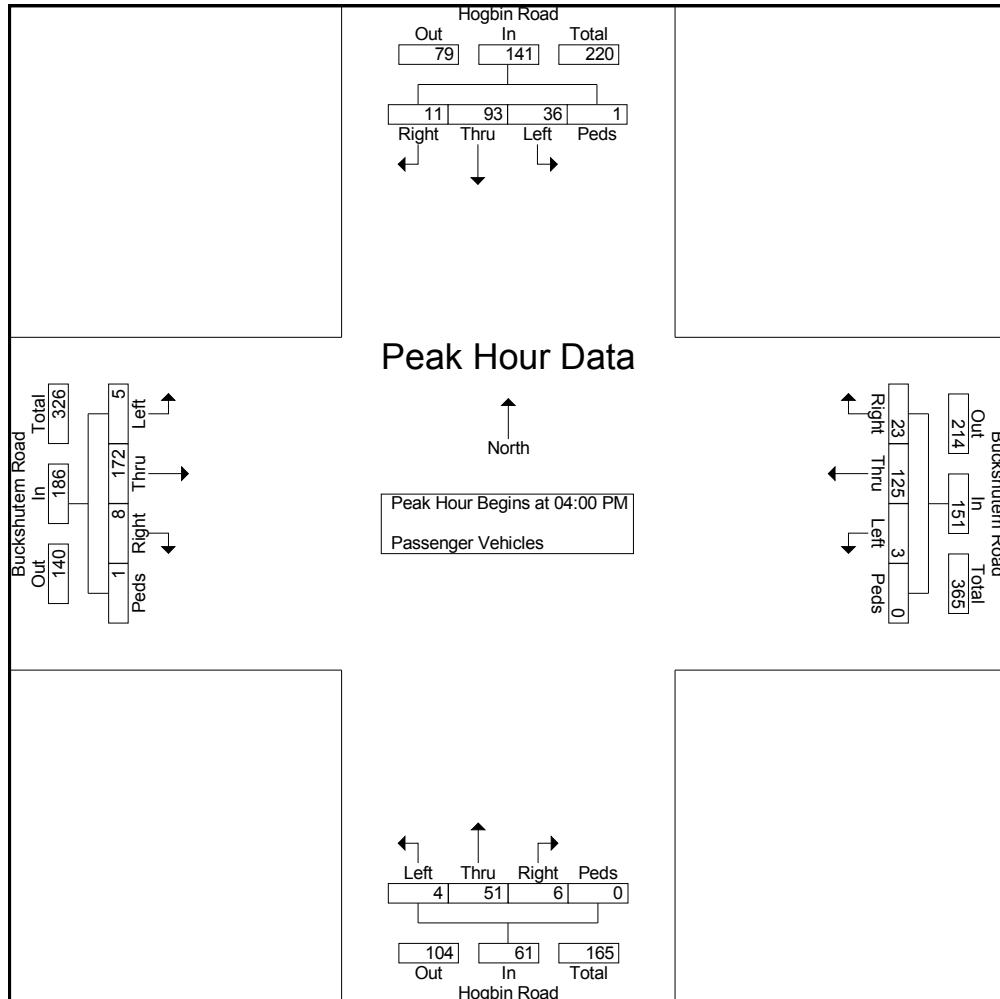
	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	2	10	1	0	13	11	20	9	0	40	1	40	3	0	44	1	38	8	0	47	144
04:15 PM	1	9	2	0	12	13	25	1	1	40	4	41	4	0	49	2	24	3	0	29	130
04:30 PM	1	16	2	0	19	6	22	0	0	28	0	42	0	1	43	0	28	8	0	36	126
04:45 PM	0	16	1	0	17	6	26	1	0	33	0	49	1	0	50	0	35	4	0	39	139
Total	4	51	6	0	61	36	93	11	1	141	5	172	8	1	186	3	125	23	0	151	539
05:00 PM	1	17	1	0	19	4	32	1	0	37	0	38	1	0	39	2	30	8	0	40	135
05:15 PM	0	19	0	0	19	7	26	3	0	36	2	49	4	0	55	0	24	5	0	29	139
05:30 PM	2	15	1	0	18	9	29	3	0	41	2	33	0	0	35	2	23	6	0	31	125
05:45 PM	1	6	1	0	8	6	18	1	0	25	0	38	2	0	40	2	24	3	0	29	102
Total	4	57	3	0	64	26	105	8	0	139	4	158	7	0	169	6	101	22	0	129	501
Grand Total	8	108	9	0	125	62	198	19	1	280	9	330	15	1	355	9	226	45	0	280	1040
Apprch %	6.4	86.4	7.2	0		22.1	70.7	6.8	0.4		2.5	93	4.2	0.3		3.2	80.7	16.1	0		
Total %	0.8	10.4	0.9	0		12	6	19	1.8	0.1	26.9	0.9	31.7	1.4	0.1	34.1	0.9	21.7	4.3	0	26.9

	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	2	10	1	0	13	11	20	9	0	40	1	40	3	0	44	1	38	8	0	47	144
04:15 PM	1	9	2	0	12	13	25	1	1	40	4	41	4	0	49	2	24	3	0	29	130
04:30 PM	1	16	2	0	19	6	22	0	0	28	0	42	0	1	43	0	28	8	0	36	126
04:45 PM	0	16	1	0	17	6	26	1	0	33	0	49	1	0	50	0	35	4	0	39	139
Total Volume	4	51	6	0	61	36	93	11	1	141	5	172	8	1	186	3	125	23	0	151	539
% App. Total	6.6	83.6	9.8	0		25.5	66	7.8	0.7		2.7	92.5	4.3	0.5		2	82.8	15.2	0		
PHF	.500	.797	.750	.000	.803	.692	.894	.306	.250	.881	.313	.878	.500	.250	.930	.375	.822	.719	.000	.803	.936

# Pennoni Associates

Location:  
Intersection:  
Date:  
Counter:

File Name : pm counts  
Site Code : 00000001  
Start Date : 6/5/2015  
Page No : 2



Location: Hogbin Rd  
City/State: Millville  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB



## RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Dec 16 2014	Start Time	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
		15	20	25	30	35	40	45	50	55	60	65	70	75	999	41-50	9
12:00 AM	0	0	0	0	2	1	5	4	2	1	0	0	0	0	15	41-50	9
1:00 AM	0	0	0	0	0	1	1	1	3	1	1	0	0	0	7	41-50	4
2:00 AM	0	0	0	0	1	0	0	5	3	1	0	0	0	0	10	42-51	7
3:00 AM	0	0	0	0	0	1	1	3	0	0	0	0	0	0	5	36-45	4
4:00 AM	0	0	0	0	0	2	2	2	2	1	0	0	0	0	9	41-50	4
5:00 AM	0	0	0	0	0	2	12	6	11	14	1	2	0	0	48	46-55	24
6:00 AM	1	1	0	3	1	14	31	35	6	5	1	1	0	0	99	41-50	66
7:00 AM	2	0	0	1	2	17	35	46	17	7	0	0	1	0	128	41-50	81
8:00 AM	1	0	0	0	0	3	12	34	48	17	3	0	0	0	118	41-50	81
9:00 AM	0	0	0	0	0	1	9	34	39	21	2	0	0	0	106	41-50	73
10:00 AM	0	0	0	0	0	3	11	23	24	16	3	1	0	0	81	41-50	46
11:00 AM	0	0	0	0	0	1	8	32	35	19	5	1	0	0	101	41-50	67
12:00 PM	1	0	0	0	0	4	9	27	35	22	7	3	0	0	108	41-50	62
1:00 PM	1	0	0	0	0	0	8	33	38	26	3	1	0	0	110	41-50	70
2:00 PM	3	0	1	3	4	16	54	44	22	2	2	0	0	0	151	41-50	98
3:00 PM	2	0	0	0	1	6	19	41	44	19	3	0	0	0	135	41-50	85
4:00 PM	0	0	0	0	1	2	28	65	49	27	4	1	0	0	177	41-50	114
5:00 PM	3	0	1	2	10	36	65	36	12	1	0	0	0	0	166	36-45	101
6:00 PM	0	0	0	1	8	30	38	26	7	3	0	0	0	0	113	37-46	67
7:00 PM	0	0	0	1	3	11	20	23	5	2	0	0	0	0	65	41-50	42
8:00 PM	0	0	0	0	3	15	36	12	2	2	0	0	0	0	70	36-45	51
9:00 PM	0	0	0	1	1	11	15	12	2	0	0	0	0	0	42	41-50	26
10:00 PM	0	0	0	0	3	5	18	5	7	1	0	1	0	0	40	36-45	23
11:00 PM	0	0	0	0	0	4	7	6	4	1	0	0	0	0	22	42-51	12
Day Total	14	1	2	15	62	280	630	580	270	57	12	2	1	0	1926	41-50	1210
Percent	0.70%	0.10%	0.10%	0.80%	3.20%	14.50%	32.70%	30.10%	14.00%	3.00%	0.60%	0.10%	0.10%	0.00%			
ADT	1926																
AM Peak Volume	2	1	6:00 AM	6:00 AM	3	8:00 AM	8:00 AM	7:00 AM	7:00 AM	9:00 AM	9:00 AM	7:00 AM	5:00 AM	6:00 AM	7:00 AM	7:00 AM	
PM Peak Volume	3	2:00 PM	2:00 PM	1	2:00 PM	5:00 PM	5:00 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM	27	7	3	1	1	128



Location: Hogbin Rd  
City/State: Millville  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB

#### SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Number in Pace
15	20	25	30	35	40	45	50	55	60	65	70	75	75	999	1210	
Grand Total	14	1	2	15	62	280	630	580	270	57	12	2	1	0	1926	41-50
Percent	0.70%	0.10%	0.10%	0.80%	3.20%	14.50%	32.70%	30.10%	14.00%	3.00%	0.60%	0.10%	0.10%	0.00%	100.00%	100.00%
Cumulative Perc	0.70%	0.80%	0.90%	1.70%	4.90%	19.40%	52.10%	82.20%	96.30%	99.20%	99.80%	99.90%	100.00%	100.00%	100.00%	100.00%
ADT	1926															

85th Percentile 50 MPH  
Mean Speed(Avg) 44 MPH  
Median 44 MPH  
Mode 43 MPH

Location: Hogbin Rd  
City/State: Millville NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB

## QUALITY COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Average Week		
						Hourly Traffic	Sat	Sun	Hourly Traffic
16-Dec-14									
12:00 AM		15				15			15
1:00 AM		7				7			7
2:00 AM		10				10			10
3:00 AM		5				5			5
4:00 AM		9				9			9
5:00 AM		48				48			48
6:00 AM		99				99			99
7:00 AM		128				128			128
8:00 AM		118				118			118
9:00 AM		106				106			106
10:00 AM		81				81			81
11:00 AM		101				101			101
12:00 PM		108				108			108
1:00 PM		110				110			110
2:00 PM		151				151			151
3:00 PM		135				135			135
4:00 PM		177				177			177
5:00 PM		166				166			166
6:00 PM		113				113			113
7:00 PM		65				65			65
8:00 PM		70				70			70
9:00 PM		42				42			42
10:00 PM		40				40			40
11:00 PM		22				22			22
Day Total		1926				1926			1926
ADT		1926				1926			1926
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		128				128			128
PM Peak		4:00 PM				4:00 PM			4:00 PM
Volume		177				177			177

Location: Buckshutem Rd  
 City/State: Millville NJ  
 Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
 Specific location: 0 ft from  
 Direction: EB/VB



**RODRIGUEZ CONSULTING COUNTS REPORT**

Date:	Start Time	Dec 16 2014	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Speed	Number in Pace		
	12:00 AM	0	0	0	0	0	2	3	0	8	0	0	0	0	13	51-60	8			
	1:00 AM	0	0	0	0	0	0	0	6	2	0	0	0	0	9	51-60	8			
	2:00 AM	0	0	0	0	0	1	0	2	3	1	0	0	0	8	55-64	4			
	3:00 AM	0	0	0	0	0	0	0	0	1	3	4	0	0	2	56-65	7			
	4:00 AM	0	0	0	0	0	0	0	2	6	9	4	3	0	2	26	51-60	15		
	5:00 AM	0	0	0	0	0	0	0	2	9	30	35	22	11	1	3	113	51-60	65	
	6:00 AM	2	0	0	0	0	0	0	4	26	82	71	20	6	3	0	214	51-60	.152	
	7:00 AM	2	0	0	0	0	0	4	15	32	74	94	30	5	2	2	260	51-60	.168	
	8:00 AM	1	0	0	0	0	5	11	14	45	61	52	11	5	3	0	208	51-60	.113	
	9:00 AM	3	0	0	0	0	1	2	6	11	37	36	17	3	2	0	118	51-60	.73	
	10:00 AM	2	0	0	0	0	0	3	5	13	46	32	11	9	3	0	124	51-60	.78	
	11:00 AM	2	0	0	0	1	0	2	1	18	31	39	15	7	2	1	119	51-60	.70	
	12:00 PM	0	0	0	0	0	1	1	7	18	32	45	31	7	2	2	146	51-60	.77	
	1:00 PM	2	0	0	0	0	0	0	5	6	28	34	59	21	10	2	2	169	51-60	.93
	2:00 PM	0	0	0	0	0	0	4	15	28	62	66	23	4	0	1	203	51-60	.227	
	3:00 PM	4	0	0	0	0	1	4	19	45	81	63	18	2	1	0	238	51-60	.244	
	4:00 PM	0	0	0	0	0	0	1	1	10	45	101	76	20	2	0	256	51-60	.276	
	5:00 PM	1	0	0	0	0	0	6	17	48	67	41	14	2	0	1	197	46-55	.115	
	6:00 PM	0	0	0	0	0	0	0	7	37	33	18	8	3	2	0	108	46-55	.69	
	7:00 PM	0	0	0	0	0	2	1	10	20	19	16	7	0	0	0	75	47-56	.38	
	8:00 PM	0	0	0	0	0	0	4	10	13	20	11	3	1	0	0	62	46-55	.33	
	9:00 PM	0	0	0	0	0	2	4	6	25	8	5	2	2	0	0	54	51-60	.33	
	10:00 PM	0	0	0	0	0	0	3	6	22	22	6	3	1	0	0	63	51-60	.44	
	11:00 PM	0	0	0	0	0	0	0	2	3	7	9	2	1	2	0	26	51-60	.16	
Day Total	19	0	0	0	1	13	52	159	457	879	818	293	86	28	16	0	2821	51-60	1696	
Percent ADT	0.70%	0.00%	0.00%	0.00%	0.50%	1.80%	5.60%	16.20%	31.20%	29.00%	10.40%	3.00%	1.00%	0.60%	0	0				
AM Peak Volume	9:00 AM	3	1	5	11	15	45	82	94	30	11	3	3	3	3	3	260			
PM Peak Volume	3:00 PM	4	2	6	19	48	101	76	101	76	31	10	2	2	2	2	256			



Location: Buckshutem Rd  
City/State: Millville NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: EB/WB

## SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

85th Percentile  
Mean Speed(Average)  
Median  
Mode

Location: Buckshutem Rd  
City/State: Millville NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: EB/WB

# RODRIGUEZ CONSULTING COUNTS REPORT



13113909 - Buckshutem Rd (0 ft)

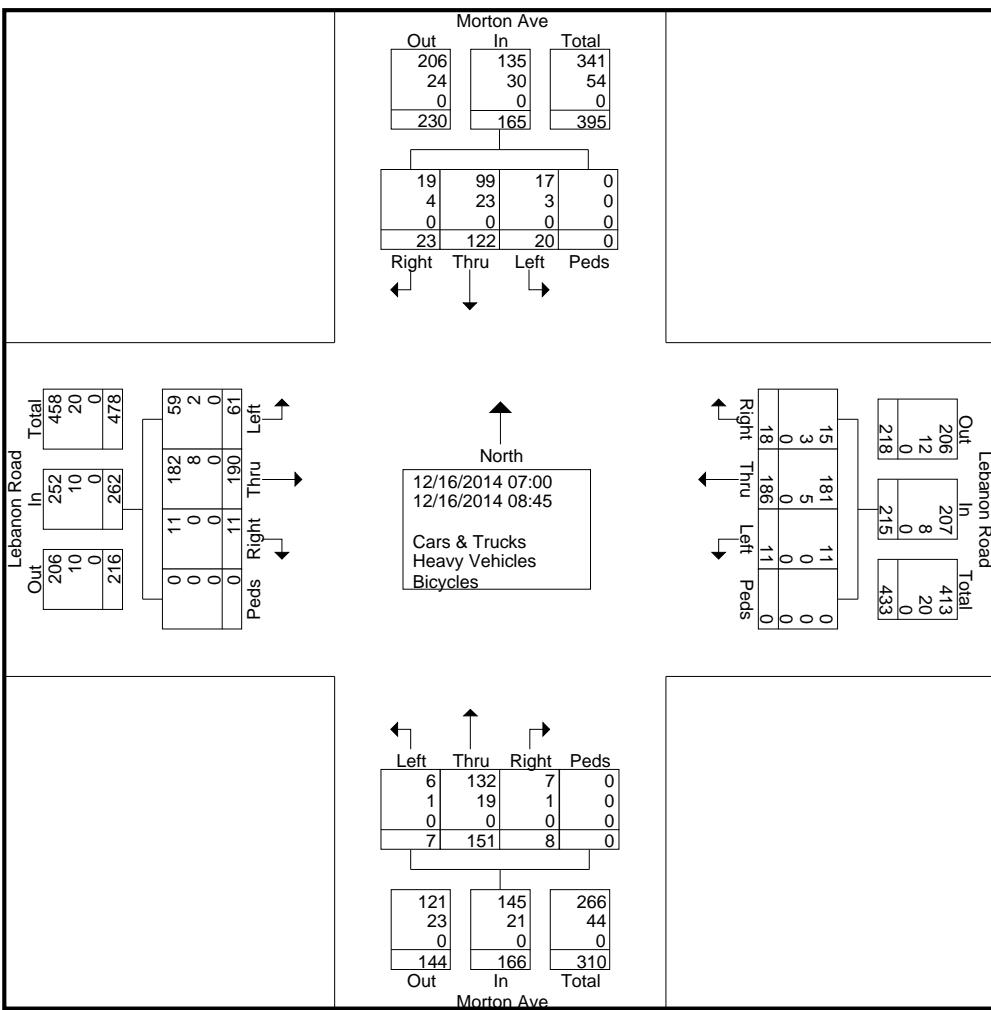
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 6 AM Counts  
Lebanon & Morton  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 6 AM Data  
Site Code : 6  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Morton Ave From North					Lebanon Road From East					Morton Ave From South					Lebanon Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	2	6	0	0	8	0	26	1	0	27	0	17	0	0	17	0	13	5	0	18	70
07:15	4	11	1	0	16	2	21	4	0	27	2	15	1	0	18	2	30	6	0	38	99
07:30	3	8	1	0	12	3	17	1	0	21	3	22	2	0	27	1	23	4	0	28	88
07:45	6	26	9	0	41	9	31	1	0	41	0	35	0	0	35	1	36	12	0	49	166
Total	15	51	11	0	77	14	95	7	0	116	5	89	3	0	97	4	102	27	0	133	423
08:00	4	27	3	0	34	2	25	1	0	28	1	17	0	0	18	3	25	5	0	33	113
08:15	1	14	3	0	18	0	30	1	0	31	0	15	2	0	17	2	20	10	0	32	98
08:30	2	12	2	0	16	1	20	0	0	21	2	12	1	0	15	1	19	16	0	36	88
08:45	1	18	1	0	20	1	16	2	0	19	0	18	1	0	19	1	24	3	0	28	86
Total	8	71	9	0	88	4	91	4	0	99	3	62	4	0	69	7	88	34	0	129	385
Grand Total	23	122	20	0	165	18	186	11	0	215	8	151	7	0	166	11	190	61	0	262	808
Apprch %	13.9	73.9	12.1	0		8.4	86.5	5.1	0		4.8	91	4.2	0		4.2	72.5	23.3	0		
Total %	2.8	15.1	2.5	0	20.4	2.2	23	1.4	0	26.6	1	18.7	0.9	0	20.5	1.4	23.5	7.5	0	32.4	
Cars & Trucks	19	99	17	0	135	15	181	11	0	207	7	132	6	0	145	11	182	59	0	252	739
% Cars & Trucks	82.6	81.1	85	0	81.8	83.3	97.3	100	0	96.3	87.5	87.4	85.7	0	87.3	100	95.8	96.7	0	96.2	91.5
Heavy Vehicles	4	23	3	0	30	3	5	0	0	8	1	19	1	0	21	0	8	2	0	10	69
% Heavy Vehicles	17.4	18.9	15	0	18.2	16.7	2.7	0	0	3.7	12.5	12.6	14.3	0	12.7	0	4.2	3.3	0	3.8	8.5
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



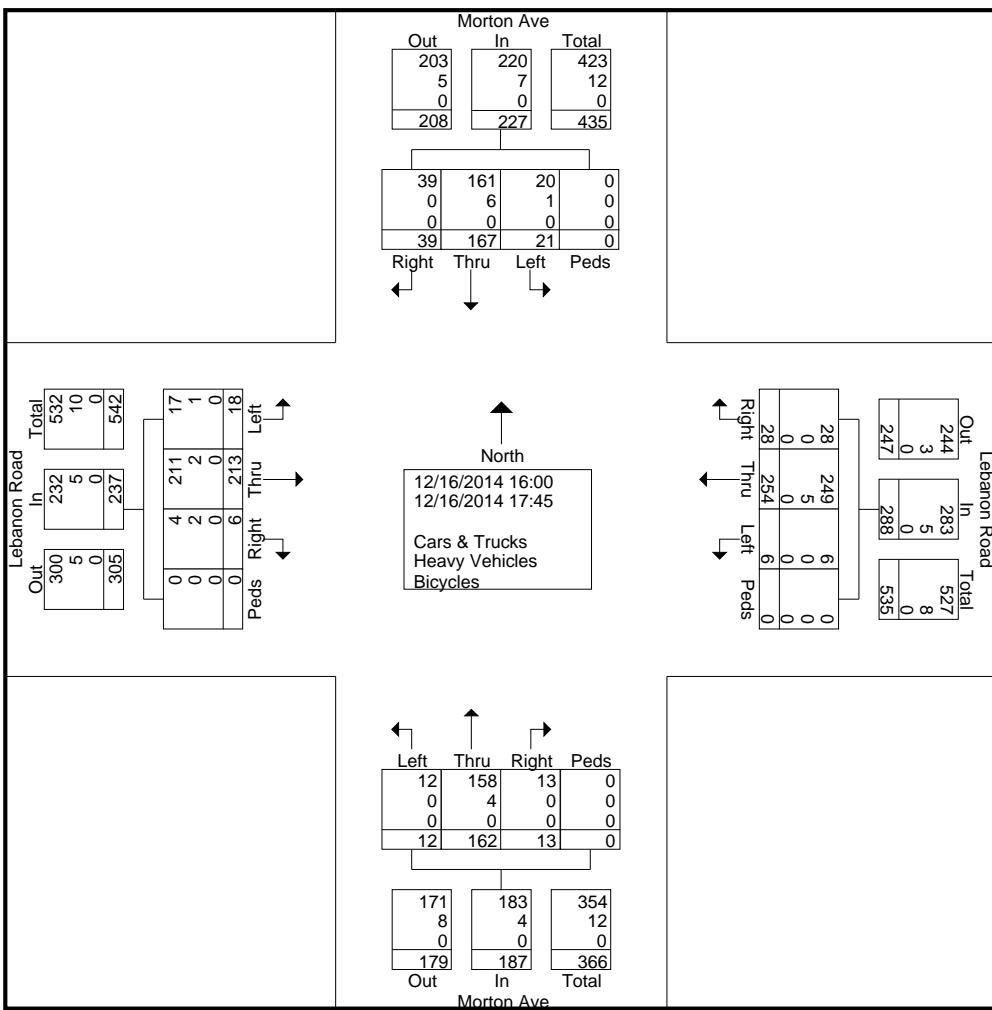
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 6 PM Counts  
Lebanon & Morton  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 6 PM Data  
Site Code : 6  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Morton Ave From North					Lebanon Road From East					Morton Ave From South					Lebanon Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	2	30	3	0	35	2	33	1	0	36	2	15	3	0	20	0	19	3	0	22	113
16:15	1	24	3	0	28	7	43	1	0	51	2	23	0	0	25	2	31	0	0	33	137
16:30	5	24	2	0	31	3	35	1	0	39	4	19	3	0	26	0	36	5	0	41	137
16:45	6	21	5	0	32	5	46	0	0	51	2	20	2	0	24	1	38	4	0	43	150
Total	14	99	13	0	126	17	157	3	0	177	10	77	8	0	95	3	124	12	0	139	537
17:00	7	14	1	0	22	2	30	2	0	34	0	19	0	0	19	0	30	4	0	34	109
17:15	10	16	1	0	27	4	28	0	0	32	2	32	1	0	35	1	22	2	0	25	119
17:30	4	20	3	0	27	5	19	1	0	25	0	18	1	0	19	1	25	0	0	26	97
17:45	4	18	3	0	25	0	20	0	0	20	1	16	2	0	19	1	12	0	0	13	77
Total	25	68	8	0	101	11	97	3	0	111	3	85	4	0	92	3	89	6	0	98	402
Grand Total	39	167	21	0	227	28	254	6	0	288	13	162	12	0	187	6	213	18	0	237	939
Apprch %	17.2	73.6	9.3	0		9.7	88.2	2.1	0		7	86.6	6.4	0		2.5	89.9	7.6	0		
Total %	4.2	17.8	2.2	0	24.2	3	27.1	0.6	0	30.7	1.4	17.3	1.3	0	19.9	0.6	22.7	1.9	0	25.2	
Cars & Trucks	39	161	20	0	220	28	249	6	0	283	13	158	12	0	183	4	211	17	0	232	918
% Cars & Trucks	100	96.4	95.2	0	96.9	100	98	100	0	98.3	100	97.5	100	0	97.9	66.7	99.1	94.4	0	97.9	97.8
Heavy Vehicles	0	6	1	0	7	0	5	0	0	5	0	4	0	0	4	2	2	1	0	5	21
% Heavy Vehicles	0	3.6	4.8	0	3.1	0	2	0	0	1.7	0	2.5	0	0	2.1	33.3	0.9	5.6	0	2.1	2.2
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



Location: Morton Ave  
 City/State: Deerfield Township NJ  
 Date: Jan 08 2015 - Jan 08 2015

Type: Speed Data  
 Specific Location: 0 ft from  
 Direction: NB/SB



#### RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Start Time	Jan 08 2015	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
	12:00 AM	1	0	2	0	2	0	50	45	55	60	65	70	75	999	41-50	8
	1:00 AM	0	0	0	0	0	2	6	2	2	1	0	0	0	18	41-50	0
	2:00 AM	0	0	0	0	0	2	3	0	1	0	0	0	0	6	38-47	4
	3:00 AM	0	0	1	0	1	1	2	2	4	2	1	0	0	0	51-60	6
	4:00 AM	2	0	0	0	1	1	1	4	0	0	0	0	0	0	41-50	5
	5:00 AM	6	1	0	3	6	9	20	10	5	6	0	2	0	1	41-50	30
	6:00 AM	7	1	1	3	5	13	29	19	17	5	2	1	2	0	41-50	47
	7:00 AM	17	0	0	2	5	21	48	71	38	16	7	2	0	0	41-50	118
	8:00 AM	10	0	0	1	3	24	28	39	34	16	3	1	0	0	46-55	73
	9:00 AM	1	0	2	4	6	6	27	21	22	10	1	0	1	0	41-50	48
	10:00 AM	7	3	2	5	12	50	38	21	5	0	1	0	0	0	41-50	87
	11:00 AM	0	0	0	2	7	28	48	27	11	4	1	0	0	0	46-55	75
	12:00 PM	0	0	0	1	6	9	25	47	42	10	5	0	1	0	46-55	89
	1:00 PM	1	0	0	0	1	3	6	18	41	48	21	4	2	1	41-50	88
	2:00 PM	6	0	0	0	2	14	35	65	57	28	13	0	1	0	46-55	122
	3:00 PM	6	0	1	3	2	3	28	52	51	30	14	4	1	0	46-55	102
	4:00 PM	5	0	0	0	2	5	21	48	60	39	10	3	0	0	46-55	108
	5:00 PM	3	0	1	3	3	23	24	49	52	17	10	1	0	0	46-55	101
	6:00 PM	3	0	0	0	1	16	28	45	30	16	7	0	0	0	46-55	75
	7:00 PM	1	0	0	1	1	9	13	28	20	10	6	0	1	1	46-55	48
	8:00 PM	1	0	0	0	0	3	23	23	20	10	4	0	0	0	42-51	45
	9:00 PM	0	0	0	2	0	3	13	16	26	5	3	0	0	0	46-55	42
	10:00 PM	1	0	0	0	1	1	3	11	4	6	4	1	0	0	46-55	15
	11:00 PM	0	0	0	0	0	1	4	3	3	0	0	0	0	0	41-50	8
Day Total	78	5	12	29	60	190	474	687	586	271	100	19	8	2	2	46-55	1272
Percent ADT	3.10%	0.20%	0.50%	1.20%	2.40%	7.50%	18.80%	27.30%	23.20%	10.70%	4.00%	0.80%	0.30%	0.10%			
ADT	2521																

AM Peak Volume	7:00 AM	10:00 AM	12:00 AM	10:00 AM	5:00 AM	8:00 AM	10:00 AM	7:00 AM	5:00 AM	6:00 AM	5:00 AM	5:00 AM	7:00 AM				
	17	3	2	5	6	24	50	71	38	16	7	2	2	2	1	227	
PM Peak Volume	2:00 PM	9:00 PM	3:00 PM	12:00 PM	5:00 PM	2:00 PM	4:00 PM	4:00 PM	3:00 PM	3:00 PM	14	4	1	1	1	221	



Location: Morton Ave  
City/State: Deerfield Township NJ  
Date: Jan 08 2015 - Jan 08 2015

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB

#### SUMMARY:

Date: Jan 08 2015 - Jan 08 2015

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	1272		
Percent	78	5	12	29	60	190	474	687	586	271	100	19	8	2	2521	46--55	
Cumulative Percent	3.10%	0.20%	0.50%	1.20%	2.40%	7.50%	18.80%	27.30%	33.20%	10.70%	4.00%	0.80%	0.30%	0.10%			
ADT	2521																

85th Percentile      55 MPH  
Mean Speed(Average)      47 MPH  
Median      48 MPH  
Mode      48 MPH

Location: Morton Ave  
City/State: Deerfield Township NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB

RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday			Average Week
						Hourly Traffic	Sat	Sun	Hourly Traffic
8-Jan-15									
12:00 AM				18		18			18
1:00 AM				6		6			6
2:00 AM				13		13			13
3:00 AM				8		8			8
4:00 AM				11		11			11
5:00 AM				69		69			69
6:00 AM				105		105			105
7:00 AM				227		227			227
8:00 AM				159		159			159
9:00 AM				101		101			101
10:00 AM				149		149			149
11:00 AM				130		130			130
12:00 PM				146		146			146
1:00 PM				146		146			146
2:00 PM				221		221			221
3:00 PM				195		195			195
4:00 PM				193		193			193
5:00 PM				186		186			186
6:00 PM				146		146			146
7:00 PM				91		91			91
8:00 PM				84		84			84
9:00 PM				70		70			70
10:00 PM				32		32			32
11:00 PM				15		15			15
Day Total				2521		2521			2521
ADT				2521		2521			2521
%Weekday Average				100.00%					
%Week Average				100.00%		100.00%			
AM Peak				7:00 AM		7:00 AM			7:00 AM
Volume				227		227			227
PM Peak				2:00 PM		2:00 PM			2:00 PM
Volume				221		221			221

RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Start Time	Dec 16 2014	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Speed	Number in Pace		
	12:00 AM	0	0	0	0	0	1	6	5	4	1	2	0	0	19	46-55	11			
	1:00 AM	0	0	0	0	0	3	3	8	4	1	1	2	0	0	22	46-55	12		
	2:00 AM	0	0	0	0	0	1	0	2	1	1	0	0	0	0	6	51-60	3		
	3:00 AM	0	0	0	0	0	1	0	2	1	5	4	1	0	0	14	51-60	9		
	4:00 AM	0	0	0	0	0	1	3	2	9	7	7	6	2	0	0	37	48-57	15	
	5:00 AM	0	1	1	3	6	12	31	48	44	17	4	0	1	0	168	46-55	92		
	6:00 AM	2	0	0	3	6	7	26	55	46	18	10	3	0	0	176	46-55	100		
	7:00 AM	2	0	0	1	0	5	19	50	88	46	32	5	2	0	250	46-55	138		
	8:00 AM	1	0	2	1	1	9	17	57	75	50	11	6	0	1	231	46-55	132		
	9:00 AM	0	0	0	0	1	1	8	24	35	32	13	3	3	0	120	51-60	67		
	10:00 AM	0	0	0	0	0	0	1	6	26	47	26	18	3	1	0	128	46-55	73	
	11:00 AM	6	2	0	0	0	1	12	27	39	27	11	2	0	2	129	51-60	66		
	12:00 PM	2	0	0	2	2	3	11	31	43	27	12	11	2	0	146	47-56	73		
	1:00 PM	0	0	0	1	7	7	13	37	49	40	17	8	1	0	180	51-60	89		
	2:00 PM	4	1	1	2	2	6	27	76	77	30	6	0	0	0	232	46-55	153		
	3:00 PM	3	0	0	0	1	0	3	35	83	70	36	9	0	0	240	46-55	153		
	4:00 PM	3	0	0	0	0	2	13	45	112	87	41	11	0	0	314	46-55	198		
	5:00 PM	3	0	0	0	0	10	37	82	63	20	5	1	0	1	222	46-55	145		
	6:00 PM	1	0	1	0	2	18	44	37	24	8	2	0	0	0	137	41-50	81		
	7:00 PM	2	0	0	0	2	1	9	16	28	19	6	2	0	0	85	46-55	46		
	8:00 PM	1	0	0	0	1	17	31	18	10	2	0	0	0	0	81	46-55	48		
	9:00 PM	0	0	0	0	1	14	23	7	4	2	0	0	0	0	51	41-50	37		
	10:00 PM	0	0	0	0	2	7	19	21	8	2	0	0	1	1	60	46-55	40		
	11:00 PM	0	0	1	0	0	1	3	10	11	9	4	0	0	0	39	46-55	21		
Day Total	30	4	6	17	32	117	396	881	886	472	183	48	10	5	5	3087	46-55	1766		
Percent ADT	1.00%	0.10%	0.20%	0.60%	1.00%	3.80%	12.80%	28.50%	28.70%	15.30%	5.90%	1.60%	0.30%	0.20%	0.20%					
AM Peak Volume	6	2	2	3	6	12	31	57	88	50	32	6	3	2	2	250				
PM Peak Volume	4	1	1	2	7	18	45	112	87	41	17	11	2	1	1	314	4:00 PM			



Location: Lebanon Rd  
City/State: Deerfield Rd NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: EB/VWB

## SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

85th Percentile  
Mean Speed(Average)  
Median  
Mode

Location: Lebanon Rd  
City/State: Deerfield Rd NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: EB/WB

## RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Average Week		
						Hourly Traffic	Sat	Sun	Hourly Traffic
16-Dec-14									
12:00 AM		19				19			19
1:00 AM		22				22			22
2:00 AM		6				6			6
3:00 AM		14				14			14
4:00 AM		37				37			37
5:00 AM		168				168			168
6:00 AM		176				176			176
7:00 AM		250				250			250
8:00 AM		231				231			231
9:00 AM		120				120			120
10:00 AM		128				128			128
11:00 AM		129				129			129
12:00 PM		146				146			146
1:00 PM		180				180			180
2:00 PM		232				232			232
3:00 PM		240				240			240
4:00 PM		314				314			314
5:00 PM		222				222			222
6:00 PM		137				137			137
7:00 PM		85				85			85
8:00 PM		81				81			81
9:00 PM		51				51			51
10:00 PM		60				60			60
11:00 PM		39				39			39
Day Total		3087				3087			3087
ADT		3087				3087			3087
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		250				250			250
PM Peak		4:00 PM				4:00 PM			4:00 PM
Volume		314				314			314

# Rodriguez Consulting

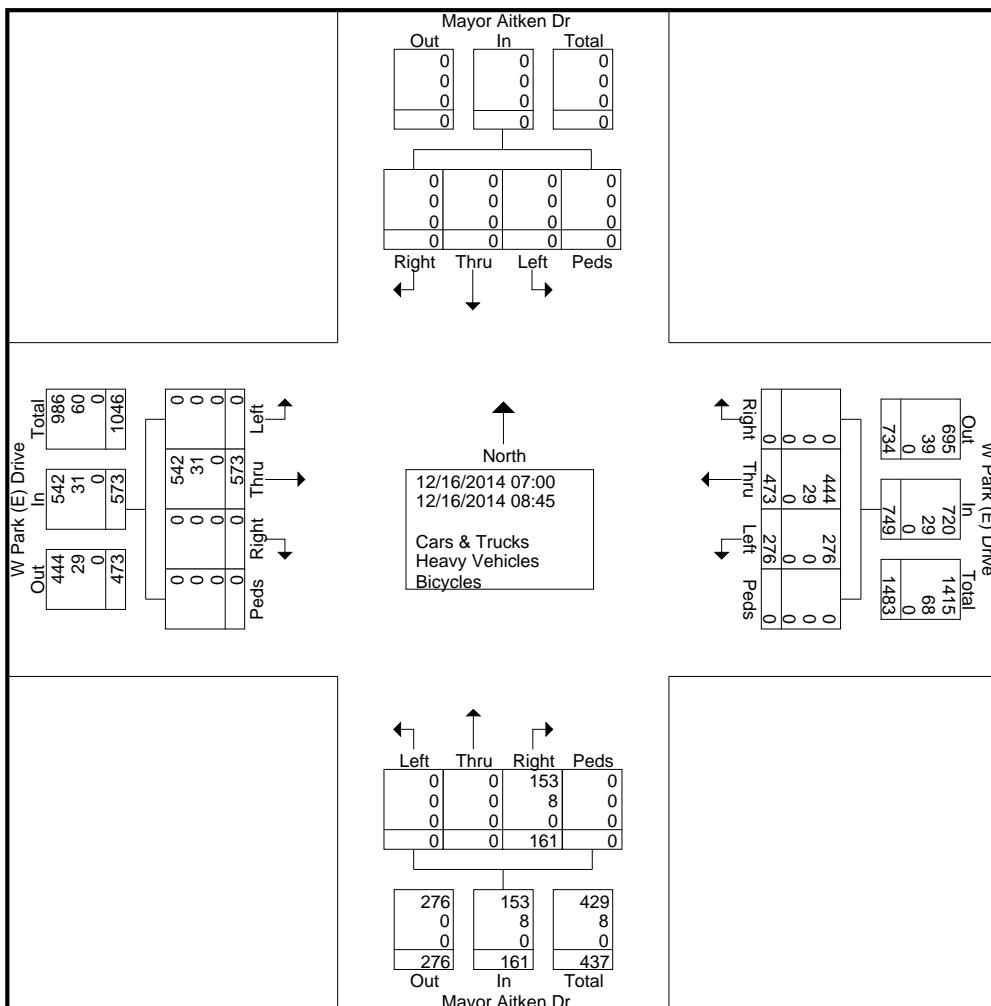
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 7 AM Counts  
Mayor Aitken & W Park (E)  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 7 AM Data  
Site Code : 7E  
Start Date : 12/16/2014  
Page No : 1

## Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles

Start Time	Mayor Aitken Dr From North					W Park (E) Drive From East					Mayor Aitken Dr From South					W Park (E) Drive From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00	0	0	0	0	0	0	30	32	0	62	14	0	0	0	14	0	81	0	0	81	157
07:15	0	0	0	0	0	0	53	28	0	81	32	0	0	0	32	0	59	0	0	59	172
07:30	0	0	0	0	0	0	64	42	0	106	15	0	0	0	15	0	70	0	0	70	191
07:45	0	0	0	0	0	0	86	45	0	131	26	0	0	0	26	0	98	0	0	98	255
Total	0	0	0	0	0	0	233	147	0	380	87	0	0	0	87	0	308	0	0	308	775
08:00	0	0	0	0	0	0	73	45	0	118	17	0	0	0	17	0	73	0	0	73	208
08:15	0	0	0	0	0	0	66	37	0	103	18	0	0	0	18	0	51	0	0	51	172
08:30	0	0	0	0	0	0	53	30	0	83	24	0	0	0	24	0	70	0	0	70	177
08:45	0	0	0	0	0	0	48	17	0	65	15	0	0	0	15	0	71	0	0	71	151
Total	0	0	0	0	0	0	240	129	0	369	74	0	0	0	74	0	265	0	0	265	708
Grand Total	0	0	0	0	0	0	473	276	0	749	161	0	0	0	161	0	573	0	0	573	1483
Apprch %	0	0	0	0	0	0	63.2	36.8	0	100	0	0	0	0	0	0	100	0	0	0	0
Total %	0	0	0	0	0	0	31.9	18.6	0	50.5	10.9	0	0	0	10.9	0	38.6	0	0	38.6	0
Cars & Trucks	0	0	0	0	0	0	444	276	0	720	153	0	0	0	153	0	542	0	0	542	1415
% Cars & Trucks	0	0	0	0	0	0	93.9	100	0	96.1	95	0	0	0	95	0	94.6	0	0	94.6	95.4
Heavy Vehicles	0	0	0	0	0	0	29	0	0	29	8	0	0	0	8	0	31	0	0	31	68
% Heavy Vehicles	0	0	0	0	0	0	6.1	0	0	3.9	5	0	0	0	5	0	5.4	0	0	5.4	4.6
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



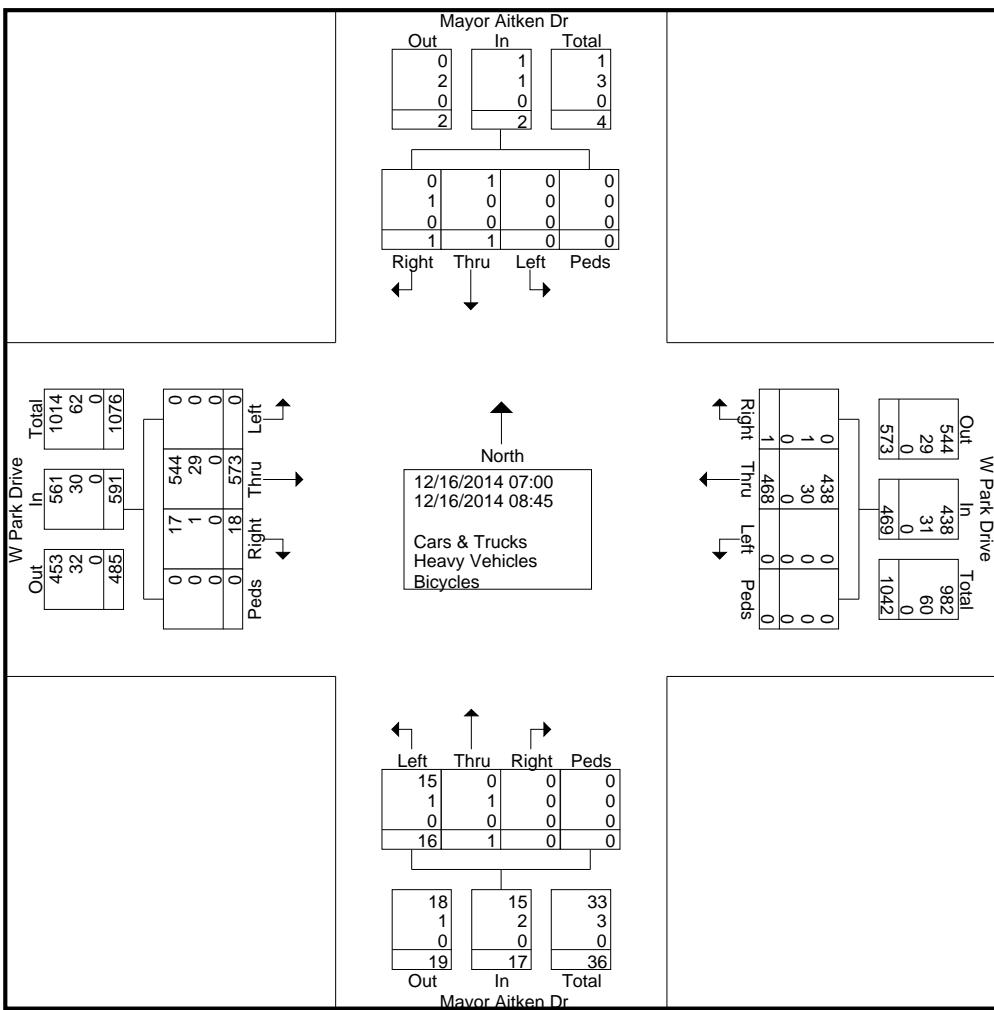
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 7 AM Counts  
Mayor Aitken & W Park  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 7 AM Data  
Site Code : 7W  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Mayor Aitken Dr From North					W Park Drive From East					Mayor Aitken Dr From South					W Park Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00	0	0	0	0	0	0	30	0	0	30	0	0	3	0	3	0	79	0	0	79	112
07:15	0	0	0	0	0	0	52	0	0	52	0	0	2	0	2	3	60	0	0	63	117
07:30	0	0	0	0	0	0	63	0	0	63	0	0	1	0	1	4	71	0	0	75	139
07:45	0	0	0	0	0	0	84	0	0	84	0	0	1	0	1	3	98	0	0	101	186
Total	0	0	0	0	0	0	229	0	0	229	0	0	7	0	7	10	308	0	0	318	554
08:00	0	0	0	0	0	1	72	0	0	73	0	0	2	0	2	0	73	0	0	73	148
08:15	0	0	0	0	0	0	65	0	0	65	0	0	3	0	3	5	52	0	0	57	125
08:30	1	0	0	0	1	0	54	0	0	54	0	1	1	0	2	1	70	0	0	71	128
08:45	0	1	0	0	1	0	48	0	0	48	0	0	3	0	3	2	70	0	0	72	124
Total	1	1	0	0	2	1	239	0	0	240	0	1	9	0	10	8	265	0	0	273	525
Grand Total	1	1	0	0	2	1	468	0	0	469	0	1	16	0	17	18	573	0	0	591	1079
Apprch %	50	50	0	0	0	0.2	99.8	0	0	0	0	5.9	94.1	0	0	3	97	0	0	0	0
Total %	0.1	0.1	0	0	0.2	0.1	43.4	0	0	43.5	0	0.1	1.5	0	1.6	1.7	53.1	0	0	54.8	
Cars & Trucks	0	1	0	0	1	0	438	0	0	438	0	0	15	0	15	17	544	0	0	561	1015
% Cars & Trucks	0	100	0	0	50	0	93.6	0	0	93.4	0	0	93.8	0	88.2	94.4	94.9	0	0	94.9	94.1
Heavy Vehicles	1	0	0	0	1	1	30	0	0	31	0	1	1	0	2	1	29	0	0	30	64
% Heavy Vehicles	100	0	0	0	50	100	6.4	0	0	6.6	0	100	6.2	0	11.8	5.6	5.1	0	0	5.1	5.9
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



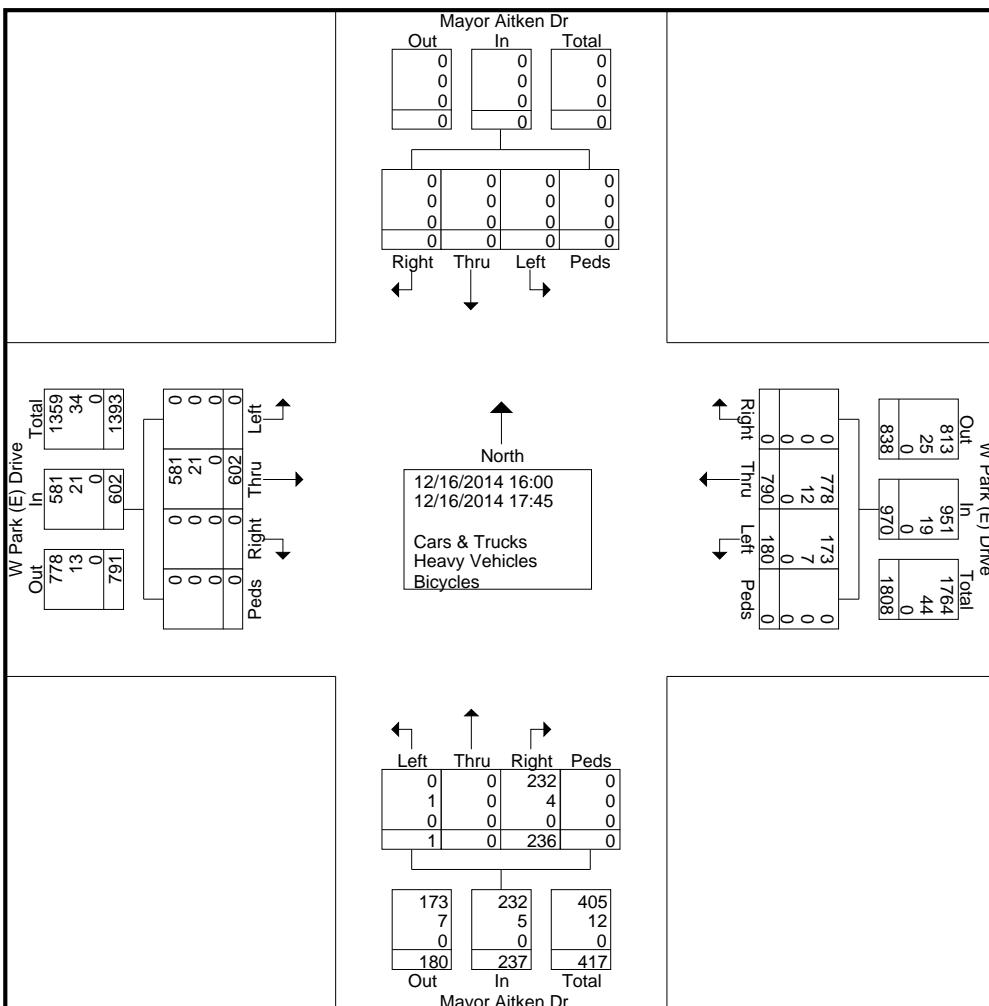
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 7 PM Counts  
Mayor Aitken & W Park (E)  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 7 PM Data  
Site Code : 7E  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Mayor Aitken Dr From North					W Park (E) Drive From East					Mayor Aitken Dr From South					W Park (E) Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	0	0	0	0	0	0	98	23	0	121	37	0	1	0	38	0	91	0	0	91	250
16:15	0	0	0	0	0	0	118	21	0	139	23	0	0	0	23	0	87	0	0	87	249
16:30	0	0	0	0	0	0	98	25	0	123	53	0	0	0	53	0	90	0	0	90	266
16:45	0	0	0	0	0	0	91	16	0	107	35	0	0	0	35	0	73	0	0	73	215
Total	0	0	0	0	0	0	405	85	0	490	148	0	1	0	149	0	341	0	0	341	980
17:00	0	0	0	0	0	0	109	28	0	137	31	0	0	0	31	0	67	0	0	67	235
17:15	0	0	0	0	0	0	100	28	0	128	17	0	0	0	17	0	60	0	0	60	205
17:30	0	0	0	0	0	0	98	24	0	122	22	0	0	0	22	0	65	0	0	65	209
17:45	0	0	0	0	0	0	78	15	0	93	18	0	0	0	18	0	69	0	0	69	180
Total	0	0	0	0	0	0	385	95	0	480	88	0	0	0	88	0	261	0	0	261	829
Grand Total	0	0	0	0	0	0	790	180	0	970	236	0	1	0	237	0	602	0	0	602	1809
Apprch %	0	0	0	0	0	0	81.4	18.6	0	99.6	0	0.4	0	0	0	0	100	0	0	0	0
Total %	0	0	0	0	0	0	43.7	10	0	53.6	13	0	0.1	0	13.1	0	33.3	0	0	33.3	0
Cars & Trucks	0	0	0	0	0	0	778	173	0	951	232	0	0	0	232	0	581	0	0	581	1764
% Cars & Trucks	0	0	0	0	0	0	98.5	96.1	0	98	98.3	0	0	0	97.9	0	96.5	0	0	96.5	97.5
Heavy Vehicles	0	0	0	0	0	0	12	7	0	19	4	0	1	0	5	0	21	0	0	21	45
% Heavy Vehicles	0	0	0	0	0	0	1.5	3.9	0	2	1.7	0	100	0	2.1	0	3.5	0	0	3.5	2.5
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	



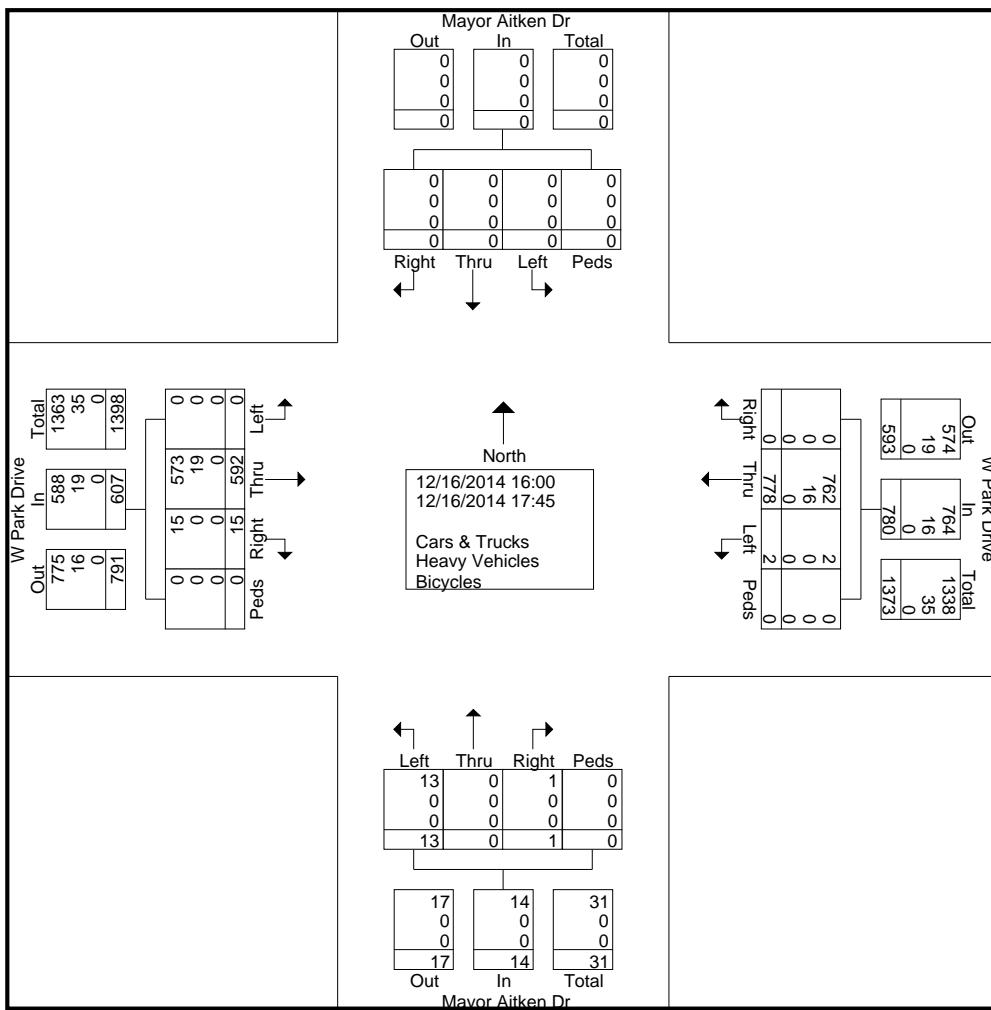
# Rodriguez Consulting

1301 N. 2nd Street  
Philadelphia, PA 19122

Site 7 PM Counts  
Mayor Aitken & W Park (W)  
Bridgeton, NJ  
Rodriguez Consulting, LLC

File Name : Site 7 PM Data  
Site Code : 7W  
Start Date : 12/16/2014  
Page No : 1

Groups Printed- Cars & Trucks - Heavy Vehicles - Bicycles																					
	Mayor Aitken Dr From North					W Park Drive From East					Mayor Aitken Dr From South					W Park Drive From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	0	0	0	0	0	0	98	0	0	98	0	0	5	0	5	4	88	0	0	92	195
16:15	0	0	0	0	0	0	115	1	0	116	0	0	4	0	4	4	84	0	0	88	208
16:30	0	0	0	0	0	0	98	0	0	98	0	0	2	0	2	3	90	0	0	93	193
16:45	0	0	0	0	0	0	91	0	0	91	0	0	0	0	0	1	73	0	0	74	165
Total	0	0	0	0	0	0	402	1	0	403	0	0	11	0	11	12	335	0	0	347	761
17:00	0	0	0	0	0	0	105	1	0	106	0	0	1	0	1	1	67	0	0	68	175
17:15	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	0	60	0	0	60	160
17:30	0	0	0	0	0	0	96	0	0	96	0	0	0	0	0	0	63	0	0	63	159
17:45	0	0	0	0	0	0	75	0	0	75	1	0	1	0	2	2	67	0	0	69	146
Total	0	0	0	0	0	0	376	1	0	377	1	0	2	0	3	3	257	0	0	260	640
Grand Total	0	0	0	0	0	0	778	2	0	780	1	0	13	0	14	15	592	0	0	607	1401
Apprch %	0	0	0	0	0	0	99.7	0.3	0	99.7	7.1	0	92.9	0	0	2.5	97.5	0	0	0	0
Total %	0	0	0	0	0	0	55.5	0.1	0	55.7	0.1	0	0.9	0	1	1.1	42.3	0	0	43.3	0
Cars & Trucks	0	0	0	0	0	0	762	2	0	764	1	0	13	0	14	15	573	0	0	588	1366
% Cars & Trucks	0	0	0	0	0	0	97.9	100	0	97.9	100	0	100	0	100	100	96.8	0	0	96.9	97.5
Heavy Vehicles	0	0	0	0	0	0	16	0	0	16	0	0	0	0	0	0	19	0	0	19	35
% Heavy Vehicles	0	0	0	0	0	0	2.1	0	0	2.1	0	0	0	0	0	0	3.2	0	0	3.1	2.5
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Location: W Park Dr  
City/State: Bridgeton NJ

Type: Speed Data  
Specific location: 0 ft from  
Direction: EB/VB



RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Start Time	Dec 16 2014	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Speed	Number in Pace
	12:00 AM	0	0	0	0	3	11	5	8	1	0	0	0	0	28	41--50	16	
	1:00 AM	0	0	1	0	1	1	8	5	3	0	2	0	0	21	41--50	13	
	2:00 AM	2	0	0	1	2	2	10	4	5	0	0	0	0	26	41--50	14	
	3:00 AM	0	0	0	0	1	0	4	3	1	0	0	0	0	9	42--51	6	
	4:00 AM	0	0	0	0	2	3	12	4	2	1	0	0	0	36	41--50	23	
	5:00 AM	0	0	0	3	1	13	33	27	13	3	1	0	0	94	41--50	60	
	6:00 AM	6	0	0	2	13	49	79	66	22	4	0	0	0	241	41--50	144	
	7:00 AM	20	0	0	2	14	100	200	144	53	11	2	0	0	546	41--50	343	
	8:00 AM	6	0	0	0	20	102	169	168	49	10	4	0	0	528	41--50	337	
	9:00 AM	9	0	0	1	24	83	152	105	30	8	1	0	0	413	41--50	257	
	10:00 AM	4	1	3	1	18	110	156	107	33	7	0	0	0	440	36--45	266	
	11:00 AM	14	7	17	44	87	124	99	64	11	2	0	0	0	469	36--45	223	
	12:00 PM	13	1	3	24	65	134	170	98	28	3	2	1	0	542	36--45	304	
	1:00 PM	19	3	1	34	97	191	155	56	11	1	1	0	0	569	36--45	346	
	2:00 PM	11	0	1	6	40	170	243	94	13	3	0	0	0	581	36--45	413	
	3:00 PM	22	0	0	0	27	144	263	161	33	6	2	0	0	658	41--50	424	
	4:00 PM	29	0	1	5	32	162	334	151	33	8	0	0	0	755	36--45	496	
	5:00 PM	25	0	1	6	67	215	217	91	16	0	0	0	0	638	36--45	431	
	6:00 PM	15	0	1	16	48	189	162	55	8	1	1	0	0	496	36--45	350	
	7:00 PM	5	0	1	1	26	80	100	59	16	5	0	0	0	293	36--45	180	
	8:00 PM	3	0	1	10	36	70	86	43	12	4	0	0	0	265	36--45	155	
	9:00 PM	0	0	1	2	7	36	79	33	19	2	0	0	0	179	36--45	115	
	10:00 PM	3	0	0	0	4	24	53	19	13	5	1	0	0	122	36--45	76	
	11:00 PM	0	0	1	0	2	16	26	19	12	3	0	0	0	79	41--50	44	
Day Total		206	12	33	158	634	2021	2821	1589	446	89	18	1	0	8028	36--45	4842	
Percent ADT		2.60%	0.10%	0.40%	2.00%	7.90%	25.20%	35.10%	19.80%	5.60%	1.10%	0.20%	0.00%	0.00%	0.00%			
AM Peak Volume		7:00 AM	20	7	17	44	87	124	200	168	53	11	4			7:00 AM	546	
PM Peak Volume		4:00 PM	29	3	3	34	97	215	334	161	33	8	2	1		4:00 PM	755	



Location: W Park Dr  
City/State: Bridgeton NJ  
City/State: Bridgeton NJ

Type: Speed Data  
Specific location: 0 ft from  
Direction: EB/VB

#### SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
Percent	206	12	33	158	634	2021	2821	1589	446	89	18	1	0	0	8028	36-45	4842
Cumulative Percent	2.60%	0.10%	0.40%	2.00%	7.90%	25.20%	35.10%	19.80%	5.60%	1.10%	0.20%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%
ADT	8028																

85th Percentile  
Mean Speed(Average)  
Median  
Mode

Location: W Park Dr  
City/State: Bridgeton NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: EB/WB

RODRIGUEZ CONSULTING COUNTS REPORT

=====



Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Average Week	
						Hourly Traffic	Sat	Sun
16-Dec-14								
12:00 AM		28				28		28
1:00 AM		21				21		21
2:00 AM		26				26		26
3:00 AM		9				9		9
4:00 AM		36				36		36
5:00 AM		94				94		94
6:00 AM		241				241		241
7:00 AM		546				546		546
8:00 AM		528				528		528
9:00 AM		413				413		413
10:00 AM		440				440		440
11:00 AM		469				469		469
12:00 PM		542				542		542
1:00 PM		569				569		569
2:00 PM		581				581		581
3:00 PM		658				658		658
4:00 PM		755				755		755
5:00 PM		638				638		638
6:00 PM		496				496		496
7:00 PM		293				293		293
8:00 PM		265				265		265
9:00 PM		179				179		179
10:00 PM		122				122		122
11:00 PM		79				79		79
Day Total		8028				8028		8028
ADT		8028				8028		8028
%Weekday Average		100.00%						
%Week Average		100.00%				100.00%		
AM Peak		7:00 AM				7:00 AM		7:00 AM
Volume		546				546		546
PM Peak		4:00 PM				4:00 PM		4:00 PM
Volume		755				755		755



Location: Mayor Aitken Dr  
City/State: Bridgeton NJ  
Date: Dec 16 2014 - Dec 16 201

Type: Speed Data  
Specific Location: 0 ft from  
Direction: NB/SB

RODRIGUEZ CONSULTING COUNTS REPORT

Date:	Dec 16 2014
Start Time:	12:00 AM
15	0
1:00 AM	0
2:00 AM	0
3:00 AM	0
4:00 AM	0
5:00 AM	0
6:00 AM	0
7:00 AM	5
8:00 AM	4
9:00 AM	3
10:00 AM	1
11:00 AM	6
12:00 PM	1
1:00 PM	1
2:00 PM	1
3:00 PM	4
4:00 PM	2
5:00 PM	4
6:00 PM	2
7:00 PM	0
8:00 PM	0
9:00 PM	0
10:00 PM	0
11:00 PM	0
Day Total	34
Percent ADT	0.120%
2822	
AM Peak Volume	6
PM Peak Volume	4
11:00 AM	11:00 AM
3:00 PM	3:00 PM
8:00 PM	8:00 PM

	1:00 AM	10:00 AM	7:00 AM	10:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM
6	1	12	32	81	78	40	8	2
3:00 PM	8:00 PM	4:00 PM	1:00 PM	4:00 PM	12:00 PM	3:00 PM	2:00 PM	
4	2	12	49	115	74	28	7	



Location: Mayor Aitken Dr  
City/State: Bridgeton NJ  
Date: Dec 16 2014 - Dec 16 2014

Type: Speed Data  
Specific Location: 0 ft from  
Direction: N/S/E/W

#### SUMMARY:

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number in Pace
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	0	2822	31-40
Percent	34	4	96	528	1038	787	288	43	3	1	0	0	0	0	0.00%	0.00%	0.00%
Cumulative Percent	1.20%	0.10%	3.40%	18.70%	36.80%	27.90%	10.20%	1.50%	0.10%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%
ADT	2822																

85th Percentile

Mean Speed(Average)

Median

Mode

Location: Mayor Aitken Dr  
City/State: Bridgeton NJ

Type: Volume Data  
Specific Location: 0 ft from  
Direction: NB/SB



## RODRIGUEZ CONSULTING COUNTS REPORT

---

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday		Average Week	
						Hourly Traffic		Sat	Sun
16-Dec-14									
12:00 AM		5				5			5
1:00 AM		4				4			4
2:00 AM		4				4			4
3:00 AM		11				11			11
4:00 AM		8				8			8
5:00 AM		25				25			25
6:00 AM		104				104			104
7:00 AM		248				248			248
8:00 AM		224				224			224
9:00 AM		156				156			156
10:00 AM		131				131			131
11:00 AM		173				173			173
12:00 PM		201				201			201
1:00 PM		215				215			215
2:00 PM		207				207			207
3:00 PM		246				246			246
4:00 PM		257				257			257
5:00 PM		192				192			192
6:00 PM		127				127			127
7:00 PM		106				106			106
8:00 PM		68				68			68
9:00 PM		47				47			47
10:00 PM		27				27			27
11:00 PM		36				36			36
Day Total		2822				2822			2822
ADT		2822				2822			2822
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		248				248			248
PM Peak		4:00 PM				4:00 PM			4:00 PM
Volume		257				257			257

# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

Cumberland County  
New Jersey

### **APPENDIX C**

#### **SYNCHRO CAPACITY ANALYSIS WORKSHEETS**



**Intersection**

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	124	21	4	100	14	12	43	4	22	73	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	6	5	25	8	14	0	5	25	18	10	0
Mvmt Flow	0	153	26	5	123	17	15	53	5	27	90	0

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	141	0	0	179	0	0	353	317	166	337	321	132
Stage 1	-	-	-	-	-	-	166	166	-	142	142	-
Stage 2	-	-	-	-	-	-	187	151	-	195	179	-
Critical Hdwy	4.1	-	-	4.35	-	-	7.1	6.55	6.45	7.28	6.6	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-	6.28	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-	6.28	5.6	-
Follow-up Hdwy	2.2	-	-	2.425	-	-	3.5	4.045	3.525	3.662	4.09	3.3
Pot Cap-1 Maneuver	1455	-	-	1269	-	-	606	594	822	587	583	923
Stage 1	-	-	-	-	-	-	841	755	-	824	764	-
Stage 2	-	-	-	-	-	-	819	767	-	771	736	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1455	-	-	1269	-	-	532	592	822	542	581	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	532	592	-	542	581	-
Stage 1	-	-	-	-	-	-	841	755	-	824	761	-
Stage 2	-	-	-	-	-	-	719	764	-	712	736	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0	0.3			12			12.9		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	590	1455	-	-	1269	-	-	571
HCM Lane V/C Ratio	0.123	-	-	-	0.004	-	-	0.205
HCM Control Delay (s)	12	0	-	-	7.8	0	-	12.9
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.8

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Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	81	0	0	63	103	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	14	0	0	8	9	11
Mvmt Flow	100	0	0	78	127	102

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Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	256	178	230	0	- 0
Stage 1	178	-	-	-	-
Stage 2	78	-	-	-	-
Critical Hdwy	6.54	6.2	4.1	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-
Follow-up Hdwy	3.626	3.3	2.2	-	-
Pot Cap-1 Maneuver	707	870	1350	-	-
Stage 1	825	-	-	-	-
Stage 2	916	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	707	870	1350	-	-
Mov Cap-2 Maneuver	707	-	-	-	-
Stage 1	825	-	-	-	-
Stage 2	916	-	-	-	-

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Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

---

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1350	-	707	-	-
HCM Lane V/C Ratio	-	-	0.141	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

---

## Intersection

Int Delay, s/veh 6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	114	10	42	72	0	9	61	31	0	84	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	25	6	10	7	10	0	11	15	3	0	10	25
Mvmt Flow	5	134	12	49	85	0	11	72	36	0	99	9

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	85	0	0	134	0	0	382	328	134	382	328	85
Stage 1	-	-	-	-	-	-	144	144	-	184	184	-
Stage 2	-	-	-	-	-	-	238	184	-	198	144	-
Critical Hdwy	4.35	-	-	4.17	-	-	7.21	6.65	6.23	7.1	6.6	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.21	5.65	-	6.1	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.21	5.65	-	6.1	5.6	-
Follow-up Hdwy	2.425	-	-	2.263	-	-	3.599	4.135	3.327	3.5	4.09	3.525
Pot Cap-1 Maneuver	1378	-	-	1420	-	-	560	570	912	580	578	914
Stage 1	-	-	-	-	-	-	838	754	-	822	733	-
Stage 2	-	-	-	-	-	-	746	724	-	808	763	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1378	-	-	1420	-	-	464	547	912	486	555	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	464	547	-	486	555	-
Stage 1	-	-	-	-	-	-	835	751	-	819	707	-
Stage 2	-	-	-	-	-	-	612	698	-	699	760	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0.2	2.8			12.3			12.7		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	612	1378	-	-	1420	-	-	575
HCM Lane V/C Ratio	0.194	0.003	-	-	0.035	-	-	0.188
HCM Control Delay (s)	12.3	7.6	0	-	7.6	0	-	12.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.7

2014 Existing AM Scenario  
14: Old Deerfield Pike & Finley Road

6/16/2015

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	51	44	13	29	0	23	154	10	4	121	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	43	14	5	8	10	0	9	5	10	0	5	100
Mvmt Flow	8	58	50	15	33	0	26	175	11	5	138	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	396	386	138	434	381	181	139	0	0	186	0	0
Stage 1	147	147	-	233	233	-	-	-	-	-	-	-
Stage 2	249	239	-	201	148	-	-	-	-	-	-	-
Critical Hdwy	7.53	6.64	6.25	7.18	6.6	6.2	4.19	-	-	4.1	-	-
Critical Hdwy Stg 1	6.53	5.64	-	6.18	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.64	-	6.18	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.887	4.126	3.345	3.572	4.09	3.3	2.281	-	-	2.2	-	-
Pot Cap-1 Maneuver	497	530	902	522	539	867	1402	-	-	1401	-	-
Stage 1	767	753	-	757	697	-	-	-	-	-	-	-
Stage 2	672	686	-	787	760	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	464	517	902	442	526	867	1402	-	-	1401	-	-
Mov Cap-2 Maneuver	464	517	-	442	526	-	-	-	-	-	-	-
Stage 1	751	750	-	741	682	-	-	-	-	-	-	-
Stage 2	626	672	-	683	757	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12			13			0.9			0.2		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1402	-	-	628	497	1401	-	-				
HCM Lane V/C Ratio	0.019	-	-	0.185	0.096	0.003	-	-				
HCM Control Delay (s)	7.6	0	-	12	13	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.3	0	-	-				

Intersection												
Int Delay, s/veh	9.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	8	76	18	51	28	7	3	174	102	58	114	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	68	68	68	68	68	68	68	68	68
Heavy Vehicles, %	25	7	0	29	11	43	0	3	9	9	3	0
Mvmt Flow	12	112	26	75	41	10	4	256	150	85	168	3
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	705	755	169	749	681	331	171	0	0	406	0	0
Stage 1	340	340	-	340	340	-	-	-	-	-	-	-
Stage 2	365	415	-	409	341	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.57	6.2	7.39	6.61	6.63	4.1	-	-	4.19	-	-
Critical Hdwy Stg 1	6.35	5.57	-	6.39	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.57	-	6.39	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4.063	3.3	3.761	4.099	3.687	2.2	-	-	2.281	-	-
Pot Cap-1 Maneuver	323	332	880	297	362	626	1418	-	-	1116	-	-
Stage 1	629	630	-	622	624	-	-	-	-	-	-	-
Stage 2	610	584	-	569	623	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	268	303	880	193	330	626	1418	-	-	1116	-	-
Mov Cap-2 Maneuver	268	303	-	193	330	-	-	-	-	-	-	-
Stage 1	626	577	-	620	622	-	-	-	-	-	-	-
Stage 2	558	582	-	408	571	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	23.8			35.8			0.1			2.8		
HCM LOS	C			E								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1418	-	-	339	239	1116	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.442	0.529	0.076	-	-				
HCM Control Delay (s)	7.5	0	-	23.8	35.8	8.5	0	-				
HCM Lane LOS	A	A	-	C	E	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	2.2	2.8	0.2	-	-				

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	100	2	3	124	12	5	73	3	11	22	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	108	2	3	133	13	5	78	3	12	24	2

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	146	0	0	110	0	0	270	264	109	298	258	140
Stage 1	-	-	-	-	-	-	111	111	-	146	146	-
Stage 2	-	-	-	-	-	-	159	153	-	152	112	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1448	-	-	1493	-	-	687	645	950	658	650	913
Stage 1	-	-	-	-	-	-	899	807	-	861	780	-
Stage 2	-	-	-	-	-	-	848	775	-	855	807	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1448	-	-	1493	-	-	665	643	950	593	648	913
Mov Cap-2 Maneuver	-	-	-	-	-	-	665	643	-	593	648	-
Stage 1	-	-	-	-	-	-	898	806	-	860	778	-
Stage 2	-	-	-	-	-	-	819	773	-	768	806	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0.1	0.2			11.4			11		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	652	1448	-	-	1493	-	-	640
HCM Lane V/C Ratio	0.134	0.001	-	-	0.002	-	-	0.059
HCM Control Delay (s)	11.4	7.5	0	-	7.4	0	-	11
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

2014 Existing AM Scenario  
26: Morton Avenue & Lebanon Road

6/16/2015

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	27	114	7	7	94	16	3	89	6	14	72	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	70	70	70	70	70	70	70	70	70
Heavy Vehicles, %	7	4	0	0	4	13	0	15	17	7	21	24
Mvmt Flow	39	163	10	10	134	23	4	127	9	20	103	24
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	374	299	115	381	307	131	127	0	0	136	0	0
Stage 1	155	155	-	140	140	-	-	-	-	-	-	-
Stage 2	219	144	-	241	167	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.54	6.2	7.1	6.54	6.33	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.54	-	6.1	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.54	-	6.1	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.036	3.3	3.5	4.036	3.417	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	574	610	943	581	604	890	1472	-	-	1418	-	-
Stage 1	836	766	-	868	777	-	-	-	-	-	-	-
Stage 2	772	774	-	767	756	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	456	599	943	448	593	890	1472	-	-	1418	-	-
Mov Cap-2 Maneuver	456	599	-	448	593	-	-	-	-	-	-	-
Stage 1	833	755	-	865	775	-	-	-	-	-	-	-
Stage 2	620	772	-	586	745	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.8			13.1			0.2			1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1472	-	-	576	609	1418	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.367	0.274	0.014	-	-				
HCM Control Delay (s)	7.5	0	-	14.8	13.1	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.7	1.1	0	-	-				

Intersection						
Int Delay, s/veh	2.9					
Movement	EBT	EBR	WBL	WBT	NEL	NER
Vol, veh/h	300	0	160	276	0	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	6	0	0	8	0	6
Mvmt Flow	370	0	198	341	0	111
Major/Minor						
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	370	0	1106	370
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	736	-
Critical Hdwy	-	-	4.1	-	6.4	6.26
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.354
Pot Cap-1 Maneuver	-	-	1200	-	235	667
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	477	-
Platoon blocked, %	-	-	-	-		
Mov Cap-1 Maneuver	-	-	1200	-	187	667
Mov Cap-2 Maneuver	-	-	-	-	187	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	380	-
Approach						
Approach	EB		WB		NE	
HCM Control Delay, s	0		3.2		11.5	
HCM LOS					B	
Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	667	-	-	1200	-	
HCM Lane V/C Ratio	0.167	-	-	0.165	-	
HCM Control Delay (s)	11.5	-	-	8.6	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.6	-	-	0.6	-	

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	274	12	0	284	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	4	0	0	5	15	0
Mvmt Flow	342	15	0	355	9	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	358	0	705 350
Stage 1	-	-	-	-	350 -
Stage 2	-	-	-	-	355 -
Critical Hdwy	-	-	4.1	-	6.55 6.2
Critical Hdwy Stg 1	-	-	-	-	5.55 -
Critical Hdwy Stg 2	-	-	-	-	5.55 -
Follow-up Hdwy	-	-	2.2	-	3.635 3.3
Pot Cap-1 Maneuver	-	-	1212	-	384 698
Stage 1	-	-	-	-	685 -
Stage 2	-	-	-	-	682 -
Platoon blocked, %	-	-	-	-	
Mov Cap-1 Maneuver	-	-	1212	-	384 698
Mov Cap-2 Maneuver	-	-	-	-	384 -
Stage 1	-	-	-	-	685 -
Stage 2	-	-	-	-	682 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	384	-	-	1212	-
HCM Lane V/C Ratio	0.023	-	-	-	-
HCM Control Delay (s)	14.6	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

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Intersection

Int Delay, s/veh 5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	110	25	5	99	10	44	68	7	13	67	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	50	5	4	25	2	0	0	4	0	0	3	0
Mvmt Flow	4	122	28	6	110	11	49	76	8	14	74	3

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Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	121	0	0	150	0	0	311	277	136	314	286	116
Stage 1	-	-	-	-	-	-	145	145	-	127	127	-
Stage 2	-	-	-	-	-	-	166	132	-	187	159	-
Critical Hdwy	4.6	-	-	4.35	-	-	7.1	6.54	6.2	7.1	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.1	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.1	5.53	-
Follow-up Hdwy	2.65	-	-	2.425	-	-	3.5	4.036	3.3	3.5	4.027	3.3
Pot Cap-1 Maneuver	1216	-	-	1302	-	-	645	627	918	643	622	942
Stage 1	-	-	-	-	-	-	863	773	-	882	789	-
Stage 2	-	-	-	-	-	-	841	783	-	819	764	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1216	-	-	1302	-	-	579	621	918	574	616	942
Mov Cap-2 Maneuver	-	-	-	-	-	-	579	621	-	574	616	-
Stage 1	-	-	-	-	-	-	860	770	-	878	785	-
Stage 2	-	-	-	-	-	-	755	779	-	729	761	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0.2	0.3			12.4			11.9		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	616	1216	-	-	1302	-	-	617
HCM Lane V/C Ratio	0.215	0.004	-	-	0.004	-	-	0.149
HCM Control Delay (s)	12.4	8	0	-	7.8	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.5

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Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	87	0	0	82	75	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	5	1	5
Mvmt Flow	95	0	0	89	82	93

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Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	217	128	175	0	- 0
Stage 1	128	-	-	-	-
Stage 2	89	-	-	-	-
Critical Hdwy	6.47	6.2	4.1	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-
Follow-up Hdwy	3.563	3.3	2.2	-	-
Pot Cap-1 Maneuver	760	927	1414	-	-
Stage 1	886	-	-	-	-
Stage 2	922	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	760	927	1414	-	-
Mov Cap-2 Maneuver	760	-	-	-	-
Stage 1	886	-	-	-	-
Stage 2	922	-	-	-	-

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Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	760	-	-
HCM Lane V/C Ratio	-	-	0.124	-	-
HCM Control Delay (s)	0	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

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## Intersection

Int Delay, s/veh 6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	95	12	35	109	0	11	78	40	0	69	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	22	3	9	3	2	0	0	5	3	0	4	0
Mvmt Flow	11	106	13	39	121	0	12	87	44	0	77	18

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	121	0	0	106	0	0	374	327	106	392	327	121
Stage 1	-	-	-	-	-	-	128	128	-	199	199	-
Stage 2	-	-	-	-	-	-	246	199	-	193	128	-
Critical Hdwy	4.32	-	-	4.13	-	-	7.1	6.55	6.23	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-	6.1	5.54	-
Follow-up Hdwy	2.398	-	-	2.227	-	-	3.5	4.045	3.327	3.5	4.036	3.3
Pot Cap-1 Maneuver	1351	-	-	1479	-	-	587	587	946	571	588	936
Stage 1	-	-	-	-	-	-	881	784	-	807	733	-
Stage 2	-	-	-	-	-	-	762	731	-	813	786	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1351	-	-	1479	-	-	502	565	946	467	566	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	502	565	-	467	566	-
Stage 1	-	-	-	-	-	-	873	777	-	800	712	-
Stage 2	-	-	-	-	-	-	648	711	-	682	779	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0.7	1.8			12.3			12		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	638	1351	-	-	1479	-	-	612
HCM Lane V/C Ratio	0.225	0.008	-	-	0.026	-	-	0.154
HCM Control Delay (s)	12.3	7.7	0	-	7.5	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	0.5

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	30	11	38	57	4	22	115	26	1	167	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	3	9	0	2	0	5	4	12	0	4	0
Mvmt Flow	3	33	12	42	63	4	24	128	29	1	186	2
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	414	395	187	403	381	142	188	0	0	157	0	0
Stage 1	189	189	-	191	191	-	-	-	-	-	-	-
Stage 2	225	206	-	212	190	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.53	6.29	7.1	6.52	6.2	4.15	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.53	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.53	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.027	3.381	3.5	4.018	3.3	2.245	-	-	2.2	-	-
Pot Cap-1 Maneuver	552	540	837	562	552	911	1368	-	-	1435	-	-
Stage 1	817	742	-	815	742	-	-	-	-	-	-	-
Stage 2	782	729	-	795	743	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	493	529	837	519	541	911	1368	-	-	1435	-	-
Mov Cap-2 Maneuver	493	529	-	519	541	-	-	-	-	-	-	-
Stage 1	801	741	-	800	728	-	-	-	-	-	-	-
Stage 2	697	715	-	747	742	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.8			13.3			1			0		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1368	-	-	579	541	1435	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.084	0.203	0.001	-	-				
HCM Control Delay (s)	7.7	0	-	11.8	13.3	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.8	0	-	-				

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	30	28	35	33	5	28	151	32	5	205	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	4	3	3	40	4	5	3	0	4	0
Mvmt Flow	2	33	31	39	37	6	31	168	36	6	228	8
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	512	509	232	523	495	186	236	0	0	203	0	0
Stage 1	243	243	-	248	248	-	-	-	-	-	-	-
Stage 2	269	266	-	275	247	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.24	7.13	6.53	6.6	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.336	3.527	4.027	3.66	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	476	470	802	463	474	768	1319	-	-	1381	-	-
Stage 1	765	708	-	754	699	-	-	-	-	-	-	-
Stage 2	741	692	-	729	700	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	433	455	802	410	459	768	1319	-	-	1381	-	-
Mov Cap-2 Maneuver	433	455	-	410	459	-	-	-	-	-	-	-
Stage 1	744	704	-	734	680	-	-	-	-	-	-	-
Stage 2	677	673	-	664	697	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.2			14.9			1			0.2		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1319	-	-	569	446	1381	-	-				
HCM Lane V/C Ratio	0.024	-	-	0.117	0.182	0.004	-	-				
HCM Control Delay (s)	7.8	0	-	12.2	14.9	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.7	0	-	-				

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	127	3	7	118	18	3	36	2	19	95	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	20	5	0	0	4	17	0	3	0	6	4	0
Mvmt Flow	6	143	3	8	133	20	3	40	2	21	107	3

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	153	0	0	146	0	0	369	325	144	335	315	143
Stage 1	-	-	-	-	-	-	156	156	-	158	158	-
Stage 2	-	-	-	-	-	-	213	169	-	177	157	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.1	6.53	6.2	7.16	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.53	-	6.16	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.53	-	6.16	5.54	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.5	4.027	3.3	3.554	4.036	3.3
Pot Cap-1 Maneuver	1325	-	-	1448	-	-	591	591	909	611	597	910
Stage 1	-	-	-	-	-	-	851	767	-	835	763	-
Stage 2	-	-	-	-	-	-	794	757	-	816	764	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1325	-	-	1448	-	-	503	585	909	572	590	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	503	585	-	572	590	-
Stage 1	-	-	-	-	-	-	847	763	-	831	758	-
Stage 2	-	-	-	-	-	-	676	752	-	767	760	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0.3	0.4			11.6			12.8		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	588	1325	-	-	1448	-	-	592
HCM Lane V/C Ratio	0.078	0.004	-	-	0.005	-	-	0.222
HCM Control Delay (s)	11.6	7.7	0	-	7.5	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.8

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	124	3	3	157	17	8	77	10	13	99	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	2	67	0	3	0	0	4	0	8	4	0
Mvmt Flow	13	138	3	3	174	19	9	86	11	14	110	16
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	353	261	118	326	263	91	126	0	0	97	0	0
Stage 1	147	147	-	109	109	-	-	-	-	-	-	-
Stage 2	206	114	-	217	154	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.52	6.87	7.1	6.53	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.903	3.5	4.027	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	591	644	784	631	640	972	1473	-	-	1460	-	-
Stage 1	842	775	-	901	803	-	-	-	-	-	-	-
Stage 2	782	801	-	790	768	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	450	634	784	517	630	972	1473	-	-	1460	-	-
Mov Cap-2 Maneuver	450	634	-	517	630	-	-	-	-	-	-	-
Stage 1	837	767	-	896	798	-	-	-	-	-	-	-
Stage 2	596	796	-	639	760	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.8			12.9			0.6			0.8		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1473	-	-	615	650	1460	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.251	0.303	0.01	-	-				
HCM Control Delay (s)	7.5	0	-	12.8	12.9	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1	1.3	0	-	-				

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NEL	NER
Vol, veh/h	341	0	90	416	1	148
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	4	6	2	100	2
Mvmt Flow	363	0	96	443	1	157

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	0	363	363
Stage 1	-	-	-	363
Stage 2	-	-	-	634
Critical Hdwy	-	-	4.16	7.4
Critical Hdwy Stg 1	-	-	-	6.4
Critical Hdwy Stg 2	-	-	-	6.4
Follow-up Hdwy	-	-	2.254	4.4
Pot Cap-1 Maneuver	-	-	1174	182
Stage 1	-	-	-	531
Stage 2	-	-	-	381
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1174	162
Mov Cap-2 Maneuver	-	-	-	162
Stage 1	-	-	-	531
Stage 2	-	-	-	340

Approach	EB	WB	NE
HCM Control Delay, s	0	1.5	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	668	-	-	1174	-
HCM Lane V/C Ratio	0.237	-	-	0.082	-
HCM Control Delay (s)	12.1	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.3	-

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	335	12	1	402	11	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	0	0	2	0	0
Mvmt Flow	364	13	1	437	12	0

Major/Minor	Major1	Major2		Minor1	
Conflicting Flow All	0	0	377	0	810
Stage 1	-	-	-	-	371
Stage 2	-	-	-	-	439
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1193	-	352
Stage 1	-	-	-	-	702
Stage 2	-	-	-	-	654
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1193	-	352
Mov Cap-2 Maneuver	-	-	-	-	352
Stage 1	-	-	-	-	702
Stage 2	-	-	-	-	653

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	-	-	1193	-
HCM Lane V/C Ratio	0.034	-	-	0.001	-
HCM Control Delay (s)	15.6	-	-	8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	7	51	44	0	13	29	0	0	23	154	10
Peak Hour Factor	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	43	14	5	2	8	10	0	2	9	5	10
Mvmt Flow	0	8	58	50	0	15	33	0	0	26	175	11
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach												
Opposing Approach	WB				EB				SB			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9.4				8.5				9.4			
HCM LOS	A				A				A			
Lane	NBLn1	EBLn1	WBLn1	SBLn1								
Vol Left, %	12%	7%	31%	3%								
Vol Thru, %	82%	50%	69%	96%								
Vol Right, %	5%	43%	0%	1%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	187	102	42	126								
LT Vol	23	7	13	4								
Through Vol	154	51	29	121								
RT Vol	10	44	0	1								
Lane Flow Rate	212	116	48	143								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.274	0.17	0.068	0.182								
Departure Headway (Hd)	4.645	5.279	5.094	4.584								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	774	678	701	782								
Service Time	2.677	3.323	3.143	2.62								
HCM Lane V/C Ratio	0.274	0.171	0.068	0.183								
HCM Control Delay	9.4	9.4	8.5	8.6								
HCM Lane LOS	A	A	A	A								
HCM 95th-tile Q	1.1	0.6	0.2	0.7								

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Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	4	121	1
Peak Hour Factor	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	0	5	100
Mvmt Flow	0	5	137	1
Number of Lanes	0	0	1	0

Approach SB

Opposing Approach NB

Opposing Lanes 1

Conflicting Approach Left WB

Conflicting Lanes Left 1

Conflicting Approach Right EB

Conflicting Lanes Right 1

HCM Control Delay 8.6

HCM LOS A

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Lane

**Intersection**

Intersection Delay, s/veh 13.1

Intersection LOS B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	8	76	18	0	51	28	7	0	3	174	102	0	58	114	2
Peak Hour Factor	0.92	0.68	0.68	0.68	0.92	0.68	0.68	0.68	0.92	0.68	0.68	0.68	0.92	0.68	0.68	0.68
Heavy Vehicles, %	2	25	7	0	2	29	11	43	2	0	3	9	2	9	3	0
Mvmt Flow	0	12	112	26	0	75	41	10	0	4	256	150	0	85	168	3
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.5	11.6	14.5	12.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	8%	59%	33%
Vol Thru, %	62%	75%	33%	66%
Vol Right, %	37%	18%	8%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	279	102	86	174
LT Vol	3	8	51	58
Through Vol	174	76	28	114
RT Vol	102	18	7	2
Lane Flow Rate	410	150	126	256
Geometry Grp	1	1	1	1
Degree of Util (X)	0.569	0.261	0.23	0.399
Departure Headway (Hd)	4.995	6.261	6.537	5.612
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	722	571	548	640
Service Time	3.042	4.321	4.599	3.665
HCM Lane V/C Ratio	0.568	0.263	0.23	0.4
HCM Control Delay	14.5	11.5	11.6	12.4
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	3.6	1	0.9	1.9

**Intersection**

Intersection Delay, s/veh 8.1

Intersection LOS A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	1	100	2	0	3	124	12	0	5	73	3	0	11	22	2
Peak Hour Factor	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93	0.92	0.93	0.93	0.93
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	1	108	2	0	3	133	13	0	5	78	3	0	12	24	2
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	8.2	8.1	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	1%	2%	31%
Vol Thru, %	90%	97%	89%	63%
Vol Right, %	4%	2%	9%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	103	139	35
LT Vol	5	1	3	11
Through Vol	73	100	124	22
RT Vol	3	2	12	2
Lane Flow Rate	87	111	149	38
Geometry Grp	1	1	1	1
Degree of Util (X)	0.109	0.134	0.177	0.048
Departure Headway (Hd)	4.512	4.34	4.264	4.61
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	796	828	844	778
Service Time	2.531	2.355	2.278	2.63
HCM Lane V/C Ratio	0.109	0.134	0.177	0.049
HCM Control Delay	8.1	8	8.2	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.5	0.6	0.2

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	27	114	7	7	94	16	3	89	6	14	72	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	70	70	70	70	70	70	70	70	70
Heavy Vehicles, %	7	4	0	0	4	13	0	15	17	7	21	24
Mvmt Flow	39	163	10	10	134	23	4	127	9	20	103	24
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	374	299	115	381	307	131	127	0	0	136	0	0
Stage 1	155	155	-	140	140	-	-	-	-	-	-	-
Stage 2	219	144	-	241	167	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.54	6.2	7.1	6.54	6.33	4.1	-	-	4.17	-	-
Critical Hdwy Stg 1	6.17	5.54	-	6.1	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.54	-	6.1	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.036	3.3	3.5	4.036	3.417	2.2	-	-	2.263	-	-
Pot Cap-1 Maneuver	574	610	943	581	604	890	1472	-	-	1418	-	-
Stage 1	836	766	-	868	777	-	-	-	-	-	-	-
Stage 2	772	774	-	767	756	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	456	599	943	448	593	890	1472	-	-	1418	-	-
Mov Cap-2 Maneuver	456	599	-	448	593	-	-	-	-	-	-	-
Stage 1	833	755	-	865	775	-	-	-	-	-	-	-
Stage 2	620	772	-	586	745	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.8			13.1			0.2			1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1472	-	-	576	609	1418	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.367	0.274	0.014	-	-				
HCM Control Delay (s)	7.5	0	-	14.8	13.1	7.6	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.7	1.1	0	-	-				

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Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	274	12	160	276	0	7	0	90	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	5	0	0	0	6	0	15	0	6	0	0	0
Mvmt Flow	0	338	15	198	341	0	9	0	111	0	0	0

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Major/Minor	Major1	Major2		Minor1			Minor2					
Conflicting Flow All	341	0	0	353	0	0	1082	1082	346	1137	1089	341
Stage 1	-	-	-	-	-	-	346	346	-	736	736	-
Stage 2	-	-	-	-	-	-	736	736	-	401	353	-
Critical Hdwy	4.15	-	-	4.1	-	-	7.25	6.5	6.26	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.25	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.25	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.2	-	-	3.635	4	3.354	3.5	4	3.3
Pot Cap-1 Maneuver	1202	-	-	1217	-	-	184	219	688	181	217	706
Stage 1	-	-	-	-	-	-	644	639	-	414	428	-
Stage 2	-	-	-	-	-	-	391	428	-	630	634	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1202	-	-	1217	-	-	156	175	688	128	173	706
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	175	-	128	173	-
Stage 1	-	-	-	-	-	-	644	639	-	414	342	-
Stage 2	-	-	-	-	-	-	312	342	-	528	634	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0	3.1			13.3			0		
HCM LOS					B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	552	1202	-	-	1217	-	-	-
HCM Lane V/C Ratio	0.217	-	-	-	0.162	-	-	-
HCM Control Delay (s)	13.3	0	-	-	8.5	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.6	-	-	-

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Intersection

Int Delay, s/veh 5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	110	25	5	99	10	44	68	7	13	67	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	50	5	4	25	2	0	0	4	0	0	3	0
Mvmt Flow	4	122	28	6	110	11	49	76	8	14	74	3

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Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	121	0	0	150	0	0	311	277	136	314	286	116
Stage 1	-	-	-	-	-	-	145	145	-	127	127	-
Stage 2	-	-	-	-	-	-	166	132	-	187	159	-
Critical Hdwy	4.6	-	-	4.35	-	-	7.1	6.54	6.2	7.1	6.53	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.1	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.1	5.53	-
Follow-up Hdwy	2.65	-	-	2.425	-	-	3.5	4.036	3.3	3.5	4.027	3.3
Pot Cap-1 Maneuver	1216	-	-	1302	-	-	645	627	918	643	622	942
Stage 1	-	-	-	-	-	-	863	773	-	882	789	-
Stage 2	-	-	-	-	-	-	841	783	-	819	764	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1216	-	-	1302	-	-	579	621	918	574	616	942
Mov Cap-2 Maneuver	-	-	-	-	-	-	579	621	-	574	616	-
Stage 1	-	-	-	-	-	-	860	770	-	878	785	-
Stage 2	-	-	-	-	-	-	755	779	-	729	761	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0.2	0.3			12.4			11.9		
HCM LOS					B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	616	1216	-	-	1302	-	-	617
HCM Lane V/C Ratio	0.215	0.004	-	-	0.004	-	-	0.149
HCM Control Delay (s)	12.4	8	0	-	7.8	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.5

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	87	0	0	82	75	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	5	1	5
Mvmt Flow	95	0	0	89	82	93
Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	217	128	175	0	-	0
Stage 1	128	-	-	-	-	-
Stage 2	89	-	-	-	-	-
Critical Hdwy	6.47	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	760	927	1414	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %		-	-	-	-	-
Mov Cap-1 Maneuver	760	927	1414	-	-	-
Mov Cap-2 Maneuver	760	-	-	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Approach	EB	NB			SB	
HCM Control Delay, s	10.4	0			0	
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1414	-	760	-	-	
HCM Lane V/C Ratio	-	-	0.124	-	-	
HCM Control Delay (s)	0	-	10.4	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.4	-	-	

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	95	12	35	109	0	11	78	40	0	69	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	22	3	9	3	2	0	0	5	3	0	4	0
Mvmt Flow	11	106	13	39	121	0	12	87	44	0	77	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	121	0	0	106	0	0	374	327	106	392	327	121
Stage 1	-	-	-	-	-	-	128	128	-	199	199	-
Stage 2	-	-	-	-	-	-	246	199	-	193	128	-
Critical Hdwy	4.32	-	-	4.13	-	-	7.1	6.55	6.23	7.1	6.54	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.55	-	6.1	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.55	-	6.1	5.54	-
Follow-up Hdwy	2.398	-	-	2.227	-	-	3.5	4.045	3.327	3.5	4.036	3.3
Pot Cap-1 Maneuver	1351	-	-	1479	-	-	587	587	946	571	588	936
Stage 1	-	-	-	-	-	-	881	784	-	807	733	-
Stage 2	-	-	-	-	-	-	762	731	-	813	786	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1351	-	-	1479	-	-	502	565	946	467	566	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	502	565	-	467	566	-
Stage 1	-	-	-	-	-	-	873	777	-	800	712	-
Stage 2	-	-	-	-	-	-	648	711	-	682	779	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			1.8			12.3			12		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	638	1351	-	-	1479	-	-	612				
HCM Lane V/C Ratio	0.225	0.008	-	-	0.026	-	-	0.154				
HCM Control Delay (s)	12.3	7.7	0	-	7.5	0	-	12				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	0.5				

Intersection												
Intersection Delay, s/veh	8.8											
Intersection LOS	A											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	3	30	11	0	38	57	4	0	22	115	26
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	3	9	2	0	2	0	2	5	4	12
Mvmt Flow	0	3	33	12	0	42	63	4	0	24	128	29
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8.1	8.7	8.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	7%	38%	1%
Vol Thru, %	71%	68%	58%	98%
Vol Right, %	16%	25%	4%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	44	99	170
LT Vol	22	3	38	1
Through Vol	115	30	57	167
RT Vol	26	11	4	2
Lane Flow Rate	181	49	110	189
Geometry Grp	1	1	1	1
Degree of Util (X)	0.227	0.065	0.148	0.235
Departure Headway (Hd)	4.516	4.75	4.855	4.487
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	795	752	737	799
Service Time	2.547	2.792	2.892	2.517
HCM Lane V/C Ratio	0.228	0.065	0.149	0.237
HCM Control Delay	8.9	8.1	8.7	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.2	0.5	0.9

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Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	1	167	2
Peak Hour Factor	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	4	0
Mvmt Flow	0	1	186	2
Number of Lanes	0	0	1	0

Approach SB

Opposing Approach NB

Opposing Lanes 1

Conflicting Approach Left WB

Conflicting Lanes Left 1

Conflicting Approach Right EB

Conflicting Lanes Right 1

HCM Control Delay 8.9

HCM LOS A

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Lane

**Intersection**

Intersection Delay, s/veh 9.3

Intersection LOS A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	30	28	0	35	33	5	0	28	151	32	0	5	205	7
Peak Hour Factor	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90	0.92	0.90	0.90	0.90
Heavy Vehicles, %	2	0	0	4	2	3	3	40	2	4	5	3	2	0	4	0
Mvmt Flow	0	2	33	31	0	39	37	6	0	31	168	36	0	6	228	8
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.3	8.9	9.5	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	3%	48%	2%
Vol Thru, %	72%	50%	45%	94%
Vol Right, %	15%	47%	7%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	60	73	217
LT Vol	28	2	35	5
Through Vol	151	30	33	205
RT Vol	32	28	5	7
Lane Flow Rate	234	67	81	241
Geometry Grp	1	1	1	1
Degree of Util (X)	0.296	0.089	0.116	0.303
Departure Headway (Hd)	4.544	4.818	5.17	4.519
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	790	740	690	793
Service Time	2.581	2.873	3.224	2.556
HCM Lane V/C Ratio	0.296	0.091	0.117	0.304
HCM Control Delay	9.5	8.3	8.9	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.3	0.4	1.3

**Intersection**

Intersection Delay, s/veh 8.8

Intersection LOS A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	5	127	3	0	7	118	18	0	3	36	2	0	19	95	3
Peak Hour Factor	0.92	0.89	0.89	0.89	0.92	0.89	0.89	0.89	0.92	0.89	0.89	0.89	0.92	0.89	0.89	0.89
Heavy Vehicles, %	2	20	5	0	2	0	4	17	2	0	3	0	2	6	4	0
Mvmt Flow	0	6	143	3	0	8	133	20	0	3	40	2	0	21	107	3
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	8.6	8.1	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	4%	5%	16%
Vol Thru, %	88%	94%	83%	81%
Vol Right, %	5%	2%	13%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	41	135	143	117
LT Vol	3	5	7	19
Through Vol	36	127	118	95
RT Vol	2	3	18	3
Lane Flow Rate	46	152	161	131
Geometry Grp	1	1	1	1
Degree of Util (X)	0.061	0.204	0.199	0.176
Departure Headway (Hd)	4.792	4.851	4.455	4.813
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	746	740	805	745
Service Time	2.831	2.882	2.484	2.846
HCM Lane V/C Ratio	0.062	0.205	0.2	0.176
HCM Control Delay	8.1	9.1	8.6	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.8	0.7	0.6

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	12	124	3	3	157	17	8	77	10	13	99	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	8	2	67	0	3	0	0	4	0	8	4	0
Mvmt Flow	13	138	3	3	174	19	9	86	11	14	110	16
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	353	261	118	326	263	91	126	0	0	97	0	0
Stage 1	147	147	-	109	109	-	-	-	-	-	-	-
Stage 2	206	114	-	217	154	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.52	6.87	7.1	6.53	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.018	3.903	3.5	4.027	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	591	644	784	631	640	972	1473	-	-	1460	-	-
Stage 1	842	775	-	901	803	-	-	-	-	-	-	-
Stage 2	782	801	-	790	768	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	450	634	784	517	630	972	1473	-	-	1460	-	-
Mov Cap-2 Maneuver	450	634	-	517	630	-	-	-	-	-	-	-
Stage 1	837	767	-	896	798	-	-	-	-	-	-	-
Stage 2	596	796	-	639	760	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.8			12.9			0.6			0.8		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1473	-	-	615	650	1460	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.251	0.303	0.01	-	-				
HCM Control Delay (s)	7.5	0	-	12.8	12.9	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1	1.3	0	-	-				

2014 Alternative PM Scenario  
38: West Park Drive

6/16/2015

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	335	12	90	416	0	12	0	148	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	5	0	6	2	0	1	0	2	0	0	0
Mvmt Flow	0	360	13	97	447	0	13	0	159	0	0	0

Major/Minor	Major1	Major2			Minor1			Minor2				
Conflicting Flow All	447	0	0	373	0	0	1008	1008	367	1087	1014	447
Stage 1	-	-	-	-	-	-	367	367	-	641	641	-
Stage 2	-	-	-	-	-	-	641	641	-	446	373	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.11	6.5	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.509	4	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1124	-	-	1164	-	-	220	242	678	195	240	616
Stage 1	-	-	-	-	-	-	655	626	-	466	473	-
Stage 2	-	-	-	-	-	-	465	473	-	595	622	-
Platoon blocked, %	-	-	-	-	-	-						
Mov Cap-1 Maneuver	1124	-	-	1164	-	-	201	215	678	137	213	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	201	215	-	137	213	-
Stage 1	-	-	-	-	-	-	655	626	-	466	420	-
Stage 2	-	-	-	-	-	-	413	420	-	455	622	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s	0	1.5			13.9			0		
HCM LOS					B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	576	1124	-	-	1164	-	-	-
HCM Lane V/C Ratio	0.299	-	-	-	0.083	-	-	-
HCM Control Delay (s)	13.9	0	-	-	8.4	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	1.2	0	-	-	0.3	-	-	-



# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

**Cumberland County  
New Jersey**

### **APPENDIX D**

### **CRASH DATA ANALYSIS**



CR 553 (South Woodruff Road) and CR 659 (Rosenhayn Avenue) and CR 705 (Woodruff-Carmel Road)

ID	COUNTY	CRASH_LOCATION	CRASH_MONTH	CRASH_TIME	crash_type	CRASH_YEAR	CROSS_STREET_NAME	EPDO	surface_condition
3376847	CUMBERLAND	CUMBERLAND COUNTY 659	Feb	4:56 PM	Right Angle	2010	CR 705	Pain	dry
3675488	CUMBERLAND	CUMBERLAND COUNTY 659	Dec	12:24 PM	Right Angle	2011	CARMEL RD/CR 705	PDO	wet
3567499	CUMBERLAND	CUMBERLAND COUNTY 659	May	7:14 PM	Right Angle	2012	CR 705 / CARMEL RD	PDO	dry
3567615	CUMBERLAND	CUMBERLAND COUNTY 659	Oct	3:04 PM	Fixed Object	2012	CR 705 / CARMEL RD	PDO	dry
3567628	CUMBERLAND	CUMBERLAND COUNTY 659	Oct	6:48 AM	Right Angle	2012	ROUTE 553 / WOODRUFF RD	Pain	dry
3567658	CUMBERLAND	CUMBERLAND COUNTY 659	Dec	11:09 PM	Fixed Object	2012	ROUTE 553 / WOODRUFF RD	PDO	dry
4252435	CUMBERLAND	CUMBERLAND COUNTY 659	Jan	4:37 PM	Right Angle	2013	ROUTE 553 / WOODRUFF RD	Pain	wet
4252505	CUMBERLAND	CUMBERLAND COUNTY 659	Apr	12:20 PM	Right Angle	2013	CR 705 / CARMEL RD	PDO	dry
4252633	CUMBERLAND	CUMBERLAND COUNTY 659	Sep	12:37 PM	Right Angle	2013	CR 705 / CARMEL RD	Incapacitating Injury	dry
7657785	CUMBERLAND	CUMBERLAND COUNTY 659	Aug	10:43 AM	Right Angle	2009	CR 553	Moderate Injury	dry
7657974	CUMBERLAND	CUMBERLAND COUNTY 659	Jul	12:11 PM	Right Angle	2009	CR 705	Pain	dry
7658052	CUMBERLAND	CUMBERLAND COUNTY 659	Nov	8:47 PM	Fixed Object	2009	WOODRUFF ROAD	PDO	wet
3376852	CUMBERLAND	ROUTE 553	Jan	11:38 AM	Same Direction - Side Swipe	2010	SOUTH WOODRUFF ROAD	PDO	dry
3675383	CUMBERLAND	ROUTE 553	Mar	8:28 AM	Right Angle	2011	CR 659 / ROSENHAYN AVE	Pain	dry
3675448	CUMBERLAND	ROUTE 553	Sep	5:36 PM	Same Direction - Rear End	2011	CR 659 / ROSENHAYN AVE	Pain	dry
3567537	CUMBERLAND	ROUTE 553	Jul	6:53 PM	Same Direction - side Swipe	2012	CR 659 / ROSENHAYN AVE	Pain	dry
4252512	CUMBERLAND	ROUTE 553	Apr	2:44 PM	Left Turn / U Turn	2013	CR 659 / ROSENHAYN AVE	Pain	dry
4252677	CUMBERLAND	ROUTE 553	Oct	9:28 PM	Right Angle	2013	CR 659 / ROSENHAYN AVE	PDO	dry
4252730	CUMBERLAND	ROUTE 553	Dec	1:11 PM	Fixed Object	2013	CR 659 / ROSENHAYN AVE	PDO	snowy

South Woodruff/Rosenhayn  
Crash Type

	Right Angle	Same Direction - Object	Same Fixed Object	Left Turn	/U Turn	Total
4	1	1	1	1	1	8
50%	13%	13%	13%	13%	100%	100%

Severity

Fatal Injury	Moderate Injury	Complaint	Total
0	0	6	8
0%	0%	75%	100%

Road Surface Condition

Dry	Wet	Snowy	Total
6	1	8	100%
75%	13%	13%	100%

Year

2011	2012	2013	Total
2	2	4	6
25%	25%	50%	100%

Year

2011	2012	2013	Total
1	3	2	6
17%	50%	33%	100%

Rosenhayn/Carmel-Woodruff Road  
Crash Type

	Right Angle	Same Side Swipe	Same Direction - Rear End	Fixed Object	Left Turn / U Turn	Total
4	0	0	0	0	2	0
67%	0%	0%	0%	33%	0%	100%

Severity

Fatal Injury	Moderate Injury	Complaint	Total
0	1	0	5
0%	17%	0%	83%

Road Surface Condition

Dry	Wet	Snowy	Total
5	1	0	6
83%	17%	0%	100%

## CR 606 (Old Deerfield Pike) and CR 704 (Silver Lake Road)

ID	COUNTY	CRASH_LOCATION	CRASH_MONTH	CRASH_TIME	crash_type	CRASH_YEAR	CROSS_STREET_NAME	EPDO	light_cond/surface_condition
3376829	CUMBERLAND	CUMBERLAND COUNTY 606	Nov	8:39 PM	Right Angle	2010	CR 617	Moderate Injury	no street   dry
3377010	CUMBERLAND	CUMBERLAND COUNTY 606	Oct	10:59 AM	Right Angle	2010	CR 617	Pain	daylight
3675307	CUMBERLAND	CUMBERLAND COUNTY 606	Dec	2:34 PM	Same Direction - Side Swipe	2011	CR 617 / FINLEY RD	PDO	dry
3675357	CUMBERLAND	CUMBERLAND COUNTY 606	Jan	7:31 AM	Fixed Object	2011	CR 617	PDO	slush
3675439	CUMBERLAND	CUMBERLAND COUNTY 606	Aug	3:42 PM	Same Direction - Side Swipe	2011	CR 617	PDO	daylight
3677519	CUMBERLAND	CUMBERLAND COUNTY 606	Jun	3:41 PM	Right Angle	2012	CR 617 / FINLEY RD	PDO	wet
3677558	CUMBERLAND	CUMBERLAND COUNTY 606	Jul	3:18 PM	Right Angle	2012	CR 617 / FINLEY RD	Moderate Injury	daylight
3677640	CUMBERLAND	CUMBERLAND COUNTY 606	Nov	6:56 AM	Fixed Object	2012	FINLEY ROAD	PDO	wet
3677738	CUMBERLAND	CUMBERLAND COUNTY 606	May	2:09 PM	Left Turn/U Turn	2012	CR 617 / FINLEY RD	Pain	dry
4252516	CUMBERLAND	CUMBERLAND COUNTY 606	Apr	5:16 PM	Left Turn/U Turn	2013	CR 617 / FINLEY RD	Moderate Injury	dry
4252517	CUMBERLAND	CUMBERLAND COUNTY 606	Apr	7:14 AM	Same Direction - Side Swipe	2013	CR 617 / FINLEY RD	PDO	daylight
4252543	CUMBERLAND	CUMBERLAND COUNTY 606	May	1:37 PM	Right Angle	2013	CR 617 / FINLEY RD	PDO	dry
4252631	CUMBERLAND	CUMBERLAND COUNTY 606	Sep	2:00 PM	Right Angle	2013	CR 617 / FINLEY RD	Moderate Injury	dry
4252639	CUMBERLAND	CUMBERLAND COUNTY 606	Sep	12:57 PM	Right Angle	2013	CR 617 / FINLEY RD	Pain	dry
4252678	CUMBERLAND	CUMBERLAND COUNTY 606	Oct	1:47 PM	Right Angle	2013	CR 617 / FINLEY RD	Moderate Injury	dry

3 year data

### Crash Type

Right	Same	Fixed	Left Turn	Total
6	3	2	2	13
46%	23%	15%	15%	100%

### Crash Location

Route 606	Route 617	Total
13	0	13
100%	0%	100%

### Month

January	February	March	April	May	June	July	August	September	October	November	December	Total
1	0	0	2	2	1	1	2	1	1	1	1	13
8%	0%	0%	15%	15%	8%	8%	15%	8%	8%	8%	8%	100%

### Severity

Fatal	Incapacitating Injury	Moderate Injury	Complaint of Pain	PDO	Total
0	0	4	2	7	13
0%	0%	31%	15%	54%	100%

### Road Surface Condition

Dry	Wet	Slush	Total
10	2	1	13
77%	15%	8%	100%

**CR 606 (Old Deerfield Pike) and CR 617 (Finley Road)**

ID	COUNTY	CRASH LOCATION	CRASH MONTH	CRASH TIME	crash_type	CRASH_YEAR	CROSS_STREET_NAME	EPDO	light_condition	surface_condition
3316877	CUMBERLAND	CUMBERLAND COUNTY 606	Jan	5:07 PM	Right Angle	2010	SILVER LAKE RD	PDO	dusk	dry
3675366	CUMBERLAND	CUMBERLAND COUNTY 606	Jan	7:01 AM	Right Angle	2011	CR 704	Fatal	dawn	dry
3967385	CUMBERLAND	CUMBERLAND COUNTY 606	Apr	6:53 AM	Right Angle	2012	CR 704 / SILVER LAKE RD	Pain	dawn	dry
3967334	CUMBERLAND	CUMBERLAND COUNTY 606	Jun	6:54 PM	Right Angle	2012	CR 704 / SILVER LAKE RD	PDO	dawn	dry
3967213	CUMBERLAND	CUMBERLAND COUNTY 606	Feb	6:36 PM	Right Angle	2012	CR 704 / SILVER LAKE RD	PDO	street lights on/contin	dry
4225644	CUMBERLAND	CUMBERLAND COUNTY 606	Oct	4:43 PM	Right Angle	2013	CR 704 / SILVER LAKE RD	Moderate Injury	dawn	dry
7657938	CUMBERLAND	CUMBERLAND COUNTY 606	May	7:25 AM	Left Turn / U Turn	2009	CUMBERLAND COUNTY 704	PDO	dawn	dry
7657960	CUMBERLAND	CUMBERLAND COUNTY 606	Jun	7:20 AM	Opposite Direction - Head On/Angular	2009	CR 704	PDO	dawn	dry
3967611	CUMBERLAND	CUMBERLAND COUNTY 704	Oct	7:20 AM	Same Direction - Rear End	2012	CR 606 / OLD DEERFIELD PINE	PDO	dawn	dry
3967655	CUMBERLAND	CUMBERLAND COUNTY 704	Nov	5:23 PM	Animal	2012	CR 606 / OLD DEERFIELD PINE	PDO	dark/no street lights	dry
4225338	CUMBERLAND	CUMBERLAND COUNTY 704	Sep	8:41 AM	Right Angle	2013	CR 606 / OLD DEERFIELD PINE	Pain	dawn	dry
7657917	CUMBERLAND	CUMBERLAND COUNTY 704	Mar	2:57 PM	Same Direction - Rear End	2009	CR 606	PDO	dawn	dry

3 year data

Crash Type			
Right Angle	Same Direction	Animal	Total
6	1	1	8
75%	13%	13%	100%

Crash Location

Route 606/Route 704	Total
5	8
63%	38%

Month

January	February	March	April	May	June	July	August	September	October	November	December	Total
1	1	0	1	0	1	0	1	2	1	0	8	8
13%	13%	0%	13%	0%	13%	0%	0%	13%	25%	13%	100%	100%

Severity

Fatal	Incapacitating injury	Moderate injury	Complaint of Pain	PDO	Total
1	0	1	2	4	8
13%	0%	13%	25%	50%	100%

Road Surface Condition

Dry	Wet	Snowy	Total
8	0	8	8
100%	0%	100%	100%

**CR 625 (Hogbin Road) and CR 670 (Buckshutem Road)**

ID	COUNTY	CRASH LOCATION	CRASH MONTH	CRASH TIME	crash type	CROSS STREET NAME	EPDO	light condition	surface condition
3674577	CUMBERLAND	CUMBERLAND COUNTY 625	Aug	1:56 AM	Right Angle	2011	CR 670	daylight	dry
3674989	CUMBERLAND	CUMBERLAND COUNTY 670	Mar	6:28 PM	Right Angle	2011	CUMBERLAND COUNTY 625	dusk	dry
4251938	CUMBERLAND	CUMBERLAND COUNTY 670	Jul	6:11 PM	Right Angle	2013	HOGBIN ROAD	daylight	dry
4252083	CUMBERLAND	CUMBERLAND COUNTY 625	Sep	12:31 PM	Right Angle	2013	CR 670 / BUCKSHUTEN RD	Moderate Injury	PDO
4252316	CUMBERLAND	CUMBERLAND COUNTY 625	Dec	7:06 PM	Right Angle	2013	CR 670 / BUCKSHUTEN RD	Moderate Injury	dry
7657123	CUMBERLAND	CUMBERLAND COUNTY 670	May	11:24 PM	Animal	2009	CR 625	Pain	dark(street lights/no continuous)
7657350	CUMBERLAND	CUMBERLAND COUNTY 625	Sep	10:48 AM	Right Angle	2009	CR 670	PDO	dry
7657392	CUMBERLAND	CUMBERLAND COUNTY 625	Sep	7:57 AM	Right Angle	2009	CR 670	daylight	dry

**CR 625 & CR 670**

**Crash Type**

Right Angle	Animal	Total
5	0	5
100%	0%	100%

**Crash Location**

Route 625	Route 670	Total
3	2	5
60%	40%	100%

**Month**

January	February	March	April	May	June	July	August	September	October	November	December	Total
0	0	1	0	0	0	1	1	1	0	0	1	5
0%	0%	20%	0%	0%	0%	20%	20%	20%	0%	0%	20%	100%

**Severity**

Fatal	Incapacitating Injury	Moderate Injury	Complaint of Pain	PDO	Total
0	0	3	2	3	5
0%	0%	60%	40%	60%	100%

**Road Surface Condition**

Dry	Wet	Snowy	Total
5	0	5	
100%	0%	0%	100%

### CR 634 (Morton Avenue) and CR 654 (Lebanon Road)

ID	COUNTY	CRASH_LOCATION	CRASH_MONTH	CRASH_TIME	crash_type	CROSS_STREET_NAME	EPDO	light_condition	Surface condition
3375720	CUMBERLAND	CUMBERLAND COUNTY 634	Jan	8:32 PM	Right Angle	CR 654	Pain	dawn	dry
3375739	CUMBERLAND	CUMBERLAND COUNTY 654	May	4:31 PM	Backing	CR 634	PDO	daylight	dry
3375756	CUMBERLAND	CUMBERLAND COUNTY 634	Dec	5:15 PM	Right Angle	CR 654	Pain	dark/no street lights	dry
3375761	CUMBERLAND	CUMBERLAND COUNTY 634	Feb	10:45 PM	Right Angle	2010	PDO	dark/street lights on/spot	snowy
3375794	CUMBERLAND	CUMBERLAND COUNTY 634	Jul	5:49 PM	Right Angle	2010	LEBANON RD CR 654	Pain	dry
3375798	CUMBERLAND	CUMBERLAND COUNTY 34	Sep	12:10 PM	Right Angle	2010	LEBANON RD CR 654	Pain	dry
3673918	CUMBERLAND	CUMBERLAND COUNTY 634	Oct	6:10 PM	Right Angle	2011	LEBANON RD (CR 654)	PDO	dry
4251021	CUMBERLAND	CUMBERLAND COUNTY 34	Aug	4:55 PM	Right Angle	2013	CR 654 / LEBANON RD	PDO	dry
4251063	CUMBERLAND	CUMBERLAND COUNTY 654	Nov	6:48 PM	Right Angle	2013	CR 634 / MORTON AVE	Pain	wet
7656170	CUMBERLAND	CUMBERLAND COUNTY 634	Nov	7:47 AM	Right Angle	2009	CR 654	PDO	wet
7656179	CUMBERLAND	CUMBERLAND COUNTY 634	May	1:53 PM	Right Angle	2009	CR 654	PDO	dry
8114086	CUMBERLAND	CUMBERLAND CTY 634	Dec	3:44 PM	Right Angle	2013	CR 654 / LEBANON RD	Pain	dry

### CR 634 & CR 654

#### Crash Type

	Right Angle	Backing	Total
4	0	4	
100%	0%	100%	

#### Crash Location

Route 634 / Route 654 Total		
3	1	4
75%	25%	100%

#### Month

January	February	March	April	May	June	July	August	September	October	November	December	Total
0	0	0	0	0	0	0	1	0	1	1	4	4
0%	0%	0%	0%	0%	0%	0%	25%	0%	25%	25%	100%	100%

#### Severity

Fatal	Incapacitating injury	Moderate Injury	Complaint of Pain	PDO	Total
0	0	0	2	2	4
0%	0%	0%	50%	50%	100%

#### Road Surface Condition

Dry	Wet	Snowy	Total
3	1	0	4
75%	25%	0%	100%

**CR 621 (West Park Drive) and Mayor Aitken Drive**

ID	COUNTY	CRASH_LOCATION	CRASH_MONTH	CRASH_TIME	crash_type	CRASH_YEAR	CROSS_STREET_NAME	E PDO	light_condition	surface_condition
3673339	CUMBERLAND	CUMBERLAND COUNTY 621	Mar	7:56 PM	Animal	2011	CR 697	PDO	dark/street lights on/continuous	dry
3673750	CUMBERLAND	CUMBERLAND COUNTY 621	Nov	8:29 PM	Animal	2011	MAYORAITKEN DR	PDO	dark/street lights on/spot	dry
3955696	CUMBERLAND	CUMBERLAND COUNTY 621	Jun	10:45 AM	Fixed Object	2012	CR 697 / MAYORAITKEN DR	Moderate Injury	daylight	dry
7655630	CUMBERLAND	CUMBERLAND COUNTY 621	Sep	2:22 PM	Fixed Object	2009	CR 697	Moderate Injury	daylight	wet
7656037	CUMBERLAND	CUMBERLAND COUNTY 621	Dec	5:48 PM	Fixed Object	2009	CR 697	PDO	dark/street lights on/continuous	icy
7656044	CUMBERLAND	CUMBERLAND COUNTY 621	Dec	9:18 AM	Fixed Object	2009	CR 697	Moderate Injury	daylight	slush
3375166	CUMBERLAND	CUMBERLAND COUNTY 621	Mar	10:54 PM	Other	2010	MAYORAITKEN DRIVE	Moderate Injury	dark (street lights off)	wet
3375224	CUMBERLAND	CUMBERLAND COUNTY 621	Mar	3:27 PM	Right Angle	2010	CR 697	Pain	daylight	dry
3673254	CUMBERLAND	CUMBERLAND COUNTY 621	Jan	7:13 AM	Right Angle	2011	CR 697	PDO	daylight	icy
3673379	CUMBERLAND	CUMBERLAND COUNTY 621	Apr	2:09 PM	Same Direction, Rear End	2011	MAYORAITKEN DR	Pain	daylight	dry
3673732	CUMBERLAND	CUMBERLAND COUNTY 621	Nov	3:09 PM	Same Direction - Rear End	2011	CR 697	PDO	daylight	dry
3965703	CUMBERLAND	CUMBERLAND COUNTY 621	Jun	9:14 AM	Same Direction - Rear End	2012	MAYORAITKEN DR / CR 697	PDO	daylight	dry
3955724	CUMBERLAND	CUMBERLAND COUNTY 697	Jul	10:09 AM	Same Direction - Rear End	2012	CR 621 / W PARK DR	PDO	daylight	dry
4250371	CUMBERLAND	CUMBERLAND COUNTY 621	Mar	7:40 AM	Same Direction - Rear End	2013	CR 697 / MAYORAITKEN DR	PDO	daylight	icy
4250604	CUMBERLAND	CUMBERLAND COUNTY 697	Jul	4:46 PM	Same Direction - Rear End	2013	CR 621 / W PARK DR	PDO	daylight	dry
7655635	CUMBERLAND	CUMBERLAND COUNTY 697	Sep	1:42 PM	Same Direction - Rear End	2009	CR 621	PDO	daylight	wet
7655725	CUMBERLAND	CUMBERLAND COUNTY 697	Nov	5:31 PM	Same Direction - Rear End	2009	CR 621	PDO	dark/street lights on/continuous	wet

**CR 621 & CR 697**

**Crash Type**

Right Angle	Same Direction	Fixed Object	Animal	Total
1	6	1	2	10
10%	60%	10%	20%	100%

**Crash Location**

Route 621	Route 697	Total
8	2	10
80%	20%	100%

**Month**

January	February	March	April	May	June	July	August	September	October	November	December	Total
1	0	2	1	0	2	2	0	0	0	2	0	10
10%	0%	20%	10%	0%	20%	20%	0%	0%	0%	20%	0%	100%

**Severity**

Fatal	Incapacitating Injury	Moderate Injury	Complaint or Pain	PDO	Total
0	0	1	1	8	10
0%	0%	10%	10%	80%	100%

**Road Surface Condition**

Dry	Wet	ICY	Slush	Total
8	0	2	0	10
80%	0%	20%	0%	100%

# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

Cumberland County  
New Jersey

### **APPENDIX E**

#### **SIGNAL WARRANT ANALYSIS WORKSHEETS**



# Traffic Signal & Multi-stop Warrant Analyses

## Traffic Volumes Summaries

### Deerfield & Silver Lake ATRs.

Start Time	NB	SB	Average of 8 Hours 265.00	EB	WB	Average of 8 Hours 138.63
	Tues 4/25/11	Tues 12/16/14			Avg.	
7:00 AM	145	133	278	98	72	170
8:00 AM	105	96	201	57	45	102
9:00 AM	108	57	165	46	35	81
10:00 AM	125	57	182	47	38	85
11:00 AM	139	69	208	29	51	80
12:00 PM	123	54	177	44	58	102
1:00 PM	141	65	206	52	40	92
2:00 PM	137	82	219	41	135	176
3:00 PM	154	157	311	53	121	174
4:00 PM	204	175	379	44	96	140
5:00 PM	191	119	310	40	106	146
6:00 PM	143	102	245	24	75	99

### Deerfield & Finley ATRs.

Start Time	NB	SB	Average of 8 Hours 209.63	EB	WB	Average of 8 Hours 124.75
	Tues 12/16/14	Tues 12/16/14			Avg.	
7:00 AM	130	30	160	107	54	161
8:00 AM	164	103	267	66	64	130
9:00 AM	82	113	195	51	57	108
10:00 AM	86	59	145	64	59	123
11:00 AM	55	61	116	51	41	92
12:00 PM	55	59	114	44	56	100
1:00 PM	67	61	128	55	40	95
2:00 PM	67	75	142	69	50	119
3:00 PM	90	102	192	52	42	94
4:00 PM	134	132	266	61	79	140
5:00 PM	126	155	281	51	61	112
6:00 PM	79	142	221	49	56	105

### Buckshutem Road & Hogbin Road

Start Time	NB	SB	Average of 8 Hours 144.50	EB	WB	Average of 8 Hours 230.13
	Tues 12/16/14	Tues 12/16/14			Avg.	
7:00 AM	78	44	122	117	144	261
8:00 AM	76	42	118	103	125	228
9:00 AM	72	34	106	63	55	118
10:00 AM	41	40	81	63	61	124
11:00 AM	48	53	101	53	66	119
12:00 PM	51	57	108	76	70	146
1:00 PM	62	48	110	79	90	169
2:00 PM	67	84	151	91	112	203
3:00 PM	64	71	135	121	117	238
4:00 PM	64	140	204	185	151	336
5:00 PM	64	139	203	169	129	298
6:00 PM	48	65	113	64	44	108

# Pennoni Associates, Inc.

3001 Market Street Suite 200

Philadelphia, PA 19104

## Multi-Way Stop Warrant Report

### Major Street Approaches

#### Eastbound: Rosenhayn Avenue

Total Approach Volume: 1,608

85% Speed > 40 MPH.

#### Westbound: Rosenhayn Avenue

Total Approach Volume: 1,588

85% Speed > 40 MPH.

### Minor Street Approaches

#### Northbound: Carmel-Woodruff Road

Total Approach Volume: 1,238

#### Southbound: South Woodruff Road

Total Approach Volume: 1,292

### Warrant Summary

#### Analysis of 8-Hour Volume Warrants:

Time	Major Total	Major Avg	Minor Total	Minor Avg	Major	Crit C Minor	Meets?	Major	Crit D Minor	Meets?
17:00 - 18:00	316	244.3	221	180.1	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
16:00 - 17:00	314		193							
07:00 - 08:00	265		201							
15:00 - 16:00	240		195							
14:00 - 15:00	232		221							
08:00 - 09:00	231		159							
13:00 - 14:00	180		146							
06:00 - 07:00	176		105							
05:00 - 06:00	168		69							
12:00 - 13:00	146		146							
18:00 - 19:00	137		146							
11:00 - 12:00	129		130							
10:00 - 11:00	128		149							
09:00 - 10:00	120		101							
19:00 - 20:00	85		91							
20:00 - 21:00	81		84							
22:00 - 23:00	60		32							
21:00 - 22:00	51		70							
23:00 - 00:00	39		15							
04:00 - 05:00	37		11							
01:00 - 02:00	22		6							
00:00 - 01:00	19		18							
03:00 - 04:00	14		8							
02:00 - 03:00	6		13							

# Pennoni Associates, Inc.

3001 Market Street Suite 200

Philadelphia, PA 19104

## Multi-Way Stop Warrant Report

### Major Street Approaches

#### Eastbound: Rosenhayn Avenue

Total Approach Volume: 1,379

85% Speed > 40 MPH.

#### Westbound: Rosenhayn Avenue

Total Approach Volume: 1,227

85% Speed > 40 MPH.

### Minor Street Approaches

#### Northbound: South Woodruff Road

Total Approach Volume: 1,101

#### Southbound: South Woodruff Road

Total Approach Volume: 975

### Warrant Summary

Analysis of 8-Hour Volume Warrants:

Time	Major Total	Major Avg	Minor Total	Minor Avg	Crit C			Crit D		
					Major	Minor	Meets?	Major	Minor	Meets?
16:00 - 17:00	248	193.9	214	158.9	210-No	140-Yes	Minor	240-No	160-No	No
07:00 - 08:00	206		188							
14:00 - 15:00	196		149							
17:00 - 18:00	194		133							
08:00 - 09:00	189		165							
15:00 - 16:00	187		144							
06:00 - 07:00	177		146							
13:00 - 14:00	154		132							
12:00 - 13:00	141		115							
11:00 - 12:00	132		109							
10:00 - 11:00	130		96							
09:00 - 10:00	112		92							
18:00 - 19:00	98		92							
19:00 - 20:00	84		56							
05:00 - 06:00	84		42							
20:00 - 21:00	69		46							
04:00 - 05:00	68		15							
21:00 - 22:00	48		45							
22:00 - 23:00	31		30							
23:00 - 00:00	21		19							
03:00 - 04:00	11		13							
01:00 - 02:00	11		14							
00:00 - 01:00	11		10							
02:00 - 03:00	4		11							

# Pennoni Associates, Inc.

3001 Market Street Suite 200

Philadelphia, PA 19104

## Multi-Way Stop Warrant Report

### Major Street Approaches

#### **Northbound:** Morton Avenue

Total Approach Volume: **1,238**

85% Speed > 40 MPH.

#### **Southbound:** Morton Avenue

Total Approach Volume: **1,292**

85% Speed > 40 MPH.

### Minor Street Approaches

#### **Eastbound:** Lebanon Road

Total Approach Volume: **1,608**

#### **Westbound:** Lebanon Avenue

Total Approach Volume: **1,588**

### Warrant Summary

#### Analysis of 8-Hour Volume Warrants:

Time	Major Total	Major Avg	Minor Total	Minor Avg	Crit C			Crit D		
					Major	Minor	Meets?	Major	Minor	Meets?
17:00 - 18:00	221	185.6	316	232.9	210-No	140-Yes	Minor	240-No	160-Yes	Minor
14:00 - 15:00	221		232							
07:00 - 08:00	201		265							
15:00 - 16:00	195		240							
16:00 - 17:00	193		314							
08:00 - 09:00	159		231							
10:00 - 11:00	149		128							
18:00 - 19:00	146		137							
13:00 - 14:00	146		180							
12:00 - 13:00	146		146							
11:00 - 12:00	130		129							
06:00 - 07:00	105		176							
09:00 - 10:00	101		120							
19:00 - 20:00	91		85							
20:00 - 21:00	84		81							
21:00 - 22:00	70		51							
05:00 - 06:00	69		168							
22:00 - 23:00	32		60							
00:00 - 01:00	18		19							
23:00 - 00:00	15		39							
02:00 - 03:00	13		6							
04:00 - 05:00	11		37							
03:00 - 04:00	8		14							
01:00 - 02:00	6		22							

# Pennoni Associates, Inc.

3001 Market Street Suite 200

Philadelphia, PA 19104

## Multi-Way Stop Warrant Report

### Major Street Approaches

#### **Eastbound:** West Park Drive

Total Approach Volume: **4,069**

85% Speed > 40 MPH.

#### **Westbound:** West Park Drive

Total Approach Volume: **3,959**

85% Speed > 40 MPH.

### Minor Street Approaches

#### **Northbound:** Mayor Aitken Drive

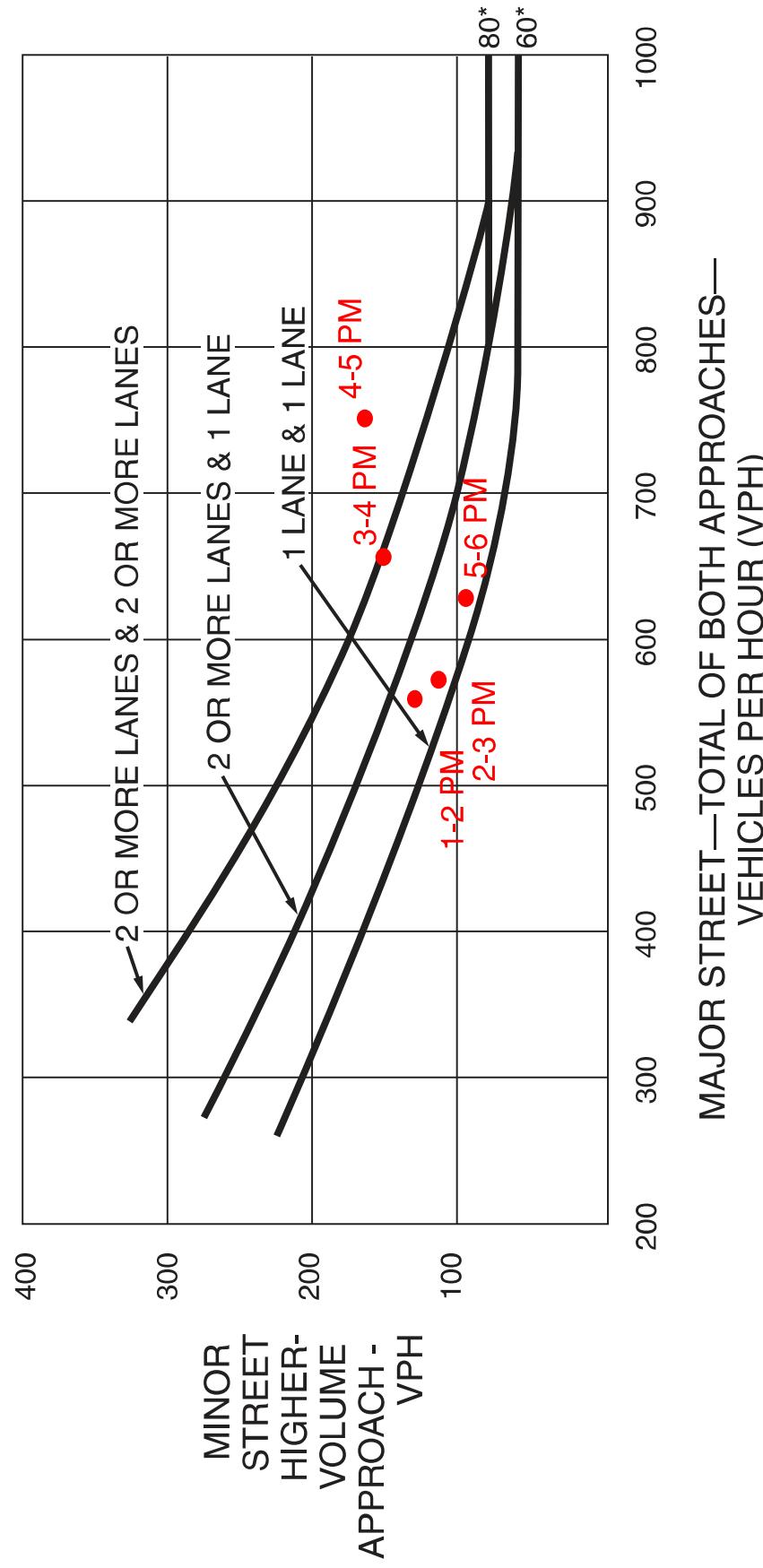
Total Approach Volume: **1,449**

### Analysis of 8-Hour Volume Warrants:

Time	Major Total	Major Avg	Minor Total	Minor Avg	Major	Crit C Minor	Meets?	Major	Crit D Minor	Meets?
16:00 - 17:00	755	602.1	161	114.8	210-Yes	140-No	Major	240-Yes	160-No	Major
15:00 - 16:00	658		153							
17:00 - 18:00	638		89							
14:00 - 15:00	581		107							
13:00 - 14:00	569		116							
07:00 - 08:00	546		90							
12:00 - 13:00	542		118							
08:00 - 09:00	528		84							
18:00 - 19:00	496		47							
11:00 - 12:00	469		96							
10:00 - 11:00	440		72							
09:00 - 10:00	413		87							
19:00 - 20:00	293		55							
20:00 - 21:00	265		37							
06:00 - 07:00	241		58							
21:00 - 22:00	179		20							
22:00 - 23:00	122		12							
05:00 - 06:00	94		17							
23:00 - 00:00	79		15							
04:00 - 05:00	36		6							
00:00 - 01:00	28		1							
02:00 - 03:00	26		2							
01:00 - 02:00	21		2							
03:00 - 04:00	9		4							

## WEST PARK AVENUE (CR 621) & MAYOR AITKEN DRIVE

**Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)**  
**(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



\*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

**Cumberland County  
New Jersey**

### **APPENDIX F**

### **CONCEPTUAL INTERSECTION IMPROVEMENT PLANS**



# **APPENDICES**

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## **Evaluation of Six Selected Intersections**

**Cumberland County  
New Jersey**

### **APPENDIX G**

### **ENGINEER'S ESTIMATE**





## ENGINEER'S ESTIMATE

PENNONI ASSOCIATES INC.

CONSULTING ENGINEERS

PROJECT NAME: Cumberland County 6 Intersections  
COUNTY PROJECT NO.: CUMB1401

DATE: 6/1/2015  
REVISED  
PREPARED BY: S. Slack  
REVIEWED BY: B. Grasso

### MASTER ITEM LIST

ITEM NO	DESCRIPTION	UNIT	UNIT PRICE
1	CLEARING SITE	LS	\$2,500.00
2	BREAKAWAY BARRICADES	UNIT	\$100.00
3	CONSTRUCTION SIGNS	SF	\$20.00
4	DRUMS	UNIT	\$25.00
5	TRAFFIC CONES	UNIT	\$15.00
6	TRAFFIC DIRECTORS, FLAGGERS	MH	\$75.00
7	CONSTRUCTION LAYOUT	LS	\$2,500.00
8	MAST ARM SIGNS, TYPE DF	SF	\$75.00
9	3" RIGID METALLIC CONDUIT	LF	\$36.00
10	GROUND WIRE, NO. 8 AWG	LF	\$3.50
11	SERVICE WIRE, NO. 6 AWG	LF	\$3.00
12	FOUNDATIONS, TYPE SFT	UNIT	\$2,000.00
13	FOUNDATIONS, TYPE P	UNIT	\$2,000.00
14	METER CABINET, TYPE T	UNIT	\$2,500.00
15	FOUNDATIONS, TYPE SPF	UNIT	\$1,250.00
16	24" x 36" JUNCTION BOXES	UNIT	\$1,500.00
17	CONTROLLER ASSEMBLIES, 8 PHASE W/ BATTERY BACKUP	UNIT	\$20,000.00
18	PEDESTRIAN SIGNAL STANDARDS	UNIT	\$1,200.00
19	PUSH BUTTON ASSEMBLY	UNIT	\$750.00
20	TRAFFIC SIGNAL MAST ARM, ALUMINUM	UNIT	\$2,000.00
21	TRAFFIC SIGNAL STANDARD	UNIT	\$2,200.00
22	TRAFFIC SIGNAL CABLE, 5 CONDUCTOR	LF	\$3.00
23	TRAFFIC SIGNAL CABLE, 10 CONDUCTOR	LF	\$3.50
24	IMAGE DETECTOR	UNIT	\$6,000.00
25	TRAFFIC SIGNAL HEAD	UNIT	\$1,200.00
26	PEDESTRIAN SIGNAL HEAD	UNIT	\$1,000.00
27	REGULATORY AND WARNING SIGNS	SF	\$40.00
28	TRAFFIC MARKINGS, LONG LIFE, THERMOPLASTIC	SF	\$4.00
29	TRAFFIC STRIPES, 4"	LF	\$4.00
30	REMOVAL OF TRAFFIC STRIPES AND MARKINGS	LF	\$1.00
31	HOT MIX ASPHALT PAVEMENT REPAIR	SY	\$40.00
32	9" x VARIABLE HEIGHT CONCRETE CURB	LF	\$20.00
33	CONCRETE SIDEWALK, 4" THICK	SY	\$50.00
34	DETECTABLE WARNING SURFACES	SY	\$225.00
35	TOPSOIL, 4" THICK	SY	\$5.00
36	FERTILIZING AND SEEDING	SY	\$8.00
37	STRAW MULCHING	SY	\$7.00
38	EXCAVATION, UNCLASSIFIED	CY	\$31.00
39	SOIL AGGREGATE, BASE AND SURFACE COURSES	SY	\$10.00
40	DENSE GRADED AGGREGATE, BASE COURSE, 6" THICK	SY	\$8.00
41	HOT MIX ASPHALT, BASE COURSE	TONS	\$80.00
42	HOT MIX ASPHALT, SURFACE COURSE	TONS	\$78.00
43	TACK COAT	GAL	\$5.00
44	PRIME COAT	GAL	\$15.00
45	SOLAR POWERED FLASHING BEACON	EACH	\$1,700.00



## ENGINEER'S ESTIMATE

**PROJECT NAME:** Cumberland County 6 Intersections  
**SITE LOCATION:** South Woodruff Road (CR 553) and Rosenhayne Avenue (CR 659) and  
Woodruff-Carmel Road (CR 705)  
**COUNTY PROJECT NO.:** CUMB1401

**DATE:** 6/1/2015

**REVISED**  
**PREPARED BY:** S. Slack  
**REVIEWED BY:** B. Grasso

### PHASE 1

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
25	REGOLATORY AND WARNING SIGNS	28	SF	\$40.00	\$1,120.00
26	TRAFFIC MARKINGS, LONG LIFE THERMOPLASTIC	826	SF	\$3.00	\$2,478.00

**PHASE 1 TOTAL** \$3,598.00

### PHASE 2

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
2	BREAKAWAY BARRICADES	24	UNIT	\$100.00	\$2,400.00
3	CONSTRUCTION SIGNS	220	SF	\$20.00	\$4,400.00
4	DRUMS	24	UNIT	\$25.00	\$600.00
5	TRAFFIC CONES	20	UNIT	\$15.00	\$300.00
6	TRAFFIC DIRECTORS, FLAGGERS	40	MH	\$75.00	\$3,000.00
7	CONSTRUCTION LAYOUT	1	LS	\$2,500.00	\$2,500.00
27	REGOLATORY AND WARNING SIGNS	29	SF	\$40.00	\$1,160.00
28	TRAFFIC STRIPES, 4"	80	LF	\$4.00	\$320.00
35	TOPSOIL, 4" THICK	880	SY	\$5.00	\$4,400.00
36	FERTILIZING AND SEEDING	880	SY	\$8.00	\$7,040.00
37	STRAW MULCHING	880	SY	\$7.00	\$6,160.00
38	EXCAVATION, UNCLASSIFIED	292	CY	\$31.00	\$9,052.00
39	SOIL AGGREGATE, BASE AND SURFACE COURSES	880	SY	\$10.00	\$8,800.00

ENGINEERING  
CONTINGENCY (10%) \$10,000.00  
\$5,732.80

**PHASE 2 TOTAL** \$57,328.00



## ENGINEER'S ESTIMATE

PROJECT NAME: Cumberland County 6 Intersections  
SITE LOCATION: Old Deerfield Pike (CR 606) & Silver Lake Road (CR 704)  
COUNTY PROJECT NO.: CUMB1401

DATE: 6/1/2015  
REVISED  
PREPARED BY: S. Slack  
REVIEWED BY: B. Grasso

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
27	REGULATORY AND WARNING SIGNS	29	SF	\$40.00	\$1,160.00
28	TRAFFIC MARKINGS, LONG LIFE, THERMOPLASTIC	906	LF	\$4.00	\$3,624.00

**TOTAL COST** **\$4,784.00**



## ENGINEER'S ESTIMATE

PROJECT NAME: Cumberland County 6 Intersections  
SITE LOCATION: Old Deerfield Pike (CR 606) & Finley Road (CR 617)  
COUNTY PROJECT NO.: CUMB1401

DATE: 6/1/2015  
REVISED  
PREPARED BY: S. Slack  
REVIEWED BY: B. Grasso

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
27	REGULATORY AND WARNING SIGNS	29	SF	\$40.00	\$1,160.00
28	TRAFFIC MARKINGS, LONG LIFE, THERMOPLASTIC	906	LF	\$4.00	\$3,624.00

TOTAL COST **\$4,784.00**



## ENGINEER'S ESTIMATE

PROJECT NAME: Cumberland County 6 Intersections  
SITE LOCATION: Hogbin Road (CR 625) & Buckshutem (CR 670)  
COUNTY PROJECT NO.: CUMB1401

DATE: 6/1/2015  
REVISED  
PREPARED BY: S. Slack  
REVIEWED BY: B. Grasso

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
27	REGULATORY AND WARNING SIGNS	29	SF	\$40.00	\$1,160.00
28	TRAFFIC MARKINGS, LONG LIFE, THERMOPLASTIC	906	LF	\$4.00	\$3,624.00

**TOTAL COST** **\$4,784.00**



## ENGINEER'S ESTIMATE

PROJECT NAME: Cumberland County 6 Intersections  
SITE LOCATION: Morton Avenue (CR 634) & Lebanon Road (CR 654)  
COUNTY PROJECT NO.: CUMB1401

DATE: 6/1/2015  
REVISED  
PREPARED BY: S. Slack  
REVIEWED BY: B. Grasso

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
45	SOLAR POWERED FLASHING BEACON	EACH	1	\$1,700.00	\$1,700.00

TOTAL COST \$1,700.00



## ENGINEER'S ESTIMATE

**PROJECT NAME:** Cumberland County 6 Intersections  
**SITE LOCATION:** West Park Drive (CR 621) & Mayor Aitken Dr  
**COUNTY PROJECT NO.:** CUMB1401

**DATE:** 6/1/2015  
**REVISED**  
**PREPARED BY:** S. Slack  
**REVIEWED BY:** B. Grasso

### PHASE 1

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
1	CLEARING SITE	1	LS	\$2,500.00	\$2,500.00
2	BREAKAWAY BARRICADES	24	UNIT	\$100.00	\$2,400.00
3	CONSTRUCTION SIGNS	220	SF	\$20.00	\$4,400.00
4	DRUMS	48	UNIT	\$25.00	\$1,200.00
5	TRAFFIC CONES	20	UNIT	\$15.00	\$300.00
6	TRAFFIC DIRECTORS, FLAGGERS	200	MH	\$75.00	\$15,000.00
7	CONSTRUCTION LAYOUT	1	LS	\$2,500.00	\$2,500.00
9	3" RIGID METALLIC CONDUIT	400	LF	\$30.00	\$12,000.00
16	24" x 36" JUNCTION BOXES	4	UNIT	\$1,500.00	\$6,000.00
24	REGULATORY AND WARNING SIGNS	32	SF	\$28.00	\$896.00
25	TRAFFIC MARKINGS, LONG LIFE, THERMOPLASTIC	568	SF	\$2.10	\$1,192.80
26	TRAFFIC STRIPES	4455	LF	\$1.00	\$4,455.00
27	REMOVAL OF TRAFFIC STRIPES AND MARKINGS	1441	SF	\$1.00	\$1,441.00
28	HOT MIX ASPHALT PAVEMENT REPAIR	30	SY	\$40.00	\$1,200.00
29	9" x VARIABLE HEIGHT CONCRETE CURB	200	LF	\$20.00	\$4,000.00
32	TOPSOIL, 4" THICK	1000	SY	\$5.00	\$5,000.00
33	FERTILIZING AND SEEDING	1000	SY	\$8.00	\$8,000.00
34	STRAW MULCHING	1000	SY	\$7.00	\$7,000.00
35	EXCAVATION, UNCLASSIFIED	1295	CY	\$31.00	\$40,145.00
36	SOIL AGGREGATE, BASE AND SURFACE COURSES	1000	SY	\$10.00	\$10,000.00
37	DENSE GRADED AGGREGATE, BASE COURSE, 6" THICK	1620	SY	\$8.00	\$12,960.00
38	HOT MIX ASPHALT, BASE COURSE	407	TONS	\$80.00	\$32,560.00
39	HOT MIX ASPHALT, SURFACE COURSE	134	TONS	\$78.00	\$10,452.00
40	TACK COAT	183	GAL	\$5.00	\$915.00
41	PRIME COAT	427	GAL	\$15.00	\$6,405.00

ENGINEERING  
CONTINGENCY (10%) \$30,000.00  
\$18,699.18

**PHASE 1 TOTAL** **\$186,991.80**

### PHASE 2

ITEM NO	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL
8	MAST ARM SIGNS, TYPE DF	12	SF	\$75.00	\$900.00
9	3" RIGID METALLIC CONDUIT	195	LF	\$36.00	\$7,020.00
10	GROUND WIRE, NO. 8 AWG	360	LF	\$3.50	\$1,260.00
11	SERVICE WIRE, NO. 6 AWG	100	LF	\$3.00	\$300.00
12	FOUNDATIONS, TYPE SFK	4	UNIT	\$2,000.00	\$8,000.00
13	FOUNDATIONS, TYPE P-MC	1	UNIT	\$2,200.00	\$2,200.00
14	METER CABINET, TYPE T	1	UNIT	\$2,500.00	\$2,500.00
15	FOUNDATIONS, TYPE SPF	4	UNIT	\$1,250.00	\$5,000.00
17	CONTROLLER ASSEMBLIES, 8 PHASE W/ BATTERY BACKUP	1	UNIT	\$20,000.00	\$20,000.00
18	PEDESTRIAN SIGNAL STANDARDS	4	UNIT	\$1,200.00	\$4,800.00
19	PUSH BUTTON ASSEMBLY	4	UNIT	\$750.00	\$3,000.00
20	TRAFFIC SIGNAL MAST ARM, ALUMINUM	4	UNIT	\$2,000.00	\$8,000.00
21	TRAFFIC SIGNAL STANDARD	4	UNIT	\$2,200.00	\$8,800.00
22	TRAFFIC SIGNAL CABLE, 5 CONDUCTOR	1263	LF	\$3.00	\$3,789.00
23	TRAFFIC SIGNAL CABLE, 10 CONDUCTOR	1143	LF	\$3.50	\$4,000.50
24	IMAGE DETECTOR	2	UNIT	\$6,000.00	\$12,000.00
25	TRAFFIC SIGNAL HEAD	9	UNIT	\$1,200.00	\$10,800.00
26	PEDESTRIAN SIGNAL HEAD	8	UNIT	\$1,000.00	\$8,000.00
27	REGULATORY AND WARNING SIGNS	20	SF	\$40.00	\$800.00
28	TRAFFIC MARKINGS, LONG LIFE, THERMOPLASTIC	120	SF	\$4.00	\$480.00
29	CONCRETE SIDEWALK, 4" THICK	90	SY	\$50.00	\$4,500.00
30	DETECTABLE WARNING SURFACES	8	SY	\$225.00	\$1,800.00

ENGINEERING  
CONTINGENCY (10%) \$20,000.00  
\$11,794.95

**PHASE 2 TOTAL** **\$117,949.50**