

# Intersection Improvement Analysis

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## Evaluation of Six Selected Intersections

Cumberland County  
New Jersey

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**CUMBERLAND COUNTY  
INTERSECTION IMPROVEMENT ANALYSIS  
TABLE OF CONTENTS**

EXECUTIVE SUMMARY .....	1
INTRODUCTION .....	3
METHODOLOGY .....	3
SOUTH WOODRUFF ROAD (CR 553) AND ROSENHAYN AVENUE (CR 659) AND WOODRUFF-CARMEL ROAD (CR 705).....	5
OLD DEERFIELD PIKE (CR 606) AND SILVER LAKE ROAD (CR 704).....	10
OLD DEERFIELD PIKE (CR 606) AND FINLEY ROAD (CR 617) .....	14
HOGBIN ROAD (CR 625) AND BUCKSHUTEM ROAD (CR 670).....	19
MORTON AVENUE (CR 634) AND LEBANON ROAD (CR 654) .....	23
WEST PARK DRIVE (CR 621) AND MAYOR AITKEN DRIVE .....	26
CONCLUSIONS .....	31

**LIST OF TABLES**

TABLE 1: EXISTING LEVEL OF SERVICE SUMMARY - ROSENHAYN AVENUE & SOUTH WOODRUFF ROAD & WOODRUFF CARMEL ROAD
TABLE 2: CRASH SUMMARY - ROSENHAYN AVENUE & SOUTH WOODRUFF ROAD & WOODRUFF CARMEL ROAD
TABLE 3: MULTI-WAY STOP EVALUATION MINIMUM VOLUME REQUIREMENTS- ROSENHAYN AVENUE & SOUTH WOODRUFF ROAD & WOODRUFF CARMEL ROAD
TABLE 4: MULTI-WAY STOP EVALUATION SIGHT DISTANCE - ROSENHAYN AVENUE & SOUTH WOODRUFF ROAD & WOODRUFF CARMEL ROAD
TABLE 5: EXISTING LEVEL OF SERVICE SUMMARY - OLD DEERFIELD PIKE & SILVER LAKE ROAD
TABLE 6: CRASH SUMMARY - OLD DEERFIELD PIKE & SILVER LAKE ROAD
TABLE 7: MULTI-WAY STOP EVALUATION MINIMUM VOLUME REQUIREMENTS- OLD DEERFIELD PIKE & SILVER LAKE ROAD
TABLE 8: MULTI-WAY STOP EVALUATION SIGHT DISTANCE - OLD DEERFIELD PIKE & SILVER LAKE ROAD
TABLE 9: LEVEL OF SERVICE SUMMARY WITH IMPROVEMENTS - OLD DEERFIELD PIKE & SILVER LAKE ROAD
TABLE 10: EXISTING LEVEL OF SERVICE SUMMARY - OLD DEERFIELD PIKE & FINLEY ROAD
TABLE 11: CRASH SUMMARY - OLD DEERFIELD PIKE & FINLEY ROAD
TABLE 12: MULTI-WAY STOP EVALUATION MINIMUM VOLUME REQUIREMENTS- OLD DEERFIELD PIKE & FINLEY ROAD
TABLE 13: MULTI-WAY STOP EVALUATION SIGHT DISTANCE - OLD DEERFIELD PIKE & FINLEY ROAD
TABLE 14: LEVEL OF SERVICE SUMMARY WITH IMPROVEMENTS - OLD DEERFIELD PIKE & FINLEY ROAD
TABLE15: EXISTING LEVEL OF SERVICE SUMMARY - HOGBIN ROAD & BUCKSHUTEM ROAD

TABLE 16: CRASH SUMMARY - HOGBIN ROAD & BUCKSHUTEM ROAD

TABLE 17: MULTI-WAY STOP EVALUATION MINIMUM VOLUME REQUIREMENTS- HOGBIN ROAD & BUCKSHUTEM ROAD

TABLE 18: MULTI-WAY STOP EVALUATION SIGHT DISTANCE - HOGBIN ROAD & BUCKSHUTEM ROAD

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

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

TABLE 21: CRASH SUMMARY - MORTON AVENUE & LEBANON ROAD

TABLE 22: MULTI-WAY STOP EVALUATION MINIMUM VOLUME REQUIREMENTS- MORTON AVENUE & LEBANON ROAD

TABLE 23: MULTI-WAY STOP EVALUATION SIGHT DISTANCE - MORTON AVENUE & LEBANON ROAD

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

TABLE 25: CRASH SUMMARY - WEST PARK DRIVE AND MAYOR AITKEN DRIVE

TABLE 26: MULTI-WAY STOP EVALUATION MINIMUM VOLUME REQUIREMENTS- WEST PARK DRIVE AND MAYOR AITKEN DRIVE

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

#### LIST OF FIGURES

FIGURE 1: PROJECT AREA

FIGURE 2: 2013 AERIAL ORTHOGRAPHY SOUTH WOODRUFF ROAD (CR 553) & ROSENHAYN AVENUE (CR 659) & WOODRUFF CARMEL ROAD (CR 705)

FIGURE 3: 2013 AERIAL ORTHOGRAPHY OLD DEERFIELD PIKE (CR 606) & SILVER LAKE ROAD (CR 704)

FIGURE 4: 2013 AERIAL ORTHOGRAPHY OLD DEERFIELD PIKE (CR 606) & FINLEY ROAD (CR 617)

FIGURE 5: 2013 AERIAL ORTHOGRAPHY HOGBIN ROAD (CR 625) & BUCKSHUTEM ROAD (CR 670)

FIGURE 6: 2013 AERIAL ORTHOGRAPHY MORTON AVENUE (CR 634) & LEBANON ROAD (CR 654)

FIGURE 7: 2013 AERIAL ORTHOGRAPHY WEST PARK DRIVE (CR 621) & MAYOR AITKEN DRIVE

FIGURE 8: 2014 EXISTING PEAK HOUR WEEKDAY TRAFFIC VOLUMES SOUTH WOODRUFF ROAD (CR 553) & ROSENHAYN AVENUE (CR 659) & WOODRUFF CARMEL ROAD (CR 705)

FIGURE 9: 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 10: 2014 EXISTING PEAK HOUR WEEKDAY TRAFFIC VOLUMES HOGBIN 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 12: 2014 EXISTING PEAK HOUR WEEKDAY TRAFFIC VOLUMES WEST PARK DRIVE (CR 621) & MAYOR AITKEN DRIVE

FIGURE 13: JUNE 2015 PEAK HOUR WEEKDAY TRAFFIC VOLUMES HOGBIN ROAD (CR 625) & BUCKSHUTEM ROAD (CR 670)

FIGURE 14: SOUTH WOODRUFF ROAD (CR 553) & ROSENHAYN AVENUE (CR 659) & WOODRUFF ROAD/CARMEL ROAD (CR 705) - PHASE 1 RECOMMENDATION

FIGURE 15: SOUTH WOODRUFF ROAD (CR 553) & ROSENHAYN AVENUE (CR 659) & WOODRUFF ROAD/CARMEL ROAD (CR 705) – PHASE 2 RECOMMENDATION

FIGURE 16: OLD DEERFIELD PIKE (CR 606) & SILVER LAKE ROAD (CR 704) RECOMMENDATIONS

FIGURE 17: OLD DEERFIELD PIKE (CR 606) & FINLEYE ROAD (CR 617) RECOMMENDATIONS

FIGURE 18: HOGBIN ROAD (CR 625) & BUCKSHUTEM ROAD RECOMMENDATIONS

FIGURE 19: WEST PARK DRIVE (CR 621) & MAYOR AITKEN DRIVE PHASE 1 RECOMMENDATIONS

FIGURE 20: WEST PARK DRIVE (CR 621) & MAYOR AITKEN DRIVE PHASE 2 RECOMMENDATIONS

#### **LIST OF APPENDICES**

APPENDIX A: LEVEL OF SERVICE CRITERIA FOR SIGNALIZED/UNSIGNALIZED INTERSECTIONS

APPENDIX B: TRAFFIC COUNT DATA

APPENDIX C: SYNCHRO CAPACITY ANALYSIS WORKSHEETS

APPENDIX D: CRASH DATA ANALYSIS

APPENDIX E: SIGNAL WARRANT ANALYSIS WORKSHEETS

APPENDIX F: CONCEPTUAL INTERSECTION IMPROVEMENT PLANS

APPENDIX G: ENGINEER'S ESTIMATES



## **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).

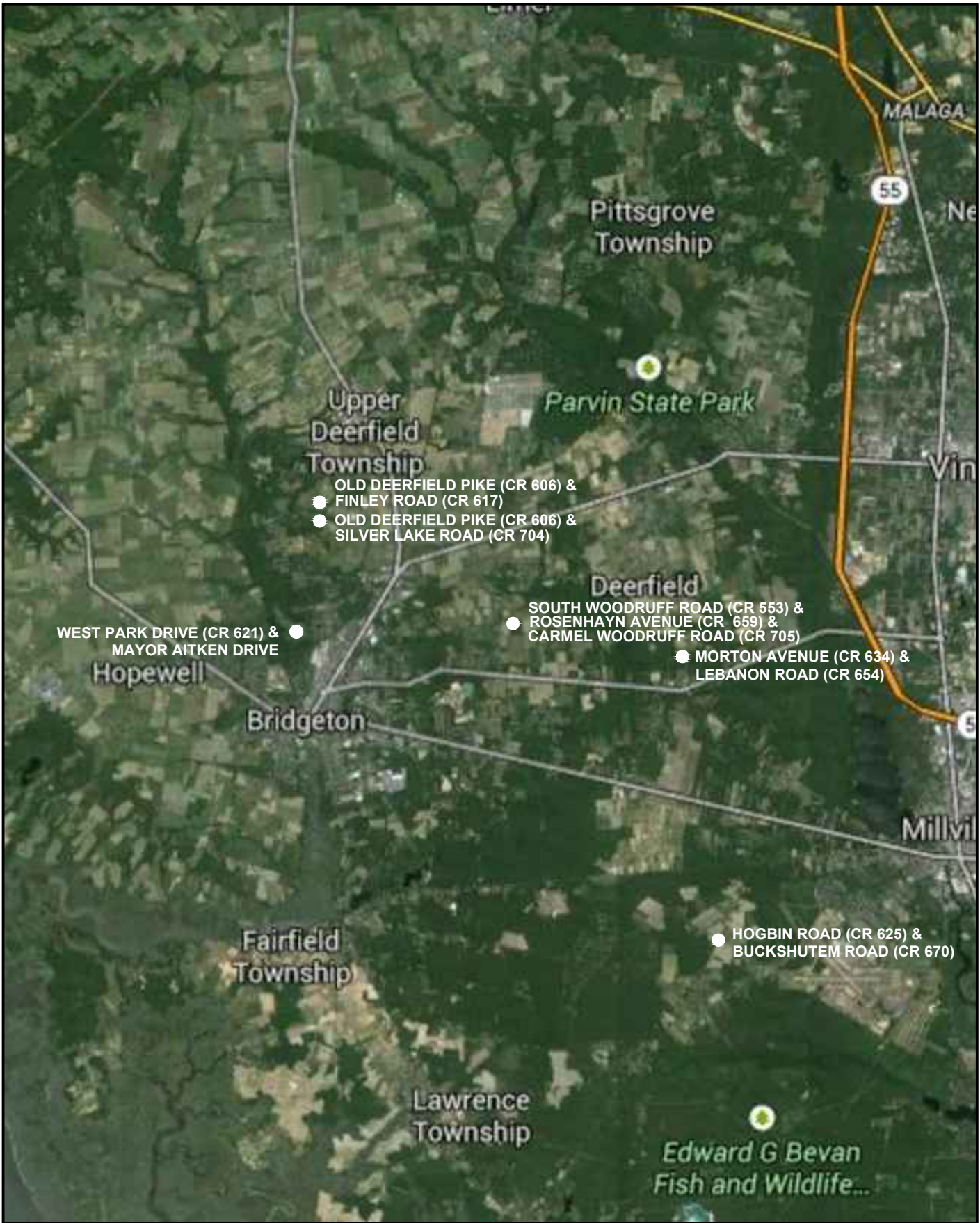
## **METHODOLOGY**

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**.







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

**FIGURE 2  
2013 AERIAL ORTHOGRAPHY**

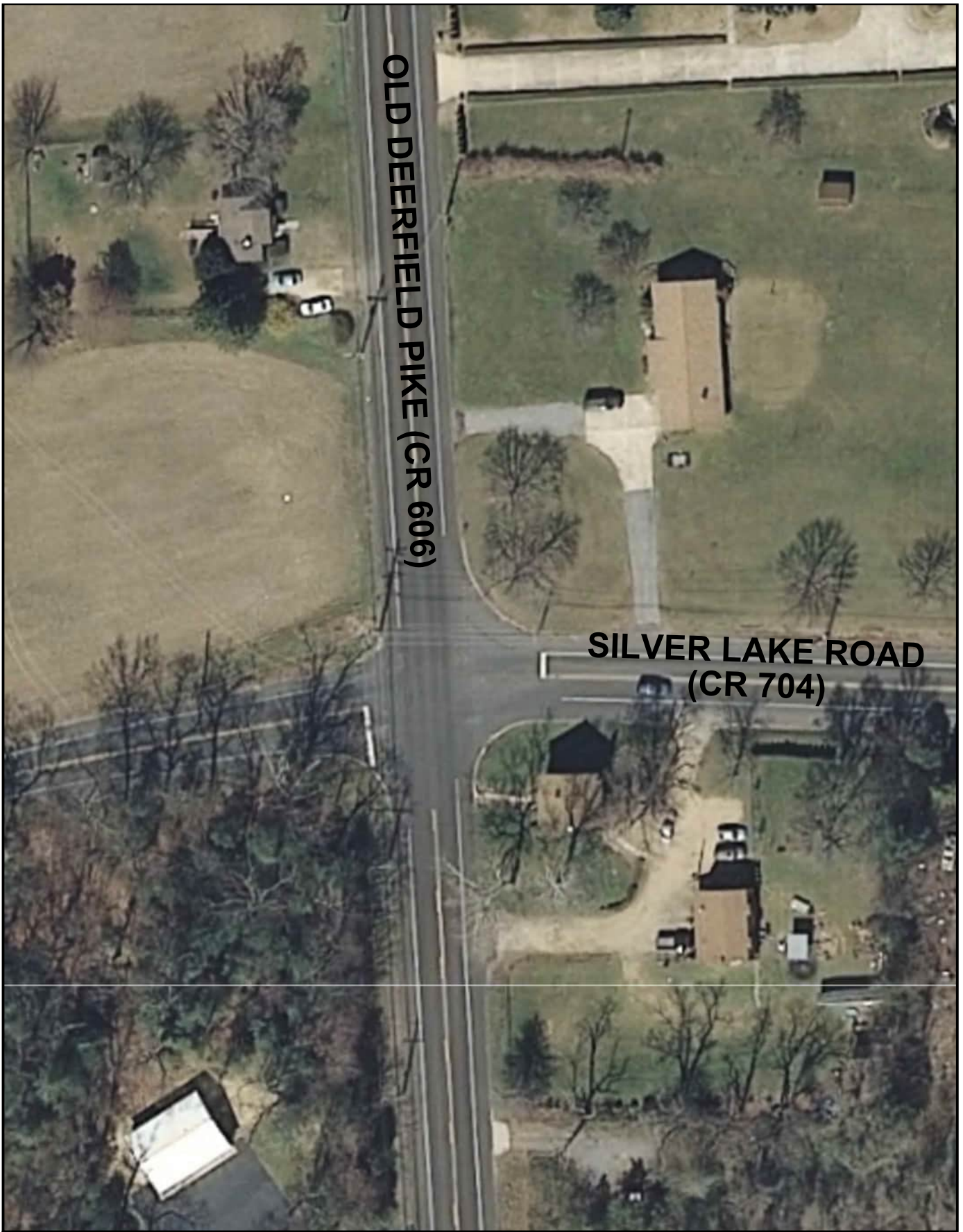


**OLD DEERFIELD PIKE (CR 606) &  
FINLEY ROAD (CR 617)**

**FIGURE 3  
2013 AERIAL ORTHOGRAPHY**

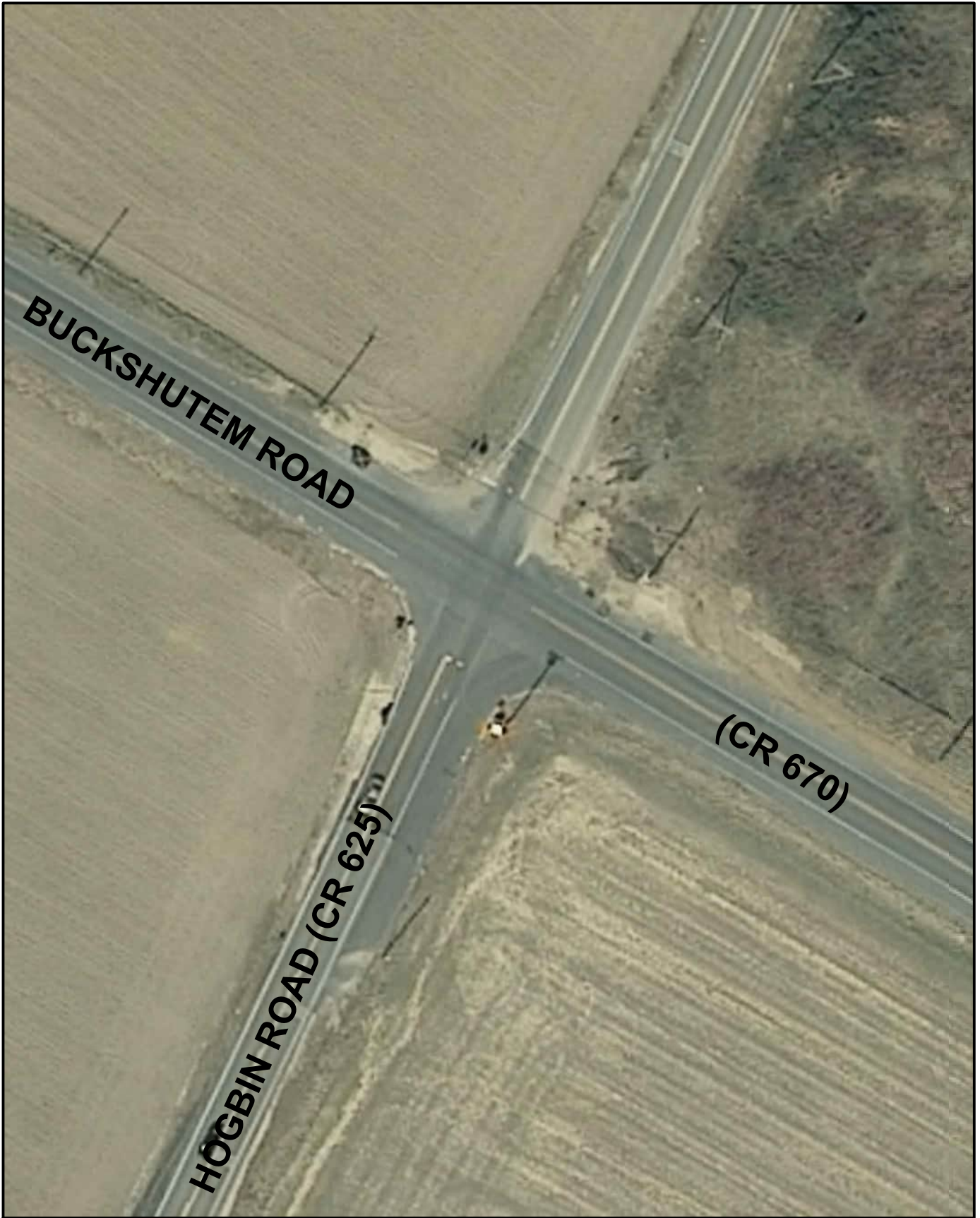






**OLD DEERFIELD PIKE (CR 606) &  
SILVER LAKE ROAD (CR 704)**

**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

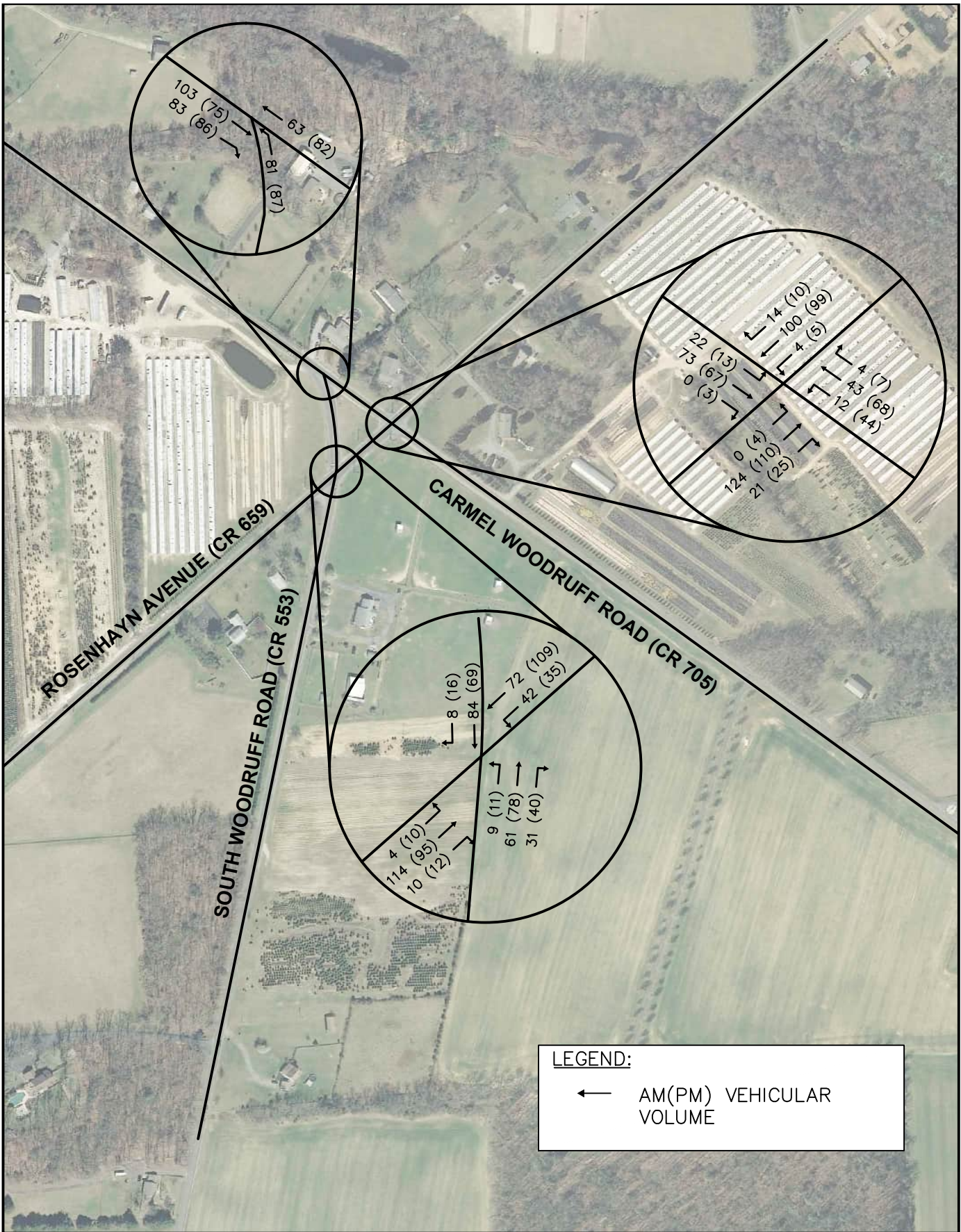




WEST PARK DRIVE (CR 621) &  
MAYOR AITKEN DRIVE

FIGURE 7  
201AERIAL OTHOGRAPHY



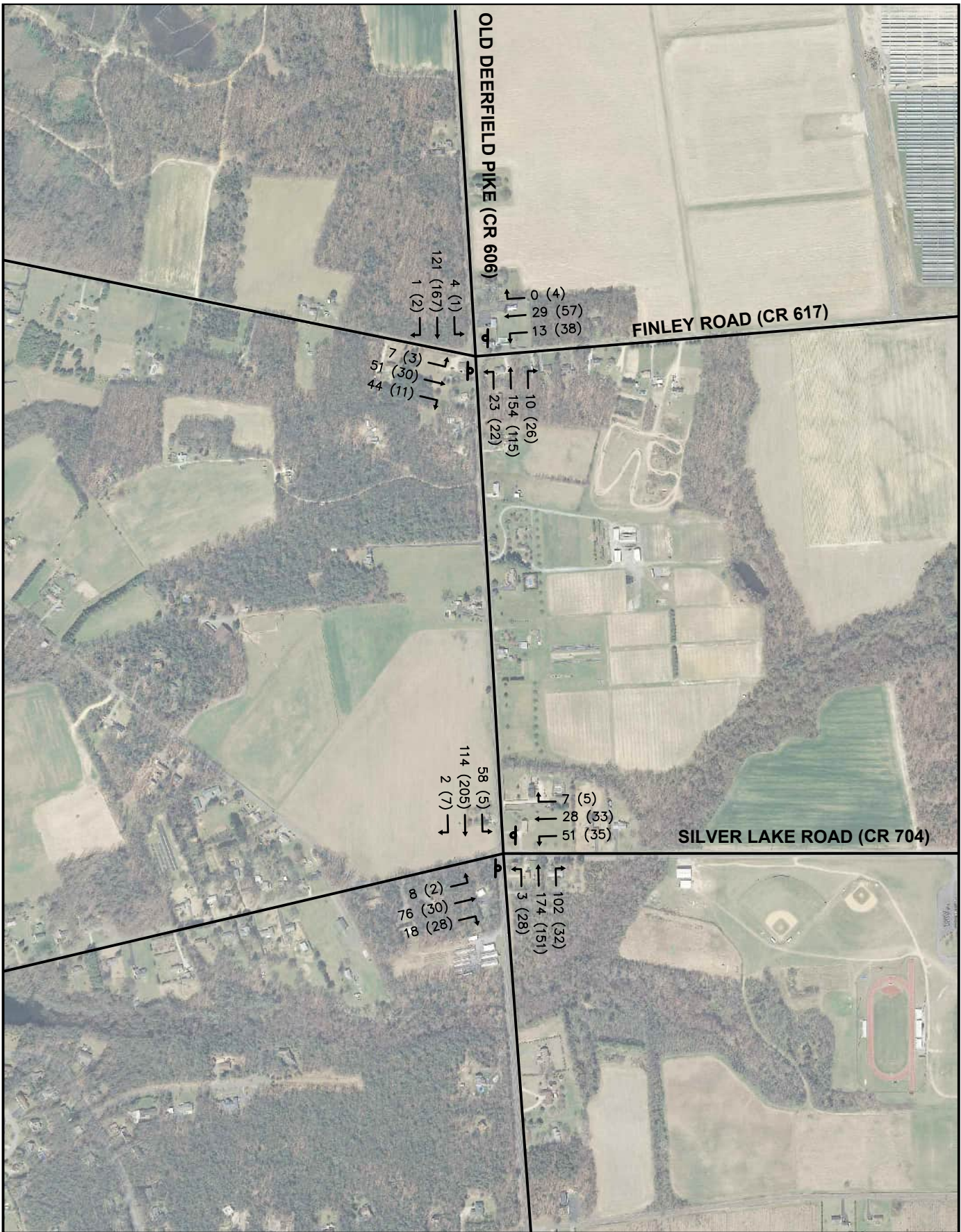


**SOUTH WOODRUFF ROAD (CR 553) & ROSENHAYN AVENUE (CR 659) & CARMEL WOODRUFF ROAD (CR 705)**

**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**





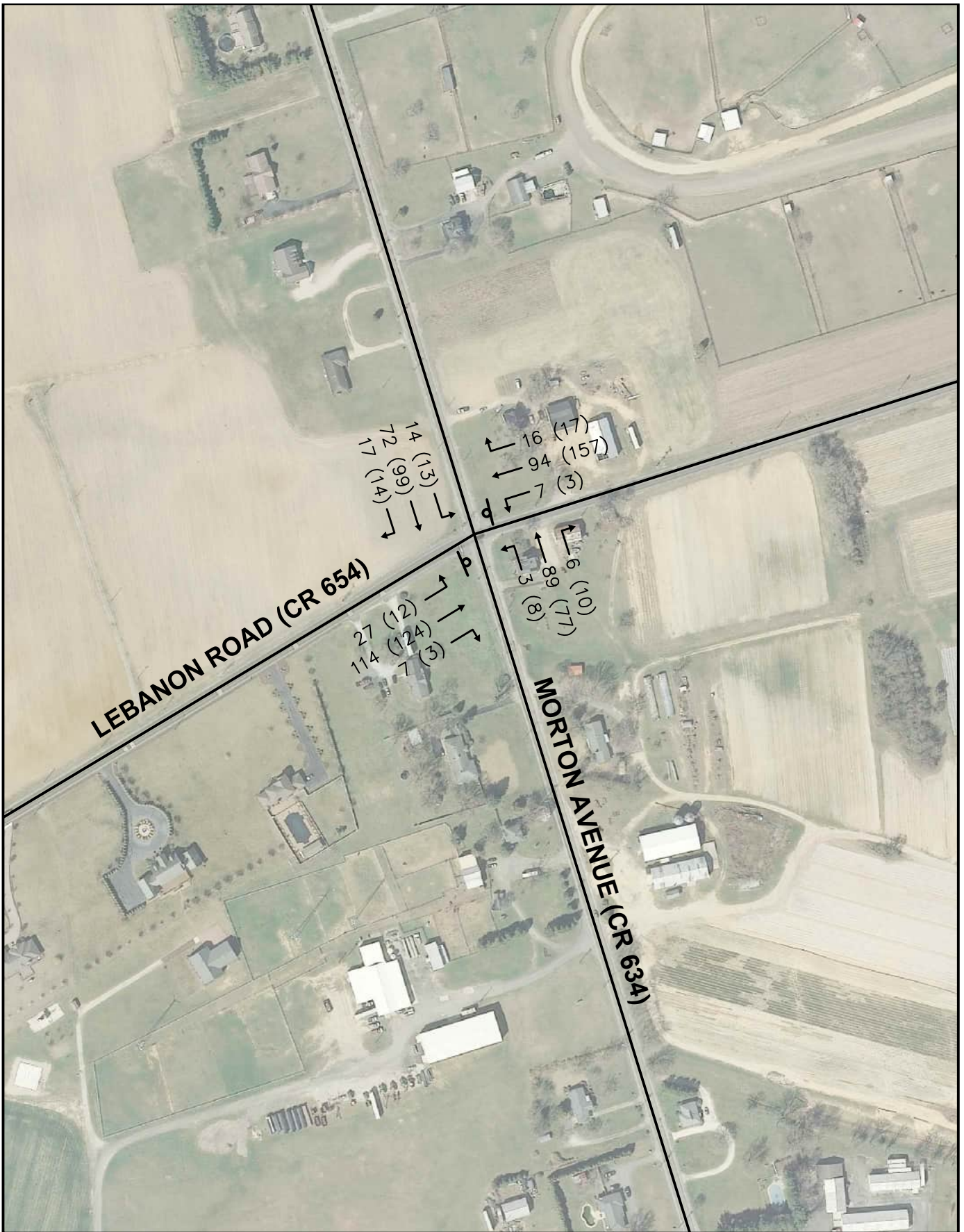


**HOGBIN ROAD (CR 625) & BUCKSHUTEM ROAD (CR 670)**

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



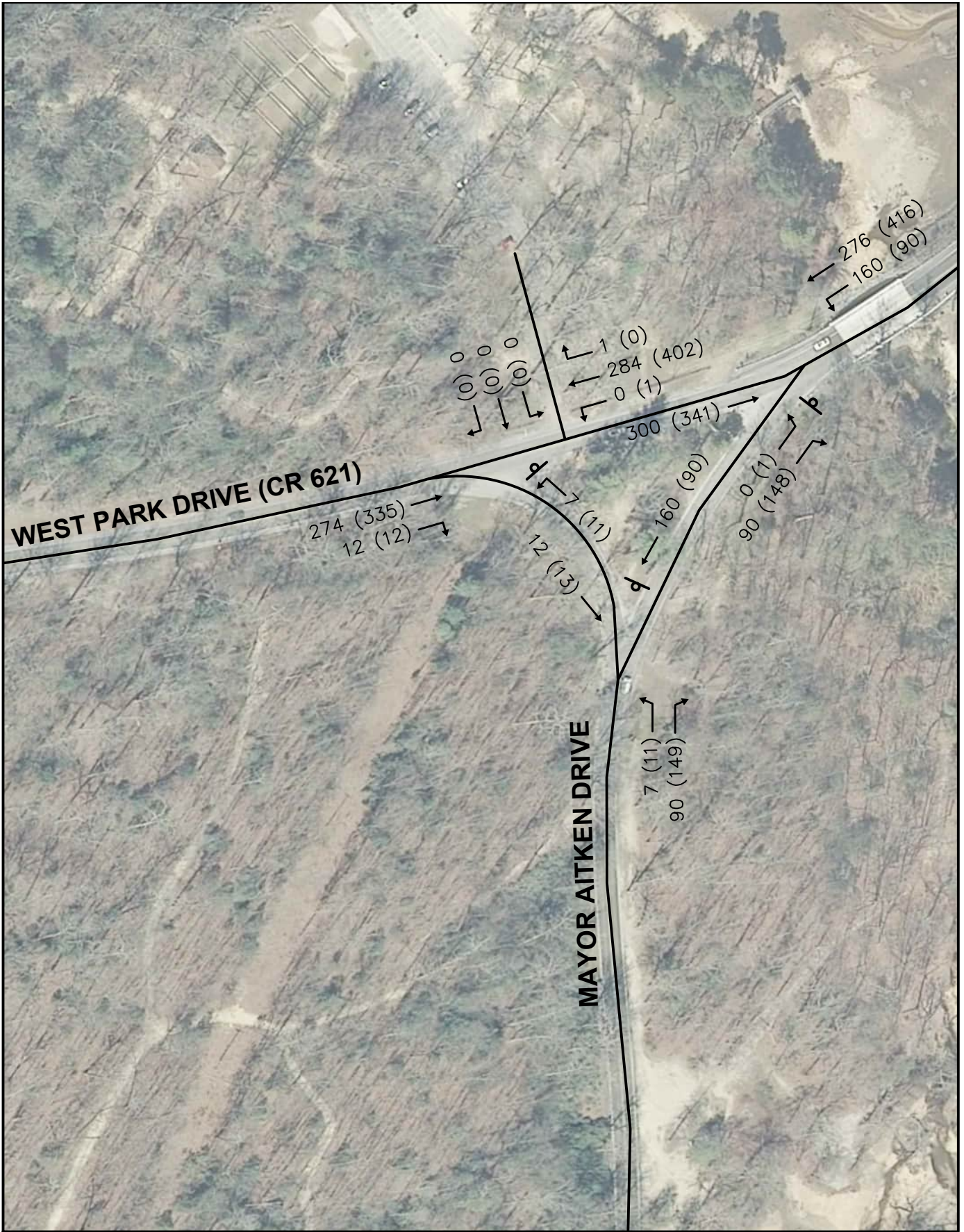




MORTON AVENUE (CR 634) &  
LEBANON ROAD (CR 654)

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 is 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/Wodruff-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	5:36 PM	Same Direction - Rear End	2011	Rosenhayn Avenue (CR 659)	Minor Injury	daylight	dry
South Woodruff Road (CR 553)	Jul	6:53 PM	Same Direction - Side Swipe	2012	Rosenhayn Avenue (CR 659)	Minor Injury	daylight	dry
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	9:28 PM	Right Angle	2013	Rosenhayn Avenue (CR 659)	Property Damage	dark (street 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'+
Carmel Road (CR 705) westbound		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).

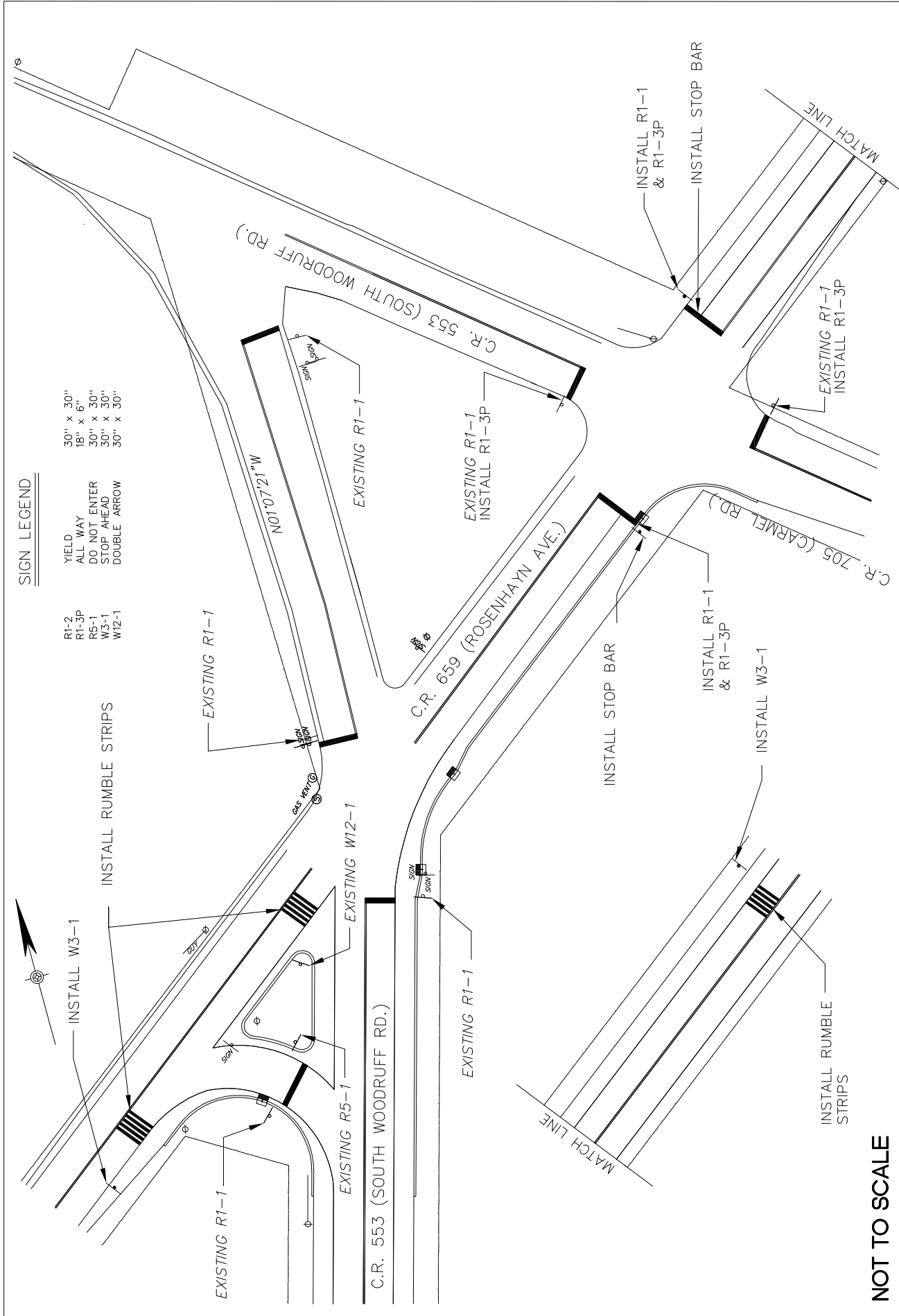
### Recommended Improvements

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.

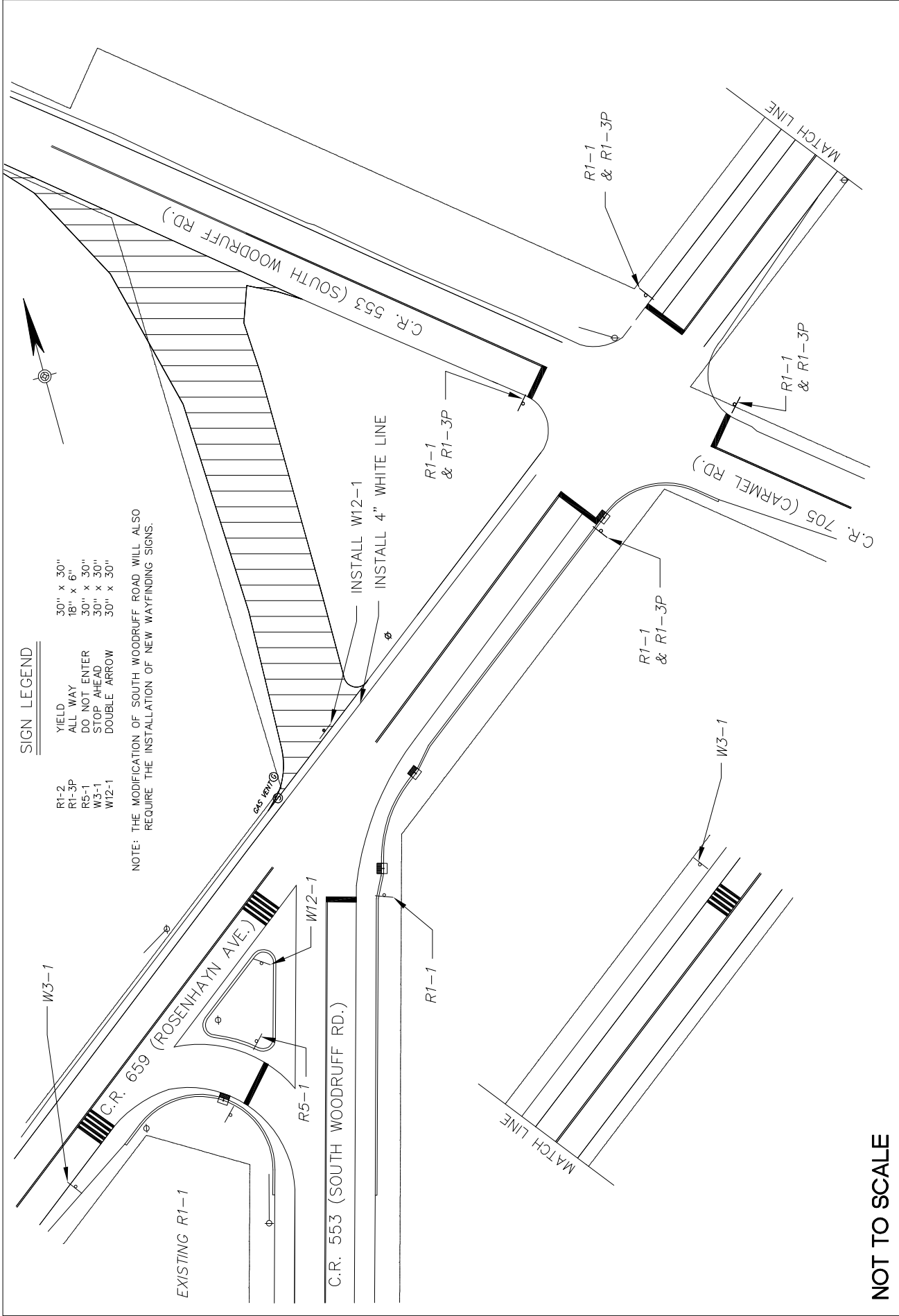


NOT TO SCALE



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

**FIGURE 14**  
 ROSENHAYN AVENUE &  
 WOODRUFF ROAD/CARMEL ROAD  
 PHASE 1 RECOMMENDATIONS (CONCEPTUAL)



NOT TO SCALE



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

**FIGURE 15**  
ROSENHAYN AVENUE &  
WOODRUFF ROAD/CARMEL ROAD  
PHASE 2 RECOMMENDATIONS (CONCEPTUAL)

## **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

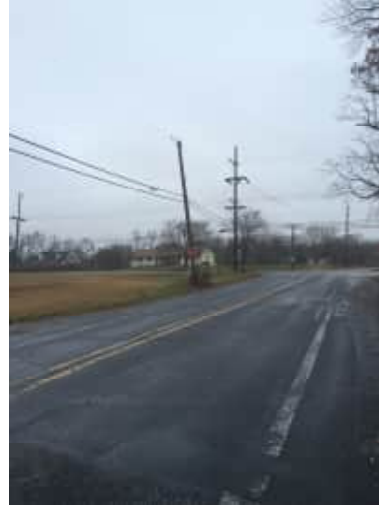


Photo 5: Silver Lake Road east of Old Deerfield Pike

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
Old Deerfield Pike (CR 606)	Feb	6:36 PM	Right Angle	2012	Silver Lake Road (CR 704)	Property Damage	dark(street lights on/continuous)	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:

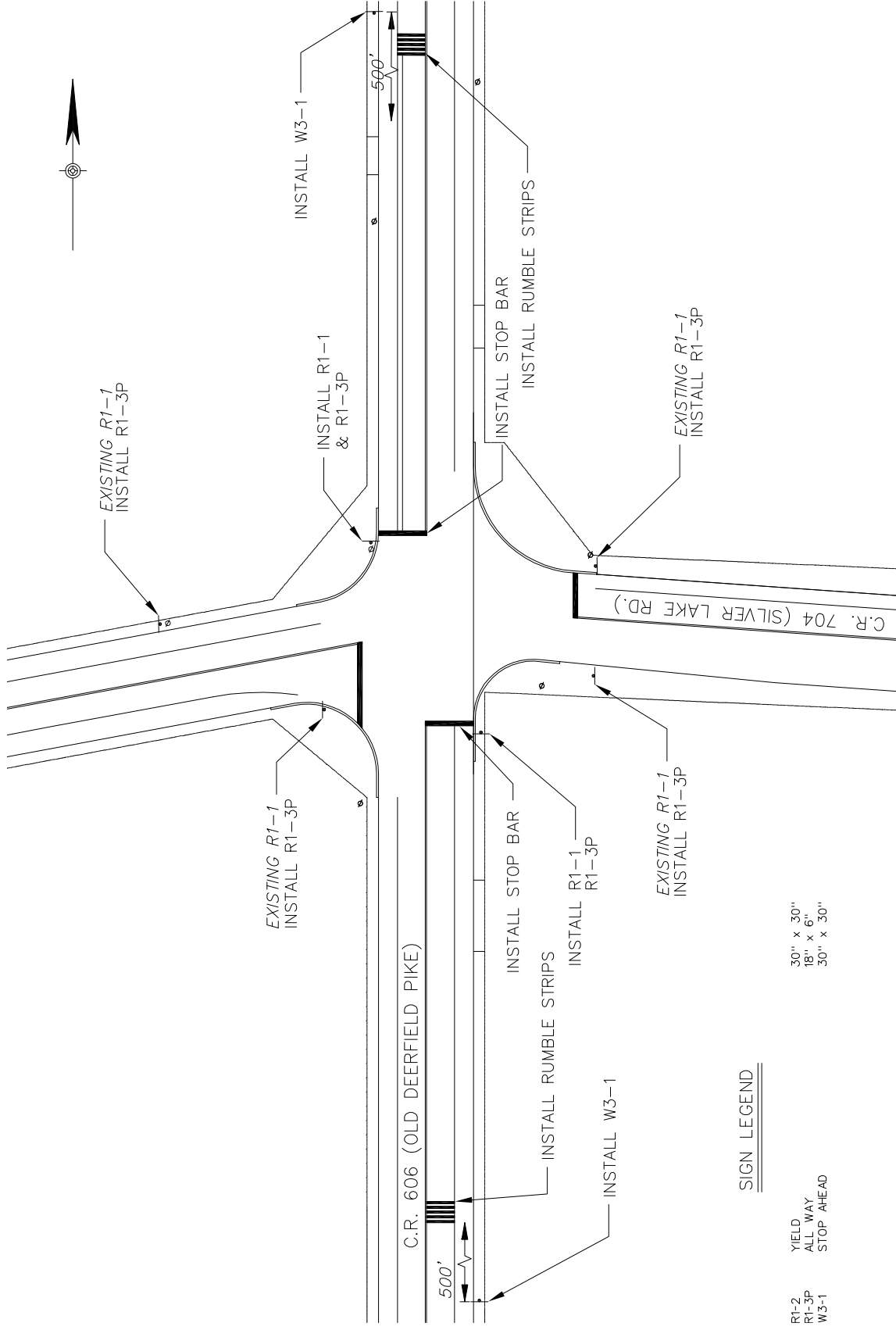
- Install a multi-way stop at Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704). The implementation of the multi-way stop at Old Deerfield Pike (CR 606) and Silver Lake Road (CR 704) will address the sight distance issue on Old Deerfield Pike (CR 606) and provide the additional effect of reducing 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)



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	-

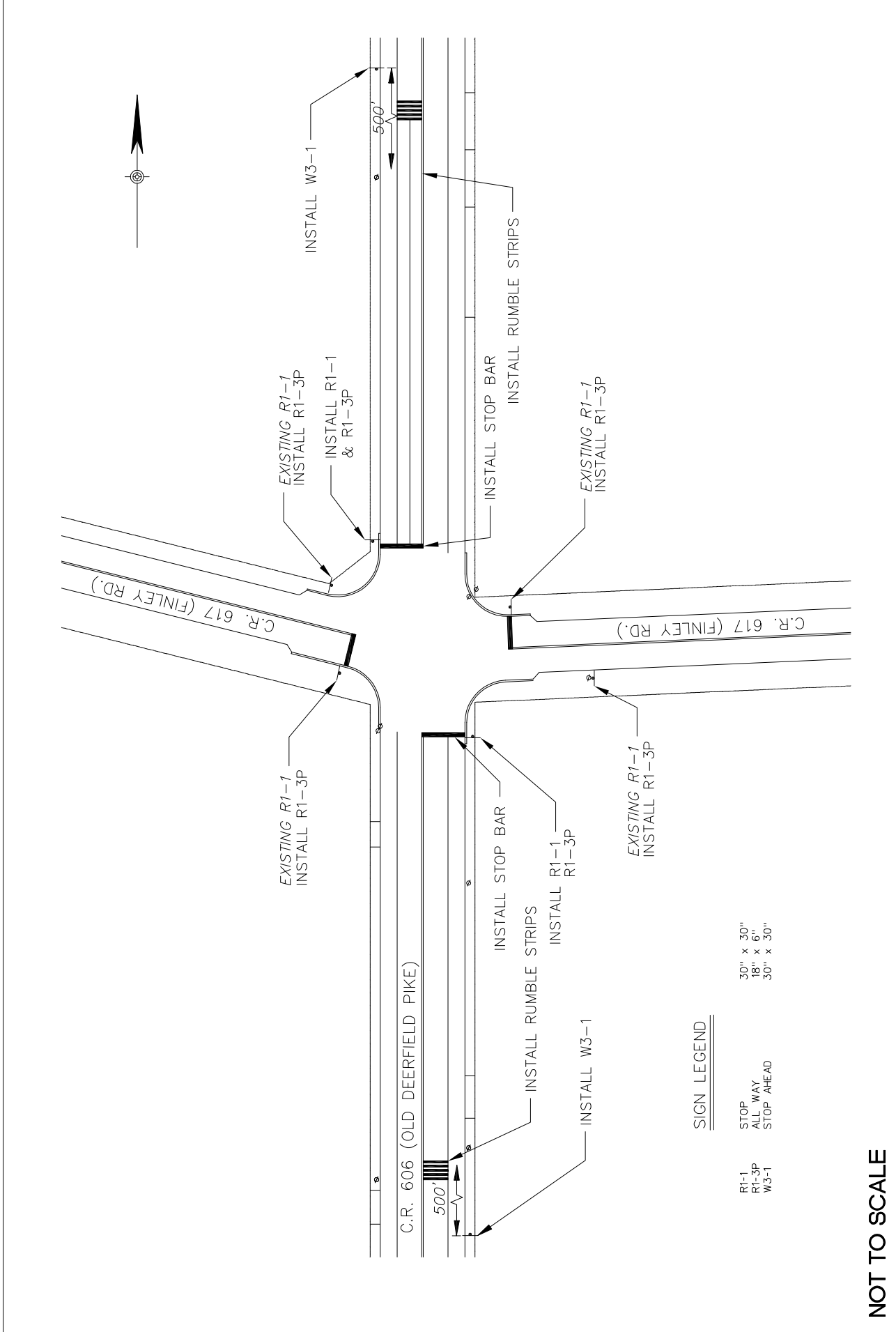
**Recommended Improvements**

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**.





**FIGURE 17**  
 OLD DEERFIELD PIKE &  
 FINLEY ROAD  
 RECOMMENDATIONS (CONCEPTUAL)

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



## **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



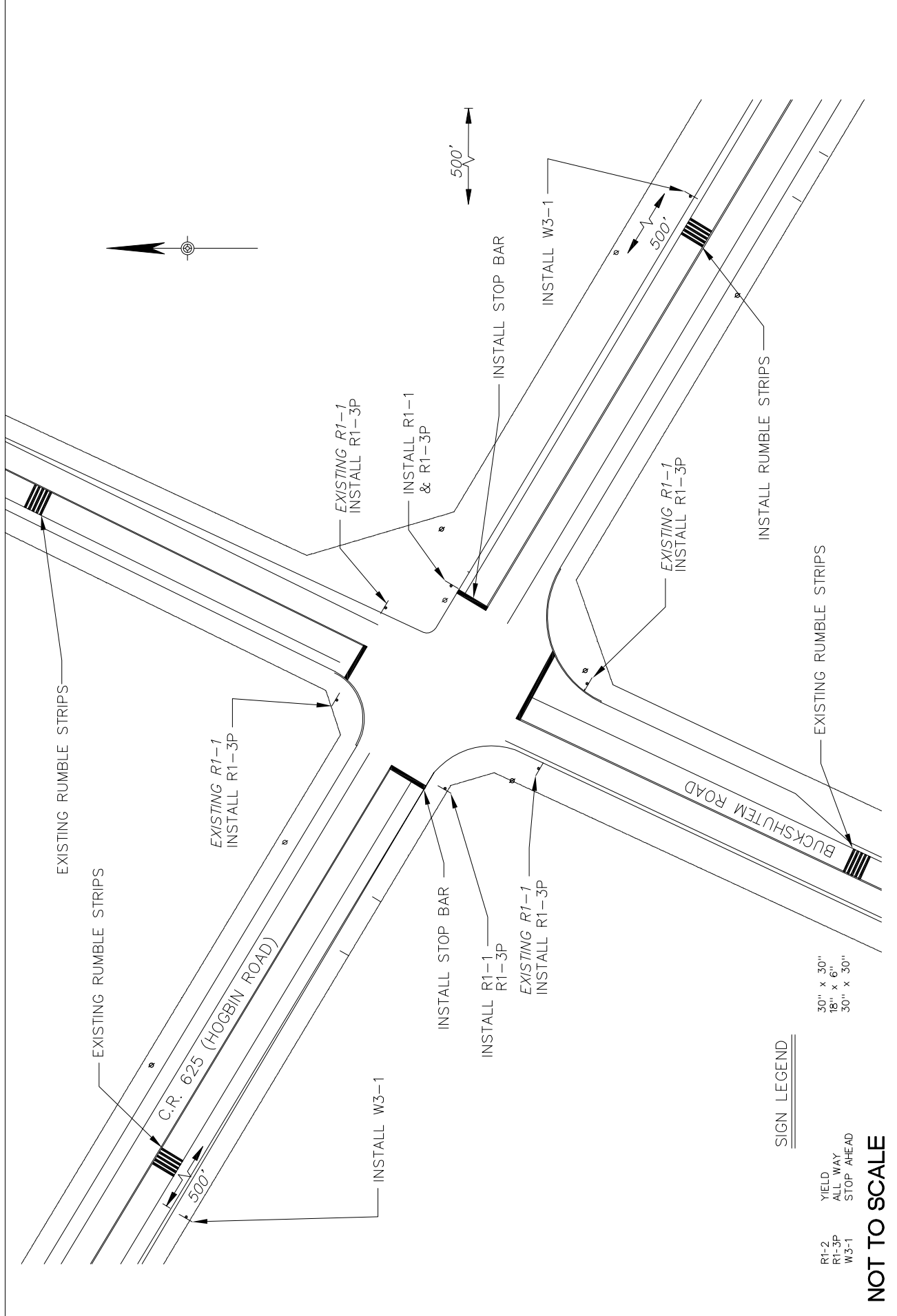
Photo 11: Lebanon Road east of Morton Avenue

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**.



**FIGURE 18**  
 HOGBIN ROAD (CR 625) &  
 BUCKSHUTEM ROAD  
 RECOMMENDATIONS (CONCEPTUAL)

**CUMBERLAND COUNTY**  
 Improvements at 6 Intersections  
 City of Millville, New Jersey



R1-2 30" x 30"  
 R1-3P 18" x 6"  
 W3-1 30" x 30"  
 YIELD ALL WAY STOP AHEAD 30" x 30"

SIGN LEGEND

**NOT TO SCALE**

**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	50*	555'/480'	700'/625'	845'/775'	845'+	775'+
Lebanon Road (CR 654) westbound		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	-

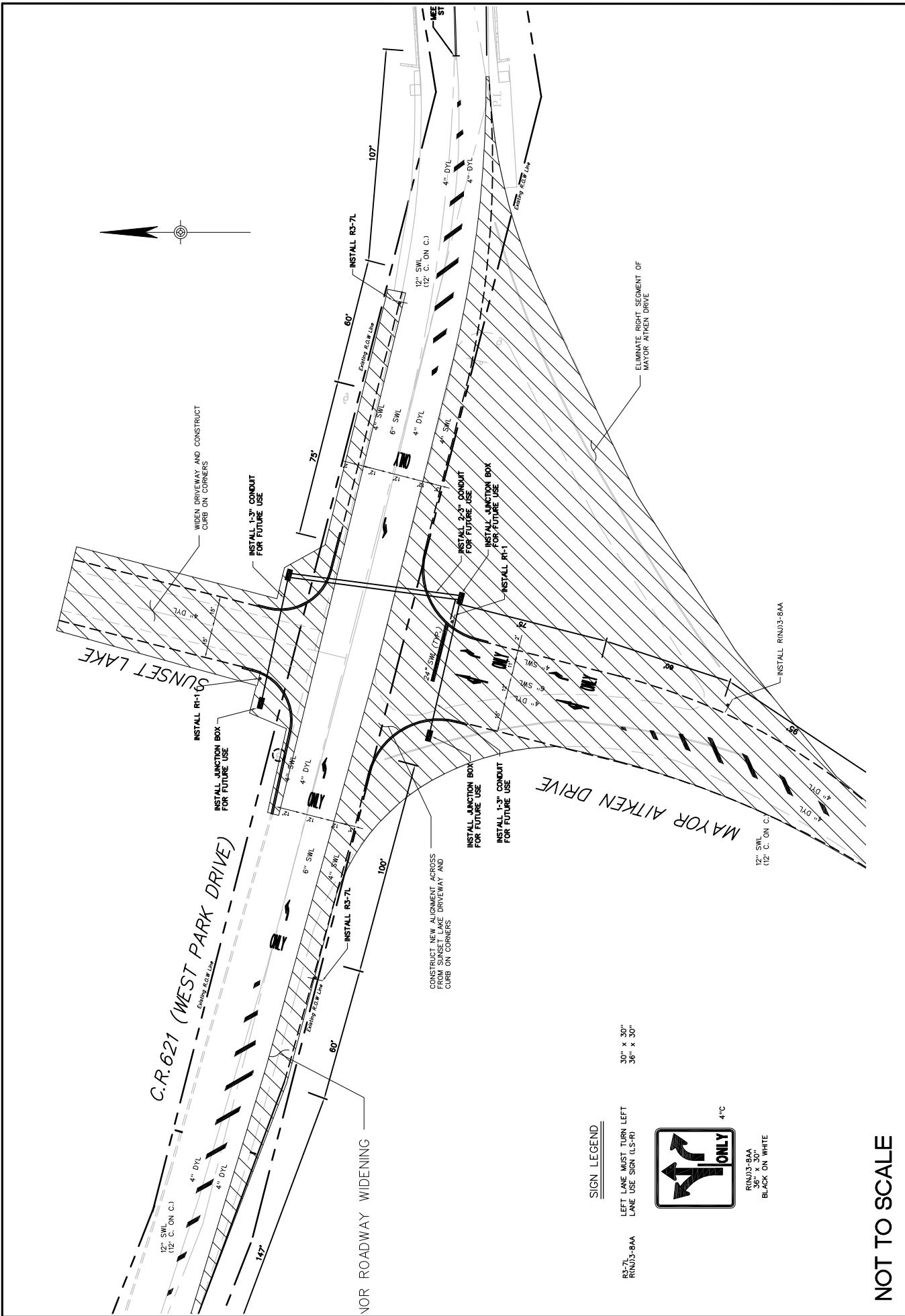
### Recommended Improvements

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.



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

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

**PENNONI ASSOCIATES INC.**  
 CONSULTING ENGINEERS  
 515 GROVE STREET  
 HADDON HEIGHTS, NJ

**SIGN LEGEND**

R3-7L  
 RNDJ3-8AA  
 30" x 30"  
 36" x 30"

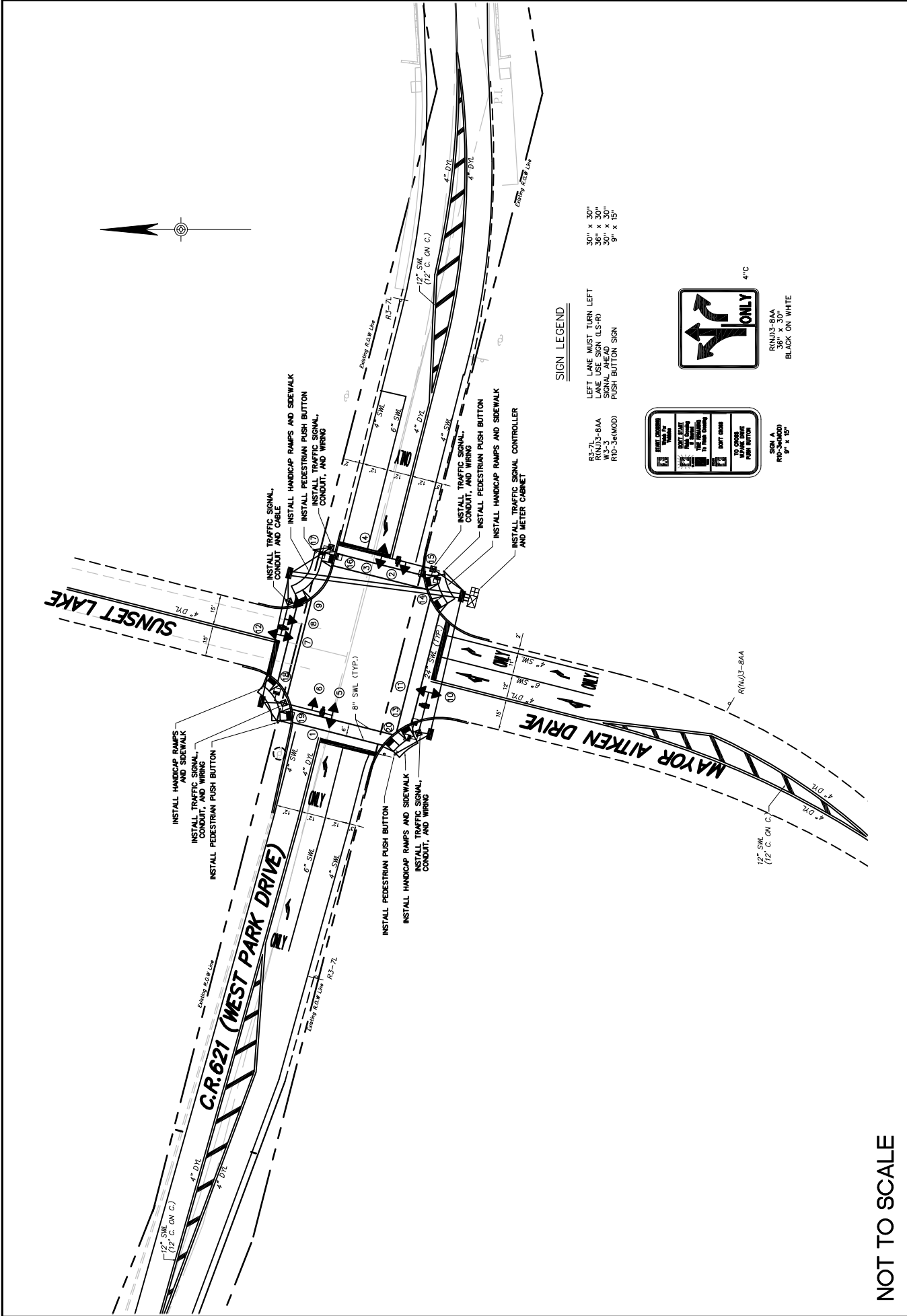
LEFT LANE MUST TURN LEFT  
 LANE USE SIGN (LS-R)

RNDJ3-8AA  
 36" x 30"  
 BLACK ON WHITE

4"

**NOT TO SCALE**





NOT TO SCALE

**Pennoni**  
 PENNONI ASSOCIATES INC.  
 CONSULTING ENGINEERS  
 515 GROVE STREET  
 HADDON HEIGHTS, NJ

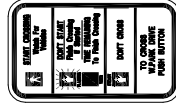
CUMBERLAND COUNTY  
 Improvements at 6 Intersections  
 Upper Deerfield Township, New Jersey

FIGURE 20  
 WEST PARK DRIVE &  
 MAYOR AITKEN DRIVE  
 PHASE 2 RECOMMENDATIONS (CONCEPTUAL)

SIGN LEGEND

- R3-7L 30" x 30" LANE USE SIGN (LS-R)
- RNUJ3-BAA 36" x 30" SHIELD AND PUSH BUTTON SIGN
- RIO-3A(MOD) 9" x 15" DONT OPEN

- R3-7L 30" x 30" LANE USE SIGN (LS-R)
- RNUJ3-BAA 36" x 30" SHIELD AND PUSH BUTTON SIGN
- RIO-3A(MOD) 9" x 15" DONT OPEN



4"  
 RNUJ3-BAA  
 36" x 30"  
 BLACK ON WHITE

4"  
 SIGN A  
 RNUJ3-BAA  
 36" x 30"  
 BLACK ON WHITE

## **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	≤ 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

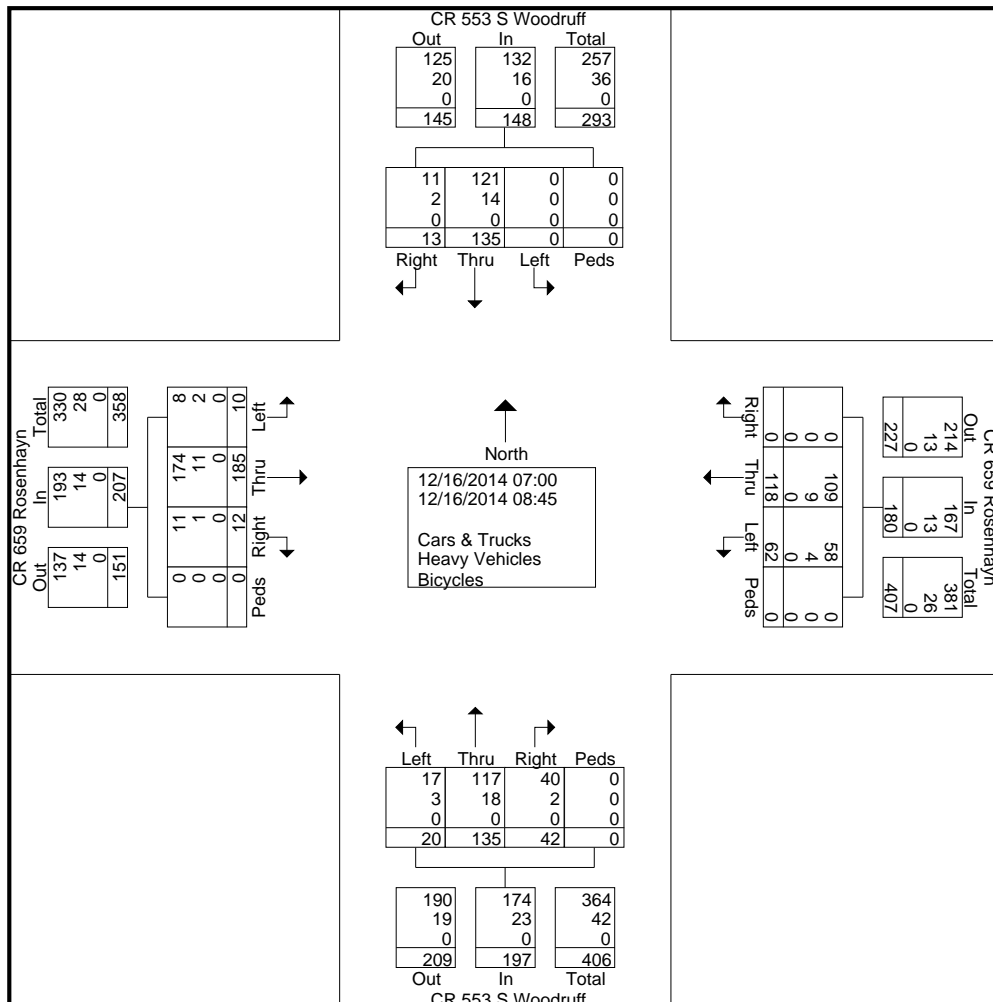
1301 N. 2nd Street  
Philadelphia, PA 19122

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

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	
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	65.6	34.4	0		21.3	68.5	10.2	0		5.8	89.4	4.8	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	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

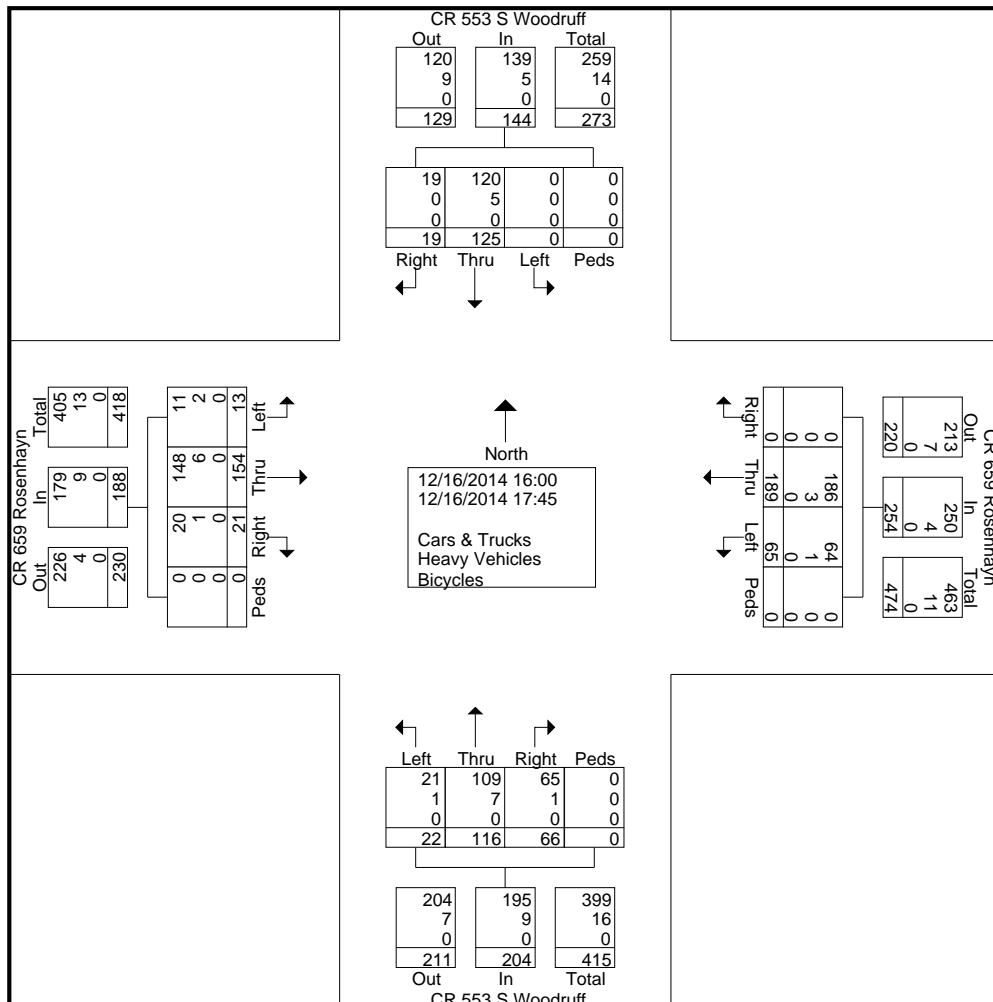
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 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	74.4	25.6	0		32.4	56.9	10.8	0		11.2	81.9	6.9	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	
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

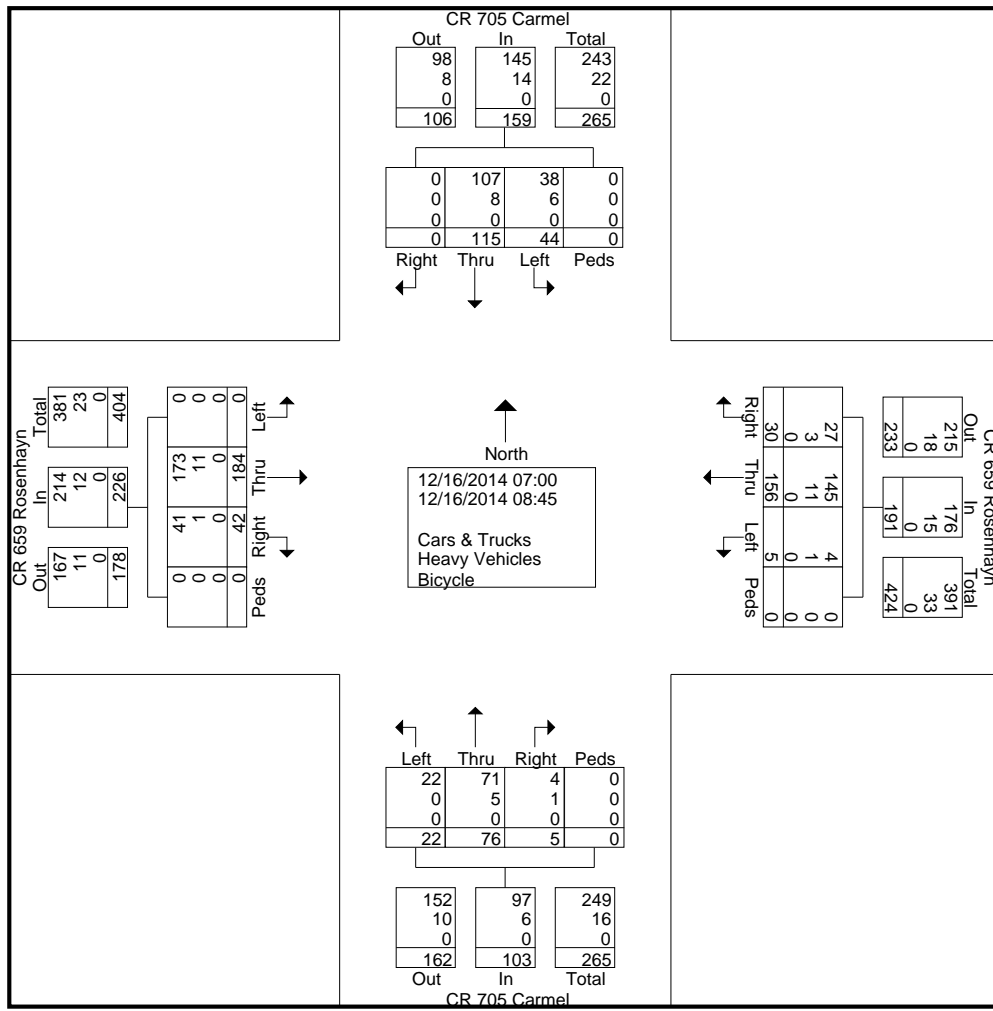
1301 N. 2nd Street  
Philadelphia, PA 19122

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					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	16	2	0	18	5	18	1	0	24	1	17	1	0	19	3	13	0	0	16	16
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	0
% Bicycle	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

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

## 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	
07:00	0	0	0	0	0	0	22	0	0	22	0	0	22	0	22	15	19	0	0	34	78
07:15	0	0	0	0	0	0	10	0	0	10	0	0	21	0	21	13	23	0	0	36	67
07:30	0	0	0	0	0	0	14	0	0	14	0	0	21	0	21	17	24	0	0	41	76
07:45	0	0	0	0	0	0	17	0	0	17	0	0	17	0	17	30	34	0	0	64	98
Total	0	0	0	0	0	0	63	0	0	63	0	0	81	0	81	75	100	0	0	175	319
08:00	0	0	0	0	0	0	12	0	0	12	0	0	14	0	14	23	22	0	0	45	71
08:15	0	0	0	0	0	0	13	0	0	13	0	0	13	0	13	20	15	0	0	35	61
08:30	0	0	0	0	0	0	6	0	0	6	0	0	13	0	13	20	13	0	0	33	52
08:45	0	0	0	0	0	0	10	0	0	10	0	0	24	0	24	8	10	0	0	18	52
Total	0	0	0	0	0	0	41	0	0	41	0	0	64	0	64	71	60	0	0	131	236
Grand Total	0	0	0	0	0	0	104	0	0	104	0	0	145	0	145	146	160	0	0	306	555
Apprch %	0	0	0	0	0	0	100	0	0	100	0	0	100	0	100	47.7	52.3	0	0		
Total %	0	0	0	0	0	0	18.7	0	0	18.7	0	0	26.1	0	26.1	26.3	28.8	0	0	55.1	
Cars & Trucks	0	0	0	0	0	0	97	0	0	97	0	0	124	0	124	131	145	0	0	276	497
% Cars & Trucks	0	0	0	0	0	0	93.3	0	0	93.3	0	0	85.5	0	85.5	89.7	90.6	0	0	90.2	89.5
Heavy Vehicles	0	0	0	0	0	0	7	0	0	7	0	0	21	0	21	15	15	0	0	30	58
% Heavy Vehicles	0	0	0	0	0	0	6.7	0	0	6.7	0	0	14.5	0	14.5	10.3	9.4	0	0	9.8	10.5
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



# Rodriguez Consulting

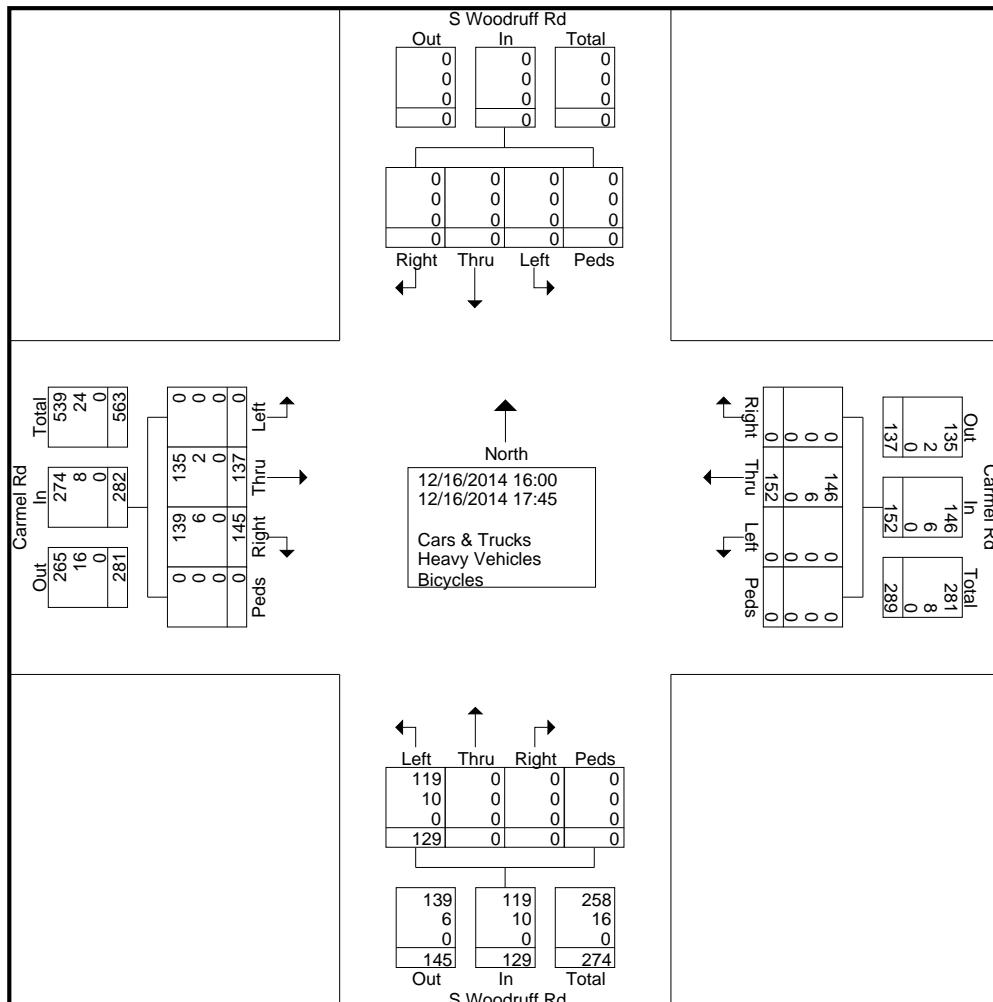
1301 N. 2nd Street  
Philadelphia, PA 19122

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		
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	
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
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Speed	in Pace
12:00 AM	0	0	0	0	0	2	6	6	3	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	15	46-55	11
2:00 AM	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	12	41-50	7
4:00 AM	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	2	6	17	16	7	3	2	3	0	0	56	41-50	33
6:00 AM	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	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	177	46-55	94
9:00 AM	2	0	1	5	6	13	31	39	20	4	1	1	0	0	123	41-50	70
10:00 AM	1	0	2	3	9	18	31	36	19	3	0	1	0	0	123	41-50	67
11:00 AM	1	1	0	0	10	20	37	30	21	3	0	1	1	0	125	41-50	67
12:00 PM	1	0	0	3	8	22	28	44	7	11	2	0	0	0	126	41-50	72
1:00 PM	2	0	1	2	10	16	49	55	32	5	8	0	0	0	180	41-50	104
2:00 PM	1	0	0	4	7	49	52	46	26	7	3	1	0	0	196	36-45	101
3:00 PM	2	0	0	3	15	57	72	63	26	7	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	237	41-50	141
5:00 PM	1	1	0	0	4	28	60	46	17	3	1	0	0	0	161	41-50	105
6:00 PM	1	0	0	1	6	31	55	33	9	4	0	1	0	0	141	41-50	87
7:00 PM	0	0	0	3	0	13	24	30	8	1	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	97	41-50	53
9:00 PM	0	1	0	1	3	10	27	21	11	2	1	1	0	0	78	41-50	48
10:00 PM	0	0	0	0	1	2	14	16	17	3	3	0	0	0	56	46-55	33
11:00 PM	0	0	0	0	0	2	10	10	8	0	2	0	0	0	32	41-50	20
Day Total	24	7	6	32	110	403	754	748	390	106	33	9	2	0	2624	41-50	1501
Percent ADT	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%			

AM Peak	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
Volume	5	1	2	5	10	28	47	65	45	14	3	3	1	192
PM Peak	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	
Volume	4	3	1	4	15	57	81	63	32	11	8	1	245	

SUMMARY:

Date:	2014 - Dec 16 2014														Total	Pace	Number
	1	16	21	26	31	36	41	46	51	56	61	66	71	76	999	Speed	in Pace
Grand Total	24	7	6	32	110	403	754	748	390	106	33	9	2	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%			
Cumulative Percent	0.90%	1.20%	1.40%	2.60%	6.80%	22.20%	50.90%	79.40%	94.30%	98.30%	99.60%	99.90%	100.00%	100.00%			
ADT	2624																

85th Percentile	51 MPH
Mean Speed(Average)	44 MPH
Median	44 MPH
Mode	43 MPH



RODRIGUEZ CONSULTING COUNTS REPORT

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Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sun	Average Week Hourly
						Hourly Traffic		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		7:00 AM				7:00 AM		7:00 AM
Volume		192				192		192
PM Peak		3:00 PM				3:00 PM		3:00 PM
Volume		245				245		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:	Dec 16 2014													Total	Pace	Number in Pace	
Start Time	16	21	26	31	36	41	46	51	56	61	66	71	76				
12:00 AM	1	25	30	35	40	45	50	55	60	65	70	75	999				6
1:00 AM	0	0	0	0	0	2	4	2	1	2	0	0	0				6
2:00 AM	0	0	0	0	1	2	1	0	1	0	0	0	0				3
3:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0				2
4:00 AM	0	0	0	0	3	5	2	3	0	0	0	0	0				8
5:00 AM	0	0	0	2	1	19	29	13	3	1	0	0	0				47
6:00 AM	0	0	1	1	3	20	30	24	2	2	1	0	0				53
7:00 AM	0	0	0	2	10	51	57	45	11	1	0	0	0				108
8:00 AM	0	0	0	3	6	25	55	40	20	1	4	0	0				95
9:00 AM	2	0	0	0	15	28	33	25	9	0	0	0	0				60
10:00 AM	4	0	0	2	6	32	38	38	10	0	0	0	0				75
11:00 AM	2	0	0	0	6	25	46	28	12	2	1	0	0				73
12:00 PM	2	0	0	3	4	25	49	33	9	6	0	0	0				81
1:00 PM	3	0	0	1	9	43	44	26	14	4	0	0	0				87
2:00 PM	4	0	0	0	20	63	64	36	6	2	0	1	0				127
3:00 PM	2	0	0	2	21	51	73	29	7	1	0	0	0				123
4:00 PM	1	0	0	2	22	102	60	40	5	0	0	0	0				162
5:00 PM	0	0	0	0	27	62	70	14	1	0	0	0	0				132
6:00 PM	0	0	0	1	27	24	35	9	2	0	0	0	0				59
7:00 PM	0	0	1	2	16	32	21	9	2	1	0	0	0				53
8:00 PM	0	0	0	2	13	25	22	7	0	0	0	0	0				47
9:00 PM	0	0	0	0	8	17	16	7	0	0	0	0	0				33
10:00 PM	0	0	0	0	2	15	6	5	0	1	0	0	0				21
11:00 PM	0	0	0	0	2	4	7	5	3	0	0	0	0				12
Day Total	21	3	2	23	222	678	764	440	120	24	6	1	0				1442
Percent ADT	0.90%	0.10%	0.10%	1.00%	9.60%	29.40%	33.20%	19.10%	5.20%	1.00%	0.30%	0.00%	0.00%				

AM Peak Volume	10:00 AM	4	6:00 AM	1	8:00 AM	3	9:00 AM	15	7:00 AM	51	7:00 AM	57	7:00 AM	45	8:00 AM	20	1:00 AM	2	8:00 AM	4	7:00 AM	177
PM Peak Volume	2:00 PM	4	7:00 PM	1	10:00 PM	2	5:00 PM	27	4:00 PM	102	3:00 PM	73	4:00 PM	40	1:00 PM	14	12:00 PM	6	8:00 AM	1	2:00 PM	232



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

SUMMARY:

Date: 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed 41--50	Number in Pace 1442
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	2304	41--50	1442
Percent	0.90%	0.00%	0.10%	0.10%	1.00%	9.60%	29.40%	33.20%	19.10%	5.20%	1.00%	0.30%	0.00%	0.00%			
Cumulative Percent	0.90%	0.90%	1.00%	1.10%	2.10%	11.80%	41.20%	74.30%	93.40%	98.70%	99.70%	100.00%	100.00%	100.00%			
ADT	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	Hourly Traffic		
		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		



RODRIGUEZ CONSULTING COUNTS REPORT

=====

Date:	Dec 16 2014												Total	Pace	Number		
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	76	Speed	in Pace
12:00 AM	15	20	25	30	35	40	45	50	55	60	65	70	75	999	14	36--45	11
1:00 AM	0	0	0	0	2	2	9	1	1	1	0	0	0	0	0	46--55	7
2:00 AM	1	0	1	0	2	2	2	6	1	0	0	0	0	0	16	41--50	8
3:00 AM	0	0	0	0	3	5	4	4	0	1	0	0	0	0	17	36--45	9
4:00 AM	0	0	0	3	0	0	11	2	2	1	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	56	36--45	30
6:00 AM	1	0	1	2	17	25	66	31	11	2	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	284	36--45	150
8:00 AM	5	0	1	8	15	57	51	58	15	5	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	182	36--45	104
10:00 AM	0	5	2	4	18	62	56	39	6	2	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	196	36--45	107
12:00 PM	9	2	4	8	16	49	63	47	10	1	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	245	36--45	143
2:00 PM	13	0	16	10	46	82	87	36	6	1	0	1	0	0	298	36--45	168
3:00 PM	3	0	0	6	26	107	94	45	5	1	0	0	0	0	287	36--45	201
4:00 PM	7	0	0	15	37	104	117	43	4	1	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	225	36--45	156
6:00 PM	9	0	1	3	27	64	54	21	4	1	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	111	36--45	84
8:00 PM	0	0	1	2	15	32	31	10	3	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	89	36--45	58
10:00 PM	1	2	0	0	8	17	15	12	2	2	1	0	0	0	60	36--45	32
11:00 PM	0	0	0	0	4	12	12	8	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	3536	36--45	2134
Percent ADT	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%			

AM Peak	10:00 AM	11:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	5:00 AM	7:00 AM	
Volume	7	5	4	14	30	75	76	62	15	5	1	284
PM Peak	2:00 PM	12:00 PM	2:00 PM	4:00 PM	2:00 PM	3:00 PM	4:00 PM	12:00 PM	1:00 PM	10:00 PM	2:00 PM	4:00 PM
Volume	13	2	16	15	46	107	117	47	16	2	1	328

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/WB



**SUMMARY:**

Date: Dec 16 2014 - Dec 16 2014

	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	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%			
Cumulative Percent	2.00%	2.50%	3.70%	6.50%	17.50%	46.00%	77.80%	95.10%	99.00%	99.90%	100.00%	100.00%	100.00%	100.00%			
ADT	3536																

85th Percentile 47 MPH  
 Mean Speed(Average) 39 MPH  
 Median 40 MPH  
 Mode 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

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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		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

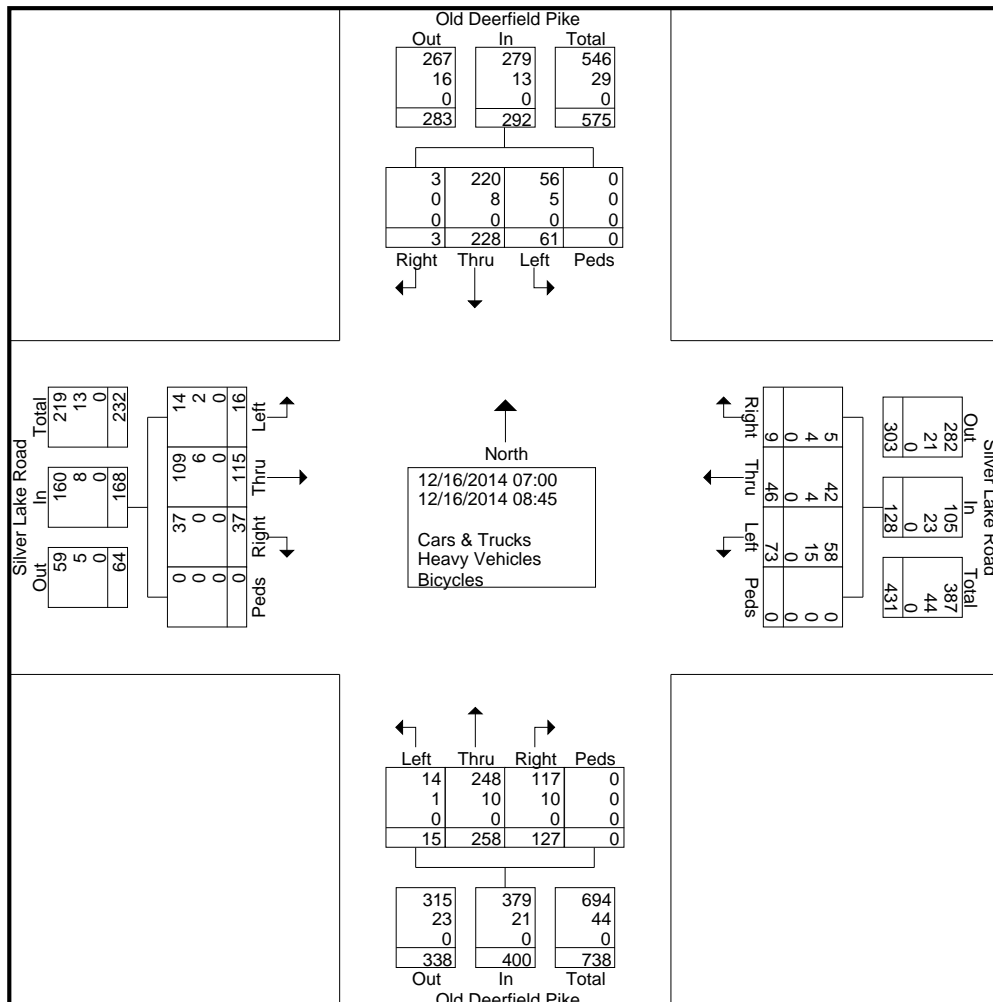
1301 N. 2nd Street  
Philadelphia, PA 19122

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

Start Time	Old Deerfield Pike From North					Silver Lake Road From East					Old Deerfield Pike From South					Silver Lake 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	
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	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

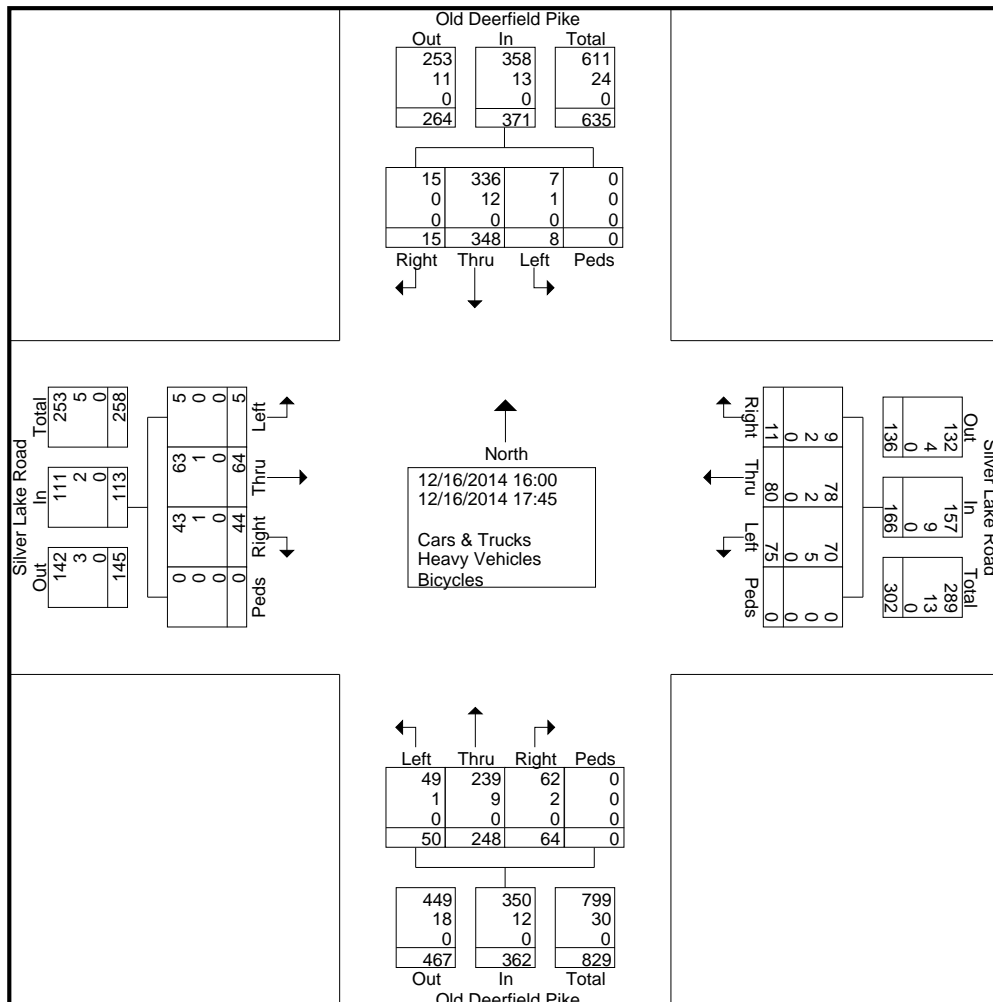
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 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

Start Time	Old Deerfield Pike From North					Silver Lake Road From East					Old Deerfield Pike From South					Silver Lake 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	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
<b>Total</b>	<b>3</b>	<b>196</b>	<b>3</b>	<b>0</b>	<b>202</b>	<b>8</b>	<b>32</b>	<b>35</b>	<b>0</b>	<b>75</b>	<b>27</b>	<b>147</b>	<b>25</b>	<b>0</b>	<b>199</b>	<b>28</b>	<b>32</b>	<b>1</b>	<b>0</b>	<b>61</b>	<b>537</b>
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
<b>Total</b>	<b>12</b>	<b>152</b>	<b>5</b>	<b>0</b>	<b>169</b>	<b>3</b>	<b>48</b>	<b>40</b>	<b>0</b>	<b>91</b>	<b>37</b>	<b>101</b>	<b>25</b>	<b>0</b>	<b>163</b>	<b>16</b>	<b>32</b>	<b>4</b>	<b>0</b>	<b>52</b>	<b>475</b>
<b>Grand Total</b>	<b>15</b>	<b>348</b>	<b>8</b>	<b>0</b>	<b>371</b>	<b>11</b>	<b>80</b>	<b>75</b>	<b>0</b>	<b>166</b>	<b>64</b>	<b>248</b>	<b>50</b>	<b>0</b>	<b>362</b>	<b>44</b>	<b>64</b>	<b>5</b>	<b>0</b>	<b>113</b>	<b>1012</b>
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	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		
Start Time	1	15	20	21	26	31	36	41	46	51	56	61	66	71	76	Speed	in Pace
12:00 AM	0	0	0	0	0	0	0	0	6	4	3	5	0	0	0	46--55	10
1:00 AM	0	0	0	0	0	0	0	1	2	1	3	1	0	0	0	51--60	4
2:00 AM	0	0	0	0	0	0	0	0	3	2	6	2	1	0	1	51--60	8
3:00 AM	0	0	0	0	0	0	0	0	0	8	4	3	0	0	0	51--60	12
4:00 AM	1	0	0	0	0	0	0	0	4	8	7	9	3	1	1	56--65	16
5:00 AM	0	1	0	0	0	1	0	3	5	15	23	13	3	5	0	51--60	38
6:00 AM	4	0	0	0	0	0	0	2	38	52	48	18	3	2	1	51--60	99
7:00 AM	6	0	0	0	0	0	2	7	51	110	87	23	10	0	1	51--60	196
8:00 AM	3	0	0	0	0	0	2	4	12	67	55	25	8	1	1	51--60	122
9:00 AM	3	0	0	0	0	0	0	6	20	51	39	18	5	1	0	51--60	90
10:00 AM	3	0	0	0	0	1	0	2	24	45	23	8	6	0	0	46--55	69
11:00 AM	3	2	0	0	0	0	0	8	19	50	25	14	3	0	0	51--60	75
12:00 PM	1	1	0	0	0	0	1	5	16	52	28	9	5	3	0	51--60	79
1:00 PM	0	0	0	0	1	0	0	7	25	46	39	6	5	2	1	51--60	85
2:00 PM	1	1	3	0	0	0	0	14	37	66	34	11	5	0	0	47--56	102
3:00 PM	11	0	0	0	0	1	1	21	83	115	45	14	0	0	0	46--55	198
4:00 PM	10	0	0	0	0	3	3	30	98	104	42	9	3	1	1	46--55	202
5:00 PM	1	0	0	0	0	0	3	18	67	74	31	1	3	0	0	46--55	141
6:00 PM	2	0	0	0	0	0	8	32	60	55	14	3	0	0	0	46--55	115
7:00 PM	0	0	0	0	1	0	2	12	28	26	18	2	0	0	0	46--55	54
8:00 PM	1	0	0	0	0	0	1	11	29	23	12	0	0	0	0	46--55	51
9:00 PM	1	0	0	0	0	0	5	4	18	27	8	3	0	0	0	46--55	45
10:00 PM	0	0	0	0	0	0	0	3	4	14	15	3	0	0	0	51--60	29
11:00 PM	0	0	0	0	0	0	0	2	2	8	7	3	2	0	0	51--60	14
Day Total	51	5	5	3	2	5	31	194	651	1023	616	203	65	15	7	46--55	1673
Percent ADT	1.80%	0.20%	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%		

AM Peak	11:00 AM	2:00 AM	12:00 AM	11:00 AM	7:00 AM	8:00 AM	7:00 AM	5:00 AM	2:00 AM	7:00 AM
Volume	6	2	1	3	8	25	87	5	1	297
PM Peak	3:00 PM	12:00 PM	2:00 PM	1:00 PM	6:00 PM	3:00 PM	3:00 PM	12:00 PM	1:00 PM	4:00 PM
Volume	11	1	3	1	8	14	45	3	1	301

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:**

Date: Dec 16 2014 - Dec 16 2014

1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number
15	20	25	30	35	40	45	50	55	60	65	70	75	999	2871	Speed	in Pace
51	5	3	2	5	31	194	651	1023	616	203	65	15	7	2871	46--55	1673
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%			
1.80%	2.00%	2.10%	2.10%	2.30%	3.40%	10.10%	32.80%	68.40%	89.90%	97.00%	99.20%	99.80%	100.00%			
ADT	2871															

85th Percentile 58 MPH  
 Mean Speed(Average) 52 MPH  
 Median 52 MPH  
 Mode 53 MPH

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

=====

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week
						Hourly Traffic			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/WB



**SUMMARY:**

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed 31--40	Number in Pace 1142
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	1642		
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%	0.00%	0.00%			
Cumulative Percent	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%			
ADT				1642													

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

=====

Start Time	Mon	Tue 16-Dec-14	Average Weekday			Average Week		
			Wed	Thu	Fri	Hourly Traffic	Sat	Sun
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

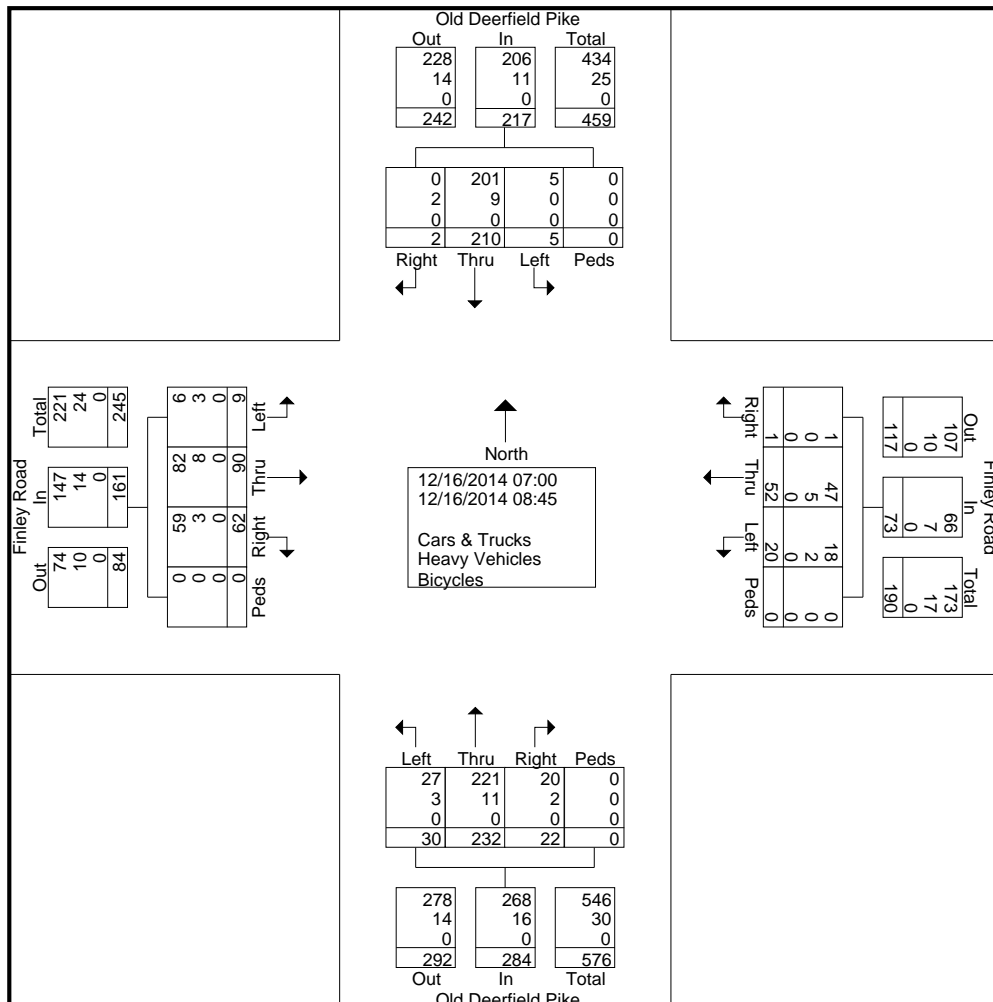
1301 N. 2nd Street  
Philadelphia, PA 19122

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

Start Time	Old Deerfield Pike From North					Finley Road From East					Old Deerfield Pike From South					Finley 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	
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		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	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

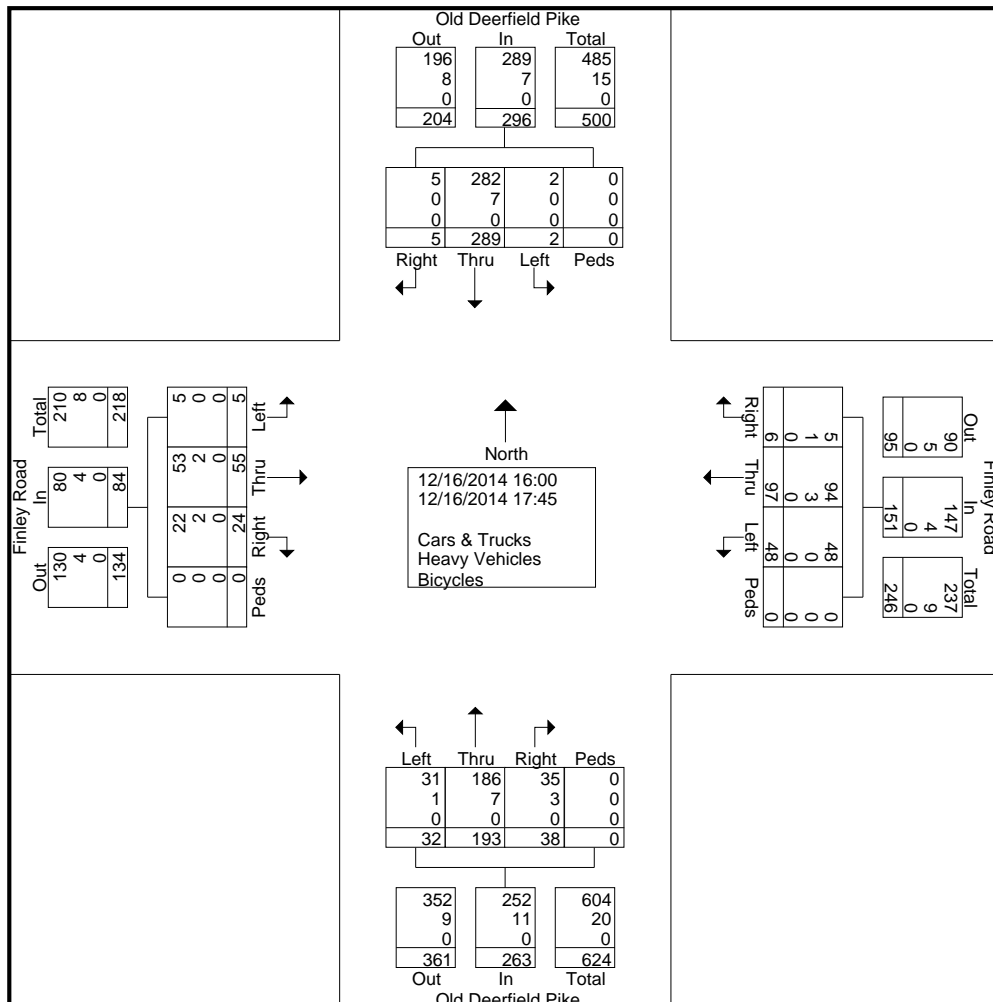
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 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

Start Time	Old Deerfield Pike From North					Finley Road From East					Old Deerfield Pike From South					Finley 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	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	0
% Bicycles	0	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

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 =====

Date:	Dec 16 2014																
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number
12:00 AM	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	1	1	5	8	4	4	1	1	1	8	61--70	3
2:00 AM	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	9	11	7	5	5	1	0	40	46--55	20
4:00 AM	1	0	0	0	0	1	2	2	7	8	8	8	0	3	40	61--70	16
5:00 AM	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	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	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	139	46--55	76
12:00 PM	0	0	0	1	2	8	25	47	49	21	6	3	3	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	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	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	267	46--55	150
6:00 PM	2	1	0	0	1	12	25	32	44	28	32	12	2	0	191	46--55	76
7:00 PM	1	0	1	0	1	2	9	7	22	24	21	10	3	6	107	56--65	45
8:00 PM	0	0	0	0	0	4	15	22	24	19	9	6	0	0	99	47--56	45
9:00 PM	1	0	0	1	0	3	4	17	19	19	11	6	2	0	83	51--60	37
10:00 PM	0	0	0	0	0	1	4	8	14	15	9	2	0	1	54	51--60	29
11:00 PM	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	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%			
AM Peak	7:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	5:00 AM	4:00 AM	7:00 AM		
Volume	2	1	2	7	9	19	35	64	112	69	41	21	8	3	364		
PM Peak	3:00 PM	3:00 PM	7:00 PM	2:00 PM	2:00 PM	4:00 PM	4:00 PM	4:00 PM	3:00 PM	3:00 PM	6:00 PM	6:00 PM	3:00 PM	7:00 PM	3:00 PM		
Volume	7	2	1	3	9	21	89	94	96	64	32	12	4	6	364		



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:**

Date: Dec 16 2014 - Dec 16 2014

	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	76	3592	46--55	1644
Percent	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%			
Cumulative Percent	1.00%	1.10%	1.30%	1.90%	3.50%	7.90%	21.40%	42.90%	67.20%	83.50%	93.20%	97.70%	99.30%	100.00%			
ADT																	

85th Percentile 60 MPH  
 Mean Speed(Average) 54 MPH  
 Median 51 MPH  
 Mode 53 MPH



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	Sat	Sun	Average Week	
						Hourly Traffic			Hourly Traffic	
		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	



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			
12:00 AM	15	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	2	0	0	2	2	0	0	0	0	0	6	41--50	4	
3:00 AM	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	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	31	41--50	20	
6:00 AM	0	1	0	0	0	4	16	23	7	2	0	0	0	0	53	36--45	39	
7:00 AM	0	0	1	1	4	25	47	49	24	3	0	0	0	0	153	36--45	96	
8:00 AM	3	1	0	0	3	3	24	29	21	4	1	0	0	0	89	37--46	52	
9:00 AM	2	0	1	1	1	3	25	22	20	4	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	81	36--45	48	
11:00 AM	0	0	0	0	0	7	17	22	11	5	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	93	36--45	66	
1:00 PM	0	0	2	3	5	5	16	38	17	7	1	0	0	0	89	41--50	55	
2:00 PM	5	0	3	2	2	9	49	40	17	2	0	0	0	0	127	36--45	89	
3:00 PM	0	0	1	2	2	10	40	45	17	3	0	0	0	0	118	36--45	85	
4:00 PM	0	0	1	2	2	16	45	42	15	1	0	0	0	0	122	36--45	87	
5:00 PM	0	0	1	1	1	20	31	34	7	1	0	0	0	0	95	36--45	65	
6:00 PM	0	0	0	2	13	13	20	17	1	0	0	0	0	0	53	36--45	37	
7:00 PM	0	0	1	1	0	1	13	7	5	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	50	36--45	40	
9:00 PM	1	0	0	0	0	5	17	15	3	2	0	1	0	0	44	36--45	32	
10:00 PM	0	0	1	1	1	4	3	5	6	0	0	0	0	0	20	41--50	10	
11:00 PM	0	0	1	0	0	0	5	1	0	0	0	0	0	0	7	36--45	5	
Day Total	13	2	13	34	34	146	441	501	218	43	6	1	0	0	1418	36--45	942	
Percent ADT	0.90%	0.10%	0.90%	2.40%	10.30%	31.10%	35.30%	15.40%	15.40%	3.00%	0.40%	0.10%	0.00%	0.00%	0.00%			

AM Peak Volume	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 AM
	1	1	1	6	25	47	49	24	5	2	6	17	1	153
PM Peak Volume	5	3	3	3	20	49	47	17	7	1	1	1	1	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/WB



**SUMMARY:**

Date: Dec 16 2014 - Dec 16 2014

	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	76	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%			
Cumulative Percent	0.90%	1.10%	2.00%	4.40%	14.70%	45.80%	81.10%	96.50%	99.50%	99.90%	100.00%	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	Average Weekday			Sat	Sun	Average Week
			Hourly Traffic	Hourly Traffic	Hourly Traffic			
		16-Dec-14						
12:00 AM		5						5
1:00 AM		2						2
2:00 AM		6						6
3:00 AM		8						8
4:00 AM		5						5
5:00 AM		31						31
6:00 AM		53						53
7:00 AM		153						153
8:00 AM		89						89
9:00 AM		78						78
10:00 AM		81						81
11:00 AM		62						62
12:00 PM		93						93
1:00 PM		89						89
2:00 PM		127						127
3:00 PM		118						118
4:00 PM		122						122
5:00 PM		95						95
6:00 PM		53						53
7:00 PM		27						27
8:00 PM		50						50
9:00 PM		44						44
10:00 PM		20						20
11:00 PM		7						7
Day Total		1418						1418
ADT		1418						1418
%Weekday Average		100.00%						
%Week Average		100.00%						100.00%
AM Peak		7:00 AM						7:00 AM
Volume		153						153
PM Peak		2:00 PM						2:00 PM
Volume		127						127

# Rodriguez Consulting

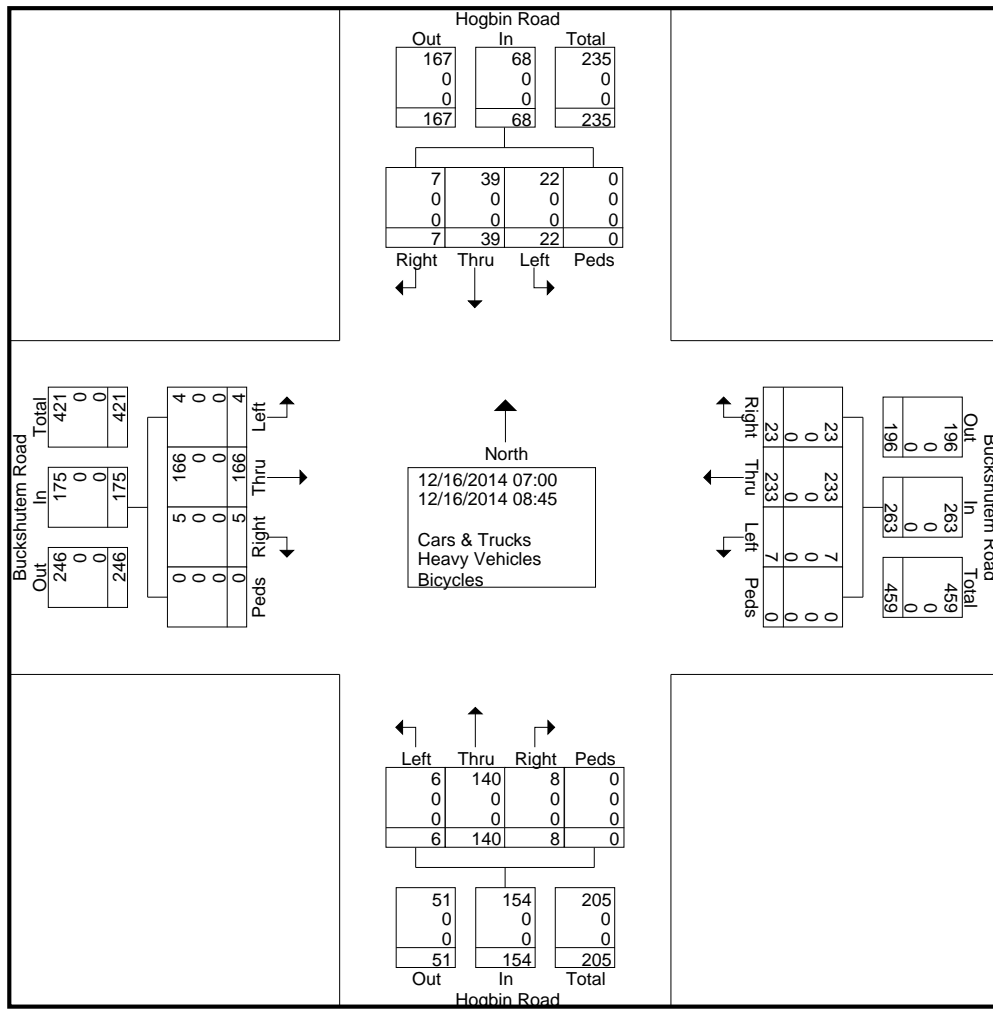
1301 N. 2nd Street  
Philadelphia, PA 19122

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					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	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	100
Heavy Vehicles	0	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	0
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

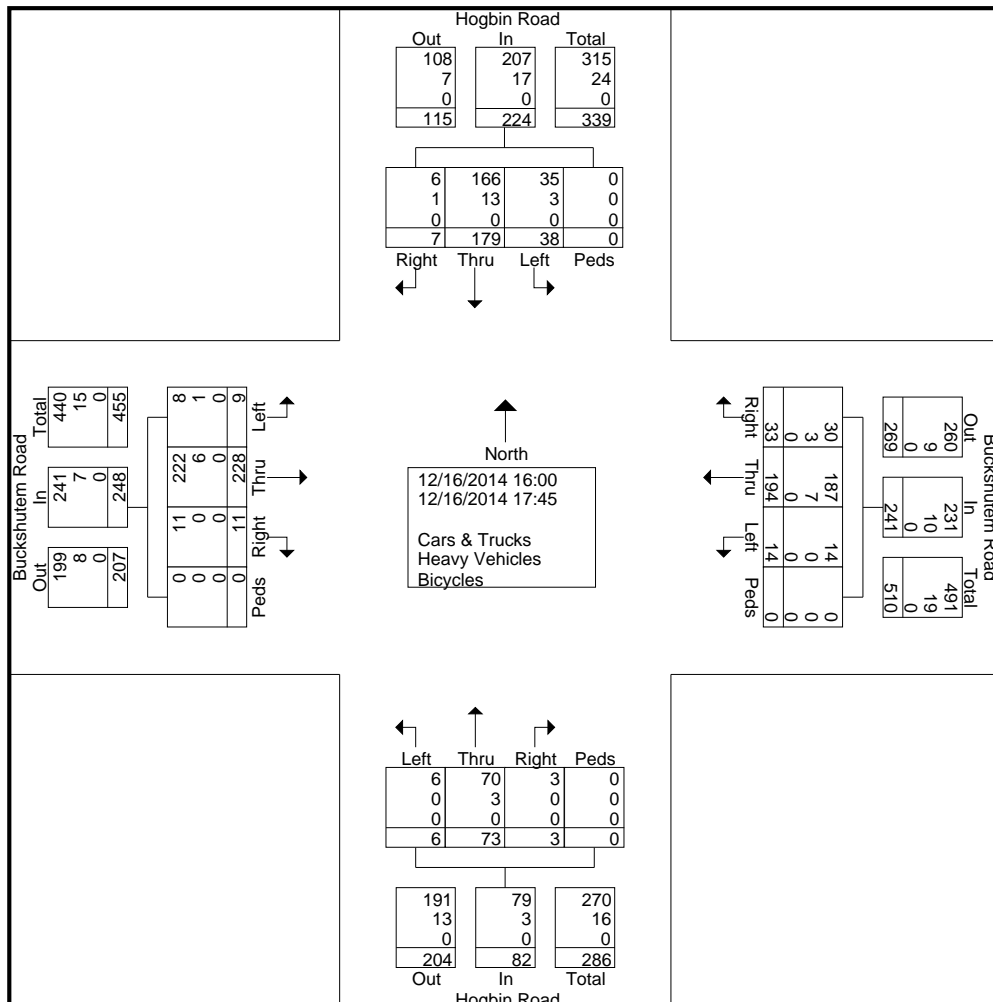
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 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

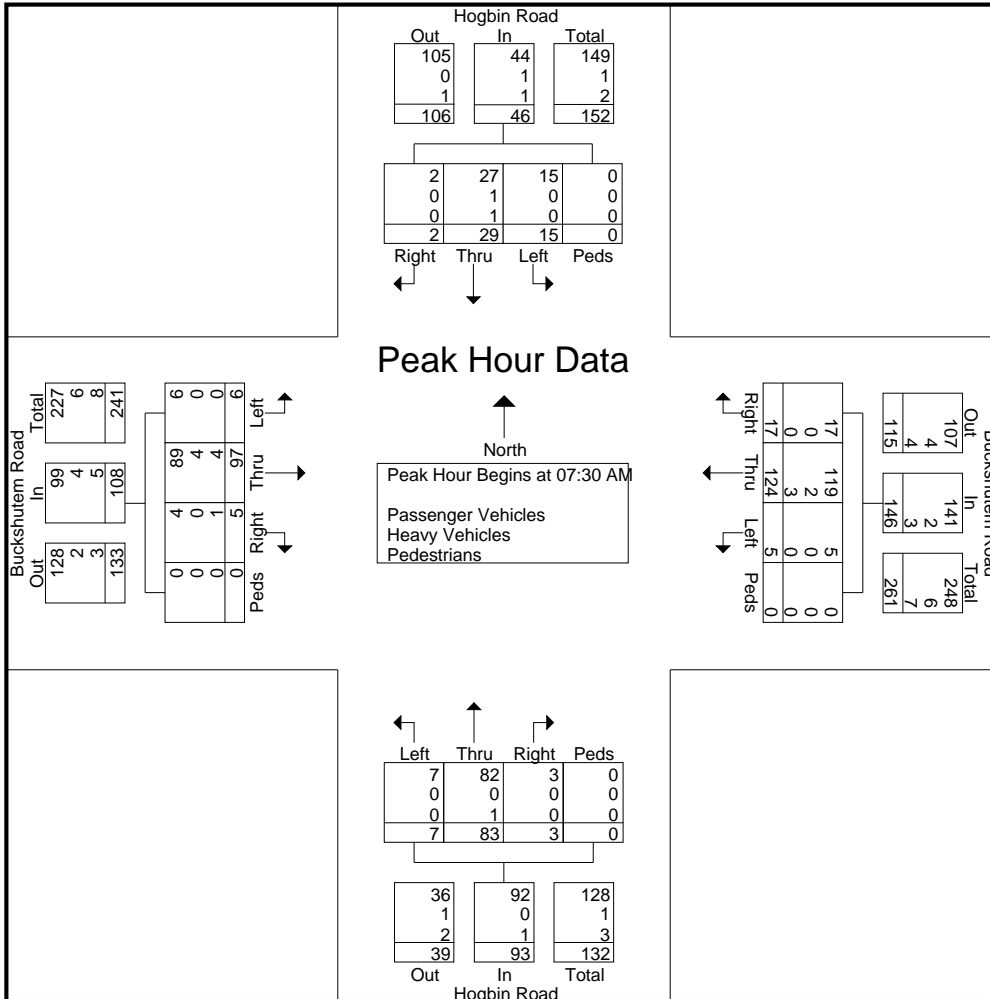
Start Time	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	13	2	0	15	1	6	0	0	7	0	37	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
<b>Total</b>	<b>6</b>	<b>69</b>	<b>3</b>	<b>0</b>	<b>78</b>	<b>11</b>	<b>33</b>	<b>0</b>	<b>0</b>	<b>44</b>	<b>2</b>	<b>112</b>	<b>3</b>	<b>0</b>	<b>117</b>	<b>1</b>	<b>126</b>	<b>17</b>	<b>0</b>	<b>144</b>	<b>383</b>
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
<b>Total</b>	<b>4</b>	<b>70</b>	<b>2</b>	<b>0</b>	<b>76</b>	<b>17</b>	<b>25</b>	<b>6</b>	<b>2</b>	<b>50</b>	<b>5</b>	<b>95</b>	<b>3</b>	<b>0</b>	<b>103</b>	<b>4</b>	<b>105</b>	<b>16</b>	<b>0</b>	<b>125</b>	<b>354</b>
<b>Grand Total</b>	<b>10</b>	<b>139</b>	<b>5</b>	<b>0</b>	<b>154</b>	<b>28</b>	<b>58</b>	<b>6</b>	<b>2</b>	<b>94</b>	<b>7</b>	<b>207</b>	<b>6</b>	<b>0</b>	<b>220</b>	<b>5</b>	<b>231</b>	<b>33</b>	<b>0</b>	<b>269</b>	<b>737</b>
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

Start Time	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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 : 0000001  
 Start Date : 6/5/2015  
 Page No : 2



# Pennoni Associates

Location:  
 Intersection:  
 Date:  
 Counter:

File Name : pm counts  
 Site Code : 0000001  
 Start Date : 6/5/2015  
 Page No : 1

### Groups Printed- Passenger Vehicles

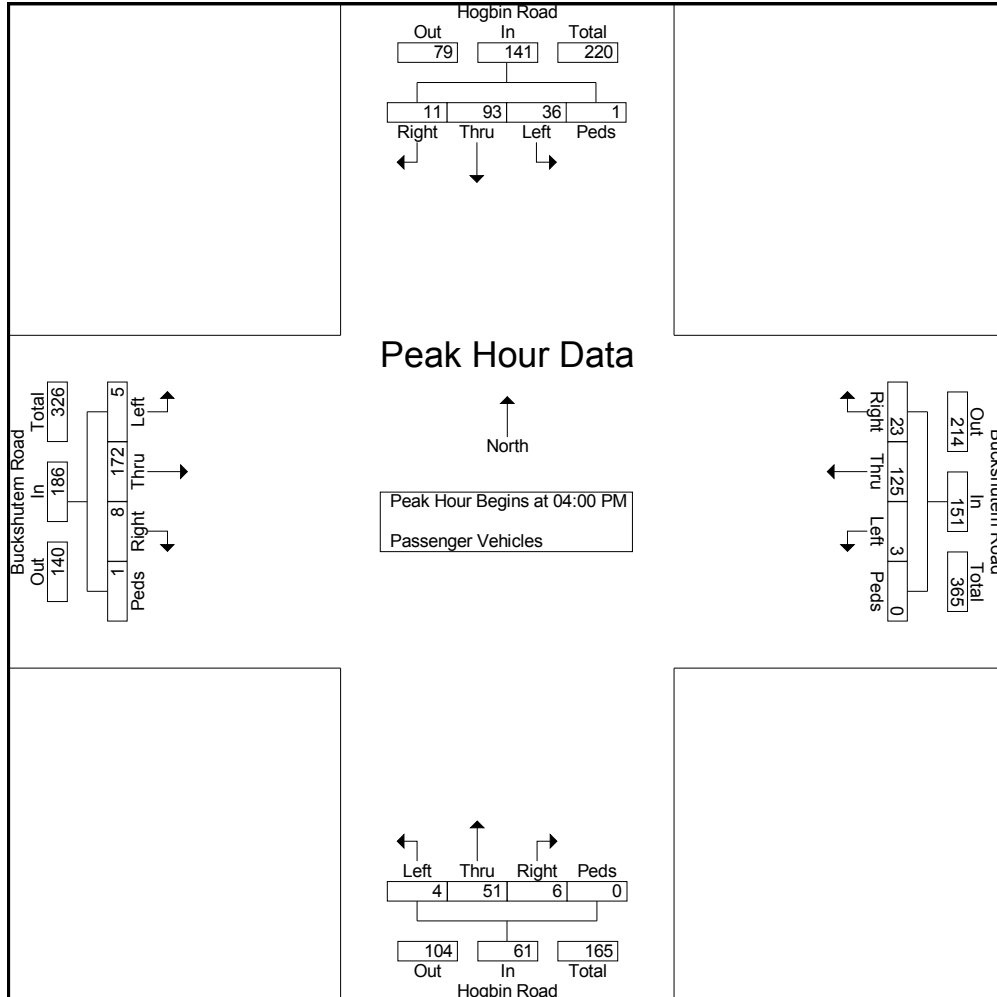
Start Time	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
04:00 PM	2	10	1	0	13	11	20	9	0	40	1	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
<b>Total</b>	<b>4</b>	<b>51</b>	<b>6</b>	<b>0</b>	<b>61</b>	<b>36</b>	<b>93</b>	<b>11</b>	<b>1</b>	<b>141</b>	<b>5</b>	<b>172</b>	<b>8</b>	<b>1</b>	<b>186</b>	<b>3</b>	<b>125</b>	<b>23</b>	<b>0</b>	<b>151</b>	<b>539</b>
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
<b>Total</b>	<b>4</b>	<b>57</b>	<b>3</b>	<b>0</b>	<b>64</b>	<b>26</b>	<b>105</b>	<b>8</b>	<b>0</b>	<b>139</b>	<b>4</b>	<b>158</b>	<b>7</b>	<b>0</b>	<b>169</b>	<b>6</b>	<b>101</b>	<b>22</b>	<b>0</b>	<b>129</b>	<b>501</b>
<b>Grand Total</b>	<b>8</b>	<b>108</b>	<b>9</b>	<b>0</b>	<b>125</b>	<b>62</b>	<b>198</b>	<b>19</b>	<b>1</b>	<b>280</b>	<b>9</b>	<b>330</b>	<b>15</b>	<b>1</b>	<b>355</b>	<b>9</b>	<b>226</b>	<b>45</b>	<b>0</b>	<b>280</b>	<b>1040</b>
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	

Start Time	Hogbin Road Northbound					Hogbin Road Southbound					Buckshutem Road Eastbound					Buckshutem Road Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. 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	<b>38</b>	<b>8</b>	0	<b>47</b>	<b>144</b>
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 : 0000001  
 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	1	15	16	20	21	25	26	30	31	36	41	46	51	56	61	66	71	76	Total	Pace	Number	
	1	15	16	20	21	25	30	31	36	41	46	51	56	61	66	71	76	999		Speed	In Pace	
12:00 AM	0	0	0	0	0	0	0	0	1	1	4	2	1	0	0	0	0	0	0	15	41--50	9
1:00 AM	0	0	0	0	0	0	0	0	1	1	3	1	1	0	0	0	0	0	0	7	41--50	4
2:00 AM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	10	42--51	7	
3:00 AM	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0	0	0	5	36--45	4	
4:00 AM	0	0	0	0	0	0	0	2	2	2	2	1	0	0	0	0	0	0	9	41--50	4	
5:00 AM	0	0	0	0	0	0	0	2	12	6	11	14	1	2	0	0	0	0	48	46--55	24	
6:00 AM	1	1	1	1	0	3	3	1	14	31	35	6	5	1	1	0	0	0	99	41--50	66	
7:00 AM	2	0	0	0	0	1	1	2	17	35	46	17	7	0	0	1	0	0	128	41--50	81	
8:00 AM	1	0	0	0	0	0	0	3	12	34	48	17	3	0	0	0	0	0	118	41--50	81	
9:00 AM	0	0	0	0	0	0	0	1	9	34	39	21	2	0	0	0	0	0	106	41--50	73	
10:00 AM	0	0	0	0	0	0	0	3	11	23	24	16	3	1	0	0	0	0	81	41--50	46	
11:00 AM	0	0	0	0	0	0	0	1	8	32	35	19	5	1	0	0	0	0	101	41--50	67	
12:00 PM	1	0	0	0	0	0	0	4	9	27	35	22	7	3	0	0	0	0	108	41--50	62	
1:00 PM	1	0	0	0	0	0	0	0	8	33	38	26	3	1	0	0	0	0	110	41--50	70	
2:00 PM	3	0	0	0	1	3	1	4	16	54	44	22	2	2	0	0	0	0	151	41--50	98	
3:00 PM	2	0	0	0	0	0	1	6	19	41	44	19	3	0	0	0	0	0	135	41--50	85	
4:00 PM	0	0	0	0	0	0	1	2	28	65	49	27	4	1	0	0	0	0	177	41--50	114	
5:00 PM	3	0	0	0	1	2	10	10	36	65	36	12	1	0	0	0	0	0	166	36--45	101	
6:00 PM	0	0	0	0	0	1	8	8	30	38	26	7	3	0	0	0	0	0	113	37--46	67	
7:00 PM	0	0	0	0	0	1	1	3	11	20	23	5	2	0	0	0	0	0	65	41--50	42	
8:00 PM	0	0	0	0	0	0	0	3	15	36	12	2	2	0	0	0	0	0	70	36--45	51	
9:00 PM	0	0	0	0	0	0	1	1	11	15	12	2	0	0	0	0	0	0	42	41--50	26	
10:00 PM	0	0	0	0	0	0	0	3	5	18	5	7	1	0	1	0	0	0	40	36--45	23	
11:00 PM	0	0	0	0	0	0	0	0	4	7	6	4	1	0	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%	0.80%	3.20%	14.50%	32.70%	30.10%	14.00%	3.00%	0.60%	0.10%	0.10%	0.00%									
ADT	1926																					
AM Peak	7:00 AM	6:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM	9:00 AM	7:00 AM	5:00 AM	6:00 AM	7:00 AM	7:00 AM	6:00 AM	7:00 AM	7:00 AM	7:00 AM					
Volume	2	1	3	3	17	35	48	21	7	2	1	1	1	1	128							
PM Peak	2:00 PM	2:00 PM	2:00 PM	5:00 PM	5:00 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM	12:00 PM	12:00 PM	10:00 PM	4:00 PM	12:00 PM	4:00 PM	4:00 PM	4:00 PM					
Volume	3	1	3	10	36	65	49	27	7	3	1	1	177	177								

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 Speed	Number in Pace
Grand Total	14	20	25	30	35	40	45	50	55	60	65	70	75	76	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%			
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%			
ADT	1926																

85th Percentile 50 MPH  
 Mean Speed(Avr)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

=====

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	
						Hourly Traffic			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	



RODRIGUEZ CONSULTING COUNTS REPORT

=====

Date:	Dec 16 2014													Total	Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Speed	in Pace
12:00 AM	0	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	1	0	0	6	2	0	0	0	0	9	51--60	8
2:00 AM	0	0	0	0	0	1	0	1	2	3	1	0	0	0	8	55--64	4
3:00 AM	0	0	0	0	2	0	0	0	1	3	4	0	0	2	12	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	2	9	30	35	22	11	1	3	113	51--60	65
6:00 AM	2	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	4	15	32	74	94	30	5	2	2	260	51--60	168
8:00 AM	1	0	0	0	5	11	14	45	61	52	11	5	3	0	208	51--60	113
9:00 AM	3	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	3	5	13	46	32	11	9	3	0	124	51--60	78
11:00 AM	2	0	0	1	0	2	1	18	31	39	15	7	2	1	119	51--60	70
12:00 PM	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	5	6	28	34	59	21	10	2	2	169	51--60	93
2:00 PM	0	0	0	0	0	4	15	28	62	66	23	4	0	1	203	51--60	127
3:00 PM	4	0	0	0	1	4	19	45	81	63	18	2	1	0	238	51--60	144
4:00 PM	0	0	0	0	1	1	10	45	101	76	20	2	0	0	256	51--60	176
5:00 PM	1	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	7	37	33	18	8	3	2	0	108	46--55	69
7:00 PM	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	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	54	51--60	33
10:00 PM	0	0	0	0	0	0	3	6	22	22	6	3	1	0	63	51--60	44
11:00 PM	0	0	0	0	0	0	2	3	7	9	2	1	2	0	26	51--60	16
Day Total	19	0	0	1	13	52	159	457	879	818	293	86	28	16	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%			

AM Peak Volume	9:00 AM	3	11:00 AM	8:00 AM	5	8:00 AM	15	8:00 AM	45	6:00 AM	82	7:00 AM	94	7:00 AM	30	5:00 AM	11	6:00 AM	3	5:00 AM	3	7:00 AM	260
PM Peak Volume	4	7:00 PM	2	5:00 PM	6	3:00 PM	19	5:00 PM	48	4:00 PM	101	4:00 PM	76	4:00 PM	31	1:00 PM	10	12:00 PM	2	12:00 PM	2	4:00 PM	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

	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	76	2821	51--60	1696
Percent	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%			
Cumulative Percent	0.70%	0.70%	0.70%	0.70%	1.20%	3.00%	8.60%	24.80%	56.00%	85.00%	95.40%	98.40%	99.40%	100.00%			
ADT	2821																

85th Percentile 59 MPH  
 Mean Speed(Average) 56 MPH  
 Median 54 MPH  
 Mode 53 MPH

Location: Buckshutem Rd  
 City/State: Millville NJ

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



RODRIGUEZ CONSULTING COUNTS REPORT

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13113909 - Buckshutem Rd (0 ft

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week
						Hourly Traffic			Hourly Traffic
16-Dec-14									
12:00 AM		13				13			13
1:00 AM		9				9			9
2:00 AM		8				8			8
3:00 AM		12				12			12
4:00 AM		26				26			26
5:00 AM		113				113			113
6:00 AM		214				214			214
7:00 AM		260				260			260
8:00 AM		208				208			208
9:00 AM		118				118			118
10:00 AM		124				124			124
11:00 AM		119				119			119
12:00 PM		146				146			146
1:00 PM		169				169			169
2:00 PM		203				203			203
3:00 PM		238				238			238
4:00 PM		256				256			256
5:00 PM		197				197			197
6:00 PM		108				108			108
7:00 PM		75				75			75
8:00 PM		62				62			62
9:00 PM		54				54			54
10:00 PM		63				63			63
11:00 PM		26				26			26
Day Total		2821				2821			2821
ADT		2821				2821			2821
%Weekday Average		100.00%							
%Week Average		100.00%				100.00%			
AM Peak		7:00 AM				7:00 AM			7:00 AM
Volume		260				260			260
PM Peak		4:00 PM				4:00 PM			4:00 PM
Volume		256				256			256

# Rodriguez Consulting

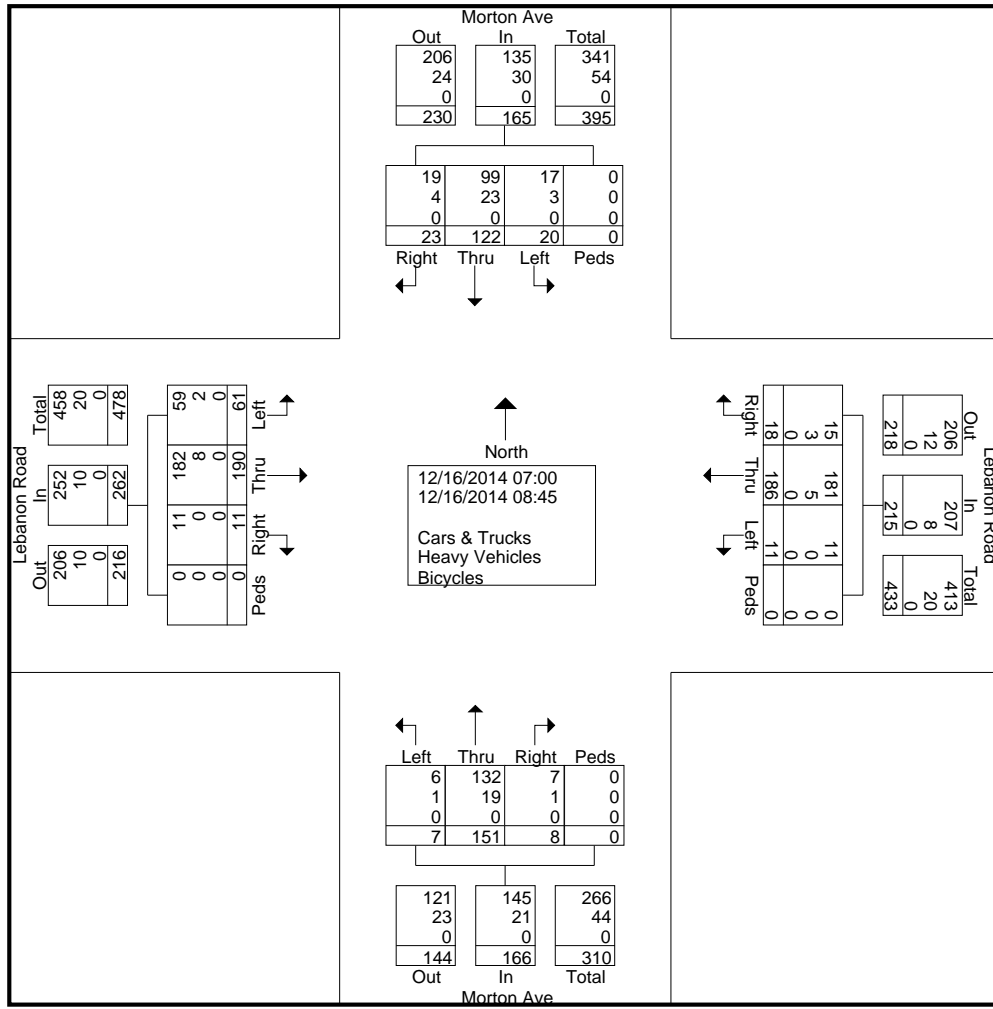
1301 N. 2nd Street  
Philadelphia, PA 19122

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

Start Time	Morton Ave From North					Lebanon Road From East					Morton Ave From South					Lebanon 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	
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
<b>Total</b>	<b>15</b>	<b>51</b>	<b>11</b>	<b>0</b>	<b>77</b>	<b>14</b>	<b>95</b>	<b>7</b>	<b>0</b>	<b>116</b>	<b>5</b>	<b>89</b>	<b>3</b>	<b>0</b>	<b>97</b>	<b>4</b>	<b>102</b>	<b>27</b>	<b>0</b>	<b>133</b>	<b>423</b>
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
<b>Total</b>	<b>8</b>	<b>71</b>	<b>9</b>	<b>0</b>	<b>88</b>	<b>4</b>	<b>91</b>	<b>4</b>	<b>0</b>	<b>99</b>	<b>3</b>	<b>62</b>	<b>4</b>	<b>0</b>	<b>69</b>	<b>7</b>	<b>88</b>	<b>34</b>	<b>0</b>	<b>129</b>	<b>385</b>
<b>Grand Total</b>	<b>23</b>	<b>122</b>	<b>20</b>	<b>0</b>	<b>165</b>	<b>18</b>	<b>186</b>	<b>11</b>	<b>0</b>	<b>215</b>	<b>8</b>	<b>151</b>	<b>7</b>	<b>0</b>	<b>166</b>	<b>11</b>	<b>190</b>	<b>61</b>	<b>0</b>	<b>262</b>	<b>808</b>
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	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

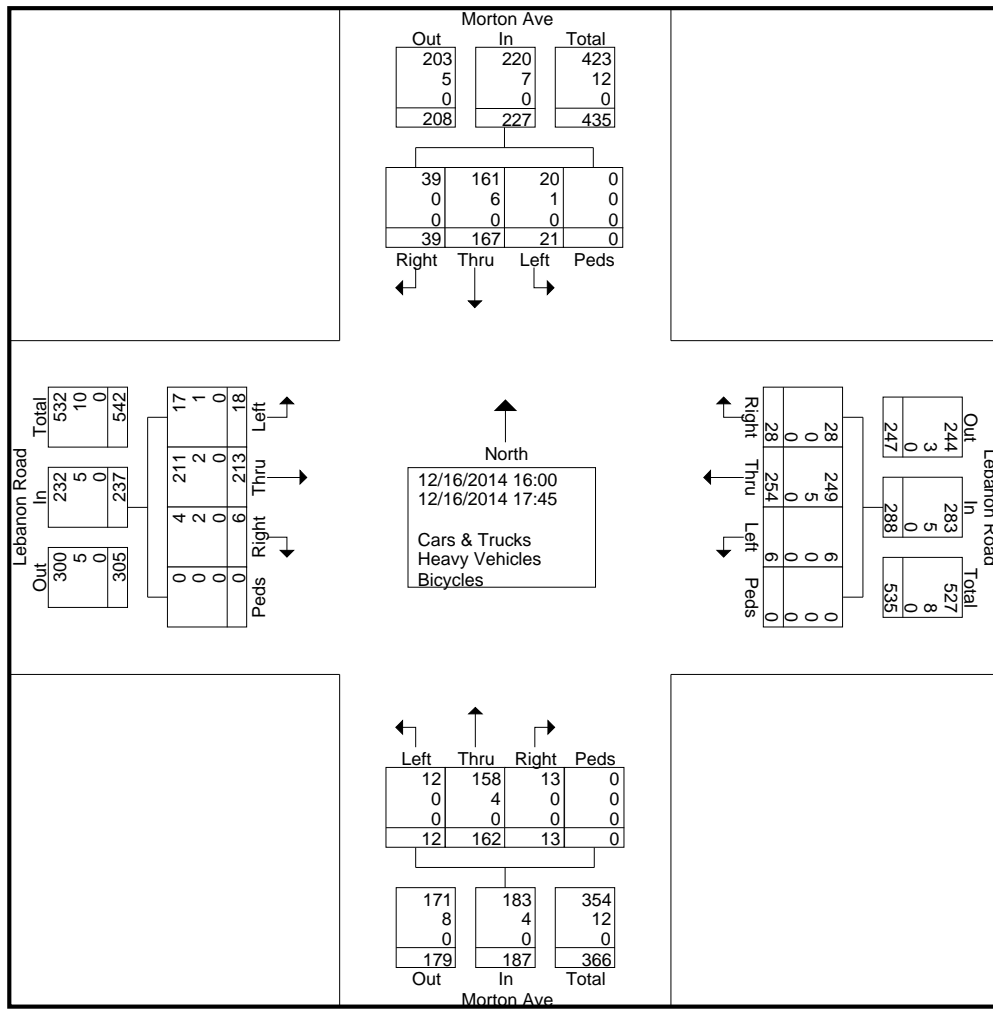
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 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

Start Time	Morton Ave From North					Lebanon Road From East					Morton Ave From South					Lebanon 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	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	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

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Date:	Jan 08 2015													Total	Pace	Number	
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	76	Speed	in Pace
12:00 AM	15	20	25	30	35	40	45	50	55	60	65	70	75	999	18	41--50	8
1:00 AM	0	0	0	0	0	2	3	0	1	0	0	0	0	0	6	38--47	4
2:00 AM	0	0	0	0	0	2	2	2	4	2	1	0	0	0	13	51--60	6
3:00 AM	0	0	1	0	1	1	1	4	0	0	0	0	0	0	8	41--50	5
4:00 AM	2	0	0	0	1	1	1	0	2	3	1	0	0	0	11	55--64	4
5:00 AM	6	1	0	3	6	9	20	10	5	6	0	2	0	1	69	41--50	30
6:00 AM	7	1	1	3	5	13	29	19	17	5	2	1	2	0	105	41--50	47
7:00 AM	17	0	0	2	5	21	48	71	38	16	7	2	0	0	227	41--50	118
8:00 AM	10	0	0	1	3	24	28	39	34	16	3	1	0	0	159	46--55	73
9:00 AM	1	0	2	4	6	6	27	21	22	10	1	0	1	0	101	41--50	48
10:00 AM	7	3	2	5	5	12	50	38	21	5	4	1	0	0	149	41--50	87
11:00 AM	0	0	0	2	2	7	28	48	27	11	4	1	0	0	130	46--55	75
12:00 PM	0	0	0	1	6	9	25	47	42	10	5	0	1	0	146	46--55	89
1:00 PM	1	0	0	1	3	6	18	41	48	21	4	2	1	0	146	46--55	88
2:00 PM	6	0	0	0	2	14	35	65	57	28	13	0	1	0	221	46--55	122
3:00 PM	6	0	1	3	2	3	28	52	51	30	14	4	1	0	195	46--55	102
4:00 PM	5	0	0	0	2	5	21	48	60	39	10	3	0	0	193	46--55	108
5:00 PM	3	0	1	3	3	23	24	49	52	17	10	1	0	0	186	46--55	101
6:00 PM	3	0	0	0	1	16	28	45	30	16	7	0	0	0	146	46--55	75
7:00 PM	1	0	0	1	1	9	13	28	20	10	6	0	1	1	91	46--55	48
8:00 PM	1	0	0	0	0	3	23	23	20	10	4	0	0	0	84	42--51	45
9:00 PM	0	0	2	0	3	2	13	16	26	5	3	0	0	0	70	46--55	42
10:00 PM	1	0	0	0	1	1	3	11	4	6	4	1	0	0	32	46--55	15
11:00 PM	0	0	0	0	0	1	4	4	3	3	0	0	0	0	15	41--50	8
Day Total	78	5	12	29	60	190	474	687	586	271	100	19	8	2	2521	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%			

AM Peak	7:00 AM	10:00 AM	12:00 AM	10:00 AM	5:00 AM	8:00 AM	10:00 AM	7:00 AM	7:00 AM	7:00 AM	5:00 AM	6:00 AM	5:00 AM	7:00 AM
Volume	17	3	2	5	6	24	50	71	38	16	7	2	1	227
PM Peak	2:00 PM	9:00 PM	3:00 PM	12:00 PM	5:00 PM	2:00 PM	2:00 PM	2:00 PM	4:00 PM	4:00 PM	3:00 PM	3:00 PM	12:00 PM	7:00 PM
Volume	6	2	3	6	23	65	35	65	60	39	14	4	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	2521	46--55	1272
Percent	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%			
Cumulative Percent	3.10%	3.30%	3.80%	4.90%	7.30%	14.80%	33.60%	60.90%	84.10%	94.90%	98.80%	99.60%	99.90%	100.00%			
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	Sat	Sun	Average Week	
						Hourly Traffic			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

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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	76	999	
12:00 AM	0	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	1	2	1	1	0	0	0	6	51--60	3
3:00 AM	0	0	0	0	1	0	2	1	5	4	1	0	0	0	14	51--60	9
4:00 AM	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	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	1	0	3	35	83	70	36	9	0	0	0	240	46--55	153
4:00 PM	3	0	0	0	2	13	45	112	87	41	11	0	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	2	1	9	16	28	19	6	2	0	0	0	85	46--55	46
8:00 PM	1	0	0	1	0	1	17	31	18	10	2	0	0	0	81	46--55	48
9:00 PM	0	0	0	0	0	1	14	23	7	4	2	0	0	0	51	41--50	37
10:00 PM	0	0	0	0	0	2	7	19	21	8	2	0	0	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	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%			

AM Peak Volume	11:00 AM	11:00 AM	8:00 AM	5:00 AM	5:00 AM	5:00 AM	5:00 AM	8:00 AM	7:00 AM	8:00 AM	7:00 AM	8:00 AM	9:00 AM	11:00 AM	7:00 AM
	6	2	2	3	6	12	31	57	88	50	32	6	3	2	250
PM Peak Volume	2:00 PM	2:00 PM	2:00 PM	1:00 PM	6:00 PM	6:00 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM	1:00 PM	12:00 PM	12:00 PM	5:00 PM	4:00 PM
	4	1	1	2	7	18	45	112	87	41	17	11	2	1	314

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/WB



**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
15	20	25	30	35	40	45	50	55	60	65	70	75	999	3087	Speed	in Pace
30	4	6	17	32	117	396	881	886	472	183	48	10	5	3087	46--55	1766
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%			
1.00%	1.10%	1.30%	1.80%	2.90%	6.70%	19.50%	48.00%	76.70%	92.00%	98.00%	99.50%	99.80%	100.00%			
ADT	3087															

85th Percentile 57 MPH  
 Mean Speed(Average) 50 MPH  
 Median 50 MPH  
 Mode 53 MPH

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

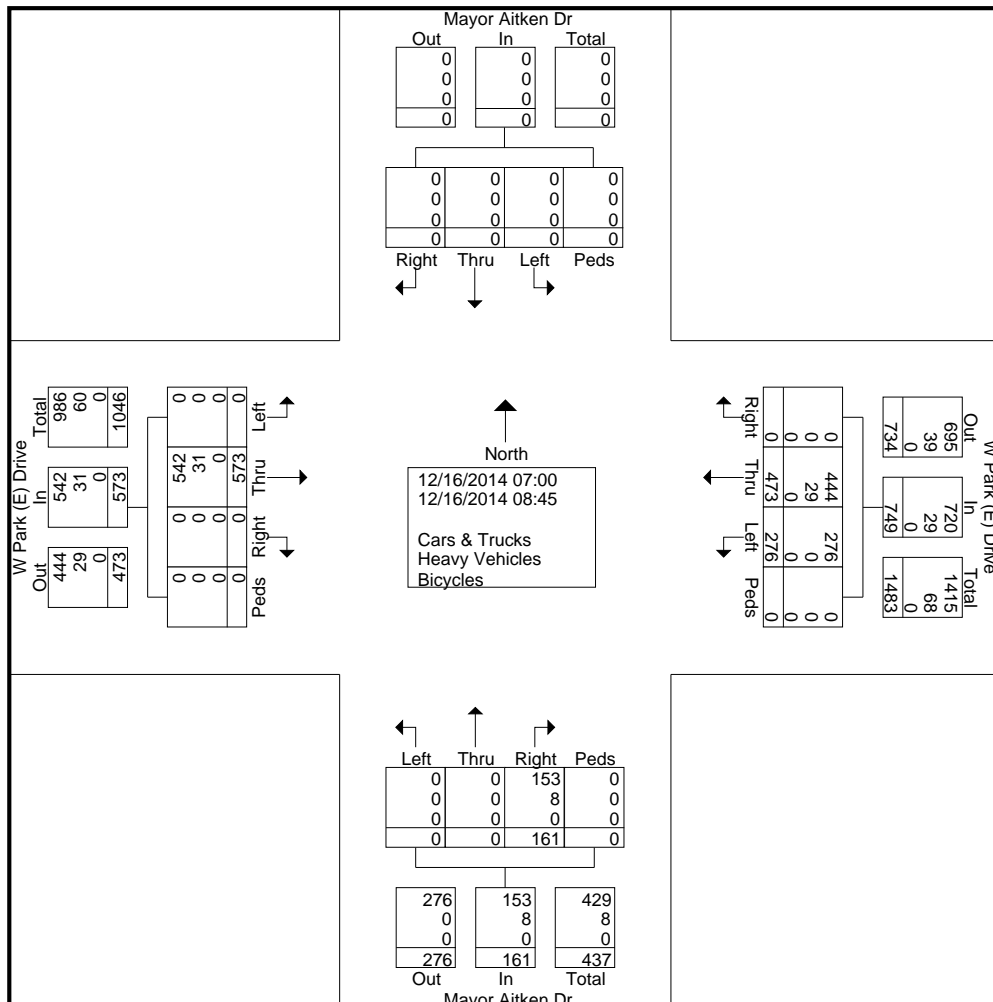
1301 N. 2nd Street  
Philadelphia, PA 19122

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	81
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	74.9	100	0	0	0	100	0	100	0	0	100	
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	
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	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

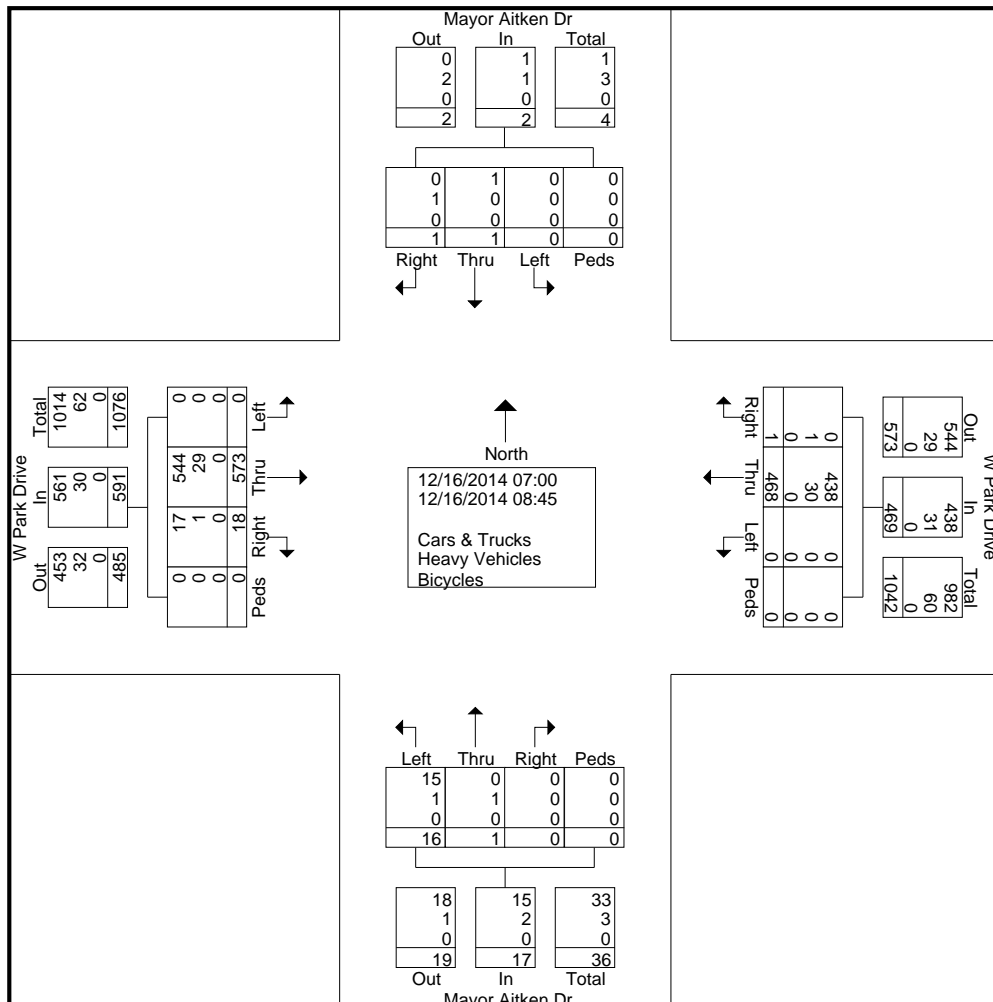
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 7 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

Start Time	Mayor Aitken Dr From North					W Park Drive From East					Mayor Aitken Dr From South					W Park 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	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		0.2	99.8	0	0		0	5.9	94.1	0		3	97	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

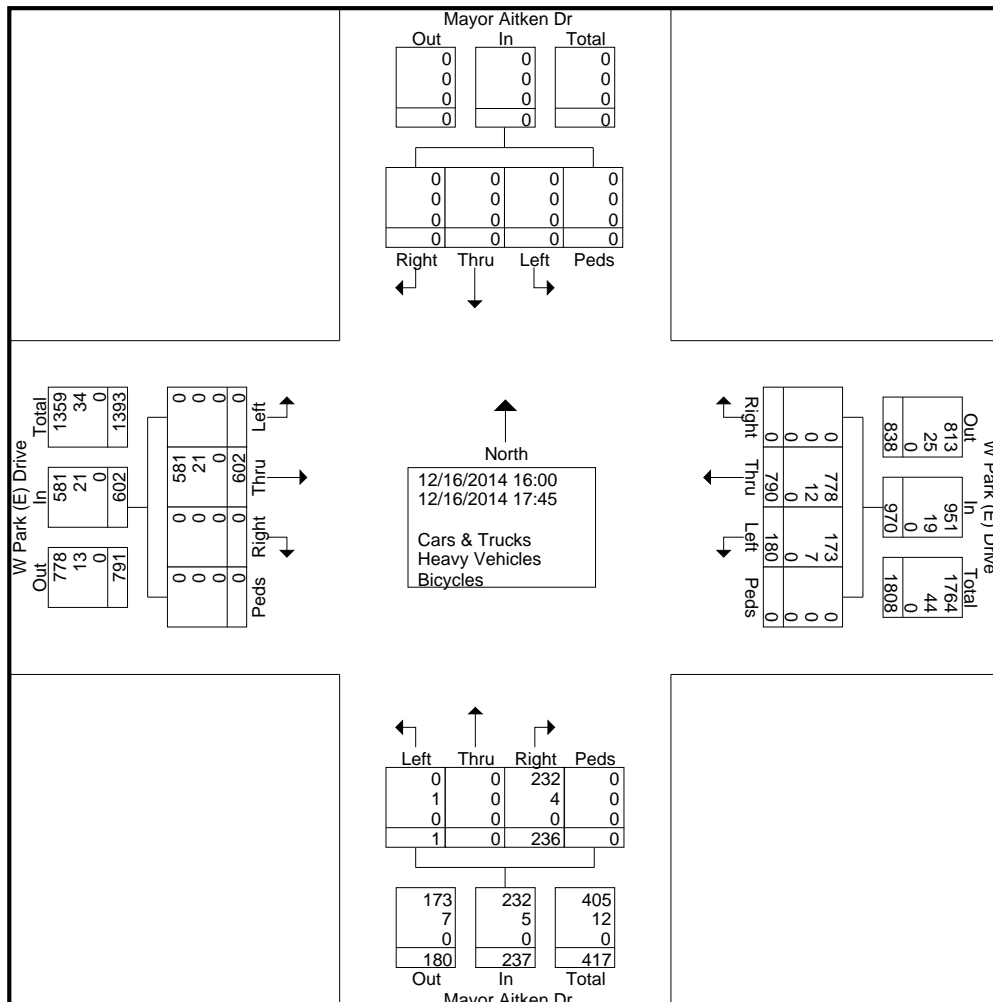
1301 N. 2nd Street  
Philadelphia, PA 19122

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

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	
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	0.4	0	99.6	0	100	0	0	100	
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	
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	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

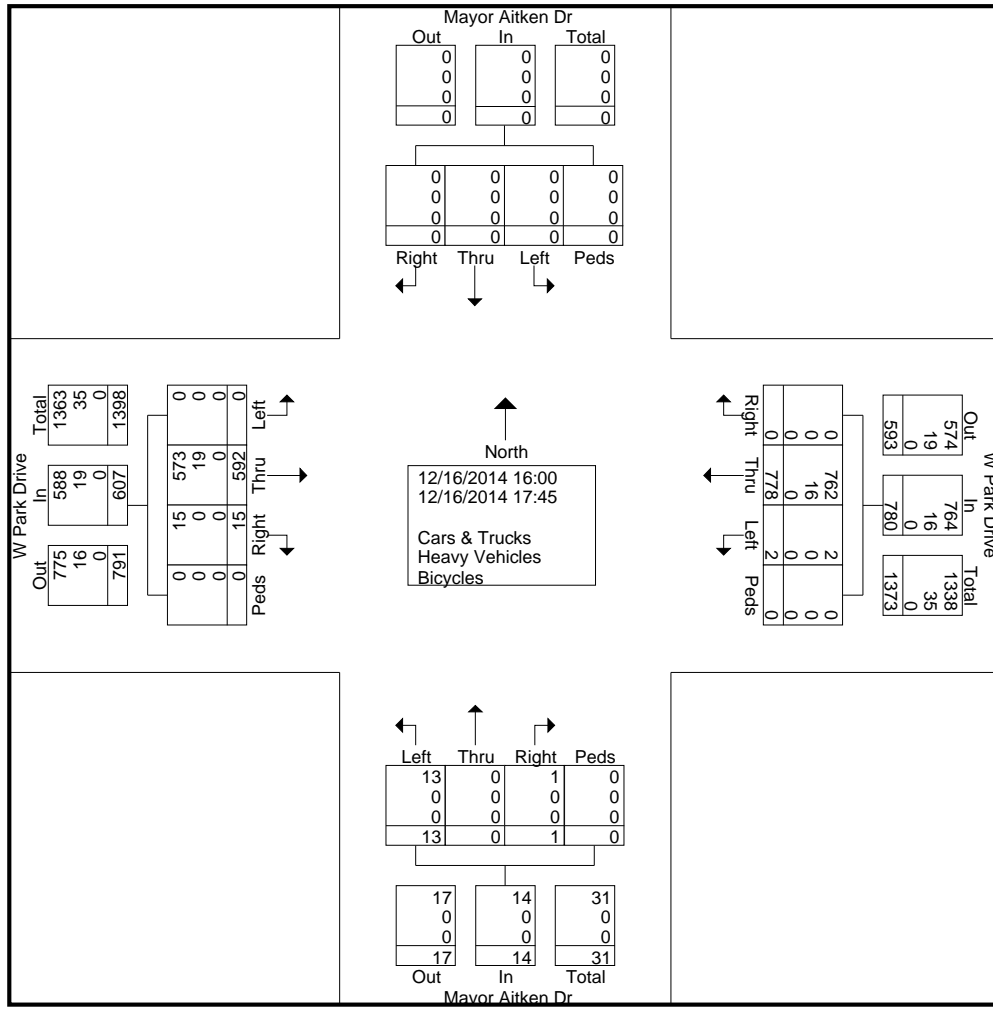
1301 N. 2nd Street  
Philadelphia, PA 19122

Site 7 PM Counts  
Mayor Aitken & W Park (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

Start Time	Mayor Aitken Dr From North					W Park Drive From East					Mayor Aitken Dr From South					W Park 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	
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	92.9	2.5	97.5	0	0	97.5	
Total %	0	0	0	0	0	0	55.5	0.1	0	55.7	0.1	0	0.9	0	0.9	1	42.3	0	0	43.3	
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





RODRIGUEZ CONSULTING COUNTS REPORT

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Date:	Dec 16 2014														Total	Pace	Number
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	76	Speed	in
12:00 AM	0	0	0	0	0	3	11	5	8	60	65	70	75	999	0	41--50	16
1:00 AM	0	0	1	0	1	1	8	5	3	0	2	0	0	0	0	41--50	13
2:00 AM	0	0	0	1	2	2	10	4	5	0	0	0	0	0	0	41--50	14
3:00 AM	0	0	0	0	1	0	4	3	1	0	0	0	0	0	0	42--51	6
4:00 AM	0	0	0	0	2	3	12	12	4	2	1	0	0	0	0	41--50	23
5:00 AM	0	0	0	3	1	13	33	27	13	3	1	0	0	0	0	41--50	60
6:00 AM	6	0	0	2	13	49	79	66	22	4	0	0	0	0	0	41--50	144
7:00 AM	20	0	0	2	14	100	200	144	53	11	2	0	0	0	0	41--50	343
8:00 AM	6	0	0	0	20	102	169	168	49	10	4	0	0	0	0	41--50	337
9:00 AM	9	0	0	1	24	83	152	105	30	8	1	0	0	0	0	41--50	257
10:00 AM	4	1	3	1	18	110	156	107	33	7	0	0	0	0	0	36--45	266
11:00 AM	14	7	17	44	87	124	99	64	11	2	0	0	0	0	0	36--45	223
12:00 PM	13	1	3	24	65	134	170	98	28	3	2	1	0	0	0	36--45	304
1:00 PM	19	3	1	34	97	191	155	56	11	1	1	0	0	0	0	36--45	346
2:00 PM	11	0	1	6	40	170	243	94	13	3	0	0	0	0	0	36--45	413
3:00 PM	22	0	0	0	27	144	263	161	33	6	2	0	0	0	0	41--50	424
4:00 PM	29	0	1	5	32	162	334	151	33	8	0	0	0	0	0	36--45	496
5:00 PM	25	0	1	6	67	215	217	91	16	0	0	0	0	0	0	36--45	431
6:00 PM	15	0	1	16	48	189	162	55	8	1	1	0	0	0	0	36--45	350
7:00 PM	5	0	1	1	26	80	100	59	16	5	0	0	0	0	0	36--45	180
8:00 PM	3	0	1	10	36	70	86	43	12	4	0	0	0	0	0	36--45	155
9:00 PM	0	0	1	2	7	36	79	33	19	2	0	0	0	0	0	36--45	115
10:00 PM	3	0	0	0	4	24	53	19	13	5	1	0	0	0	0	36--45	76
11:00 PM	0	0	1	0	2	16	26	19	12	3	0	0	0	0	0	41--50	44
Day Total	206	12	33	158	634	2021	2821	1589	446	89	18	1	0	0	8028	36--45	4842
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%			
ADT	8028																
AM Peak	7:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Volume	20	7	17	44	87	124	200	168	53	11	4	4	4	4	546		
PM Peak	4:00 PM	1:00 PM	12:00 PM	1:00 PM	1:00 PM	5:00 PM	4:00 PM	3:00 PM	3:00 PM	4:00 PM	12:00 PM	12:00 PM	12:00 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM
Volume	29	3	3	34	97	215	334	161	33	8	2	1	1	755			

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

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



**SUMMARY:**

Date: Dec 16 2014 - Dec 16 2014

	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	Pace Speed	Number in Pace
Grand Total	206	12	33	158	634	2021	2821	1589	446	89	18	1	0	0	8028	36--45	4842
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%			
Cumulative Percent	2.60%	2.70%	3.10%	5.10%	13.00%	38.20%	73.30%	93.10%	98.70%	99.80%	100.00%	100.00%	100.00%	100.00%			
ADT	8028																

85th Percentile 47 MPH  
 Mean Speed(Average) 40 MPH  
 Median 41 MPH  
 Mode 43 MPH

Location: W Park Dr  
 City/State: Bridgeton 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		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	



RODRIGUEZ CONSULTING COUNTS REPORT

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Date:	Dec 16 2014												Total	Pace	Number			
Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	76	999	Speed	in Pace
12:00 AM	15	20	0	0	2	40	45	50	55	60	65	70	75	0	5	4	31--40	4
1:00 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4	4	36--45	4
2:00 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	4	3	36--45	3
3:00 AM	0	0	0	2	4	2	3	0	0	0	0	0	0	0	11	6	31--40	6
4:00 AM	0	0	0	0	2	2	4	0	0	0	0	0	0	0	8	6	36--45	6
5:00 AM	0	0	0	2	10	6	5	2	0	0	0	0	0	0	25	15	31--40	15
6:00 AM	0	0	4	18	35	31	13	2	1	0	0	0	0	0	104	66	31--40	66
7:00 AM	5	0	12	31	72	78	40	8	2	0	0	0	0	0	248	150	31--40	150
8:00 AM	4	0	10	23	81	77	27	2	0	0	0	0	0	0	224	158	31--40	158
9:00 AM	3	0	1	19	58	49	24	2	0	0	0	0	0	0	156	107	31--40	107
10:00 AM	1	1	5	32	43	35	9	5	0	0	0	0	0	0	131	78	31--40	78
11:00 AM	6	0	9	21	59	48	24	6	0	0	0	0	0	0	173	106	31--40	106
12:00 PM	1	0	5	32	76	74	13	0	0	0	0	0	0	0	201	150	31--40	150
1:00 PM	1	0	4	49	93	51	16	1	0	0	0	0	0	0	215	143	31--40	143
2:00 PM	1	0	4	40	82	52	21	7	0	0	0	0	0	0	207	134	31--40	134
3:00 PM	4	1	7	49	90	64	28	2	0	1	0	0	0	0	246	154	31--40	154
4:00 PM	2	0	12	47	115	60	20	1	0	0	0	0	0	0	257	175	31--40	175
5:00 PM	4	0	5	46	71	49	14	3	0	0	0	0	0	0	192	120	31--40	120
6:00 PM	2	0	5	28	59	27	6	0	0	0	0	0	0	0	127	87	26--35	87
7:00 PM	0	0	6	34	32	30	4	0	0	0	0	0	0	0	106	66	26--35	66
8:00 PM	0	2	3	31	14	15	3	0	0	0	0	0	0	0	68	44	26--35	44
9:00 PM	0	0	1	16	17	11	1	1	0	0	0	0	0	0	47	33	26--35	33
10:00 PM	0	0	1	4	10	11	1	0	0	0	0	0	0	0	27	21	31--40	21
11:00 PM	0	0	1	4	13	13	4	1	0	0	0	0	0	0	36	26	31--40	26
Day Total	34	4	96	528	1038	787	288	43	3	1	0	0	0	0	2822	1825	31--40	1825
Percent ADT	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%	0.00%				

AM Peak Volume	11:00 AM	10:00 AM	7:00 AM	10:00 AM	8:00 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	7:00 AM	7:00 AM	7:00 AM
	6	1	12	32	81	78	40	8	2							248
PM Peak Volume	4	2	12	49	115	74	28	7		3:00 PM	1					257



Location: Mayor Attkin Dr  
 City/State: Bridgeton NJ  
 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 Speed 31--40	Number in Pace 1825
Grand Total	15	20	25	30	35	40	45	50	55	60	65	70	75	999	2822		
Percent	34	4	96	528	1038	787	288	43	3	1	0	0	0	0			
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%	0.00%			
ADT	2822	1.30%	4.70%	23.50%	60.20%	88.10%	98.30%	99.90%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%			

85th Percentile 39 MPH  
 Mean Speed(Average) 33 MPH  
 Median 33 MPH  
 Mode 33 MPH

Location: Mayor Aitken Dr  
 City/State: Bridgeton 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	Hourly Traffic	
		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



2014 Existing AM Scenario  
 3: Carmel Road/S. Woodruff Road & Rosenhayn Avenue

6/16/2015

**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	-	-	None	-	-	None	-	-	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

2014 Existing AM Scenario  
 7: S. Woodruff Road & Carmel Woodruff Road

6/16/2015

**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

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	256	178	230
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	-	-

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	-	-

2014 Existing AM Scenario  
 8: S. Woodruff Road & Rosenhayn Avenue

6/16/2015

**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	-	-

2014 Existing AM Scenario  
 16: Old Deerfield Pike & Silver Lake Road

6/16/2015

**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	-	-

2014 Existing AM Scenario  
 19: Hogbin Road & Buckshutem Road

6/16/2015

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	-	-	None	-	-	None	-	-	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

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	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	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	-

2014 Existing AM Scenario  
 34: Mayor Aitken Drive & West Park Drive

6/16/2015

**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
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1212
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1212
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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	-

2014 Existing PM Scenario  
 3: Carmel Road/S. Woodruff Road & Rosenhayn Avenue

6/16/2015

**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	-	-	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, %	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

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



2014 Existing PM Scenario  
 7: S. Woodruff Road & Carmel Woodruff Road

6/16/2015

**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
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	-	-

2014 Existing PM Scenario  
8: S. Woodruff Road & Rosenhayn Avenue

6/16/2015

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

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

6/16/2015

**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	-	-

2014 Existing PM Scenario  
 16: Old Deerfield Pike & Silver Lake Road

6/16/2015

**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	-	-

2014 Existing PM Scenario  
 19: Hogbin Road & Buckshutem Road

6/16/2015

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	-	-	None	-	-	None	-	-	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

2014 Existing PM Scenario  
 26: Morton Avenue & Lebanon Road

6/16/2015

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	EBLn1WBLn1	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 Existing PM Scenario  
 31: Mayor Aitken Drive & West Park Drive

6/16/2015

**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
Stage 1	-	-	363
Stage 2	-	-	634
Critical Hdwy	-	-	4.16
Critical Hdwy Stg 1	-	-	6.4
Critical Hdwy Stg 2	-	-	6.4
Follow-up Hdwy	-	-	2.254
Pot Cap-1 Maneuver	-	-	1174
Stage 1	-	-	531
Stage 2	-	-	381
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1174
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	371
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	439	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1193	-	352	679
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	654	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1193	-	352	679
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												
Intersection Delay, s/veh	9.1											
Intersection LOS	A											
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	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	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

**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

**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	-	-

2014 Alternative AM Scenario  
 38: Mayor Aitken Drive/Ampitheater & West Park Drive

6/16/2015

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	-	-	None	-	-	None	-	-	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

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	-	-	-



2014 Alternative PM Scenario  
 3: Carmel Road/S. Woodruff Road & Rosenhayn Avenue

6/16/2015

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	-	-	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, %	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

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
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	-	-

2014 Alternative PM Scenario  
8: S. Woodruff Road & Rosenhayn Avenue

6/16/2015

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

**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

**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	EBLn1WBLn1	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	2.9											

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	-	-	None	-	-	None	-	-	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
3967499	CUMBERLAND	CUMBERLAND COUNTY 659	May	7:14 PM	Right Angle	2012	CR 705 / CARMEL RD	PDO	dry
3967615	CUMBERLAND	CUMBERLAND COUNTY 659	Oct	3:04 PM	Fixed Object	2012	CR 705 / CARMEL RD	PDO	dry
3967628	CUMBERLAND	CUMBERLAND COUNTY 659	Oct	6:48 AM	Right Angle	2012	ROUTE 553 / WOODRUFF RD	Pain	dry
3967658	CUMBERLAND	CUMBERLAND COUNTY 659	Dec	11:09 PM	Fixed Object	2012		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
3376885	CUMBERLAND	CUMBERLAND COUNTY 659	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
3967537	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	11:11 PM	Fixed Object	2013	CR 659 / ROSENHAYN AVE	PDO	snowy

South Woodruff/Rosenhayn

Crash Type

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

Severity

Fatal	Incapacitating Injury	Moderate Injury	Complaint of Pain	PDO	Total
0	0	6	2	8	8
0%	0%	75%	25%	100%	

Road Surface Condition

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

Year

2011	2012	2013	Total
2	2	4	8
25%	25%	50%	100%

Rosenhayn/Carmel-Woodruff Road

Crash Type

Right Angle	Same Direction Side Swipe	Same Direction Rear End	Fixed Object	Left Turn / U Turn	Total
4	0	0	2	0	6
67%	0%	0%	33%	0%	100%

Severity

Fatal	Incapacitating Injury	Moderate Injury	Complaint of Pain	PDO	Total
0	1	0	0	5	6
0%	17%	0%	0%	83%	100%

Road Surface Condition

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

Year

2011	2012	2013	Total
1	3	2	6
17%	50%	33%	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 l	dry
3377010	CUMBERLAND	CUMBERLAND COUNTY 606	Oct	10:59 AM	Right Angle	2010	CR 617	Pain	daylight	dry
3675307	CUMBERLAND	CUMBERLAND COUNTY 606	Dec	2:34 PM	Same Direction - Side Swipe	2011	CR 617 / FINLEY RD	PDO	daylight	dry
3675357	CUMBERLAND	CUMBERLAND COUNTY 606	Jan	7:31 AM	Fixed Object	2011	CR 617	PDO	daylight	slush
3675439	CUMBERLAND	CUMBERLAND COUNTY 606	Aug	3:42 PM	Same Direction - Side Swipe	2011	CR 617	PDO	daylight	dry
3967640	CUMBERLAND	CUMBERLAND COUNTY 606	Jun	3:41 PM	Right Angle	2012	CR 617 / FINLEY RD	PDO	daylight	wet
3967519	CUMBERLAND	CUMBERLAND COUNTY 606	Jul	3:18 PM	Right Angle	2012	CR 617 / FINLEY RD	Moderate Injury	daylight	wet
3967738	CUMBERLAND	CUMBERLAND COUNTY 606	Nov	6:56 AM	Fixed Object	2012	FINLEY ROAD	PDO	daylight	dry
4252516	CUMBERLAND	CUMBERLAND COUNTY 606	May	2:09 PM	Left Turn / U Turn	2012	CR 617 / FINLEY RD	Pain	daylight	dry
4252517	CUMBERLAND	CUMBERLAND COUNTY 606	Apr	5:16 PM	Left Turn / U Turn	2013	CR 617 / FINLEY RD	Moderate Injury	daylight	dry
4252543	CUMBERLAND	CUMBERLAND COUNTY 606	May	1:37 PM	Right Angle	2013	CR 617 / FINLEY RD	PDO	daylight	dry
4252631	CUMBERLAND	CUMBERLAND COUNTY 606	Sep	2:00 PM	Right Angle	2013	CR 617 / FINLEY RD	Moderate Injury	daylight	dry
4252639	CUMBERLAND	CUMBERLAND COUNTY 606	Sep	12:57 PM	Right Angle	2013	CR 617 / FINLEY RD	Pain	daylight	dry
4252678	CUMBERLAND	CUMBERLAND COUNTY 606	Oct	1:47 PM	Right Angle	2013	CR 617 / FINLEY RD	Moderate Injury	daylight	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	1	2	1	1	1	13
8%	0%	0%	15%	15%	8%	8%	8%	15%	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
3376877	CUMBERLAND	CUMBERLAND COUNTY 606	Jan	5:07 PM	Right Angle	2010	SILVERLAKE RD	PDO	dusk	dry
3675366	CUMBERLAND	CUMBERLAND COUNTY 606	Jan	7:01 AM	Right Angle	2011	CR 704	Fatal	daylight	dry
3967485	CUMBERLAND	CUMBERLAND COUNTY 606	Apr	6:53 AM	Right Angle	2012	CR 704 / SILVERLAKE RD	Pain	daylight	dry
3967534	CUMBERLAND	CUMBERLAND COUNTY 606	Jun	6:54 PM	Right Angle	2012	CR 704 / SILVERLAKE RD	PDO	daylight	dry
3967713	CUMBERLAND	CUMBERLAND COUNTY 606	Feb	6:36 PM	Right Angle	2012	CR 704 / SILVERLAKE RD	PDO	street lights on/contli	dry
4252664	CUMBERLAND	CUMBERLAND COUNTY 606	Oct	4:43 PM	Right Angle	2013	CR 704 / SILVERLAKE RD	Moderate Injury	daylight	dry
7657938	CUMBERLAND	CUMBERLAND COUNTY 606	May	7:25 AM	Left Turn / U Turn	2009	CUMBERLAND COUNTY 704	PDO	daylight	dry
7657960	CUMBERLAND	CUMBERLAND COUNTY 606	Jun	7:20 AM	Opposite Direction - Head On/Angular	2009	CR 704	PDO	daylight	dry
3967611	CUMBERLAND	CUMBERLAND COUNTY 704	Oct	7:20 AM	Same Direction - Rear End	2012	CR 606 / OLD DEERFIELD PIKE	PDO	daylight	dry
3967655	CUMBERLAND	CUMBERLAND COUNTY 704	Nov	5:23 PM	Animal	2012	CR 606 / OLD DEERFIELD PIKE	PDO	dark(no street lights)	dry
4252638	CUMBERLAND	CUMBERLAND COUNTY 704	Sep	8:41 AM	Right Angle	2013	CR 606 / OLD DEERFIELD PIKE	Pain	daylight	dry
7657917	CUMBERLAND	CUMBERLAND COUNTY 704	Mar	2:57 PM	Same Direction - Rear End	2009	CR 606	PDO	daylight	dry

3 year data

Crash Type

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

Crash Location

Crash Location	Count	Percentage	Total
Route 606	5	63%	8
Route 704	3	38%	8
Total	8	100%	8

Month

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

Severity

Severity	Count	Percentage	Total
Fatal	1	13%	8
Incapacitating Injury	0	0%	8
Moderate Injury	1	13%	8
Complaint of Pain	2	25%	8
PDO	4	50%	8
Total	8	100%	8

Road Surface Condition

Road Surface Condition	Count	Percentage	Total
Dry	8	100%	8
Wet	0	0%	8
Snowy	0	0%	8
Total	8	100%	8

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

ID	COUNTY	CRASH_LOCATION	CRASH_MONTH	CRASH_TIME	crash_type	CRASH_YEAR	GROSS_STREET_NAME	EPDO	light_condition	surface_condition
3674577	CUMBERLAND	CUMBERLAND COUNTY 625	Aug	11:56 AM	Right Angle	2011	CR 670	Moderate Injury	daylight	dry
3674989	CUMBERLAND	CUMBERLAND COUNTY 670	Mar	6:28 PM	Right Angle	2011	CUMBERLAND COUNTY 625	Moderate Injury	dusk	dry
4251938	CUMBERLAND	CUMBERLAND COUNTY 670	Jul	6:11 PM	Right Angle	2013	HOGBIN ROAD	PDO	daylight	dry
4252083	CUMBERLAND	CUMBERLAND COUNTY 625	Sep	12:01 PM	Right Angle	2013	CR 670 / BUCKSHUTEN RD	Moderate Injury	daylight	dry
4252316	CUMBERLAND	CUMBERLAND COUNTY 625	Dec	7:06 PM	Right Angle	2013	CR 670 / BUCKSHUTEN RD	Pain	dark/no street lights	dry
7657123	CUMBERLAND	CUMBERLAND COUNTY 670	May	11:24 PM	Animal	2009	CR 625	PDO	dark(street lights on/continuous)	dry
7657350	CUMBERLAND	CUMBERLAND COUNTY 625	Sep	10:48 AM	Right Angle	2009	CR 670	PDO	daylight	dry
7657392	CUMBERLAND	CUMBERLAND COUNTY 625	Sep	7:57 AM	Right Angle	2009	CR 670	Pain	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	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	CRASH_YEAR	CROSS_STREET_NAME	EPDO	light_condition	surface_condition
3375720	CUMBERLAND	CUMBERLAND COUNTY 634	Jan	8:32 PM	Right Angle	2010	CR 654	Pain	dawn	dry
3375739	CUMBERLAND	CUMBERLAND COUNTY 654	May	4:31 PM	Backing	2010	CR 634	PDO	daylight	dry
3375756	CUMBERLAND	CUMBERLAND COUNTY 634	Dec	5:15 PM	Right Angle	2010	CR 654	Pain	dark(no street lights)	dry
3375761	CUMBERLAND	CUMBERLAND COUNTY 634	Feb	10:45 PM	Right Angle	2010	CR 654	PDO	dark(street lights on/spot)	snowy
3375794	CUMBERLAND	CUMBERLAND COUNTY 634	Jul	5:49 PM	Right Angle	2010	LEBANON RD CR 654	Pain	daylight	dry
3375798	CUMBERLAND	CUMBERLAND COUNTY 634	Sep	12:10 PM	Right Angle	2010	LEBANON RD.(CR654)	Pain	daylight	dry
3673918	CUMBERLAND	CUMBERLAND COUNTY 634	Oct	6:10 PM	Right Angle	2011	LEBANON RD.(CR 654)	PDO	daylight	dry
4251021	CUMBERLAND	CUMBERLAND COUNTY 634	Aug	4:55 PM	Right Angle	2013	CR 654 / LEBANON RD	PDO	daylight	dry
4251063	CUMBERLAND	CUMBERLAND COUNTY 654	Nov	6:48 PM	Right Angle	2013	CR 634 / MORTON AVE	Pain	dark(no street lights)	wet
7656170	CUMBERLAND	CUMBERLAND COUNTY 634	Nov	7:47 AM	Right Angle	2009	CR 654	PDO	daylight	wet
7656199	CUMBERLAND	CUMBERLAND COUNTY 634	May	1:53 PM	Right Angle	2009	CR 654	PDO	daylight	dry
8114086	CUMBERLAND	CUMBERLAND CTY 634	Dec	3:44 PM	Right Angle	2013	CR 654 / LEBANON RD	Pain	daylight	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	1	4
0%	0%	0%	0%	0%	0%	0%	25%	0%	25%	25%	25%	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	EPDO	light_condition	surface_condition
367339	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	MAYOR AITKEN DR	PDO	dark(street lights on/spot)	dry
3965696	CUMBERLAND	CUMBERLAND COUNTY 621	Jun	10:45 AM	Fixed Object	2012	CR 697 / MAYOR AITKEN DR	Moderate Injury	daylight	dry
7653630	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	MAYOR AITKEN 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	MAYOR AITKEN DR	Pain	daylight	dry
396703	CUMBERLAND	CUMBERLAND COUNTY 621	Nov	3:09 PM	Same Direction - Rear End	2011	CR 697	PDO	daylight	dry
396724	CUMBERLAND	CUMBERLAND COUNTY 621	Jun	9:14 AM	Same Direction - Rear End	2012	MAYOR AITKEN DR / CR 697	PDO	daylight	dry
396724	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 / MAYOR AITKEN 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 of 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			Average of 8 Hours	EB			Average of 8 Hours
	Tues 4/25/11	Tues 12/16/14	Avg.		Tues 12/16/14	Tues 5/01/12	Avg.	
7:00 AM	145	133	278	265.00	98	72	170	138.63
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			Average of 8 Hours	EB			Average of 8 Hours
	Tues 12/16/14	Tues 12/16/14	Avg.		Tues 12/16/14	Tues 9/10/13	Avg.	
7:00 AM	130	30	160	209.63	107	54	161	124.75
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			Average of 8 Hours	EB			Average of 8 Hours
	Tues 12/16/14	Tues 12/16/14	Avg.		Tues 12/16/14	Wed 5/02/12	Avg.	
7:00 AM	78	44	122	144.50	117	144	261	230.13
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	Crit C			Crit D		
					Major	Minor	Meets?	Major	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**

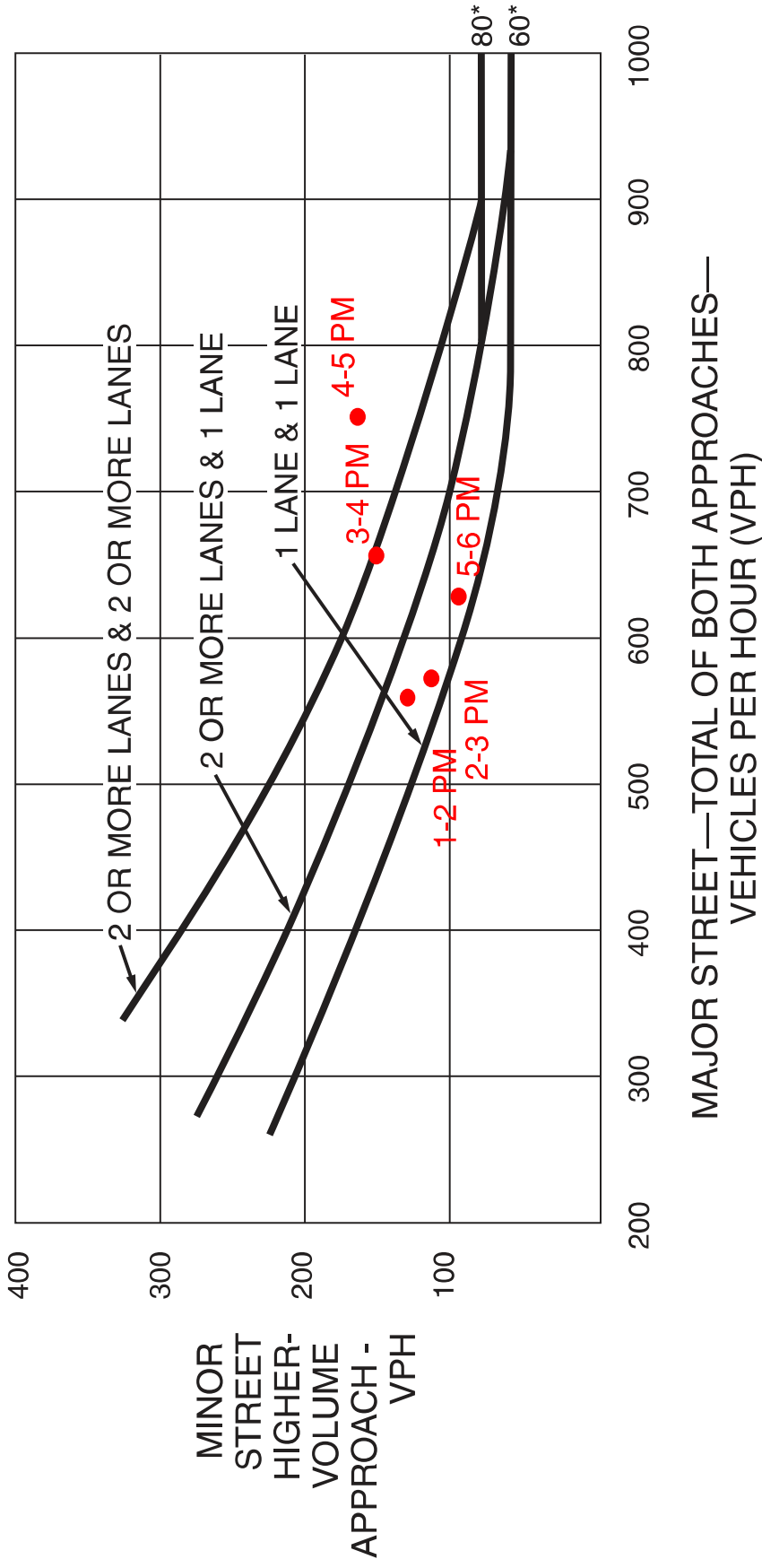
#### Analysis of 8-Hour Volume Warrants:

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

**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	REGULATORY 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	REGULATORY 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 \$10,000.00  
 CONTINGENCY (10%) \$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	\$4,070.00
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 \$30,000.00  
 CONTINGENCY (10%) \$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 \$20,000.00  
 CONTINGENCY (10%) \$11,794.95

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