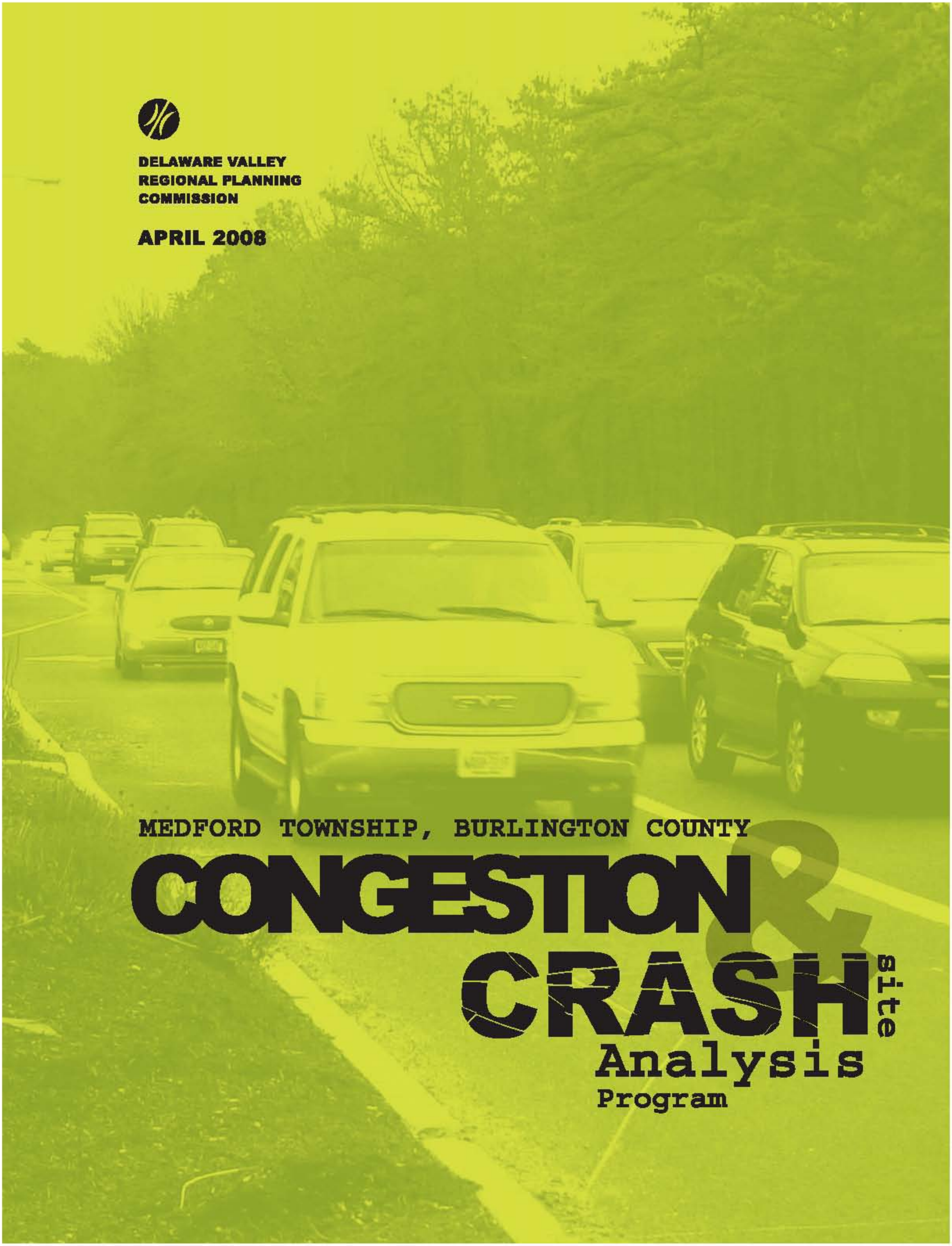

DELAWARE VALLEY
REGIONAL PLANNING
COMMISSION

APRIL 2008

MEDFORD TOWNSHIP, BURLINGTON COUNTY

CONGESTION & CRASH site Analysis Program

Created in 1965, the Delaware Valley Regional Planning Commission (DVRPC) is an interstate, intercounty and intercity agency that provides continuing, comprehensive and coordinated planning to shape a vision for the future growth of the Delaware Valley region. The region includes Bucks, Chester, Delaware, and Montgomery counties, as well as the City of Philadelphia, in Pennsylvania; and Burlington, Camden, Gloucester and Mercer counties in New Jersey. DVRPC provides technical assistance and services; conducts high-priority studies that respond to the requests and demands of member state and local governments; fosters cooperation among various constituents to forge a consensus on diverse regional issues; determines and meets the needs of the private sector; and practices public outreach efforts to promote two-way communication and public awareness of regional issues and the Commission.

Our logo is adapted from the official DVRPC seal, and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole, while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

DVRPC is funded by a variety of funding sources including federal grants from the U.S. Department of Transportation's Federal Highway Administration (FHWA) and Federal Transit Administration (FTA), the Pennsylvania and New Jersey departments of transportation, as well as by DVRPC's state and local member governments. The authors, however, are solely responsible for its findings and conclusions, which may not represent the official views or policies of the funding agencies.

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INTRODUCTION

The goals of the Congestion and Crash Site Analysis Program are improving access to and efficiency of the region's transportation system, improving safety and air quality, and reducing congestion through analyses for specific highway locations with demonstrated problems in both New Jersey and Pennsylvania. Unlike a typical corridor study that examines a larger geographic area, the intent of this program is to examine individual intersections or specific problem sites. Although this program preceded the DVRPC's Regional Safety Action Plan, it also addresses one of our established emphasis areas: "improving the design and operations of intersections."

Due to their many conflict points, intersections experience more crashes than mid-block locations. In addition, the geometry of an intersection can present many issues for the road user. Assuring the efficient operation of intersections is an increasingly important issue as municipalities attempt to maximize vehicle roadway capacity to serve the growing demand for travel. The objective is to identify cost-effective improvements that will reduce crashes and congestion created by limited capacity and design deficiencies.

These selected locations may experience high levels of congestion and/or have a high number of crashes. Crashes not only result in fatalities, injuries, and property damage, but also add to the congestion and deficiency in the operation of the intersection. This report examines the intersection of Tuckerton Road and Taunton Boulevard and its surroundings in Medford Township and identifies potential improvement strategies that would improve the safety and mobility of all road users.

There are three other locations currently being evaluated in this program and include one location in Pennsylvania—Delaware County; and two others in New Jersey—one each in Camden and Mercer counties. These results will be presented in separate documents.

DVRPC solicited input from each of the counties in the region to identify potential problem locations. Working with the counties, DVRPC selected the four locations to study. Each of the locations is distinct and has its own particular set of issues and problems. With each location being unique, there is no one cure-all solution. In fact, for each location, a combination of strategies may need to be implemented to have an impact on improving safety and reducing congestion.

Methodology

The Burlington County Engineering Department was asked to submit two locations for further study. To assist in the selection process, the county was given a number of locations that were identified through analysis using the DVRPC-developed *Cluster Finder Tool,* which focused on locations with a high number of crashes. The county could select the locations from this list or select another based on other criteria. Burlington County selected only one location (the intersection of Tuckerton Road and Taunton Boulevard) to be analyzed. The selection was based on the location demonstrating high levels of congestion and/or crashes and because it was not already programmed for improvement. Selections for the program were also determined by whether the locations provide a regional function and, in the case of New Jersey, are on the county or local network.

The study team conducted field views for the location to observe the issues. Data was then compiled and analyzed. This included crash records data, Average Annual Daily Traffic (AADT), turning movement counts, and traffic signal timings. Stakeholder meetings were held with the appropriate state, county, and municipal officials and others as deemed necessary. Business owners and operators in the area were active participants in stakeholder meetings. These meetings assisted in the identification of problems, with discussion of the study team observations and local stakeholder feedback.

The study team conducted follow-up field views to better define the existing conditions, observe the operating conditions, and refine the identification of problems. Subsequently, a technical analysis was performed to quantify the identified transportation problem areas. This included the preparation of collision diagrams displaying crash patterns and conducting level of service (LOS) analyses for existing conditions.

Based on these analyses, a set of improvements was developed that addresses the specific problems. LOS analyses were conducted for the recommended improvements.

Findings and preliminary recommendations were presented to stakeholders at a follow-up meeting. The purpose of the meeting was also to discuss and get a sense from the local officials of how practical the recommendations were from their perspective.

The Structure

The report is organized into separate sections that consist of: Location Description, Existing Conditions, Opportunities and Constraints, Potential Improvement Scenarios, and Recommendations.

The *location description* section provides an account of the location and examines the study area in terms of regional setting. This includes a general depiction of the local area surroundings, lane configurations, and adjacent land uses.

The *existing conditions* section presents additional background information for the site. Turning movement counts were collected during the peak periods in 15-minute increments to determine the peak-hour traffic volumes. Traffic signal timing and operation plans for the intersection were collected from the county. A crash analysis and an LOS analysis were conducted for the intersection and adjacent area.

The crash analysis was performed to substantiate problems presented during the municipal field views and to identify any probable causes and potential improvements. Reportable crash records for a three-year period were collected from the Medford Township Police Department. Reportable crashes typically involve an injury, fatality, and/or significant property damage of $500 or more. In some of the locations, non-reportable crashes are included in the analysis. Although a non-reportable crash is one where there is no injury to the occupant(s) of the vehicle(s) and the vehicles involved do not have considerable damage, the crash may have negative effects on the operation of the intersection.

The *opportunities and constraints* section discusses specific issues or problems that may effect any potential improvements that have been identified. A typical issue may be the restriction of right-of-way expansion to increase capacity. Expansion may be cost prohibitive due to encroaching land uses or nearby bridge widths.

The *potential improvement scenarios* section addresses operational and safety problems. Typical improvement scenarios range from optimizing signal timing and signal coordination to adding turning lanes and intersection redesign/reconstruction. A LOS analysis was conducted for each scenario and compared to the existing LOS analysis. This process helps to determine the level of improvement to the efficiency and operations of the intersection if the scenario is implemented.

The recommendations in the final section are based on the ability to correct existing or potential problems or deficiencies. The potential improvement scenario concepts presented in this document have been categorized as short term, midrange or long term. Short-term improvement recommendations typically considered a lower cost operational/safety improvement that can be completed with little lead time and no additional major studies. Long-range improvement concepts should only be pursued, if the implemented set of short-term and midrange improvements are evaluated and determined to be ineffective. These improvements, such as additional signing and resurfacing or enhancing pavement markings, may be completed primarily through maintenance activities. A midrange improvement may require additional costs with regard to signal coordination and pedestrian enhancements. A long-term improvement may have a higher capital cost and require the acquisition of right-of-way and construction of new infrastructure.

There is a corresponding Appendix that contains the detailed technical data documentation for crash records, turning movement counts, and LOS analysis.

Level of Service Analysis

The level of service analysis (LOS) is a common tool for assessment of transportation facilities and is used extensively in this report. The LOS for existing conditions and potential improvement scenarios is evaluated for the study intersection. When applied as a measure of performance for an entire intersection or a particular component of it, LOS has a precise meaning: the average delay experienced by a vehicle traveling through the intersection or a specific component of it. In other words, LOS is a reflection of the average delay experienced by vehicles traversing an intersection. The exact parameters of delay that determine the various LOS categories for a signalized and an unsignalized intersection are displayed in ***Table 1***.

Table 1 **Level of Service (LOS) Designations and Associated Delays**

Level of Service	Signalized Intersection Total Delay per Vehicle (seconds/vehicle)	Unsignalized Intersection Control Delay per Vehicle (seconds/vehicle)
A (Desirable)	≤ 10	≤ 10
B (Desirable)	> 10 and ≤ 20	> 10 and ≤ 15
C (Desirable)	> 20 and ≤ 35	> 15 and ≤ 25
D (Acceptable)	> 35 and ≤ 55	> 25 and ≤ 35
E (Undesirable)	> 55 and ≤ 80	> 35 and ≤ 55
F (Unsatisfactory)	> 80	> 50

A review of the existing conditions and of the various improvement scenarios was conducted using SYNCHRO traffic signal software for the project intersection. Necessary information for determining delay and LOS measures include turning movement counts, roadway geometry, signal timing, and actuation plans. The turning movement counts were mostly gathered by DVRPC staff; the signal timing, actuation data, and roadway geometrics were supplied by the county.

For signalized intersections, SYNCHRO calculates a control delay and a queue delay. The control delay is calculated by a percentile delay method; this approach uses formulas from the Highway Capacity Manual (HCM) to calculate delay; however, the final delay measure is taken from an average of the 10^{th}, 30^{th}, 50^{th}, 70^{th}, and 90^{th} percentile volume levels. As a result, the calculated delay is a product of the various operating conditions that a signal may actually encounter. The queue delay is utilized whenever two signalized intersections are located within a critical distance of one another. If the intersections are within that distance, then calculations are made to determine the extent to which queue interactions (such as queue spillback and queue blocking) reduce capacity and consequently increase delay.

For an unsignalized intersection, SYNCHRO only utilizes control delay, for which it relies exclusively upon HCM methods.

For the revision of timing plans, SYNCHRO is capable of optimizing intersection splits, cycle lengths, and offsets. These efforts seek to establish a timing plan that provides the most efficient performance that serves a critical volume of vehicles.

TAUNTON BOULEVARD AND TUCKERTON ROAD, MEDFORD TOWNSHIP

LOCATION DESCRIPTION

The study location is the signalized intersection of Taunton Boulevard (CR 623) and Tuckerton Road (CR 620) in Medford Township. Taunton Boulevard, which is functionally classified as an Urban Minor Arterial, runs in a north-south direction. Taunton Boulevard runs south from South Main Street (CR 541) via Mill Street, and southward to Taunton Lake Road (CR 619), for a distance of 3.44 miles, as shown in ***Figure 1***. Tuckerton Road, which is also functionally classified as an Urban Minor Arterial, runs in an east-west direction. Tuckerton Road runs west from Stokes Road (CR 541) to NJ 73, for a distance of 13.25 miles.

There are several major roads that connect with both Taunton Boulevard and Tuckerton Road. Tuckerton Road connects with Maple Avenue (CR 607) to the west of the study intersection and with Stokes Road, Oakshade Road (CR 534), and Willow Grove Road (CR 648) to the east of the study intersection. Taunton Boulevard connects with Hartford Road to the north of the study intersection.

Taunton Boulevard has two lanes, with one lane in each direction. As shown in ***Figure 2***, at the intersection there are three lanes at each approach; the southbound and northbound directions both provide dedicated right-turn and left-turn lanes and one through lane. There is no shoulder available at the intersection and a raised median separates the northbound and southbound traffic. The speed limit on Taunton Boulevard is 35 MPH.

Tuckerton Road has two lanes, with one lane in each direction. At the intersection there are three lanes at each approach; eastbound and westbound directions provide dedicated right-turn and left-turn lanes and one through lane. There is no shoulder available at the intersection and a raised median separates the eastbound and westbound traffic. The speed limit on Tuckerton Road is 45 MPH.

The study intersection does not support alternative modes of transportation. Sidewalks are not available on three of the intersection corners. The gas station on the northwest corner provides sidewalks that are discontinued at the property edge and are interrupted by large driveways. There are no pedestrian crosswalks at the intersection and the medians create an obstacle for pedestrians crossing at the intersection. There are no bike lanes provided for bicyclists or share-the-road indicators. Additionally, there is no transit located within one mile of the study location.

The land use in the area immediately surrounding the study intersection is commercial. There are commercial uses occupying each corner of the intersection and all provide multiple access points on both Taunton Boulevard and Tuckerton Road. There are gas stations with access points directly at the intersection on the northwest and southeast corners of the intersection. Next to the gas station on the southeast corner are a Wawa Convenience store and dry cleaning business on Tuckerton Road, and a hardware store

Figure 1

Congestion and Crash Site Analysis

Study Area

Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ

Analysis Area / Intersection

70

HARTFORD RD

541

STOKES RD

MEDFORD

EVESHAM

620

TUCKERTON RD

TAUNTON BLVD

Pine

623

Lake

TAUNTON LAKE RD

Medford Lakes

JACKSON RD

0 0.25

Miles

Delaware Valley Regional
Planning Commission
April 2008

Figure 2

Congestion and Crash Site Analysis

Existing Lane Configuration

Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ

on Taunton Boulevard with access points on corresponding roadways. On the northeast corner there is a PNC Bank and on the southwest corner there is a strip mall.

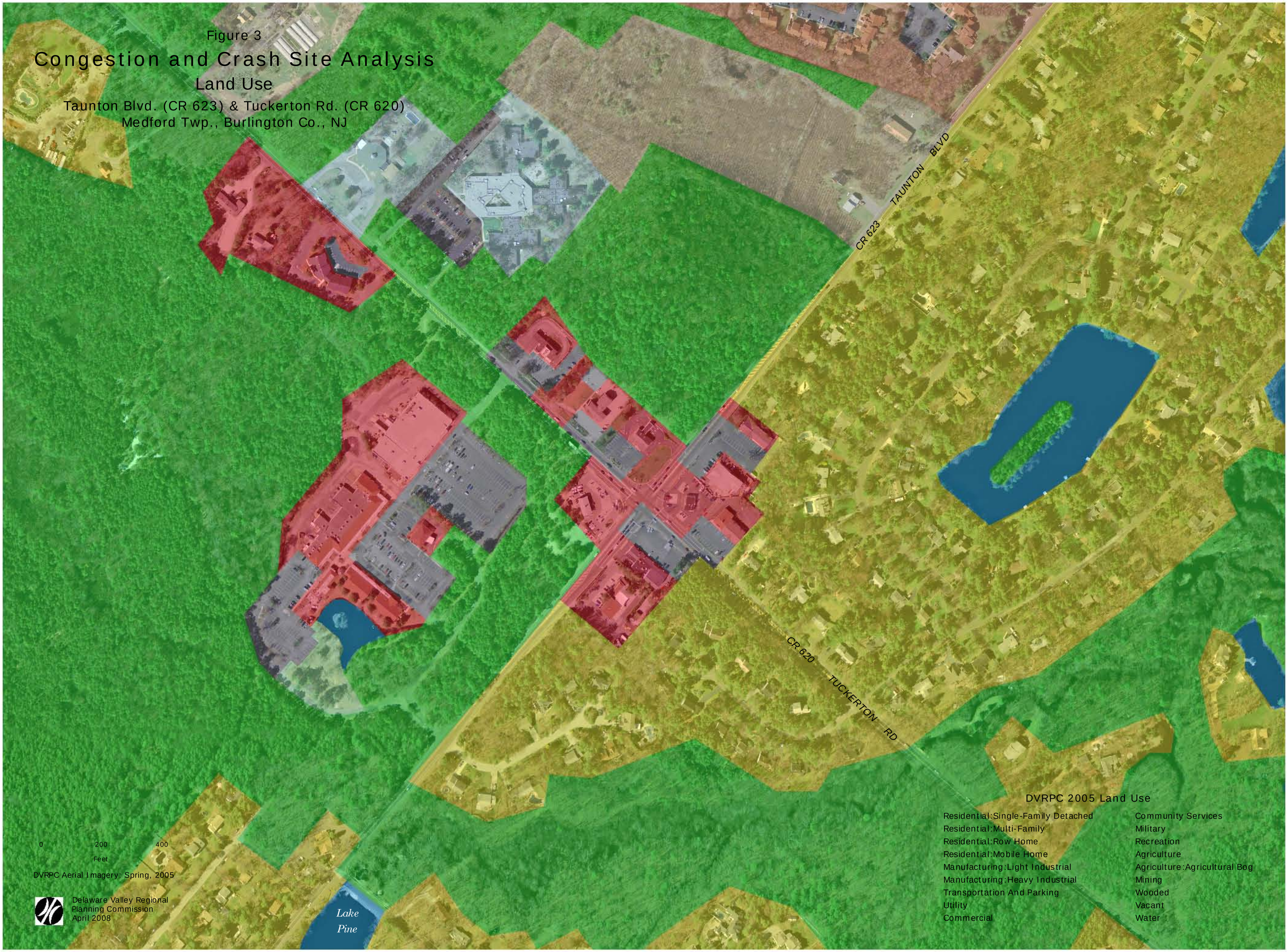
As can be seen in ***Figure 3***, the neighboring area of the study intersection is mixed commercial and residential. In the southeast and southwest, the land use is residential with single family detached housing. The intersection provides access for these residential areas to commercial business and adjacent neighborhoods. To the northwest and northeast, the area is primarily wooded, with pockets of commercial and community service uses.

Figure 3

Congestion and Crash Site Analysis

Land Use

Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ



DVRPC Aerial Imagery: Spring, 2005

Delaware Valley Regional Planning Commission
April 2008

EXISTING CONDITIONS

Congestion

Tuckerton Road (CR 620) serves commuter traffic moving in a west-east direction. It runs parallel to other major commuter routes like NJ 42, US 30, and NJ 73. According to the *NJDOT Straight Line Diagrams*, an Average Annual Daily Traffic (AADT) count of 14,732 was recorded in 2005 in Evesham Township west of the study area. Taunton Boulevard (CR 623) runs in a north-south direction and connects indirectly with major east-west commuter routes, NJ 70, NJ 73, US 30, and NJ 42. This roadway feeds a significant amount of commuter traffic during peak periods into adjacent roadways.

Currently, the intersection experiences congestion during the peak periods. All four approaches have three lanes: dedicated left turn, through, and right turn. Left turns at the intersection are facilitated by protected left-turn signal phasing.

Congestion at the intersection of these two roadways occurs during the morning and afternoon peak periods on weekdays. Traffic constantly backs up on westbound Tuckerton Road and northbound Taunton Boulevard in the morning peak period and in the opposite direction during the evening peak. Although the intersection approaches are each served by three lanes, the roadways leading to the intersection have only one lane in each direction, all carrying high volumes of traffic. The congested situation is further exacerbated by numerous driveways at or in close proximity to the intersection actively serving commercial land uses.

Intersection traffic during the AM Peak
Source: DVRPC

Turning Movement Counts

Manual turning movement counts of the intersections of Tuckerton Road and Taunton Boulevard and the Wawa driveways and Tuckerton Road were taken in October 2007. These counts were conducted from 6:00 AM to 9:00 AM, from 11:30 AM to 1:30 PM, and from 4:00 PM to 7:00 PM. The data determined that the peak hours were 7:45 AM to 8:45 AM, 12:00 PM to 1:00 PM, and 6:00 PM to 7:00 PM for the morning, midday, and afternoon, respectively. The complete manual turning movement counts are located in the **Appendix**.

Figure 4 shows the turning movement counts for the morning, midday, and afternoon peak hours. There are 2,356 vehicles moving through the intersection during the morning peak hour. The dominant movements are the westbound approach of Tuckerton Road, with 39 percent of the total, and northbound approach of Taunton Boulevard, with 33 percent. The north-westbound Tuckerton Road through movement is the single largest movement, with 635 vehicles, or 27 percent of the morning peak-hour total volume. This approach also carries heavy left-turning movement onto Taunton Boulevard: 147 vehicles, or 16 percent of that approach’s morning peak-hour volume. During this period, there are heavy right-turn movements from the northbound and westbound approaches of both roadways. As a result of the protected left-turn movements, turning conflict should be minimal. “Right turn on red” is permitted at the intersection and can cause potential conflicts during peak periods.

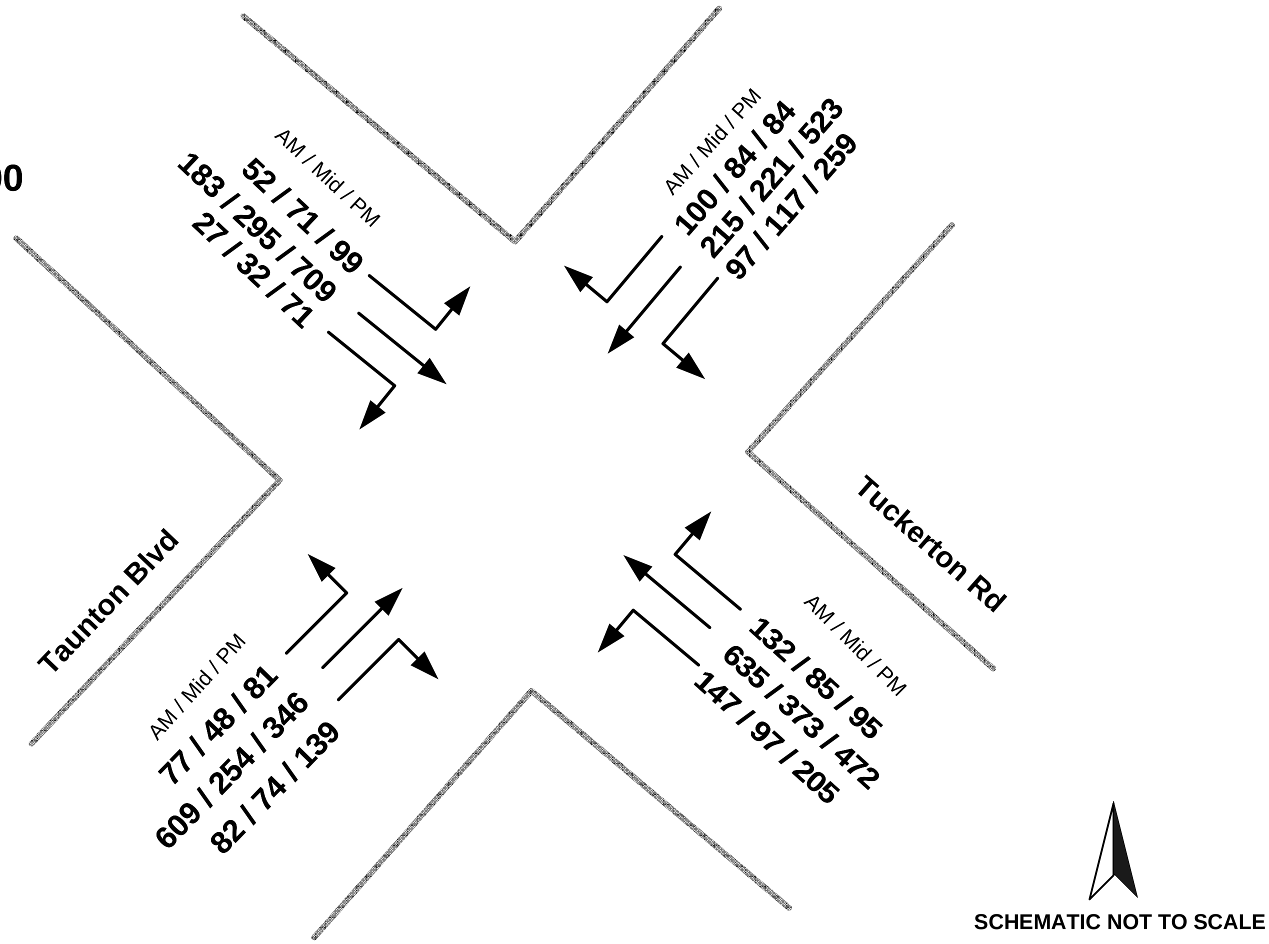
The afternoon’s peak-hour total of 3,083 vehicles is noticeably greater than the morning peak-hour volume. The dominant movements for the afternoon peak hour are the southbound and eastbound approaches of the intersection. The southbound approach leg of Tuckerton Road has the highest volume within the afternoon peak hour of 879 vehicles, with the through movement carrying 709 vehicles. The southbound Taunton Boulevard approach left-turn movement carries 259 vehicles during the afternoon peak, representing 30 percent of the approach total. The westbound approach of Tuckerton Road carries 772 vehicles during the peak hour, 25 percent of the intersection total, with the left-turn movement carrying 27 percent of the approach’s total volume.

Figure 5 shows the traffic movements at the Wawa driveway during morning, midday, and evening peak hours. During the morning peak hour, there are 109 vehicles leaving the Wawa parking lot, and 91 percent of those vehicles make right turns. In the evening peak hour, there are 88 vehicles leaving the Wawa parking lot, and 82 percent of those vehicles make right turns. The percentage of left turns from the driveway is three times higher in the evening peak hour than in the morning peak hour. These vehicles conflict with the dominant through traffic movements and eastbound left-turning vehicles on Tuckerton Road. This causes more congestion and unsafe conditions. Traffic back up was observed in the Wawa parking lot during the morning peak period. Left-turning vehicles traveling eastbound on Tuckerton Road create conflict with high-volume westbound through traffic. This forces eastbound through traffic to use the shoulder to get around turning vehicles, blocking left-turn movement from the driveway on to eastbound Tuckerton Road, inducing congestion, and encouraging unsafe maneuvers.

Figure 4
Existing Peak Hour Turning Movement Counts
Tuckerton Road and Taunton Boulevard Intersection

Peak Hours

AM: 7:45 – 8:45
Midday: 12:00 – 1:00
PM: 6:00 – 7:00



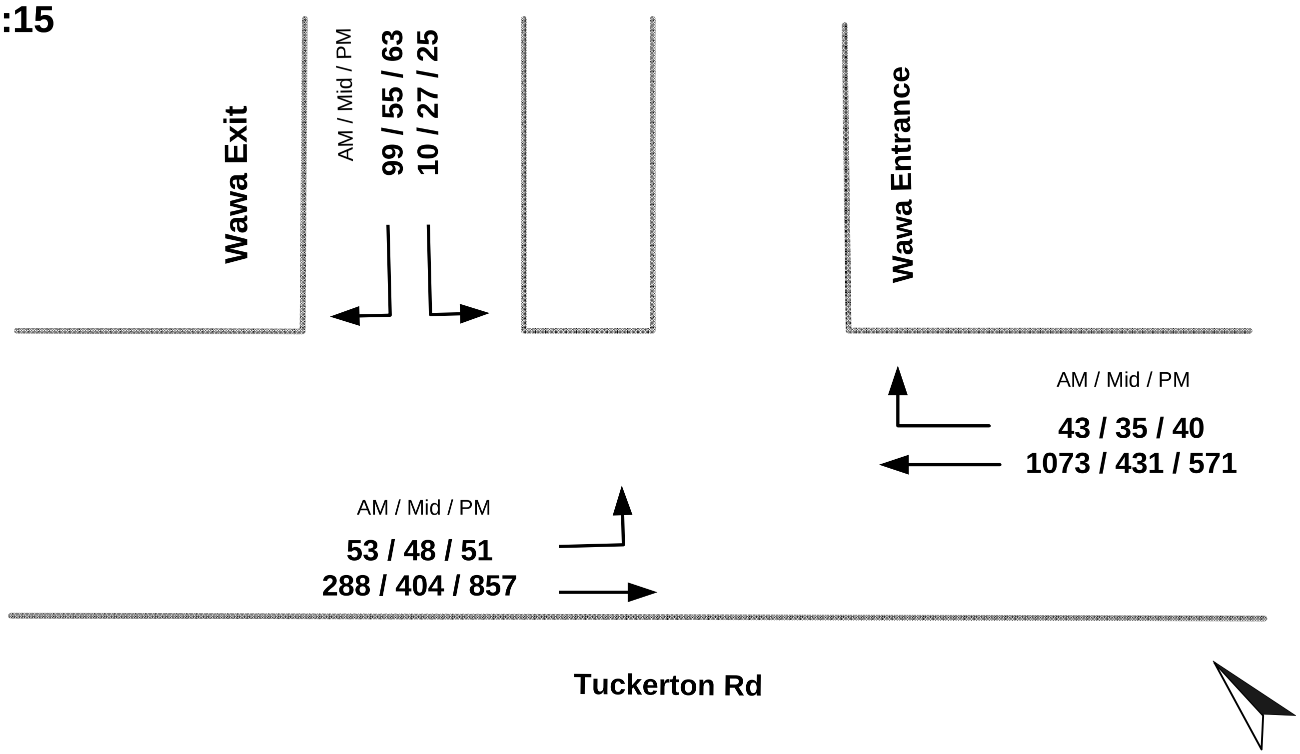
Delaware Valley Regional Planning Commission
April 2008

Source: DVRPC, 2007

Figure 5
Existing Peak Hour Turning Movement Counts
Tuckerton Road and Wawa Driveways

Peak Hours

AM: 7:30 – 8:30
Midday: 12:30 – 1:30
PM: 5:15 – 6:15



SCHEMATIC NOT TO SCALE

Delaware Valley Regional Planning Commission
April 2008

Source: DVRPC, 2007

Level of Service
SYNCHRO Traffic Analysis Software was utilized to evaluate the intersection's current performance levels and then to compare the effectiveness of potential improvements. In its evaluations of intersection performance, SYNCHRO considers several factors, including but not limited to vehicular volume, intersection geometry, and signal timing. From this data, SYNCHRO is capable of providing a Level of Service (LOS) and the average delay-per-vehicle, as well as other measures of effectiveness. These measures are detailed for each movement and approach and for the entire intersection.

Table 2 shows the existing LOS. During the morning peak hour, the intersection operates at an overall LOS of E, with an average delay of 76 seconds. The poorest performing approaches during this period are the westbound Tuckerton Road and the northbound Taunton Boulevard legs, with LOSs of E and F, respectively. The northbound approach operates with an average delay of one and a half minutes. This is primarily the result of the approach's high volume and high percentage of turns. Conversely, the southbound Taunton Boulevard approach operates at an LOS of D, with an average delay of 50 seconds.

TABLE 2

Existing Peak-Hour Level of Service (LOS) Analysis

Tuckerton Road and Taunton Boulevard

Scenario	**Direction of Travel**	**2007 Peak AM Hour and Peak PM Hour LOS with Average Delay / Vehicle**			
Existing Conditions		AM Peak (111 sec)		PM Peak (111 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road eastbound	E	58	F	356
	Tuckerton Road westbound	E	80	D	45
	Taunton Blvd. northbound	F	90	C	34
	Taunton Blvd. southbound	D	50	F	259
	Intersection	E	76	F	192

Source: DVRPC, 2007

During the afternoon peak hour, the intersection operates at an overall LOS of F, with an average of 192 seconds of delay. The eastbound Tuckerton Road and southbound Taunton Boulevard approaches experience the heaviest delays, with LOSs of F. Eastbound Tuckerton Road operates with the greatest average delay of all the intersection approaches, approximately six minutes (356 seconds) during the evening peak hour. This is mainly the result of volume (878 vehicles go through that approach in the peak hour), vehicles turning, and signal timing. Taunton Boulevard southbound has a delay of over 4 minutes (259 seconds) during this period. This is a result of high left turn movements. Left turns constitute 30 percent of the approach's traffic during the peak hour. The northbound Taunton Boulevard approach has the least delay, 34 seconds, and an LOS of C.

Safety

This study intersection handles a considerable volume of traffic during the morning and afternoon peak periods. In addition to through traffic, all four quadrants of the intersection have trip-generating land uses. As stated earlier, each approach leg of the intersection has a concrete median separating the intersection approach and departure lanes. This barrier essentially forces right-in/right-out movements to and from most businesses located at the intersection. This deters the potentially unsafe left-turn movements that would be common given the multilane configuration of the intersection approaches.

Crash Analysis

The crash analysis is a safety review of the Taunton Boulevard (CR 623) and Tuckerton Road (CR 620) intersection in Medford Township, New Jersey. The crash analysis focuses on crashes occurring at the intersection as well as crashes on the approaches. Oftentimes the crashes on the approaches are related to the design and operation of the intersection. This type of crash is referred to as "intersection-related," as opposed to those occurring in the intersection box and described by the NJDOT as "at intersection" crashes. It is important to consider both, especially where peak period recurring congestion plays a major role, as it does at this location.

The crash data used in this analysis was obtained from the Medford Township Police Department Crash Investigation Reports for the years 2004 to 2006. The main goals of this analysis were to identify problematic locations, highlight crash trends, and compare and contrast crash data with New Jersey statewide crash averages for comparable roadways. Collision diagrams, graphic representations of vehicular crashes within the study area, and the crash summary, the analytical synopsis of various crash conditions were produced from the crash reports. These documents identify crash trends and contributing factors for these crashes both physical and human behavioral.

According to the crash summary shown in ***Table 3***, there were a total of 102 reportable crashes and seven non-reportable crashes. Reportable crashes are crashes that result in a fatality, injury, and/or property damage of $500 or more. There were no recorded fatalities, 15 injuries, and 94 property-damage-only crashes. The property-damage-only crash total was higher than the statewide average for the county road system, while injury crashes were lower (13.76 percent) compared to the statewide percentage (29.16 percent). This is a possible indication that crashes at this location involve slower speeds, a condition associated with congestion.

There was a progressive reduction in crashes over the three-year study period. There were 48 crashes in 2004, 31 in 2005, and 30 in 2006. Between 2004 and 2006 there was a 38 percent reduction in the number of crashes at the study location. According to the Medford Township Police Department, there were 33 reported crashes at this

Table 3: Intersection Crash Summmary

CR 620 & CR 623	2004		2005		2006		Total		2006 NJ Statewide County
Crash Summary	**Crash**	**%**	**Crash**	**%**	**Crash**	**%**	**Crash**	**%**	**Road Average**
Reportable	44	91.67%	28	90.32%	30	100.00%	102	93.58%	~
Non-Reportable	4	8.33%	3	9.68%	~	~	7	6.42%	~
Total	48		31		30		109		
Crash Type									
Rear-End	22	45.83%	10	32.26%	17	56.67%	49	44.95%	30.32%
Angle	9	18.75%	8	25.81%	3	10.00%	20	18.35%	18.09%
Sideswipe	2	4.17%	~	~	1	3.33%	3	2.75%	11.45%
Left Turn	11	22.92%	10	32.26%	6	20.00%	27	24.77%	7.89%
Hit Animal	3	6.25%	~	~	1	3.33%	4	3.67%	3.80%
Hit Pedestrian	1	2.08%	~	~	~	~	1	0.92%	1.89%
Hit Fixed Object	~	~	3	9.68%	1	3.33%	4	3.67%	11.89%
Backing	~	~	~	~	1	3.33%	1	0.92%	2.00%
Intersection Type									
Intersection	6	12.50%	4	12.90%	6	20.00%	16	14.68%	39.52%
Not at Intersection	42	87.50%	27	87.10%	24	80.00%	93	85.32%	60.45%
Severity Type									
Fatality	~	~	~	~	~	~	~	~	0.27%
Injured	5	10.42%	6	19.35%	4	13.33%	15	13.76%	29.16%
Property	43	89.58%	25	80.65%	26	86.67%	94	86.24%	70.57%
Lighting Condition									
Day	41	85.42%	25	80.65%	24	80.00%	90	82.57%	70.25%
Dusk/Dawn	1	2.08%	~	~	2	6.67%	3	2.75%	3.84%
Night	6	12.50%	6	19.35%	4	13.33%	16	14.68%	25.49%
Road Surface Condition									
Dry	38	79.17%	22	70.97%	26	86.67%	86	78.90%	77.54%
Wet	9	18.75%	9	29.03%	3	10.00%	21	19.27%	19.67%
Ice/Snow	1	2.08%	~	~	1	3.33%	2	1.83%	2.13%

Source: Medford Township Police Department, 2007

location in 2007. A graphic representation of 2007 crashes provided by Medford Township Police is shown in the **Appendix**. This data was not available for analysis.

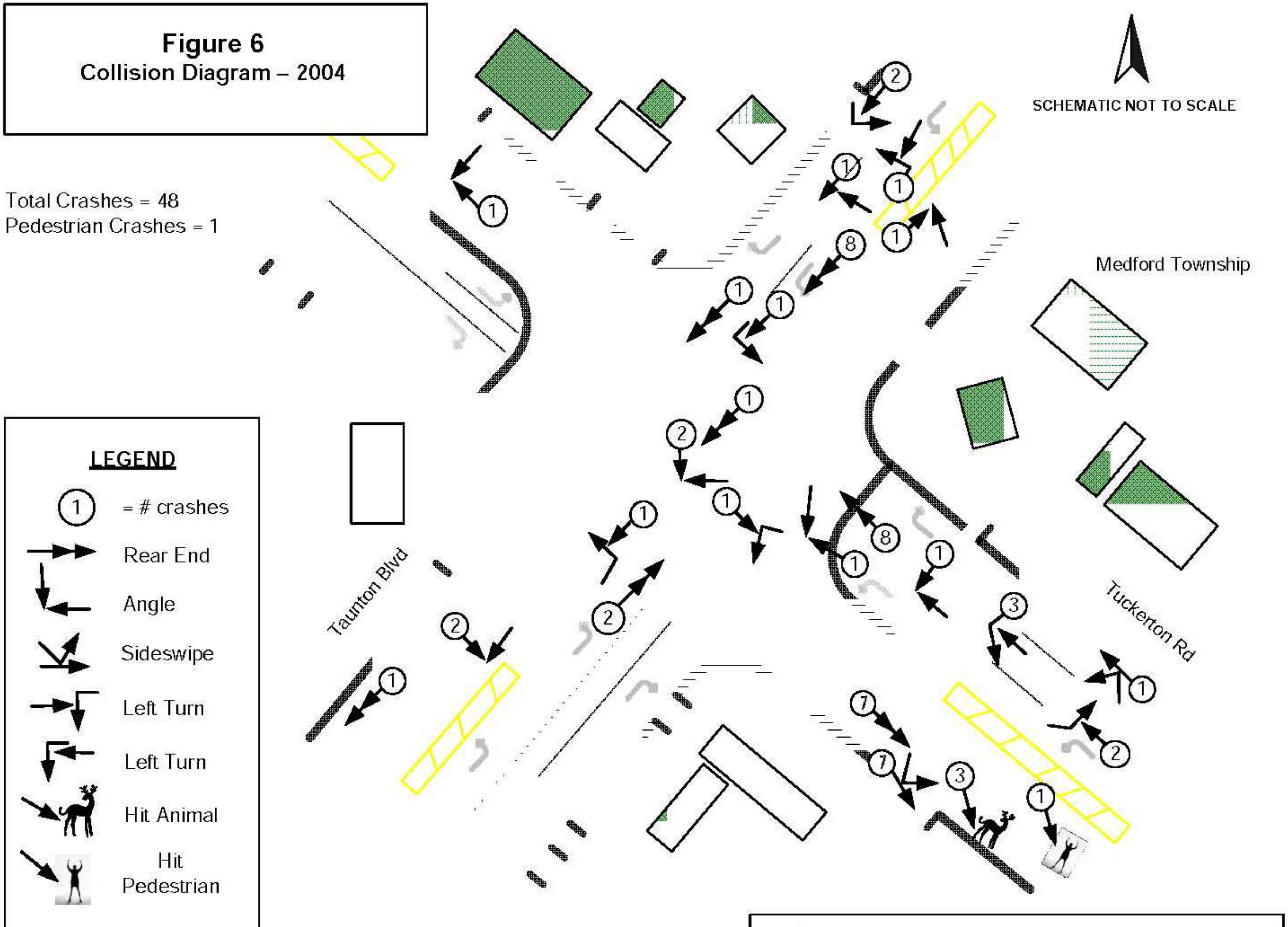
As shown in **Table 3**, throughout the three-year study period, rear end, left-turn, and angle crash averages exceeded the 2006 statewide averages for those crash types. Rear-end crashes were by far the most predominant crash type in the study area, at approximately 45 percent, exceeding the statewide average of 30 percent. Rear-end crashes are typically the result of congestion, which is evident during peak periods along both roadways. After rear end crashes, the most common crash types were left-turn with approximately 25 percent of the three year total and angle crashes with 18.35 percent of the total. Angle crashes involve vehicles traveling at angular directions, i.e., northbound and westbound. The percentage of angle crashes is only slightly above the statewide average of 18.09 percent. However, the percentage of left-turn crashes far exceeded the statewide average of 7.89 percent. Although they typically occur within the intersection box like angle crashes, left-turn crashes involve opposite direction traffic. These crashes are oftentimes the result of left-turning vehicles misjudging the speed and relative distance of an oncoming vehicle. Hit animal crashes were almost equal to the statewide average. Throughout the study period there was only one pedestrian-related crash.

In the analysis of crashes occurring during specific light and road surface conditions, most of the crashes occurred during daylight (90) and on dry (86) road surface conditions. The percentages of these crashes exceeded the 2006 New Jersey statewide county road averages.

Figures 6, 7, and 8 represent collision diagrams for 2004, 2005, and 2006, respectively. The collision diagrams reveal two areas of crash concentrations. Approximately 43 percent of the crashes occurred within the eastern leg of the intersection (westbound approach and eastbound departure lanes of Tuckerton Road) and 26 percent occurred in the northern leg of the intersection (southbound approach and northbound departure lanes of Taunton Boulevard). A combination of angle, left-turn and rear-end collision types were recorded in these areas. In both legs, these three collision types were predominant. These collision types may be indicative of congestion, roadway geometry, signal timing, and/or human behavioral actions. A contributing factor to crash frequency, as shown in the collision diagrams, is traffic entering and exiting the businesses around the intersection. The concrete medians installed along each approach limit the number of left turns associated with the businesses, but some are still possible.

Figures 9 and 10 depict crashes by month and crashes by day of the week. Crash frequency by month is fairly consistent, with seven months of the year experiencing between nine and eleven crashes. The most crashes were recorded in July (14) and the least occurred in November (5). The spring and summer months of March through August accounted for 63 crashes; 57 percent of the total.

Figure 6
Collision Diagram – 2004



Source: Medford Township Police Department, 2007

Delaware Valley Regional Planning Commission
April 2008

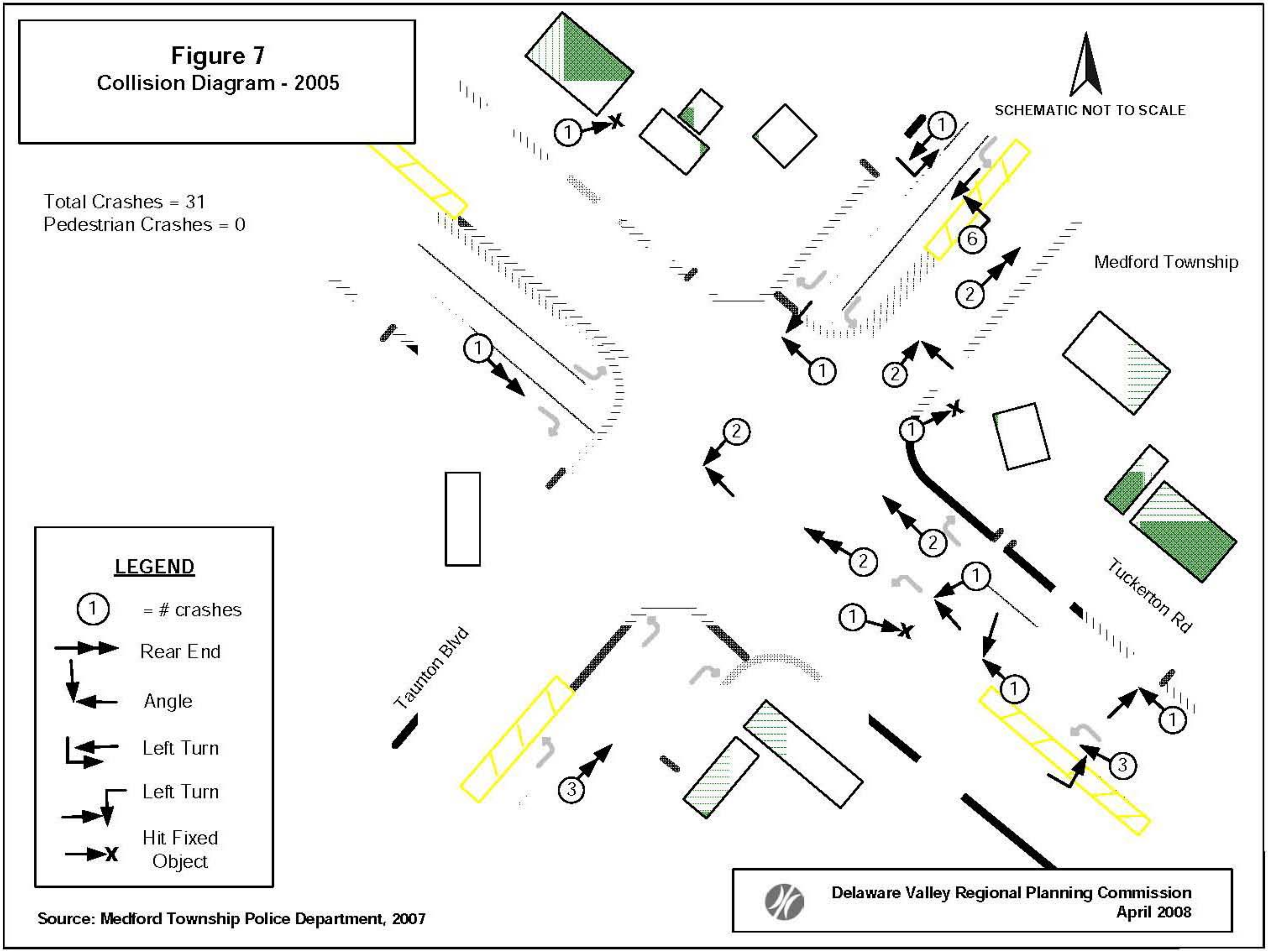
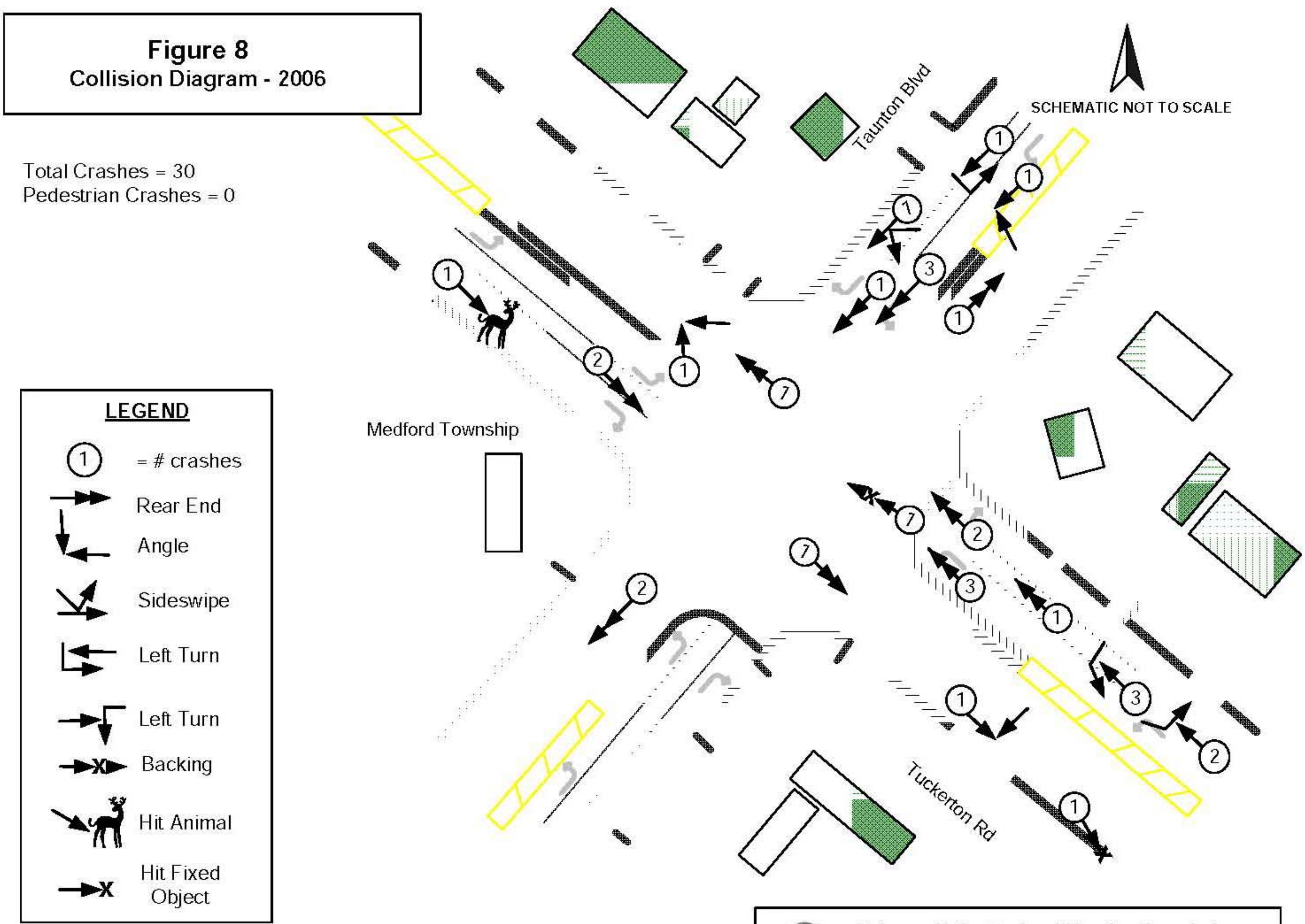


Figure 7
Collision Diagram - 2005
SCHEMATIC NOT TO SCALE
Total Crashes = 31
Pedestrian Crashes = 0
Medford Township
Tuckerton Rd
Taunton Blvd
LEGEND
1 = # crashes
Rear End
Angle
Left Turn
Left Turn
Hit Fixed Object
Delaware Valley Regional Planning Commission
April 2008
Source: Medford Township Police Department, 2007

Figure 8
Collision Diagram - 2006

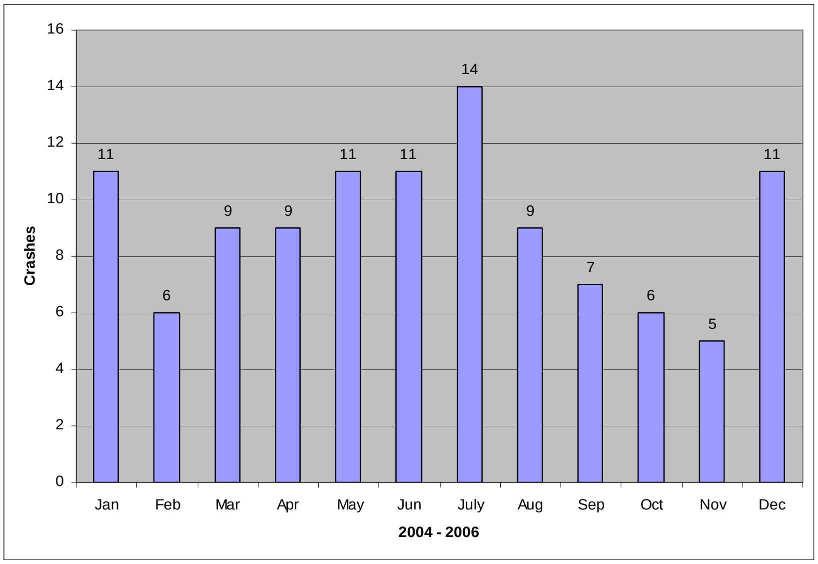


Source: Medford Township Police Department, 2007

Delaware Valley Regional Planning Commission
April 2008

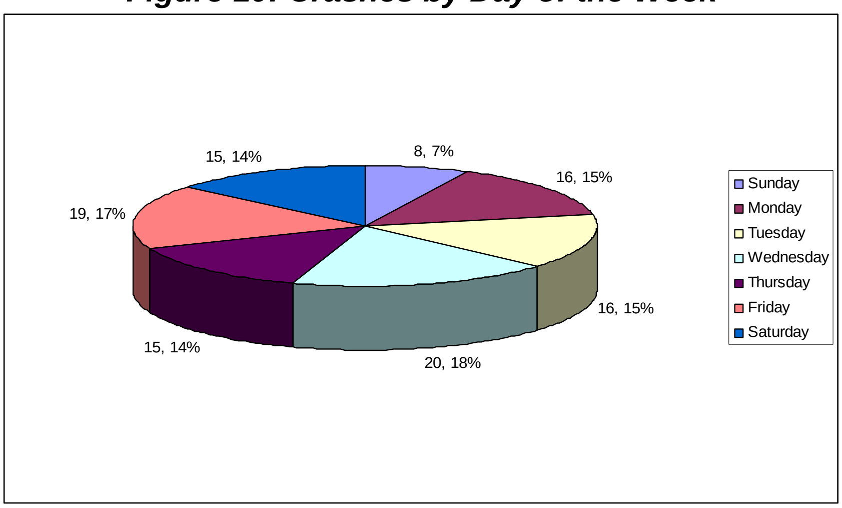
Crash totals for day of week were fairly consistent. The most crashes occurred on Wednesdays (20) and the least occurred on Sundays (8). For the remaining five days, the crash totals were between 15 and 19.

Figure 9: Crashes by Month of the Year



Source: Medford Township Police Department, 2007

Figure 10: Crashes by Day of the Week



Source: Medford Township Police Department, 2007

Pedestrian and Bicyclists

The area is not pedestrian friendly. The sidewalk is discontinuous or nonexistent. A sidewalk is located on the southwest quadrant of the intersection in front of the Exxon gas station, after which it ends abruptly. There are no crosswalks at the intersection approaches or in the vicinity.

Pedestrian using the right-turn lane to travel eastbound on Tuckerton Road
Source: DVRPC, 2007

The roadways leading into and away from the intersection have wide shoulders, which can accommodate bicyclists, but there are no bicycle amenities at the immediate study area.

Pavement Markings
Some of the pavement markings are in poor condition. On the east leg of Tuckerton Road, the centerline and shoulder pavement markings are faded. Several pavement marking arrows at the intersection are also faded.

Access Management
Businesses at three of the four corners of the intersection currently have four access and egress points for each property. Vehicles slowing to enter or exit these businesses are in conflict with traffic moving through the intersection. Additionally, vehicles making a left turn from the Wawa parking lot travel across three active lanes of traffic to access eastbound Tuckerton Road.

Vehicle making left turn from WAWA driveway
Source: DVRPC, 2007

OPPORTUNITIES AND CONSTRAINTS

With an LOS of F, the efficiency of the intersection is failing during the afternoon peak hour. Although operating at an LOS E during the morning peak hour, the overall delay is almost 2 minutes less than the afternoon peak. Eastbound Tuckerton Road and southbound Taunton Boulevard are operating poorly during the PM peak. In order to improve the operation of the intersection, there are a number of geometric, signal timing, and land use variables that must first be considered.

Although much of the traffic is through traffic, there are a number of traffic generators and attractors around the intersection that also make it a destination. All four corners of the intersection are dedicated to commercial uses, many of which have driveways close to the intersection. Left turns possible from driveways near the intersection create a safety concern and contribute to the accident history at this intersection. This is an opportunity to address access management around the intersection. Strategies may be identified to make driveways more efficient, resulting in the safer operation of the roadway in these locations.

This is an opportunity to address the Wawa driveway, which has experienced a number of crashes over the study period. Recommended strategies will address physical as well as behavioral safety of the area.

Commercial land use at the intersection also limits the widening of the intersection to alleviate congestion. The wide shoulders in the area can be utilized to accommodate high traffic volumes without the need for acquiring additional right-of-way.

Existing signal timing has protected left-turn phases on Tuckerton Road, as well as Taunton Boulevard; therefore, improvements to the operation of the intersection through signal timing are limited.

When considering pedestrian crashes, the concern is greater than with any other collision type due to the vulnerability of pedestrians in a crash for injury or death. Pedestrians were observed crossing the intersection. Due to the close proximity of residential areas to this intersection and its retail facilities, improved pedestrian accommodations should be pursued as a high priority.

POTENTIAL IMPROVEMENT SCENARIOS

Tuckerton Road and Wawa Driveway
Several alternative strategies were considered to address the issues associated with the Wawa driveway.

Alternative 1
This alternative is shown in ***Figure 11***.
Characteristics
- Convert "exit only" driveway to "right out only."
- Extend concrete median at the westbound approach of Tuckerton Road to deter left turns from vehicles exiting the driveway.
- Utilize the existing utility right-of-way on the southern side of the Hardware Store to provide access to and egress from the Wawa facility on Taunton Boulevard.
- Reformat parking spaces.

Advantages
- Eliminates left-turn movements from Wawa.
- Gain alternative entrance to businesses from Taunton Boulevard.
- Relieves congestion in the Wawa parking lot.
- Possibly save time for northbound Taunton Boulevard motorists by having an exit on Taunton Boulevard via the new driveway.

Disadvantages
- Eliminates left-turn movement from driveway for eastbound Tuckerton Road.
- New driveway may encroach on or adversely affect existing hardware business.
- Costs associated with right-of-way acquisition and construction of driveway on the south side of the hardware store.
- Costs associated with extending the concrete median and reconfiguring the Wawa exit driveway to right-out only
- Left-turn movements must cross multiple lanes of traffic.

Alternative 2
This alternative is shown in ***Figure 12***.
Characteristics
- Convert entrance driveway to entrance/exit.
- Introduce a one-way traffic circulation system in the parking lot.

Advantages
- Left turns from driveway will be made across one lane as opposed to three lanes of traffic.
- One-way circulation eliminates potential conflicts.

Disadvantages
- Potential for increased congestion in parking lot.

- Potential for conflicts in the parking lot due to congestion.

Alternative 3
This alternative is shown in ***Figure 13***.
Characteristics
- Convert “exit only” driveway to “right out only.”
- Extend concrete median at the westbound approach of Tuckerton Road to deter left turns from “exit” driveway.
- Convert “entrance only” driveway to two-way movement.

Advantages
- Eliminates unsafe left-turn movements from “exit” driveway and accommodate these movements at the existing “entrance” driveway, which is further away from the intersection and crosses only one lane of traffic.
- Relieves congestion in the parking lot.

Figure 11
Congestion and Crash Site Analysis
Proposed Wawa Access Improvements - Alternative 1
Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ

Figure 12
Congestion and Crash Site Analysis
Proposed Wawa Access Improvements - Alternative 2
Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ
CR 620 TUCKERTON RD
CR 623 TAUNTON BLVD
DO NOT
BLOCK
DRIVEWAY
CONCEPTUAL SCHEMATIC
FOR PLANNING PURPOSES ONLY
0
25
50
Feet
DVRPC Aerial Imagery: Spring, 2005
Delaware Valley Regional
Planning Commission
April 2008

Figure 13

Congestion and Crash Site Analysis

Proposed Wawa Access Improvements - Alternative 3

Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ

CONCEPTUAL SCHEMATIC
FOR PLANNING PURPOSES ONLY

DVRPC Aerial Imagery: Spring, 2005

Delaware Valley Regional
Planning Commission
April 2008

Intersection of Taunton Boulevard and Tuckerton Road

Four improvement scenarios have been developed to help alleviate congestion and improve safety at the intersection. These involve changes to the signal timing and modification of the intersection geometry. A fifth scenario was considered to model the impact of traffic exiting the Wawa driveway (*Alternative 1* of the Tuckerton Road and Wawa Driveway improvement scenario) on intersection operation.

Scenario 1

Characteristics

- Optimize existing traffic signal timing.
- Improve pedestrian amenities:
  - Add crosswalks on all four approaches.
  - Add sidewalks as appropriate with American Disabilities Act (ADA) compliant ramps and landings.
  - Add pedestrian signal heads to existing signal with pedestrian countdown indications.
- Prohibit u-turns at the Tuckerton Road northbound approach.

Advantages

- Improvements can be implemented in the short term.
- Improvements are low cost.
- Signal timing optimization provides for a more efficient movement of traffic through the intersection.
- Improvements to pedestrian safety and visibility.

Disadvantages

- Optimization will spread the delay for the approaches; as a result, some approaches may experience longer delays.
- Cycle length is longer.

Level of Service Analysis

As shown in ***Table 4***, in the morning the overall LOS is an E, which is consistent with the existing LOS and delay. Optimization of the signal provides the greatest benefits in the afternoon on the eastbound and southbound approaches, reducing vehicle delay from 356 and 259 seconds to 107 and 109 seconds, respectively. Compared to the existing conditions, the overall LOS in the afternoon remains at an LOS of F, with a reduction of 94 seconds of vehicle delay. In the afternoon peak period, the westbound and northbound delay increases from 45 and 34 seconds to 72 and 104 seconds, respectively. The cycle length for the morning and afternoon peak periods increase to 140 and 150 seconds, respectively.

Scenario 2

Characteristics

- Same as *Scenario 1*.
- Convert the dedicated right-turn lanes on the Tuckerton Road approaches to accommodate both through and right turns.

TABLE 4

Proposed Alternative Scenarios Peak Hour Level of Service (LOS) Analysis

Tuckerton Road and Taunton Boulevard

Scenario	**Direction of Travel**	**2007 Peak AM Hour and Peak PM Hour LOS with Average Delay / Vehicle**			
Existing Conditions		AM Peak (111 sec)		PM Peak (111 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	E	58	F	356
	Tuckerton Road - Westbound	E	80	D	45
	Taunton Boulevard - Northbound	F	90	C	34
	Taunton Boulevard - Southbound	D	50	F	259
	Intersection	E	76	F	192
Scenario 1 – Signal Optimization		AM Peak (140 sec)		PM Peak (150 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	E	65	F	107
	Tuckerton Road - Westbound	E	75	E	72
	Taunton Boulevard - Northbound	E	79	F	104
	Taunton Boulevard - Southbound	D	54	F	109
	Intersection	E	72	F	98
Scenario 2 – Converting Right Turn lane to Through/Right Turn lane at Tuckerton Road approaches		AM Peak (90 sec)		PM Peak (90 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	D	45	F	84
	Tuckerton Road - Westbound	D	54	E	56
	Taunton Boulevard - Northbound	D	52	E	61
	Taunton Boulevard - Southbound	D	39	E	73
	Intersection	D	50	E	70

TABLE 4 (continued)

Proposed Alternative Scenarios Peak Hour Level of Service (LOS) Analysis

Tuckerton Road and Taunton Boulevard

Scenario	Direction of Travel	2007 Peak AM Hour and Peak PM Hour LOS with Average Delay / Vehicle			
Scenario 3 – Convert Right Turn to Through/Right Lane on Southbound Taunton Boulevard and Increase "All-Red" Phase for entire intersection		AM Peak (90 sec)		PM Peak (100 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	E	60	F	92
	Tuckerton Road - Westbound	F	81	D	54
	Taunton Boulevard - Northbound	E	66	E	73
	Taunton Boulevard - Southbound	D	39	D	55
	Intersection	E	67	E	69
Scenario 4 – Adjust Timing: AM increase Tuckerton Road Cycle Length; PM increase the Southbound Protected Left Phase		AM Peak (90 sec)		PM Peak (100 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	D	46	F	92
	Tuckerton Road - Westbound	E	61	D	54
	Taunton Boulevard - Northbound	E	74	F	84
	Taunton Boulevard - Southbound	D	39	D	50
	Intersection	E	60	E	69
Scenario 5 – Dual Left Turn Lanes on the Southbound Approach of Taunton Boulevard		AM Peak (90 sec)		PM Peak (90 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	E	60	E	68
	Tuckerton Road - Westbound	E	67	D	42
	Taunton Boulevard - Northbound	D	52	E	57
	Taunton Boulevard - Southbound	D	41	D	53
	Intersection	E	57	E	56

TABLE 4 (continued) **Proposed Alternative Scenarios Peak Hour Level of Service (LOS) Analysis**					
Tuckerton Road and Taunton Boulevard					
Scenario	**Direction of Travel**	**2007 Peak AM Hour and Peak PM Hour LOS with Average Delay / Vehicle**			
Scenario 6 – Rerouting Wawa Driveway Left Turning traffic to Taunton Boulevard		AM Peak (90 sec)		PM Peak (90 sec)	
		LOS	Delay (sec)	LOS	Delay (sec)
	Tuckerton Road - Eastbound	E	60	E	69
	Tuckerton Road - Westbound	F	81	D	47
	Taunton Boulevard - Northbound	D	52	E	61
	Taunton Boulevard - Southbound	C	32	D	49
	Intersection	E	61	E	57

Source: DVRPC, 2007

- Stripe the existing receiving lanes and shoulder to accommodate two through lanes of traffic, then merge back to one lane.
- Add appropriate “Merge” signs.

Advantages
- Improvements can be implemented in the short term.
- Improvements are low cost.
- No right-of-way acquisition necessary--shoulders at the receiving lanes of Tuckerton Road can be used to accommodate new configuration.
- Increased capacity on Tuckerton Road through the lane conversions will improve traffic flow through the intersection.
- For both peak periods, the cycle length is reduced from the existing conditions

Disadvantages
- Potential conflicts at the merge in the receiving lanes.
- Right turns into driveways close to the intersection will hinder the smooth movement and merge of the two proposed receiving lanes on Tuckerton Road without facilities (e.g. shoulder) for deceleration.

Level of Service Analysis
By converting the right-turn lane into a through and right-turn lane, the operation and efficiency of the intersection is enhanced, improving the overall LOS for both the morning and afternoon peak periods. As shown in ***Table 4***, the morning peak period’s overall LOS improves from an E to a D. There is also improvement in the LOS of three

of the four approaches to a D and delay is reduced at all approaches. Reductions range from 38 seconds for the northbound approach to 11 seconds at the southbound approach.

In the afternoon peak, the LOS for the overall intersection improves to an E over the existing F. Delay is reduced 122 seconds. Eastbound and southbound approaches experience the most reduction in delay at this time (274 and 183 seconds, respectively), but the westbound and northbound approaches have increased delay of 11 and 27 seconds respectively, when compared to the existing conditions. With the exception of the eastbound approach, the approach’s LOS during the afternoon peak period is E. The eastbound approach has an LOS F, with a vehicle delay of 84 seconds, which is the result of the high through volumes traveling through the intersection. With this scenario, the cycle length is 90 seconds for both peak periods.

Scenario 3
Characteristics
- Same as *Scenario 2.*
- Convert the southbound Taunton Boulevard right turn lane into a through/right lane.
- Stripe the existing receiving lane and shoulder to accommodate two through lanes of traffic, and merge back to one lane.
- Add appropriate “Merge” signs.
- Increase the “all-red” signal phase for all four approaches by one second.

Advantages
- Same as *Scenario 2.*
- No right-of-way acquisition necessary; the shoulder at the receiving lane of southbound Taunton Boulevard can be used to accommodate new configuration.
- Increased capacity for the through movement for southbound Taunton Boulevard will improve traffic flow through the intersection, especially during the afternoon peak.
- For both peak periods, the cycle length is reduced from the existing conditions.
- Improved traffic flow north of the intersection will provide better access to those businesses.
- Potential reduction in crashes, especially angle and left-turn crashes, related to running the red light.

Disadvantages
- Same as *Scenario 2.*
- Potential conflicts at the merge in the receiving lanes.
- Right turns into driveways close to the intersection will hinder the smooth movement and merge of the two proposed receiving lanes on Taunton Boulevard without facilities (e.g. shoulder) for deceleration.

This scenario is depicted in ***Figure 14***.

Level of Service Analysis
As shown in ***Table 4***, the overall LOS for the intersection is an E for both morning and afternoon peak periods. During the morning peak the westbound Tuckerton Road approach is failing with 81 seconds of delay, one second higher than existing. Eastbound Tuckerton Road also experiences an increase in delay over the existing but both Taunton Boulevard approaches experiences reduced delay. All approaches except southbound Tuckerton Road had increased delay and movement in LOS from Ds to F and Es when compared to *Scenario 2*.

For the afternoon overall delay for the intersection was reduced from 70 to 69 seconds. Westbound Tuckerton Road and southbound Taunton Boulevard showed reduction in delay and LOS going from E to D. Of the two approaches with delay increase, northbound Taunton Boulevard had the highest with 12 seconds. With this option, the morning and afternoon peak periods have a cycle length of 90 and 100 seconds, respectively.

Scenario 4
Characteristics
- Same as *Scenario 3*
- Signal timing adjustment:
  - Increase Tuckerton Road cycle length during the morning peak;
  - Increased green time for the left turn phase of southbound Taunton Boulevard during the afternoon peak.

Advantages
- Reduced delay on Tuckerton Road during the morning peak period.
- More time is allocated for the heavy southbound left turn movement that occurs during the afternoon peak.
- Timing adjustments can be implemented immediately with relatively low costs.

Disadvantages
- The LOS and delay may increase on Taunton Boulevard during the morning peak period.

Level of Service
Level of service remains the same compared to *Scenario 3* for the overall intersection but delay decreases during the morning peak, as shown in ***Table 4***. In the morning, delay at the Tuckerton Road approaches decreases by 16 and 20 seconds over *Scenario 3,* delay increases by 8 seconds for northbound Taunton Boulevard and remains the same for the southbound. Eastbound and westbound Tuckerton Road goes from LOS E and F to D and E, respectively, over *Scenario 3.*

In the afternoon the eastbound and northbound approach of the intersection fail with a LOS of F and vehicle delay of 92 and 84 seconds. Compared to Scenario 3, the northbound Taunton Boulevard approach delay increases by 11 seconds and the

Figure 14

Congestion and Crash Site Analysis

Proposed Intersection Improvements - Scenario 3

Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ

DVRPC Aerial Imagery: Spring, 2005

Delaware Valley Regional Planning Commission
April 2008

southbound approach delay is reduced by 5 seconds. Both the morning and afternoon peak periods have LOS E with a cycle lengths of 90 and 100 seconds, respectively.

Scenario 5
Characteristics
- Add another left-turn lane to southbound Taunton Boulevard.
- Replace island on the outside of the left-turn lanes.

Advantages
- Improvement can be implemented in the short term.
- Improvement can be implemented in existing right-of-way.
- Increased left-turning capacity at the southbound Taunton Boulevard to accommodate the heavy movement.

Disadvantages
- Potential conflicts at the merge in the receiving lanes on eastbound Tuckerton Road.
- Through lane at the northbound approach will not line up with the receiving lane. It would be opposite the southbound left turn lane.

This scenario is depicted in ***Figure 15***.

Level of Service Analysis
As shown in ***Table 4***, this option improves the overall operation and efficiency of the intersection. During the morning peak period, overall intersection has LOS of E, with 57 seconds of vehicle delay. Compared to *Scenario 3*, only the southbound approach showed an increase in delay for the morning peak period. The westbound approach experience improvement in LOS from an F to an E and northbound improved from an E to a D.

In the afternoon, the intersection overall LOS is also an E, with a vehicle delay of 56 seconds. Compared to the afternoon existing conditions, the delay on the southbound Taunton Boulevard approach is reduced from 259 seconds to 53 seconds. The LOS improves from an F to a D. The northbound approach of the intersection has increased delays of 23 seconds over the existing conditions. When compared to *Scenario 3* all approaches experienced a reduction in delay and the eastbound approach had an improvement in level of service.

Scenario 6
Characteristics
- Same as *Scenario 5*.
- Same as *Alternative 1* (Tuckerton Road and Wawa Driveway Improvement Alternative)

Advantages
- Same as *Scenario 5*.

- Eliminate left-turn movements from Wawa.
- Gain alternative entrance to businesses from Taunton Boulevard.
- Relieve congestion in the Wawa parking lot.
- Possibly save time for northbound Taunton Boulevard motorists by having an exit on Taunton Boulevard via the new driveway.

Disadvantages
- Same as *Scenario 5*.
- Eliminate left-turn movement from driveway for eastbound Tuckerton Road.
- New driveway may encroach on or adversely affect existing hardware business.
- Costs associated with right-of-way acquisition and construction of driveway on the south side of the hardware store.
- Costs associated with extending the concrete median and reconfiguring the Wawa exit driveway to right-out only
- Left-turn movements must cross multiple lanes of traffic.

Level of Service Analysis
As shown in ***Table 4***, the LOS is E for the morning and afternoon peak periods, with 61 and 57 seconds of vehicle delay, respectively. Compared to *Scenario 5* for morning peak period, the westbound approach LOS declined from E to F with an increase of 14 seconds. For the southbound approach, the LOS improved from D to C, with a reduction of 9 second vehicle delay. The cycle lengths for this option remained the same, with 90 seconds allocated for the morning and afternoon peak periods.

For the afternoon all approaches had increased delay over *Scenario 5* except for the southbound approach which had a reduction of 4 seconds.

Figure 15

Congestion and Crash Site Analysis

Proposed Intersection Improvements - Scenario 5

Taunton Blvd. (CR 623) & Tuckerton Rd. (CR 620)
Medford Twp., Burlington Co., NJ

RECOMMENDATIONS

The intersection currently performs at a tolerable LOS of E in the AM peak hour and dramatically fails in the PM peak hour. This difference is mainly a result of significantly higher vehicular volumes in the afternoon peak period--specifically, in the eastbound Tuckerton Road and southbound Taunton Boulevard approaches.

Of the three improvement alternatives provided for the Wawa driveways, *Alternative 3* provides the most overall improvement and the least negative impact. This alternative addresses the safety issues associated with left turns from the existing “exit only” driveway, while providing a potentially safer alternative. This alternative can potentially alleviate congestion in the parking lot. Given the congestion and safety issues associated with the intersection of Tuckerton Road and Taunton Boulevard there is no favorable solution to providing reasonable safe queuing and access to the Wawa facility for eastbound traffic. Install “do not block driveway” sign and appropriate pavement marking as depicted in ***Figure 14,*** to facilitate left turn movement.

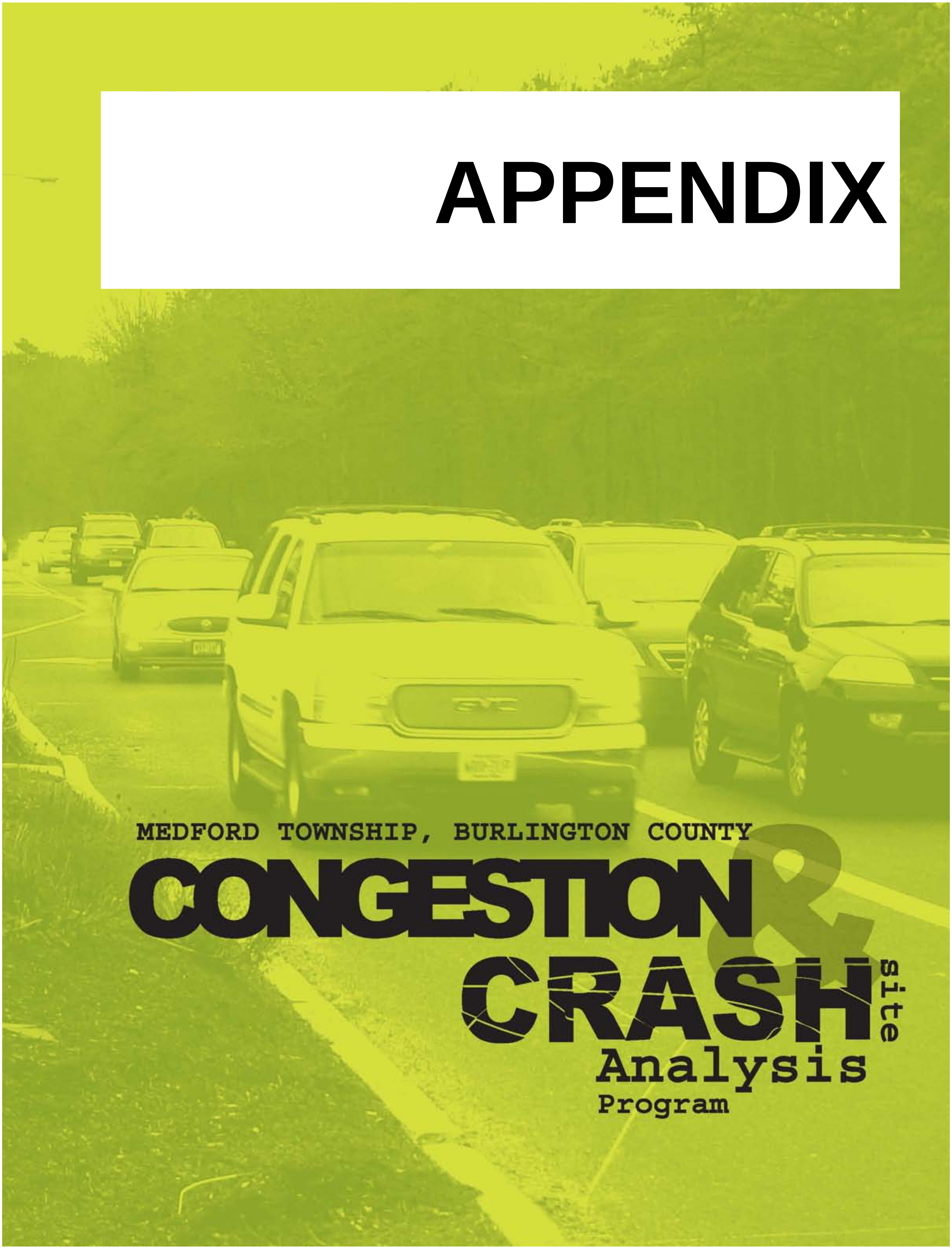
All improvement scenarios have shown improvement in the efficiency of the Tuckerton Road and Taunton Boulevard intersection over the existing operation. More efficient movement of vehicles through the intersection has the potential to reduce aggressive driving and the associated crashes. *Scenario 1* is the most cost effective solution for providing immediate improvements to the intersection. Increasing the “all red” phase may also be beneficial to the overall operation of the intersection. Although extending the “all-red” phases will not necessarily reduce red-light running, it will help to prevent crashes if red-light running occurs in the first few seconds of the red intervals.

Scenario 4 would provide the most overall improvement of congestion and vehicle delay, as well as safety, especially for the afternoon peak period while maintaining acceptable geometric design. Overcoming the disadvantages of this alternative will require proper signage and some time for motorists to get used to the new configuration. With the high volumes of traffic traveling through the intersection during the morning and afternoon peak periods and proposed conversion of the exclusive right turn lanes, longer lanes may be beneficial to the overall operation of the intersection. An engineering study should be completed to determine the feasibility of geometric changes.

Pedestrian traffic in and around the study location seems to be low. The lack of pedestrian amenities needs to be addressed for the safety and convenience of those who do travel the area on foot.

There are a number of driveways in close proximity to the intersection. Apart from the Wawa driveway, only a few crashes are associated with driveways in the study area. This may be partially due to the fact that left turns are discouraged by the concrete median at the intersection approaches. However, patrons should be encouraged to use the driveways furthest away from the intersection when exiting these businesses.

APPENDIX


MEDFORD TOWNSHIP, BURLINGTON COUNTY
CONGESTION &
CRASH site
Analysis
Program

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL MAM INTERVAL COUNTS

COUNTY: BURLINGTON
MUNICIPALITY: MEDFORD

INTERSECTION: North-South Street & East-West Street
STREETS: TAUNTON BLVD TUCKERTON RD

DATE: 10/17/06
DAY: WEDNESDAY
WEATHER: FAIR

FILE NUMBER: 1MIDDAY

AM INTERVAL COUNTS

	TAUNTON BLVD								TUCKERTON RD										
	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
STARTING TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
11:30 11:45	10	37	21	68	29	59	28	116	19	66	6	91	22	69	14	105	184	196	380
11:45 12:00	8	46	18	72	25	56	21	102	14	41	18	73	33	62	11	106	174	179	353
12:00 12:15	8	72	11	91	32	55	13	100	25	87	9	121	16	64	11	91	191	212	403
12:15 12:30	16	74	25	115	28	41	21	90	20	60	6	86	23	131	20	174	205	260	465
12:30 12:45	10	63	15	88	25	67	27	119	15	68	12	95	32	105	32	169	207	264	471
12:45 1:00	14	45	23	82	32	58	23	113	11	80	5	96	26	73	22	121	195	217	412
1:00 1:15	6	67	11	84	20	57	13	90	14	78	8	100	19	81	19	119	174	219	393
1:15 1:30	11	53	17	81	24	54	21	99	17	71	5	93	24	69	23	116	180	209	389
TOTALS	83	457	141	681	215	447	167	829	135	551	69	755	195	654	152	1001	1510	1756	3266
P.H. am																			
P.H. pm																			

HOURLY VOLUMES

	TAUNTON BLVD								TUCKERTON RD										
	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
STARTING TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
11:30 12:30	42	229	75	346	114	211	83	408	78	254	39	371	94	326	56	476	754	847	1601
12:30 1:30	41	228	66	335	101	236	84	421	57	297	30	384	101	328	96	525	756	909	1665
TOTALS	83	457	141	681	215	447	167	829	135	551	69	755	195	654	152	1001	1510	1756	3266

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: BURLINGTON
MUNICIPALITY: MEDFORD

INTERSECTION: North-South Street & East-West Street
STREETS: TAUNTON BLVD & TUCKERTON RD

DATE: 10/16/07
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 1AM

AM INTERVAL COUNTS

STARTING TIME	TAUNTON BLVD 1-NORTHBOUND L	S	R	TOTAL	2-SOUTHBOUND L	S	R	TOTAL	TUCKERTON RD 3-EASTBOUND L	S	R	TOTAL	4-WESTBOUND L	S	R	TOTAL	N-S TOTAL	E-W TOTAL	TOTAL
6:00 6:15	10	56	8	74	8	9	8	25	7	16	1	24	7	82	16	105	99	129	228
6:15 6:30	9	77	8	94	5	17	7	29	6	9	5	20	10	108	27	145	123	165	288
6:30 6:45	31	119	20	170	12	20	13	45	5	24	4	33	33	145	35	213	215	246	461
6:45 7:00	30	151	23	204	14	17	15	46	13	42	1	56	16	135	27	178	250	234	484
7:00 7:15	28	103	12	143	13	32	13	58	7	37	3	47	28	171	52	251	201	298	499
7:15 7:30	19	161	12	192	15	38	21	74	11	33	4	48	32	144	53	229	266	277	543
7:30 7:45	17	111	22	150	22	43	24	89	16	47	4	67	47	133	42	222	239	289	528
7:45 8:00	21	153	25	199	22	47	32	101	17	52	6	75	45	161	38	244	300	319	619
8:00 8:15	14	135	21	170	28	56	15	99	14	45	6	65	24	157	41	222	269	287	556
8:15 8:30	16	158	10	184	36	60	30	126	14	49	7	70	24	176	26	226	310	296	606
8:30 8:45	26	163	26	215	11	52	23	86	7	37	8	52	54	141	27	222	301	274	575
8:45 9:00	34	118	19	171	20	30	10	60	21	42	7	70	39	132	40	211	231	281	512
TOTALS	255	1505	206	1966	206	421	211	838	138	433	56	627	359	1685	424	2468	2804	3095	5899
P.H. am																			
P.H. pm																			

HOURLY VOLUMES

STARTING TIME	TAUNTON BLVD 1-NORTHBOUND L	S	R	TOTAL	2-SOUTHBOUND L	S	R	TOTAL	TUCKERTON RD 3-EASTBOUND L	S	R	TOTAL	4-WESTBOUND L	S	R	TOTAL	N-S TOTAL	E-W TOTAL	TOTAL
6:00 7:00	80	403	59	542	39	63	43	145	31	91	11	133	66	470	105	641	687	774	1461
7:00 8:00	85	528	71	684	72	160	90	322	51	169	17	237	152	609	185	946	1006	1183	2189
8:00 9:00	90	574	76	740	95	198	78	371	56	173	28	257	141	606	134	881	1111	1138	2249
TOTALS	255	1505	206	1966	206	421	211	838	138	433	56	627	359	1685	424	2468	2804	3095	5899

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: BURLINGTON
MUNICIPALITY: MEDFORD

INTERSECTION: North-South Street & East-West Street
STREETS: TAUNTON BLVD & TUCKERTON RD

DATE: 10/16/07
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 1PM

PM INTERVAL COUNTS

STARTING TIME		TAUNTON BLVD 1-NORTHBOUND L	S	R	TOTAL	2-SOUTHBOUND L	S	R	TOTAL	TUCKERTON RD 3-EASTBOUND L	S	R	TOTAL	4-WESTBOUND L	S	R	TOTAL	N-S TOTAL	E-W TOTAL	TOTAL
4:00 4:15		13	86	15	114	61	128	21	210	19	134	27	180	32	109	20	161	324	341	665
4:15 4:30		24	97	22	143	38	120	19	177	21	150	21	192	23	103	17	143	320	335	655
4:30 4:45		14	81	34	129	39	118	20	177	31	127	19	177	24	89	31	144	306	321	627
4:45 5:00		16	107	25	148	46	131	17	194	18	137	23	178	23	102	15	140	342	318	660
5:00 5:15		16	94	20	130	58	116	19	193	30	116	28	174	48	95	28	171	323	345	668
5:15 5:30		22	116	34	172	60	154	26	240	20	155	33	208	20	103	41	164	412	372	784
5:30 5:45		24	81	49	154	31	159	18	208	20	145	25	190	38	94	31	163	362	353	715
5:45 6:00		40	76	32	148	81	134	27	242	21	147	29	197	32	78	25	135	390	332	722
6:00 6:15		24	84	36	144	53	116	21	190	18	174	26	218	31	153	20	204	334	422	756
6:15 6:30		12	88	32	132	83	144	23	250	35	122	14	171	56	85	29	170	382	341	723
6:30 6:45		24	90	30	144	59	136	19	214	19	239	14	272	59	108	29	196	358	468	826
6:45 7:00		21	84	41	146	64	127	21	212	27	174	17	218	59	126	17	202	358	420	778
	TOTALS	250	1084	370	1704	673	1583	251	2507	279	1820	276	2375	445	1245	303	1993	4211	4368	8579
	P.H. am																			
	P.H. pm																			

HOURLY VOLUMES

STARTING TIME	TAUNTON BLVD 1-NORTHBOUND L	S	R	TOTAL	2-SOUTHBOUND L	S	R	TOTAL	TUCKERTON RD 3-EASTBOUND L	S	R	TOTAL	4-WESTBOUND L	S	R	TOTAL	N-S TOTAL	E-W TOTAL	TOTAL
4:00 5:00	67	371	96	534	184	497	77	758	89	548	90	727	102	403	83	588	1292	1315	2607
5:00 6:00	102	367	135	604	230	563	90	883	91	563	115	769	138	370	125	633	1487	1402	2889
6:00 7:00	81	346	139	566	259	523	84	866	99	709	71	879	205	472	95	772	1432	1651	3083
TOTALS	250	1084	370	1704	673	1583	251	2507	279	1820	276	2375	445	1245	303	1993	4211	4368	8579

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: BURLINGTON
MUNICIPALITY: MEDFORD

INTERSECTION: North-South Street & East-West Street
STREETS: WAWA ENT / EXIT TUCKERTON RD

DATE: 10/16/07
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 2MIDDAY

AM INTERVAL COUNTS

	WAWA ENT / EXIT								TUCKERTON RD										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
11:30 11:45	0	0	0	0	4	0	9	13	16	94	0	110	0	109	11	120	13	230	243
11:45 12:00	0	0	0	0	4	0	30	34	12	95	0	107	0	131	14	145	34	252	286
12:00 12:15	0	0	0	0	5	0	16	21	9	86	0	95	0	124	12	136	21	231	252
12:15 12:30	0	0	0	0	4	0	13	17	14	88	0	102	0	88	6	94	17	196	213
12:30 12:45	0	0	0	0	6	0	17	23	13	97	0	110	0	99	11	110	23	220	243
12:45 1:00	0	0	0	0	8	0	13	21	11	94	0	105	0	116	7	123	21	228	249
1:00 1:15	0	0	0	0	5	0	18	23	14	108	0	122	0	110	8	118	23	240	263
1:15 1:30	0	0	0	0	8	0	7	15	10	105	0	115	0	106	9	115	15	230	245
TOTALS	0	0	0	0	44	0	123	167	99	767	0	866	0	883	78	961	167	1827	1994
P.H. am																			
P.H. pm																			

HOURLY VOLUMES

	WAWA ENT / EXIT								TUCKERTON RD										
STARTING	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
11:30 12:30	0	0	0	0	17	0	68	85	51	363	0	414	0	452	43	495	85	909	994
12:30 1:30	0	0	0	0	27	0	55	82	48	404	0	452	0	431	35	466	82	918	1000
TOTALS	0	0	0	0	44	0	123	167	99	767	0	866	0	883	78	961	167	1827	1994

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: BURLINGTON
MUNICIPALITY: MEDFORD

INTERSECTION: North-South Street & East-West Street
STREETS: WAWA ENT/EXT TUCKERTON RD

DATE: 10/16/07
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 2AM

AM INTERVAL COUNTS

STARTING	WAWA ENT/EXT								TUCKERTON RD										
	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
6:00 6:15	0	0	0	0	0	0	17	17	9	10	0	19	0	71	13	84	17	103	120
6:15 6:30	0	0	0	0	1	0	35	36	13	23	0	36	0	137	15	152	36	188	224
6:30 6:45	0	0	0	0	4	0	27	31	10	17	0	27	0	224	16	240	31	267	298
6:45 7:00	0	0	0	0	7	0	26	33	26	68	0	94	0	255	21	276	33	370	403
7:00 7:15	0	0	0	0	3	0	32	35	13	48	0	61	0	214	11	225	35	286	321
7:15 7:30	0	0	0	0	1	0	23	24	12	44	0	56	0	183	12	195	24	251	275
7:30 7:45	0	0	0	0	4	0	27	31	10	84	0	94	0	271	14	285	31	379	410
7:45 8:00	0	0	0	0	2	0	16	18	9	82	0	91	0	256	12	268	18	359	377
8:00 8:15	0	0	0	0	2	0	25	27	18	61	0	79	0	228	9	237	27	316	343
8:15 8:30	0	0	0	0	2	0	31	33	16	61	0	77	0	318	8	326	33	403	436
8:30 8:45	0	0	0	0	8	0	16	24	14	99	0	113	0	210	13	223	24	336	360
8:45 9:00	0	0	0	0	5	0	23	28	8	79	0	87	0	262	12	274	28	361	389
TOTALS	0	0	0	0	39	0	298	337	158	676	0	834	0	2629	156	2785	337	3619	3956
P.H. am																			
P.H. pm																			

HOURLY VOLUMES

STARTING	WAWA ENT/EXT								TUCKERTON RD										
	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
6:00 7:00	0	0	0	0	12	0	105	117	58	118	0	176	0	687	65	752	117	928	1045
7:00 8:00	0	0	0	0	10	0	98	108	44	258	0	302	0	924	49	973	108	1275	1383
8:00 9:00	0	0	0	0	17	0	95	112	56	300	0	356	0	1018	42	1060	112	1416	1528
TOTALS	0	0	0	0	39	0	298	337	158	676	0	834	0	2629	156	2785	337	3619	3956

DELAWARE VALLEY REGIONAL PLANNING COMMISSION
OFFICE OF TRAVEL M AM INTERVAL COUNTS

COUNTY: BURLINGTON
MUNICIPALITY: MEDFORD

INTERSECTION: North-South Street & East-West Street
STREETS: WAWA ENT / EXIT TUCKERTON RD

DATE: 1016/07
DAY: TUESDAY
WEATHER: FAIR

FILE NUMBER: 2PM

PM INTERVAL COUNTS

STARTING	WAWA ENT / EXIT								TUCKERTON RD										
	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
4:00 4:15	0	0	0	0	3	0	14	17	14	199	0	213	0	148	5	153	17	366	383
4:15 4:30	0	0	0	0	8	0	23	31	15	175	0	190	0	145	8	153	31	343	374
4:30 4:45	0	0	0	0	4	0	19	23	10	179	0	189	0	135	10	145	23	334	357
4:45 5:00	0	0	0	0	5	0	14	19	11	213	0	224	0	118	2	120	19	344	363
5:00 5:15	0	0	0	0	4	0	11	15	13	221	0	234	0	150	5	155	15	389	404
5:15 5:30	0	0	0	0	6	0	21	27	17	220	0	237	0	155	8	163	27	400	427
5:30 5:45	0	0	0	0	9	0	14	23	12	183	0	195	0	120	8	128	23	323	346
5:45 6:00	0	0	0	0	5	0	12	17	9	241	0	250	0	149	13	162	17	412	429
6:00 6:15	0	0	0	0	5	0	16	21	13	213	0	226	0	147	11	158	21	384	405
6:15 6:30	0	0	0	0	3	0	22	25	20	202	0	222	0	119	5	124	25	346	371
6:30 6:45	0	0	0	0	9	0	14	23	5	196	0	201	0	155	14	169	23	370	393
6:45 7:00	0	0	0	0	4	0	16	20	8	197	0	205	0	115	6	121	20	326	346
TOTALS	0	0	0	0	65	0	196	261	147	2439	0	2586	0	1656	95	1751	261	4337	4598
P.H. am																			
P.H. pm																			

HOURLY VOLUMES

STARTING	WAWA ENT / EXIT								TUCKERTON RD										
	1-NORTHBOUND				2-SOUTHBOUND				3-EASTBOUND				4-WESTBOUND				N-S	E-W	
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	TOTAL	TOTAL	TOTAL
4:00 5:00	0	0	0	0	20	0	70	90	50	766	0	816	0	546	25	571	90	1387	1477
5:00 6:00	0	0	0	0	24	0	58	82	51	865	0	916	0	574	34	608	82	1524	1606
6:00 7:00	0	0	0	0	21	0	68	89	46	808	0	854	0	536	36	572	89	1426	1515
TOTALS	0	0	0	0	65	0	196	261	147	2439	0	2586	0	1656	95	1751	261	4337	4598

Taunton Boulevard and Tuckerton Road Intersection Crash Data
MEDFORD TOWNSHIP - BURLINGTON COUNTY

Reportable and Non Reportable crashes (2004-2006)

Reportable or Non-reportable	DATE	TIME	TOTAL KILLED	TOTAL INJURED	ROAD SYSTEM	INTERSECTION OR NOT AT INTERSECTION	WEATHER COND.	LIGHT COND.	ROAD COND.	POLICE DEPARTMENT	MUNICIPALITY CODE	CRASH TYPE
Reportable	11/10/04	10:19 PM	0		County	At Intersection	Clear	Dark	Dry	Medford Township	321	Rear End
Reportable	8/27/04	3:47 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	8/18/04	8:36 AM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Non-reportable	8/9/04	11:44 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	7/26/04	11:16 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	7/23/04	2:32 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	7/14/04	7:50 AM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	6/9/04	8:47 AM	0	1	County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	6/6/04	9:52 AM	0		County	At Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	5/5/04	2:57 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	3/26/04	3:55 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	3/12/04	7:54 AM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	2/9/04	08;40	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Non-reportable	1/29/04	7:10 PM	0		County	Not at Intersection	Clear	Dark	Dry	Medford Township	321	Rear End
Reportable	1/29/04	7:18 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	12/13/04	11:35 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	10/21/04	6:40 PM	0		County	Not at Intersection	Clear	Dark	Dry	Medford Township	321	Right Angle
Reportable	8/26/04	4:23 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	7/30/04	9:02 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn

Reportable	7/28/04	4:33 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	7/22/04	2:11 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	7/15/04	1:59 PM	0	2	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	06/1804	1:59 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	3/3/04	10:58 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Non-reportable	2/12/04	5:35 PM	0		County	Not at Intersection	Clear	Dawn or Dusk	Dry	Medford Township	321	Rear End
Reportable	3/4/04	1:33 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	12/14/04	9:54 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Hit Pedestrian
Reportable	12/10/04	6:59 AM	0		County	Not at Intersection	Clear	Daylight	Wet	Medford Township	321	Right Angle
Reportable	12/7/04	3:38 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Hit Animal
Reportable	9/25/04	1:07 PM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Non-reportable	9/23/04	6:16 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	9/15/04	6:49 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Right Angle
Reportable	7/13/04	7:32 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	7/9/04	7:43 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	7/2/04	4:42 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	6/13/04	11:37 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Hit Animal
Reportable	6/5/04	1:36 PM	0		County	Not at Intersection	Clear	Daylight	Wet	Medford Township	321	Rear End
Reportable	5/28/04	8:44 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	4/30/04	10:00 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	4/1/04	4:20 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	3/22/04	7:58 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	2/18/04	3:44 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Same Direction Side Swipe

Reportable	2/2/04	3:47 PM	0		County	Not at Intersection	Clear	Daylight	Wet	Medford Township	321	Same Direction Side Swipe
Reportable	1/24/03	5:03 AM	0		County	Not at Intersection	Snow	Dark	Snowy	Medford Township	321	Hit Animal
Reportable	1/23/04	5:32 PM	0		County	Not at Intersection	Clear	Dark	Dry	Medford Township	321	Rear End
Reportable	12/22/04	7:19 PM	0		County	Not at Intersection	Clear	Dark	Dry	Medford Township	321	Rear End
Reportable	12/7/04	7:38 AM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	12/1/04	2:49 PM	0	1	County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	4/5/05	6:14 PM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	4/8/05	3:28 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	6/3/05	10:04 AM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Non-reportable	6/27/05	5:44 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	8/12/05	5:20 PM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	8/20/05	2:52 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	10/11/05	3:21 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	10/25/05	6:41 PM	0		County	Not at Intersection	Rain	Dusk	Wet	Medford Township	321	Left Turn
Reportable	12/4/05	3:32 PM	0		County	Not at Intersection	Clear	Daylight	Wet	Medford Township	321	Rear End
Reportable	2/13/05	11:43 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	13-23-05	12:36 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	4/13/05	8:42 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	4/14/05	6:37 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Non-reportable	5/25/05	11:03 AM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	6/7/05	5:45 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	6/15/05	8:04 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	6/27/05	5:02 PM	0	1	County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End

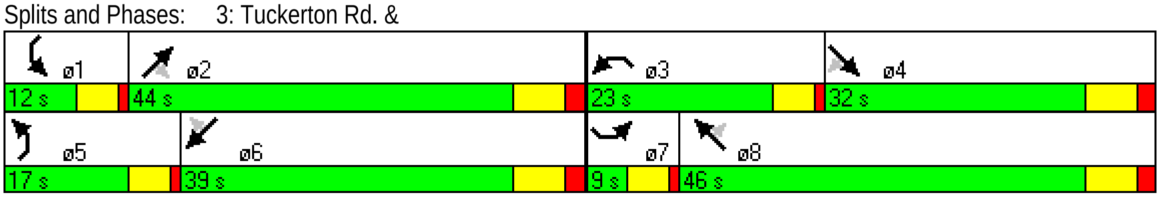
Reportable	11/19/05	12:21 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	1/4/05	5:31 PM	0		County	Not at Intersection	Clear	Dusk	Dry	Medford Township	321	Rear End
Non-reportable	1/11/05	3:38 PM	0		County	Not at Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	5/10/05	5:58 PM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	5/13/05	10:24 PM	0		County	At Intersection	Clear	Dusk	Dry	Medford Township	321	Right Angle
Reportable	5/22/05	2:20 AM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	9/10/05	2:19 PM	0		County	At Intersection	Clear	Dusk	Dry	Medford Township	321	Rear End
Reportable	10/16/05	2:19 PM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	11/1/05	7:01 PM	0		County	Not at Intersection	Clear	Dusk	Dry	Medford Township	321	Rear End
Reportable	11/14/05	8:35 AM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	12/30/05	11:53 PM	0		County	Not at Intersection	Clear	Dusk	Wet	Medford Township	321	Hit fixed
Reportable	1/1/00	9:03 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	3/9/05	4:53 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	3/21/05	7:28 AM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left Turn
Reportable	5/20/06	3:21 AM	0		County	At Intersection	Clear	Dark	Dry	Medford Township	321	Rear End
Reportable	10/3/06	8:47 AM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Backing
Reportable	12/22/06	10:45 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	12/1/06	12:00 AM	0		County	Not at Intersection	Rain	Dawn	Wet	Medford Township	321	Rear End
Reportable	7/30/06	8:46 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	4/22/06	11:22 AM	0		County	At Intersection	Rain	Daylight	Wet	Medford Township	321	Rear End
Reportable	6/17/06	9:15 AM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	7/9/06	8:44 AM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	2/22/06	4:23 PM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	3/19/06	4:34 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End

Reportable	5/19/06	5:15 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	1/15/06	7:38 PM	0	1	County	Not at Intersection	Clear	Dark	Icy	Medford Township	321	Left turn
Reportable	1/14/06	1:58 PM	0		County	Not at Intersection	Clear	Daylight	Wet	Medford Township	321	Rear End
Reportable	5/12/06	8:39 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	5/22/06	12:01 PM	0	0	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left turn
Reportable	4/12/06	8:21 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	9/11/06	4:20 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left turn
Reportable	5/3/06	8:28 PM	0		County	Not at Intersection	Clear	Dark	Dry	Medford Township	321	Hit Animal
Reportable	9/7/06	9:27 PM	0		County	Not at Intersection	Clear	Dark	Dry	Medford Township	321	Right Angle
Reportable	7/18/06	3:44 PM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left turn
Reportable	11/4/06	9:23 AM	0		County	At Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	10/16/06	10:09 AM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Same Direction Side Swipe
Reportable	9/13/06	4:29 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left turn
Reportable	8/15/06	4:59 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Right Angle
Reportable	8/24/06	5:11 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Left turn
Reportable	7/27/06	12:37 PM	0	1	County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	8/9/06	3:26 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	12/28/06	5:09 PM	0		County	Not at Intersection	Clear	Dusk	Dry	Medford Township	321	Rear End
Reportable	3/29/06	2:42 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End
Reportable	4/7/06	5:25 PM	0		County	Not at Intersection	Clear	Daylight	Dry	Medford Township	321	Rear End

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	52	183	27	147	635	132	77	609	82	97	215	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			29			114			56			109
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			204			893			924	
Travel Time (s)		14.3			3.1			17.4			18.0	
Lane Group Flow (vph)	57	199	29	160	690	143	84	662	89	105	234	109
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Total Split (s)	9.0	32.0	32.0	23.0	46.0	46.0	17.0	44.0	44.0	12.0	39.0	39.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	4.0	28.8	28.8	14.2	39.0	39.0	9.4	37.0	37.0	7.0	36.7	36.7
Actuated g/C Ratio	0.04	0.26	0.26	0.13	0.35	0.35	0.08	0.33	0.33	0.06	0.33	0.33
v/c Ratio	0.92	0.43	0.07	0.73	1.09	0.23	0.58	1.10	0.16	0.97	0.39	0.19
Control Delay	147.8	38.7	12.3	65.4	98.0	8.2	64.4	104.1	12.4	132.6	32.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	147.8	38.7	12.3	65.4	98.0	8.2	64.4	104.1	12.4	132.6	32.7	6.5
LOS	F	D	B	E	F	A	E	F	B	F	C	A
Approach Delay		57.9			79.8			90.3			49.7	
Approach LOS		E			E			F			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 111	
Actuated Cycle Length: 111	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 75.5	Intersection LOS: E
Intersection Capacity Utilization 94.2%	ICU Level of Service F
Analysis Period (min) 15	

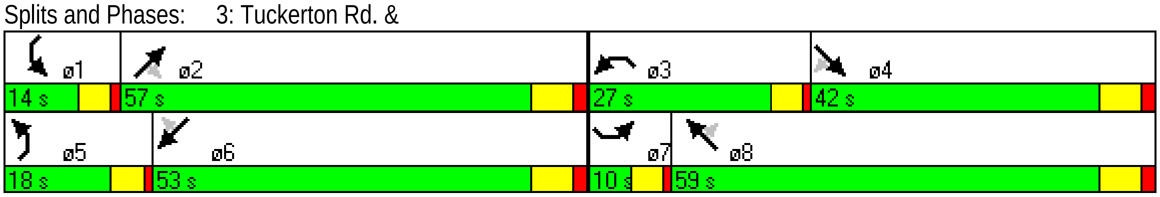
Splits and Phases: 3: Tuckerton Rd. &



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	52	183	27	147	635	132	77	609	82	97	215	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			29			93			46			109
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	57	199	29	160	690	143	84	662	89	105	234	109
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Total Split (s)	10.0	42.0	42.0	27.0	59.0	59.0	18.0	57.0	57.0	14.0	53.0	53.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	5.0	40.0	40.0	17.0	52.0	52.0	10.6	50.0	50.0	9.0	48.4	48.4
Actuated g/C Ratio	0.04	0.29	0.29	0.12	0.37	0.37	0.08	0.36	0.36	0.06	0.35	0.35
v/c Ratio	0.93	0.39	0.06	0.77	1.03	0.23	0.65	1.03	0.15	0.95	0.38	0.18
Control Delay	163.2	44.1	13.1	82.5	86.1	12.3	85.1	87.2	16.5	138.4	37.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	163.2	44.1	13.1	82.5	86.1	12.3	85.1	87.2	16.5	138.4	37.2	6.4
LOS	F	D	B	F	F	B	F	F	B	F	D	A
Approach Delay		64.8			74.9			79.4			53.5	
Approach LOS		E			E			E			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 71.5	Intersection LOS: E
Intersection Capacity Utilization 94.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Tuckerton Rd. &

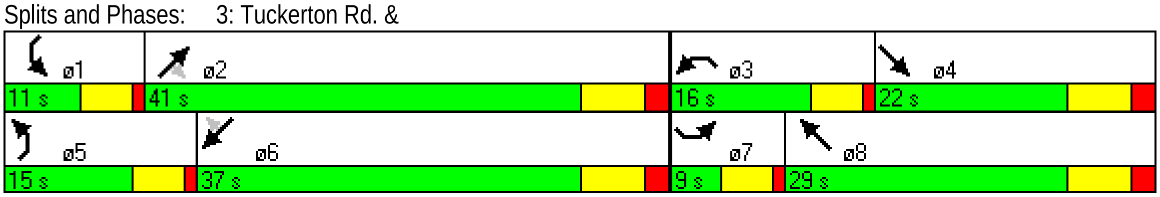


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	52	183	27	147	635	132	77	609	82	97	215	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3356	0	1711	3332	0	1711	1801	1531	1711	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3356	0	1711	3332	0	1711	1801	1531	1711	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			26				74			109
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	57	228	0	160	833	0	84	662	89	105	234	109
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	9.0	22.0	0.0	16.0	29.0	0.0	15.0	41.0	41.0	11.0	37.0	37.0
Total Lost Time (s)	5.0	7.0	4.0	5.0	7.0	4.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	4.0	15.0		10.4	23.3		8.2	33.7	33.7	6.0	33.6	33.6
Actuated g/C Ratio	0.04	0.17		0.12	0.26		0.09	0.38	0.38	0.07	0.38	0.38
v/c Ratio	0.74	0.39		0.80	0.94		0.54	0.97	0.14	0.91	0.34	0.17
Control Delay	93.3	33.3		67.8	51.4		51.3	57.7	6.8	107.6	23.4	5.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.3	33.3		67.8	51.4		51.3	57.7	6.8	107.6	23.4	5.2
LOS	F	C		E	D		D	E	A	F	C	A
Approach Delay		45.3			54.0			51.6			38.7	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 89.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 49.6	Intersection LOS: D
Intersection Capacity Utilization 82.5%	ICU Level of Service E
Analysis Period (min) 15	

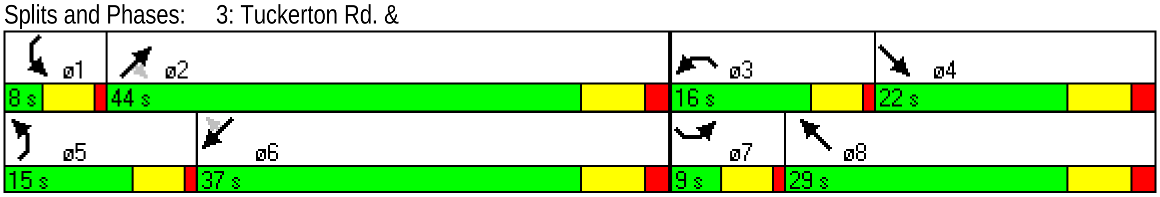
Splits and Phases: 3: Tuckerton Rd. &



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	52	183	27	147	635	132	77	609	82	97	215	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		0	0		0	1		1	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3356	0	1711	3332	0	1711	1801	1531	3319	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3356	0	1711	3332	0	1711	1801	1531	3319	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			26				79			109
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	57	228	0	160	833	0	84	662	89	105	234	109
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	9.0	22.0	0.0	16.0	29.0	0.0	15.0	44.0	44.0	8.0	37.0	37.0
Total Lost Time (s)	5.0	7.0	4.0	5.0	7.0	4.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	4.0	15.1		10.3	23.4		8.1	33.9	33.9	3.0	31.1	31.1
Actuated g/C Ratio	0.05	0.17		0.12	0.27		0.09	0.39	0.39	0.03	0.36	0.36
v/c Ratio	0.71	0.38		0.78	0.90		0.52	0.94	0.14	0.91	0.36	0.18
Control Delay	88.1	32.6		65.0	46.1		50.3	48.1	5.6	107.3	23.9	5.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.1	32.6		65.0	46.1		50.3	48.1	5.6	107.3	23.9	5.3
LOS	F	C		E	D		D	D	A	F	C	A
Approach Delay		43.7			49.1			43.8			38.9	
Approach LOS		D			D			D			D	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 86.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 45.0	Intersection LOS: D
Intersection Capacity Utilization 80.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Tuckerton Rd. &

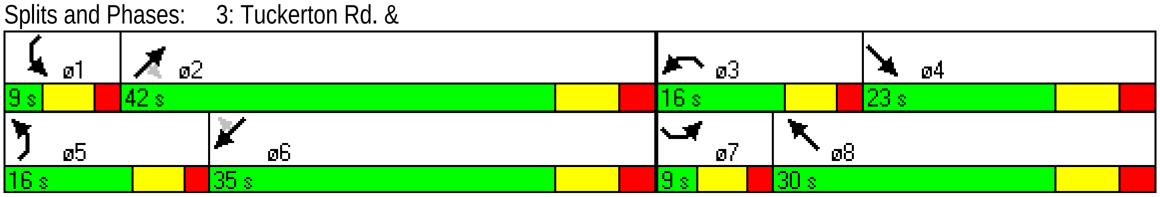


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	52	183	27	147	635	132	77	609	82	97	215	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		0	0		0	1		1	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3356	0	1711	3332	0	1711	1801	1531	3319	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3356	0	1711	3332	0	1711	1801	1531	3319	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			26				74			109
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	57	228	0	160	833	0	84	662	89	105	234	109
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	9.0	23.0	0.0	16.0	30.0	0.0	16.0	42.0	42.0	9.0	35.0	35.0
Total Lost Time (s)	6.0	8.0	4.0	6.0	8.0	4.0	6.0	8.0	8.0	6.0	8.0	8.0
Act Effct Green (s)	3.0	15.2		9.8	22.0		8.2	33.9	33.9	3.0	30.9	30.9
Actuated g/C Ratio	0.03	0.17		0.11	0.24		0.09	0.38	0.38	0.03	0.34	0.34
v/c Ratio	1.00	0.39		0.86	1.00		0.54	0.98	0.14	0.95	0.38	0.18
Control Delay	167.5	33.4		78.7	64.8		51.5	58.5	6.7	118.0	26.2	5.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	167.5	33.4		78.7	64.8		51.5	58.5	6.7	118.0	26.2	5.8
LOS	F	C		E	E		D	E	A	F	C	A
Approach Delay		60.2			67.0			52.3			42.7	
Approach LOS		E			E			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 57.2 — Intersection LOS: E
Intersection Capacity Utilization 83.8% — ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Tuckerton Rd. &



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	52	183	27	147	635	132	77	609	82	107	215	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		1	0		0	1		1	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3356	0	1711	3332	0	1711	1801	1531	3319	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3356	0	1711	3332	0	1711	1801	1531	3319	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			25				74			109
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			400	
Travel Time (s)		14.3			3.0			17.4			7.8	
Lane Group Flow (vph)	57	228	0	160	833	0	84	662	89	116	234	109
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	9.0	23.0	0.0	15.0	29.0	0.0	16.0	42.0	42.0	10.0	36.0	36.0
Total Lost Time (s)	6.0	8.0	4.0	6.0	8.0	4.0	6.0	8.0	8.0	6.0	8.0	8.0
Act Effct Green (s)	3.0	15.0		9.0	21.0		8.2	33.9	33.9	4.0	31.9	31.9
Actuated g/C Ratio	0.03	0.17		0.10	0.23		0.09	0.38	0.38	0.04	0.35	0.35
v/c Ratio	1.00	0.40		0.94	1.04		0.54	0.98	0.14	0.78	0.37	0.18
Control Delay	167.5	33.6		96.4	77.9		51.5	58.5	6.7	77.2	25.2	5.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	167.5	33.6		96.4	77.9		51.5	58.5	6.7	77.2	25.2	5.6
LOS	F	C		F	E		D	E	A	E	C	A
Approach Delay		60.3			80.9			52.3			33.7	
Approach LOS		E			F			D			C	

Intersection Summary

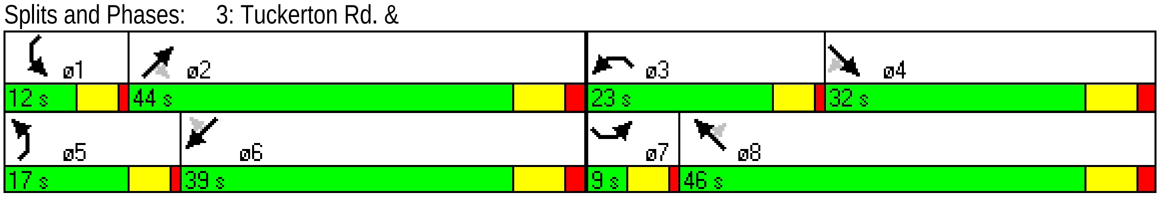
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 60.9 Intersection LOS: E
Intersection Capacity Utilization 83.8% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Tuckerton Rd. &

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	709	71	205	472	95	81	346	139	259	523	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			36			103			151			77
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	108	771	77	223	513	103	88	376	151	282	568	91
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Total Split (s)	9.0	32.0	32.0	23.0	46.0	46.0	17.0	44.0	44.0	12.0	39.0	39.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	4.0	25.2	25.2	16.1	37.3	37.3	9.3	32.0	32.0	7.1	32.3	32.3
Actuated g/C Ratio	0.04	0.24	0.24	0.15	0.36	0.36	0.09	0.31	0.31	0.07	0.31	0.31
v/c Ratio	1.64	1.78	0.19	0.84	0.80	0.17	0.58	0.68	0.26	2.43	1.02	0.17
Control Delay	376.5	385.9	22.1	71.6	42.0	5.6	62.3	38.8	5.6	695.8	82.2	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	376.5	385.9	22.1	71.6	42.0	5.6	62.3	38.8	5.6	695.8	82.2	10.0
LOS	F	F	C	E	D	A	E	D	A	F	F	A
Approach Delay		355.5			45.4			34.0			259.1	
Approach LOS		F			D			C			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 111	
Actuated Cycle Length: 104.6	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 2.43	
Intersection Signal Delay: 191.8	Intersection LOS: F
Intersection Capacity Utilization 101.2%	ICU Level of Service G
Analysis Period (min) 15	

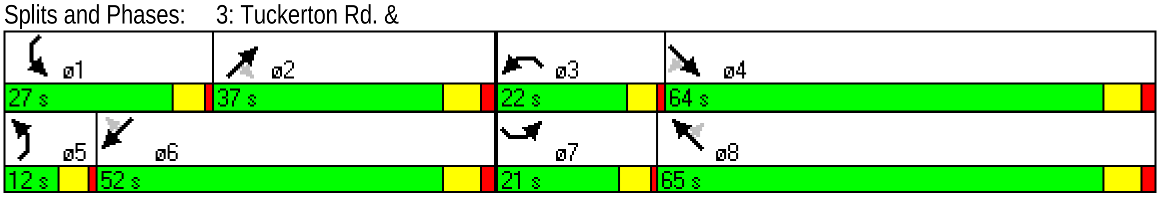
Splits and Phases: 3: Tuckerton Rd. &



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	709	71	205	472	95	81	346	139	259	523	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	1801	1531	1711	1801	1531	1711	1801	1531	1711	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			33			86			104			58
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	108	771	77	223	513	103	88	376	151	282	568	91
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Total Split (s)	21.0	64.0	64.0	22.0	65.0	65.0	12.0	37.0	37.0	27.0	52.0	52.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	13.1	57.0	57.0	17.0	60.9	60.9	7.0	30.0	30.0	22.0	45.0	45.0
Actuated g/C Ratio	0.09	0.38	0.38	0.11	0.41	0.41	0.05	0.20	0.20	0.15	0.30	0.30
v/c Ratio	0.72	1.13	0.13	1.15	0.70	0.15	1.10	1.04	0.39	1.12	1.05	0.18
Control Delay	92.2	117.4	18.6	167.1	43.9	8.5	192.6	116.2	20.9	150.0	102.8	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.2	117.4	18.6	167.1	43.9	8.5	192.6	116.2	20.9	150.0	102.8	17.1
LOS	F	F	B	F	D	A	F	F	C	F	F	B
Approach Delay		106.6			72.3			103.7			108.7	
Approach LOS		F			E			F			F	

Intersection Summary	
Area Type: Other	
Cycle Length: 150	
Actuated Cycle Length: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 98.1	Intersection LOS: F
Intersection Capacity Utilization 101.2%	ICU Level of Service G
Analysis Period (min) 15	

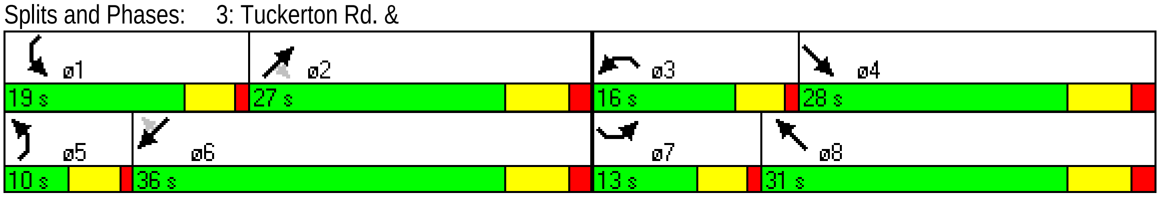
Splits and Phases: 3: Tuckerton Rd. &



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	709	71	205	472	95	81	346	139	259	523	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3373	0	1711	3336	0	1711	1801	1531	1711	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3373	0	1711	3336	0	1711	1801	1531	1711	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			25				151			91
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	108	848	0	223	616	0	88	376	151	282	568	91
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	13.0	28.0	0.0	16.0	31.0	0.0	10.0	27.0	27.0	19.0	36.0	36.0
Total Lost Time (s)	5.0	7.0	4.0	5.0	7.0	4.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	7.6	21.0		11.0	24.4		5.0	20.0	20.0	14.0	29.0	29.0
Actuated g/C Ratio	0.08	0.23		0.12	0.27		0.06	0.22	0.22	0.16	0.32	0.32
v/c Ratio	0.74	1.07		1.07	0.67		0.93	0.94	0.33	1.06	0.98	0.16
Control Delay	70.6	85.5		121.4	32.3		119.8	68.5	7.3	110.8	64.7	5.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.6	85.5		121.4	32.3		119.8	68.5	7.3	110.8	64.7	5.8
LOS	E	F		F	C		F	E	A	F	E	A
Approach Delay		83.8			56.0			60.8			72.8	
Approach LOS		F			E			E			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 69.5	Intersection LOS: E
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Tuckerton Rd. &

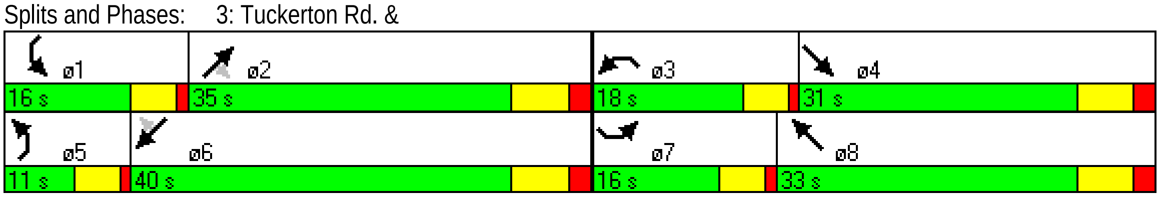


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	709	71	205	472	95	81	346	139	259	523	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		0	0		0	1		1	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3373	0	1711	3336	0	1711	1801	1531	3319	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3373	0	1711	3336	0	1711	1801	1531	3319	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			23				151			91
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	108	848	0	223	616	0	88	376	151	282	568	91
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	16.0	31.0	0.0	18.0	33.0	0.0	11.0	35.0	35.0	16.0	40.0	40.0
Total Lost Time (s)	5.0	7.0	4.0	5.0	7.0	4.0	5.0	7.0	7.0	5.0	7.0	7.0
Act Effct Green (s)	9.5	24.0		13.0	27.5		6.0	27.7	27.7	10.6	32.3	32.3
Actuated g/C Ratio	0.10	0.24		0.13	0.28		0.06	0.28	0.28	0.11	0.33	0.33
v/c Ratio	0.66	1.03		1.00	0.65		0.85	0.75	0.28	0.79	0.97	0.16
Control Delay	62.9	77.2		104.7	34.9		103.1	43.4	6.2	60.5	64.7	5.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	77.2		104.7	34.9		103.1	43.4	6.2	60.5	64.7	5.9
LOS	E	E		F	C		F	D	A	E	E	A
Approach Delay		75.6			53.5			42.8			57.8	
Approach LOS		E			D			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 99.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 59.0 Intersection LOS: E
Intersection Capacity Utilization 85.2% ICU Level of Service E
Analysis Period (min) 15

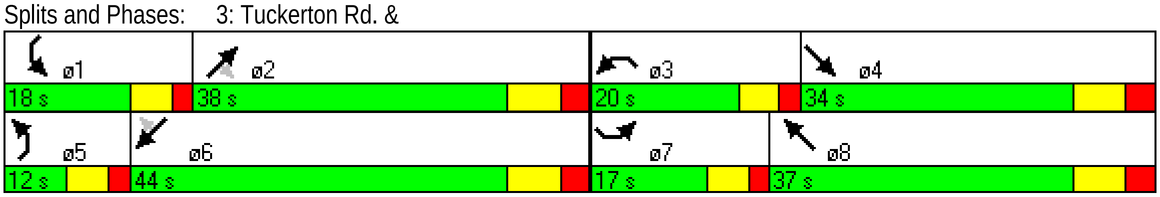
Splits and Phases: 3: Tuckerton Rd. &



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	709	71	205	472	95	81	346	139	259	523	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		0	0		0	1		1	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3373	0	1711	3336	0	1711	1801	1531	3319	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3373	0	1711	3336	0	1711	1801	1531	3319	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			21				151			83
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			924	
Travel Time (s)		14.3			3.0			17.4			18.0	
Lane Group Flow (vph)	108	848	0	223	616	0	88	376	151	282	568	91
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	17.0	34.0	0.0	20.0	37.0	0.0	12.0	38.0	38.0	18.0	44.0	44.0
Total Lost Time (s)	6.0	8.0	4.0	6.0	8.0	4.0	6.0	8.0	8.0	6.0	8.0	8.0
Act Effct Green (s)	9.8	26.0		14.0	30.2		6.0	29.8	29.8	11.6	35.4	35.4
Actuated g/C Ratio	0.09	0.24		0.13	0.28		0.05	0.27	0.27	0.11	0.32	0.32
v/c Ratio	0.71	1.05		1.02	0.66		0.94	0.77	0.29	0.81	0.98	0.16
Control Delay	72.5	85.9		113.7	38.2		131.0	48.4	6.5	65.9	69.2	7.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	85.9		113.7	38.2		131.0	48.4	6.5	65.9	69.2	7.7
LOS	E	F		F	D		F	D	A	E	E	A
Approach Delay		84.4			58.3			49.9			62.3	
Approach LOS		F			E			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 110	
Actuated Cycle Length: 109.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 65.3	Intersection LOS: E
Intersection Capacity Utilization 88.6%	ICU Level of Service E
Analysis Period (min) 15	

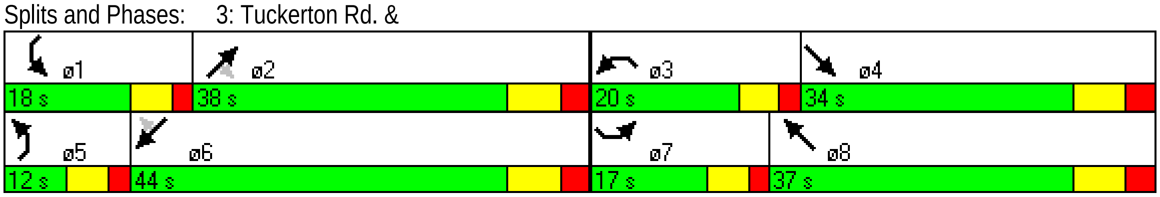
Splits and Phases: 3: Tuckerton Rd. &

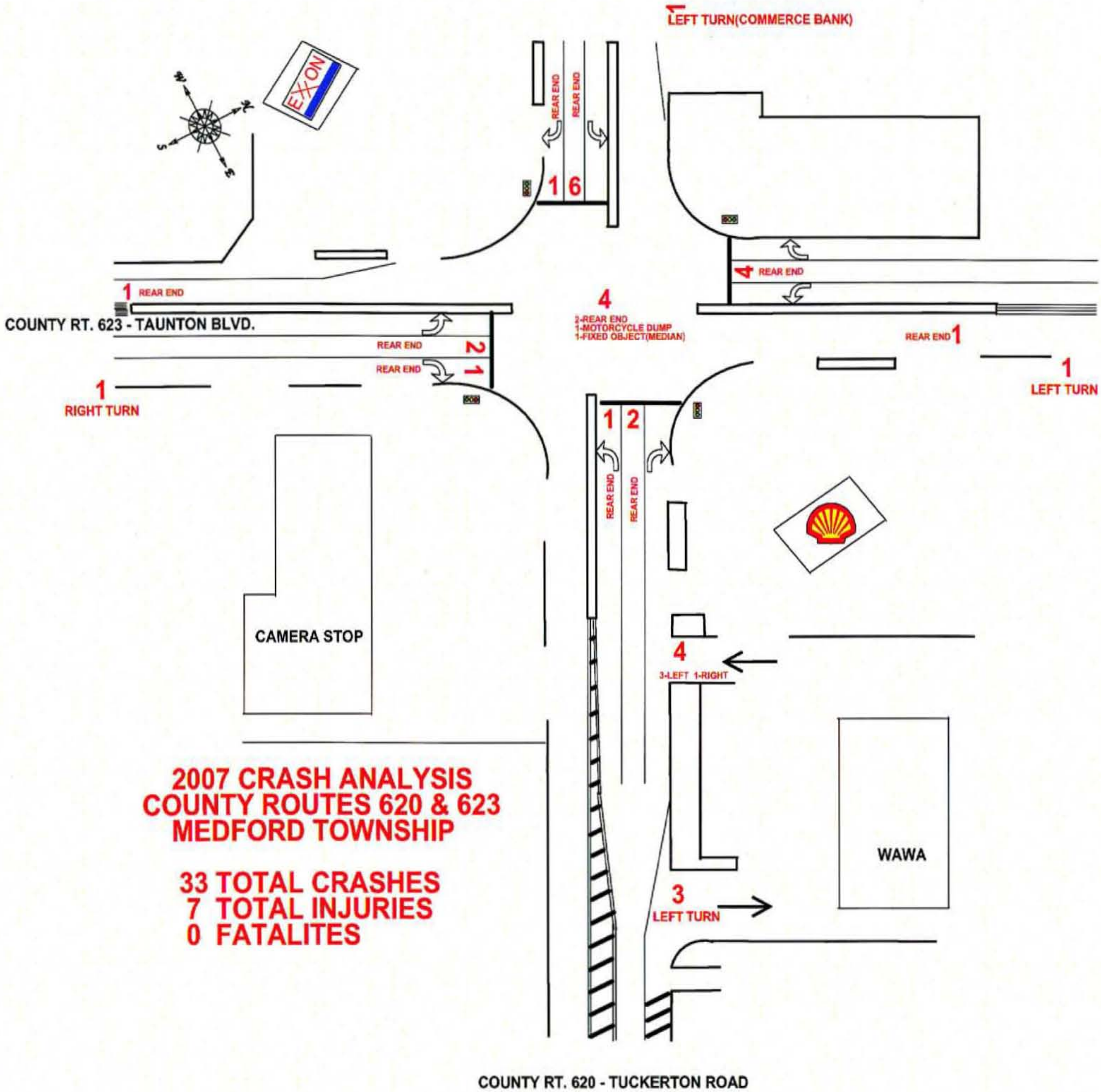


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	99	709	71	205	472	95	81	346	139	284	523	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	190		190	190		190	190		190	400		240
Storage Lanes	1		1	0		0	1		1	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	1711	3373	0	1711	3336	0	1711	1801	1531	3319	1801	1531
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1711	3373	0	1711	3336	0	1711	1801	1531	3319	1801	1531
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			21				151			83
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		943			195			893			400	
Travel Time (s)		14.3			3.0			17.4			7.8	
Lane Group Flow (vph)	108	848	0	223	616	0	88	376	151	309	568	91
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Total Split (s)	17.0	34.0	0.0	20.0	37.0	0.0	12.0	38.0	38.0	18.0	44.0	44.0
Total Lost Time (s)	6.0	8.0	4.0	6.0	8.0	4.0	6.0	8.0	8.0	6.0	8.0	8.0
Act Effct Green (s)	9.8	26.0		14.0	30.2		6.0	29.6	29.6	11.8	35.4	35.4
Actuated g/C Ratio	0.09	0.24		0.13	0.28		0.05	0.27	0.27	0.11	0.32	0.32
v/c Ratio	0.71	1.05		1.02	0.66		0.94	0.77	0.29	0.86	0.98	0.16
Control Delay	72.5	85.9		113.7	38.2		131.0	48.9	6.6	71.8	69.2	7.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	85.9		113.7	38.2		131.0	48.9	6.6	71.8	69.2	7.7
LOS	E	F		F	D		F	D	A	E	E	A
Approach Delay		84.4			58.3			50.3			64.3	
Approach LOS		F			E			D			E	

Intersection Summary	
Area Type: Other	
Cycle Length: 110	
Actuated Cycle Length: 109.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 65.9	Intersection LOS: E
Intersection Capacity Utilization 88.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Tuckerton Rd. &





MEDFORD TOWNSHIP POLICE DEPARTMENT

MEDFORD, NEW JERSEY

Title of Report: ***Congestion and Crash Site Analysis Program – Medford Township, Burlington County***

Publication No.: **08026**

Date Published: April 2008

Geographic Area Covered:
Signalized intersection of Tuckerton Road (CR 620) and Taunton Boulevard (CR 623) and its environs in Medford Township, Burlington County, New Jersey.

Key Words:
Congestion, level of service, intersection, safety, fatalities, injuries, crashes, crash types, statewide, strategies, signalized, traffic signal, pedestrian, actions, roadway, driveway, goal, objectives, potential, deficiency, scenario, bicycle, pedestrians, turning movements, average annual daily traffic volumes, peak hour, exclusive, approach, merge, left turn, access.

ABSTRACT: This document is the result an effort to improve the mobility and safety of the roadways in the DVRPC region. The goal of the program is to identify cost effective improvements strategies which will reduce congestion and crashes and improve mobility and safety of all road users. Working with the Burlington County, the intersection of Tuckerton Road (CR 620) and Taunton Boulevard (CR 623) was chosen for analysis. This intersection was identified as having congestion and safety issues. An in-depth crash and level of service analysis was performed to quantify and gain an understanding of the issues. With input from local stakeholders improvement strategies were identified to address the issues. These vary from signal timing adjustments to intersection geometry changes. As appropriate, proposed improvement strategies were tested for level of effectiveness.

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