South Jersey Transportation Planning Organization

2011-12 Road Safety Assessment

Brigantine Avenue (CR 638)
Brigantine City
Atlantic County

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In Association with:
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Introduction

Orth-Rodgers & Associates, Inc. (ORA) was selected by the South Jersey Transportation Planning Organization (SJTPO) to conduct their 2011-12 Road Safety Assessment (RSA) project. The sections of roadway to be studied were selected by SJTPO based on a number of factors considered important to the safety and future development of the roadways. Among the factors considered were crash data, traffic volume growth, recent and planned future development along the roadway, and local cooperation and control. County and local officials cooperated with the SJTPO in identifying roads that meet these parameters.

Three roadway sections and 15 signalized intersections were chosen for the 2011-12 assessments. Two of the roadways are located in Atlantic County, one is in Cape May County and the 15 signalized intersections are located in Cape May County.

The three roadway sections are:

1. Brigantine Avenue (CR 638) entire length, between RT 87 and its northern terminus north of 14th Street in The City of Brigantine, Atlantic County.

2. Ventnor Avenue (CR 629), between Coolidge Avenue in Margate City and Dorset Avenue in Ventnor City, Atlantic County.

3. New Jersey Avenue (CR 621) between Rambler Road (MP 4.19) and Cresse Road (MP 5.05) and between Young Avenue (MP 5.70) and 26th Street (MP 6.37) in Wildwood Crest Borough and Wildwood City, Cape May County.

The 15 signalized intersections are:

1. Central Avenue and 16th Avenue in the City of North Wildwood

2. The following locations in the city of Wildwood:

    a. New York Avenue and Maple Avenue (flashing beacon)

    b. Atlantic Avenue and Glenwood Avenue

c. Ocean Avenue and Cresse Avenue

d. Atlantic Avenue and Cresse Avenue

e. Atlantic Avenue and Hand Avenue

f. Atlantic Avenue and Taylor Avenue

g. Atlantic Avenue and Montgomery Avenue

h. Atlantic Avenue and Schellenger Avenue

i. Atlantic Avenue and Oak Avenue

j. Atlantic Avenue and Wildwood Avenue

k. Atlantic Avenue and Magnolia Avenue

l. Atlantic Avenue and 26th Street

m. Pacific Avenue and Baker Avenue

n. Pacific Avenue and Spencer Avenue

o. Central Avenue and 16th Avenue

Each studied roadway will have a separate report, but will share basically the same introduction, background section, format and some text.

Safety assessments serve to address the safe operation of the roadways and to ensure a high level of safety for all road users. The process of a safety assessment is two-fold: 1) to conduct a formal examination of highway features and the surrounding environment that increases the potential for crashes; and, 2) to identify countermeasures that will reduce or eliminate the probability of such crashes. According to the Federal Highway Administration (FHWA), the formal definition of a road safety assessment is as follows:

"A Road Safety Audit is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team."

To accomplish these goals, the assessment team assesses the safety performance history as well as the future crash potential of a roadway and prepares a report that documents the safety deficiencies and appropriate countermeasures. The purpose of the 2011-12 assessment is to identify potential safety deficiencies along the selected sections of the three roadways and at the 15 signalized intersections.

There are three primary parts of the assessment: 1) the data collection and analysis phase; 2) the field view (conducted by the team); and, 3) the preparation of the report and findings.

The **data collection phase** is performed prior to the assessment team conducting a field view of the entire roadway. The data is intended to assist the team in identifying potential safety issues, as well as to provide a factual and historic component of the study. Traffic count and crash data are collected, and a capacity analysis of major intersections is performed. The traffic counts are used to assist in analyzing solutions for the intersections, as well as aid in identifying the most congested sections of the roads. The crash data assists the team in identifying specific areas and/or conditions that warrant close scrutiny that might have otherwise been overlooked. The capacity analysis of intersections identifies how well the intersections are operating and when and where improvements may be needed. Based on an analysis of all of the data, the team can conduct a productive and comprehensive evaluation of the roads being studied. A multi-disciplinary team conducts the field view.

The team divided into two groups with one group walking the northbound side of the road and the other the southbound side of the road starting at RT 87 and walking north to 14th Street discussing observations and taking notes for inclusion in the report. The team leader then prepared a **draft report** that documented the assessment findings and recommended actions. The draft report is distributed to the team members for their review and comment. A final report is then prepared by the team leader incorporating the agreed upon draft report comments.

BACKGROUND INFORMATION

At the pre-assessment meeting a list of questions were asked of the County and local representatives seeking to gather background information on Brigantine Avenue (CR 638). The questions asked were:

- Why was the road chosen for the assessment?
- What problems exist on the road?
- What areas should be given special attention?
- Has the roadway changed in the last three years?
- Are there any projects pending or anticipated for the roadway and their status?
- Have any of the traffic control devices or regulations been changed in the last three years (i.e., signals, speed limits, etc.)?
- Was there any development on the road in the last three years, or any proposed development on the road or in the area that has or will impact traffic in the future?
- Are any recent traffic counts available?
- Have any recent traffic studies been conducted on the road?
- What plans, if any, are available for the road?
- At what locations should new traffic counts, either turning movement or ATRs, be conducted?

The same questions were again asked at the workshop on the day of the assessment to ensure that no available data was missing. A pre-assessment information package was prepared and distributed at the workshop and field view. The package included a brief explanation of what a safety assessment is, why safety assessments are conducted, and the process involved. It also included a chart of three year crash trends, crash occurrence by month, by day of the week, by time of day, by surface condition, by light condition, by crash severity, by crash type, and by closest intersection.

BRIGANTINE AVENUE (CR 638)

Brigantine Avenue (CR 638) is under the jurisdictional control of Atlantic County. The entire length of the road is in the City of Brigantine, Atlantic County. The Road Safety Assessment was performed over its entire length.

CR 638 (Brigantine Boulevard) is designated as a south to north roadway and is classified as an urban principal arterial. It starts at the northern terminus of RT 87 (MP 0.0) at the north end of the bridge over Absecon Channel and extends north approximately 3.91 miles, where it dead ends. From milepost 0.0 to approximately milepost 1.2, it is a four lane divided roadway with shoulders and left turn slots created in the grass center median. Parking is permitted along both shoulders of the road and the posted speed limit is 45 MPH. Between milepost 0.3 and Harbor Beach Boulevard (MP 1.0), there is a service road along the northbound side of the road whose primary function is to provide access to the properties along the east side of the road.

Just north of Harbor Beach Boulevard (MP 1.0), the roadway becomes undivided and remains undivided for its duration, although its lane configuration varies. Basically, it is a four lane undivided roadway into a traffic circle at milepost 1.53, then transitions to one lane in each direction north of the circle with a posted 35 MPH speed limit. In the vicinity of 30th Street (MP 1.73), it becomes a four lane undivided roadway with painted bike lanes along both sides of the road. From 18th Street (MP 2.3), to its northern terminus, it has a three lane configuration consisting of a through lane in each direction and a center left turn lane with painted bike lanes along both sides of the road adjacent to the through lanes and shoulders along both sides of the road. The speed limit along the three lane section is 30 MPH. There are pedestrian refuge islands in the center of the roadway at its intersection with 24th and 26th Streets. There are three traffic signals along the roadway, at Harbor Beach Boulevard, at 38th Street, and at 14th Street.

There are no significant traffic generators along the road other than the typical assortment of shore resort generators such as motels, restaurants, small shops, some service businesses and, of course, the beach.

It was ascertained from local members of the assessment team that:

- The road was chosen to be assessed because of the substantial increase in traffic during the summer resort months including pedestrians and bicyclist. Also, the traffic signal equipment is dated and worn and not pedestrian friendly. Vehicle speeds are high at the south end of the road within the four lane divided section in the vicinity of Route 87.
- There are no projects of significance planned for the road.
- There have been no significant changes along the road in the last three years.
- There have been no significant changes to the traffic controls along the road in the last three years.

The following sections describe the various tasks undertaken by ORA in partnership with the Safety Assessment Team and summarize the findings from the assessment process in a manner that will allow the responsible agencies and personnel to prioritize implementation of safety enhancements.

Pre-Assessment Data Collection and Analysis

Prior to the assessment activities on site, ORA collected and reviewed materials in order to assist the team in conducting the assessment. ORA also conducted a pre-assessment field view of the road to familiarize itself with the road. A description of the materials that were reviewed is provided below.

1. Traffic Volume Data

Since the road is located within the summer resort area of the state the County requested that traffic counts be conducted during the summer months, therefore they were not available prior to conducting the field view. Eight-hour weekday traffic counts were conducted at the Harbor Beach Boulevard and 38th Street intersections with Brigantine Boulevard (CR 638). Also, 10AM-2 PM Saturday traffic counts were taken at both of the intersections. GTS consultants conducted the eight hour counts on July 26, 2011 and July 27, 2011 and the 10AM-2PM counts on July 23, 2011.

2. Crash Data

SJTPO forwarded to ORA the crash data excel files for the roadway being studied. Crash data for the years 2008, 2009 and 2010 were reviewed. A summary sheet, crash data summary text, and crash data charts were prepared for use during the pre-assessment meeting.

CRASH DATA SUMMARY

During the kickoff meeting with the County it was learned that SJTPO would provide the crash charts for the section of roadway being assessed. It was agreed that a straight line diagram plot of the crash data would not be required. In the three year period (2008-2010), a total of 90 crashes occurred along the study section of road. Twenty nine (29) crashes occurred in 2008, twenty four (24) in 2009 and thirty seven (37) in 2010. In the preceding 5-year period there were a total of 158 crashes, averaging 32 per year, with a low of 19 in 2006 and a high of 39 in 2007.

The types of crashes are characterized as follows: a concentration of crashes for reference in this report will consist of three (3) or more crashes of the same type at a location in the three (3) year period, 2008-2010. The table on the following page summarizes the crash data by type of crash and location:

# of Crashes	Type of Crash	Location of Crashes
0	Fatal Crashes	
25	Injury Crashes	
65	Non-Injury Crashes	
15	Right Angle Type Crashes	(6) at Harbor Beach Boulevard No other concentrations
26	Same Direction Crashes	(6) at Harbor Beach Boulevard (5) at North 4th Street (3) at South 14th Street No other concentrations
4	Left Turn Type Crashes	No concentration
11	Side Swipe Same Direction Type Crashes	No concentration
1	Side Swipe Opposite Direction Type Crashes	Vicinity of Bayshore Avenue
13	Fixed Object Type Crashes	(5) in the vicinity of Harbor Beach Boulevard No other concentrations
1	Head-On Type Crash	Vicinity of Bayshore Boulevard
3	Pedestrian Type Crashes	(1) at South 10th Street, (1) at South 15th Street, (1) at South 16th Street
6	Bicyclist Type Crashes	(2) at Roosevelt Boulevard, (1) at South 7th Street, (1) at South 9th Street, (1) at South 14th Street, (1) at South 28th Street
2	Other Type Crashes	Backing
8	Struck Parked Vehicles	No concentrations

The crash data was compared to the "Crash Summary For County Road System" obtained from the NJDOT for the year 2009.

A review of the crashes established the following:

- The month with the most crashes, as expected since the roadway is in the summer resort area of the state, was July (16).
- The day of the week with the highest number of crashes was Saturday (17) and Monday and Tuesday were the days with the least number of crashes (10 each).

- The highest frequency of crashes (14) occurred between 2:00-3:00 PM, which corresponds generally to the time people are leaving the beach for the day.
- The percentage of crashes during hours of darkness (21%) is less than the statewide average for county roads (approximately 27%).
- The percentage of crashes for wet surface conditions (12%) is less then the statewide average for county roads (approximately 22%).
- The percentage of crashes with injuries (28%) is approximately the same as the statewide average for county roads (approximately 28%).
- The percentage of right angle type crashes (17%) is approximately the same as the statewide average for county roads (approximately 19%).
- The percentage of same directional crashes (29%) is approximately the same as the statewide average for county roads (approximately 32%).
- The percentage of left-turn crashes (4 %) is approximately the same as the statewide average for county roads (approximately 5%).
- The percentage of side- swipe same direction type crashes (12 %) is approximately the same as the statewide average for county roads (approximately 11%).
- The percentage of fixed-object type crashes (14%) is approximately the same as the statewide average for county roads (approximately 12%).
- The percentage of head on crashes (1%) is less than the statewide average for county roads (approximately 3%).
- The percentage of pedestrian type crashes (3%) is approximately the same as the statewide average for county roads (approximately 2%).
- The percentage of bicycle type crashes (7%) is much higher than the statewide average for county roads (approximately 1%). This is not surprising due to the beach destination.
- The percentage of struck parked vehicle type crashes (9%) is higher than the statewide average for county roads (approximately 6%)

Assessment

On July 7, 2011 the Safety Assessment Team met in the Brigantine City municipal building to formally conduct the assessment. The meeting commenced at 9:00 AM with brief statements by ORA representatives who reiterated the importance of RSAs and outlined the objectives of the safety assessment. There were brief introductions by team members followed by an extensive review and discussion of materials described in the previous section. The team then drove to the southern end of Brigantine Boulevard (CR 638) to begin the assessment. Atlantic County provided a van for the team. Team members are listed below.

SAFETY ASSESSMENT TEAM FOR BRIGANTINE AVENUE

Name	**Agency**
John Masi	Atlantic County
James Mason	Atlantic County
John Peterson	Atlantic County
Jennifer Marandino	SJTPO
John Everest	Atlantic County
Edward Newman	Atlantic County
Lt. James Bennett	Brigantine Police
Sheree Davis	NJDOT
Thanh Le	Rutgers TCRC
John Gaona	GTS Consultants
Andy Kaplan	Rutgers
Teresa Thomas	South Jersey Traffic Safety Alliance
Norman Deitch	Orth-Rodgers & Associates, Inc.
George Strathern	Orth-Rodgers & Associates, Inc.

Additionally, Mr. Timothy Chelius and Mr. John Petersack of SJTPO attended the pre-assessment meet but did not participate in the field view portion of the assessment. The team split up into two groups, one walking on the northbound side of the road lead by Mr. Strathern and the other walking the southbound side lead by Mr. Masi. The team walked the entire length of the road to its' northern terminus.

During the field views, team members identified features on the roadway and its surrounding environment that could contribute to the occurrence or relative severity of roadway crashes. At the intersections and mid-block locations, the Assessment Team identified safety deficiencies and inappropriate traffic signs, as well as other items that were felt to be inconsistent with effective road function and use. A variety of safety improvement measures were discussed with field notes and digital photographs being taken by team members.

At the completion of the assessment, the team leader recapped the findings of the assessment with the team. The team leader informed the team members on the next step in the assessment process; ORA will prepare a draft report summarizing the findings from the assessment process and forward the report to all team members for their review and comments.

On November 3, 2011 Norman Deitch, John Masi, Matthew Hash (Atlantic County), Jennifer Marandino and George Strathern conducted a night assessment. The goal was to check the retroflectivity of the street signs, pavement markings, and condition of the raised pavement markers (RPMs). In addition, the need for street lighting was checked and lights adjacent to the roadway on private property were checked to ensure that they did not create bright areas and glare that could distract drivers. The team also looked for issues that would only be apparent during hours of darkness, such as clearly defined roadway alignment, ineffective street lighting, etc.

The next section of the report summarizes the findings from the daytime and nighttime assessment of Brigantine Boulevard (CR 638) along with suggested remedial actions to address the noted safety issue. In order to assist in prioritizing the work effort recommended to correct the situation, the level of effort required (low, medium, high) and degree of safety benefit derived (low, medium, high) is also noted for each item.

LEVEL OF EFFORT REQUIRED

For this road safety assessment final report the "level of effort" required to address a remedial action recommendation has been divided into three levels – low, medium and high. A correlation of cost and man hour expenditures generally helps to define the level of effort. The following are some examples of the levels of effort:

- Low Level of Effort – Development of general work orders or directives from the engineering department to its maintenance forces to: implement signal timing changes; pavement marking revisions and refurbishing; replacing worn signs; installing new signs; replacing a few rigid sign supports with breakaway supports; tree trimming.

- Medium Level of Effort – Minor revisions to a traffic signal not requiring any underground work; signal revisions that require re-wiring for new signal heads; installing pedestrian indications; replacing inlet grates; installing or repairing small sections of sidewalk and guiderail; installing corridor wide breakaway sign supports; restriping an entire roadway section; conducting more detailed in-house traffic studies to address specific issues.

- High Level of Effort – Major signal revisions requiring underground work such as new foundations, conduit, new signal controller; redesign of roadway features; resolving poor drainage issues; development of design plans that would require outside contractors to implement; any road work that would require permits and general capital improvement projects.

POTENTIAL SAFETY BENEFITS

Potential safety benefits are divided into three categories – low, medium and high. This is a subjective breakdown based on engineer's opinion as to the percentage of the road that would be impacted by the improvement along with the degree of impact that the identified safety issue would have on potential crash experience. For example, eliminating a potential tripping safety hazard where there are very few pedestrians could be considered low, however, if they number of pedestrians was high the potential safety benefit would increase. Pavement markings not visible at night could be considered high.

Findings

The findings from the Brigantine Boulevard (CR 638) safety assessment, except where repetitious items have been combined, are presented on the following pages in the approximate order of their location on the roadway starting at milepost 0 and proceeding to mile post 3.91.

			LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
SAFETY ISSUE		**REMEDIAL ACTION**	**LOW**	**MEDIUM**	**HIGH**	**LOW**	**MEDIUM**	**HIGH**
1	General comment- the pavement markings along the entire roadway are worn and need to be re-painted	Re-install pavement markings.		X				X
2	General comment-many of the RPM's along the entire length of the road are damaged or missing.	Inventory damaged or missing RPM's and replace as needed.			X		X	
3	General comment-roadway surface is deteriorated along the lane line marking (old concrete joint) along the section of road between the southern terminus of the road and Harbor Beach Boulevard. **(Picture #1)**	Consideration be given to evaluate the pavement condition and making the necessary repairs to the pavement.			X		X	

PICTURE #1

CRACKS IN ROADWAY (NORTHBOUND)

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
4	General comment- there are some handicapped ramps along the roadway but most do not appear to be in compliance with ADA standards. Other locations lack them entirely.	Consideration be given to installing ADA compatible ramps along the roadway in conjunction with future roadway projects.			X			X
5	General comment - Sign installation. Many of the signs along the road are installed as “bendaway” rather than “breakaway.” Many installed as “breakaway” are installed incorrectly with the stub too far out of the ground or on the wrong side of the post.	Consideration should be given to inventorying the method of sign installation along the entire road and taking steps to properly install all signs as “breakaway” in accordance with the most current NJDOT standards and the MUTCD.			X		X	
6	General comment – Most of the street name signs are worn to a point that they cannot be read especially at night.	Contact Brigantine officials regarding having new signs installed.			X			X
7	General comment- Oversized “NO PARKING” signs installed by the City are all installed on non-break-away posts. County officials have recommended that all of these signs be removed.	Remove all of the signs.	X			X		
8	Northbound side- entering Brigantine-pedestrian activity and legal rights along the road should be highlighted.	Consideration should be given to installing a state law “Stop For Pedestrian in Crosswalk” sign or similar sign north of the first speed limit 40 MPH sign.	X				X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
9	Northbound side- approximately ¼ mile north of bridge- sewer vent foundation with concrete base approximately 12 inches above grade. **(Picture #2)**	Consideration should be given to grading the surrounding area to reduce the exposed height of the concrete base	X			X		
10	Northbound side- Brigantine garden club plate mounted on boulder by "SLOW DOWN WHATS YOUR HURRY YOU ARE ALREADY HERE" sign. Boulder is a possible road side hazard. **(Picture #3)**	Consideration should be given to moving the boulder to the far side of the plantings farther from the roadway.	X			X		
11	Northbound side-there are several left turn slots in the grass median. None have signs or pavement markings. **(Picture #4)**	Consideration should be given to installing the appropriate signs and pavement markings for the left turn slots.	X				X	

PICTURE #2

SEWER VENT, ¼ MILE NB BRIGANTINE BLVD

PICTURE #3

BRIGANTINE GARDEN CLUB

PICTURE #4

FIRST U-TURN SLOT NORTH OF THE BRIDGE

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
12	Northbound side- There is a utility pole (#A-2599) on the divider at the beginning of the service road. **(Picture #5)**	Consideration should be given to installing an object marker in front of the pole.	X			X		
13	Northbound side-Stop signs and stop lines facing the service road are worn.	Consideration should be given to contacting the City regarding replacing the signs and re-installing the stop lines.	X			X		
14	Northbound side- there are no stop signs controlling access to Brigantine Boulevard (CR 638) from the service road (traffic turning left from the service road then turning right onto Brigantine Boulevard (CR 638)).	Consideration should be given to reviewing the access control to determine the appropriate type of control.	X			X		

PICTURE #5

ISLAND, BEGINNING OF SERVICE ROAD, NB

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
15	Northbound side- northern most access to Brigantine Boulevard (638) from the service road lacks one way sign indicating Brigantine Boulevard (CR 638) is one way.	Install one way sign on grass median opposite opening.	X			X		
16	Northbound side- speed limit changes from 45 MPH to 35 MPH at Harbor Beach Boulevard. It is county's practice to use reduce speed ahead sign with 10 MPH change of speed limit.	Install reduce speed ahead sign at a location south of Harbor Beach Boulevard.	X			X		
17	**Harbor Beach Boulevard Signalized Intersection:** There are no over the roadway indications to the left of the center median along either of the Brigantine Boulevard (CR 638) approaches to the intersection.	Consideration be given to installing over-the-roadway signals on the existing mast arm with existing one direction indications.		X			X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
17	**Harbor Beach Boulevard Signalized Intersection:** Pedestrian signal indications and four section pole mounted vehicular indication installed on the signal pole on the southeast corner of the intersection are installed lower then the required 8’ height. **(Picture #6)**	Reinstall indications at appropriate height.	X			X		

PICTURE #6

SOUTH EAST CORNER AT HARBOR BEACH BOULEVARD

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
	Harbor Beach Boulevard Signalized Intersection:							
	Existing push buttons and pedestrian- push button signs are not installed parallel to the crosswalks they control. The 2009 edition of the MUTCD guidance is that push buttons and push button signs be installed parallel to the crosswalk they control.	Consideration be given to installing push buttons and sign parallel to crosswalk.		X		X		
17	There is a dual left turn movement from Harbor Beach Boulevard onto southbound Brigantine Boulevard (CR 638). It has been suggested that "elephant tracks" be installed to better define the movement.	Consideration be given to installing "elephant tracks".	X				X	
	Driveway to private residents opposite Harbor Beach Boulevard within the intersection is uncontrolled.	Consideration be given to investigating what if any changes to the existing condition is warranted.		X		X		
	The County has suggested that back-plates be installed on all vehicular indications to increase signal visibility. The team concurs with this comment.	Consideration be given to installing back-plates.		X			X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
17	**Harbor Beach Boulevard Signalized Intersection:** Existing crosswalk across Brigantine Boulevard (CR 638) is in conflict with the heavier turning movement (double left) from Harbor Beach Boulevard. **(Picture #7)**	Consideration be given to relocating the crosswalk and making the necessary revisions to the signal to accommodate this revision.			X			X
	There are no cross only at crosswalk signs directing pedestrians at the intersection	Install the appropriate sign directing pedestrian where to cross at the intersection.	X			X		
	Lane use control signs on northbound Brigantine Boulevard (CR 638) and Harbor Beach Boulevard do not conform to the MUTCD. **(Picture #8)**	Consideration should be given to replacing signs with MUTCD conforming sign.	X			X		

PICTURE #7

INTERSECTION AT HARBOR BEACH BLVD. (SUGGESTED CROSSWALK)

PICTURE #8

LANE USE CONTROL SIGN, NB VICINITY OF STOP LINE

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
17	**Harbor Beach Boulevard Signalized Intersection:** Northbound side- "KEEP RIGHT" sign on island north side of intersection is worn.	Replace sign.	X			X		
	Signal controller on the northeast corner of the intersection- county informed team that it has been hit several times.	Consideration be given to relocating the controller where it is less likely to be struck. The controller cabinet should be raised to a higher height with a higher skirt. A uniform power supply with battery backup should be installed since Brigantine Boulevard (CR 638) is an evacuation route.			X	X		
	Southbound side just south of the intersection- approximately 15' of sidewalk missing.	Consideration be given to installing missing section of sidewalk.		X		X		
	Southbound side-substandard guide rail at intersection.	Investigate need for guide rail and if retained upgrade to current standards.		X			X	
	HCS runs were done for the intersection using the traffic counts previously mentioned in the report and existing signal timing schedules. Those runs indicate that the intersection operates at a level of service "B" during the weekday AM and PM peak hours and a level of service "C" during the Saturday peak.	Review the HCS runs for possible improvement in the operation.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
18	Northbound side- just north of harbor Beach Boulevard-no "U" turn sign is damaged.	Replace with new sign.	X			X		
19	Inlets which are not bicycle safe were noted at the following locations: Northbound side-just north of Harbor Beach Boulevard between driveways for the Shell gas station. Northbound side- in front of Wawa Northbound side- at South 2nd Avenue Southbound side- at South 30th Street.	Consideration be given to replacing all of the inlet grates with bicycle safe inlet grates.		X				X

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
20	The following locations had signs which are not installed on non-breakaway posts, some of which are worn or undersized: **<u>NORTHBOUND SIDE:</u>** "NO PARKING" sign in vicinity of shell station. "NO PARKING ANYTIME" sign in front of Risso Realty. At S. 38th Street- coastal evacuation route sign. Worn "NO U TURN" sign north of the north driveway to the 7-11 Two hour parking sign just south of S. 33rd Street. Two hour parking sign just north of S. 33rd Street. Two hour parking sign north of S. 33rd Street in front of number 3214. Adopt a highway sign in front of 3212. Worn undersized STOP sign on access drive north of sweet shop. Worn STOP sign on S. 32nd Street approach. Just north of S.32nd Street- "NO PARKING WHEN ROAD IS SNOW COVERED" and "NO PARKING HERE TO CORNER" sign.	Re-install signs on break-away posts. Replace those signs indicated as worn or undersized unless otherwise noted.		X			X	

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
20	S. 31st Street "NO PARKING ANYTIME" sign. Worn "STOP" sign on S. 30th St. Worn and undersized "STOP" sign on alley south of S.29th Street "SPEED LIMIT 30" just south of S.29th Street Worn "STOP" sign on alley way adjacent to 2804. Worn "STOP" sign on S. 28th Street. Undersized "STOP" sign on alley between S. 27thand S.28th Streets. "Central Business District" sign north of alley between S. 27th and S. 28th Streets. Remove sign, do not replace. Worn "STOP" sign on S. 27th Street. Worn "SPEED LIMIT 30" sign north of S. 27th Street. Undersized and worn "STOP" sign on alley between S. 26th and S. 27th Streets. Worn "STOP" sign on S. 26th Street.			X			X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
20	Worn mile marker 2 sign just north of S. 26th street. At S.17th Street-"STOP" sign is worn and undersized. Worn "STOP" sign at S.16th Street. Undersized and worn "STOP" sign on alley between S.16th and S.15th Streets. "STOP" sign on S.15th Street-stem of breakaway post too far out of the ground. Worn "NO PARKING HERE TO CORNER" sign just north of S.14th Street. "TWO HOUR PARKING" sign north of S.14th Street. Worn "NO PARKING HERE TO CORNER" sign just north of S.13th Street. Worn "TWO HOUR PARKING" sign north of S. 13th Street. Worn "NO U TURN" sign just south of S. 12th Street. Worn "YIELD TO PEDESTRIAN IN CROSSWALK" sign just south of S. 12th Street.	Also, change "YIELD" to "STOP"		X			X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
	Worn “YIELD TO PEDESTRAIN IN CROSSWALK” sign just south of S. 11th Street.	Also, change "YIELD" to "STOP"						
	Worn “STOP” sign on S. 11th Street.							
	Worn “TWO HOUR PARKING SIGN” just north of S. 11th Street.							
	Worn “YIELD TO PED IN CROSSWALK” sign just south of S. 10th Street.	Also, change "YIELD" to "STOP"						
	Worn “STOP” sign on S. 10th Street.							
	Worn “SPEED LIMIT 30” sign just north of S. 10th Street.			X			X	
	Worn “STOP” sign on S. 9th Street.							
	“NO LITTER $500 FINE” sign in front of number 812.							
	Worn “YIELD TO PEDESTRIAN IN CROSSWALK” sign south of S. 9th Street.	Also, change "YIELD" to "STOP"						
	Worn “SPEED LIMIT 30” sign north of S. 8th Street.							
	Worn “STOP” sign on S. 7th Avenue.							
	Worn “STOP” sign on S. 6th Avenue.							

SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
Worn mile marker 3.5 north of S. 6th Street. Worn "STOP" sign on S. 5th St. Worn "STOP" sign on S. 4th St. Worn "STOP" sign on S. 3rd St. "SPEED LIMIT 30" sign north of S. 3rd Street. Worn "STOP" sign on S. 2nd Ave. Worn "YIELD TO PED IN CROSSWALK" sign at Prospect Worn "STOP" sign on Prospect Worn "STOP" sign on S. 8th Street. **SOUTHBOUND SIDE-** In the vicinity of # 4701- turtle crossing sign. In the vicinity of # 4201- "NO PARKING" sign. "NO PARKING WHEN ROAD IS SNOW COVERED" vicinity of # 3717. Worn "STOP "sign on Bayshore Worn "STOP" sign on alley between S. 23rd and S. 24th Streets. Undersize "STOP" sign on 23rd Near CVS worn "NO PARKING" sign	Also, change "YIELD" to "STOP"						

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
21	Northbound side-northerly most driveway to Wawa shared with shopping center. Driveway is located opposite left turn slot for SB Brigantine Boulevard (CR 638). Existing Stop sign on driveway is worn and installed only 3' above the ground. **(Picture #9)**	Install new sign at appropriate height. Consideration be given to installing additional signs at the location to control the access onto Brigantine Boulevard (CR 638)	X			X		
22	Northbound side-right lane ends symbol warning sign located in the vicinity of Sun National Bank is worn and damaged	Replace with new sign.	X			X		
23	Northbound side- southern most driveway from Sun National Bank "DO NOT ENTER" sign is worn and installed parallel to driveway.	Install new sign correctly orientated to traffic. Consideration be given to installing a "ONE WAY" sign at the driveway.	X			X		

PICTURE #9

EXIT STOP SIGN AT NORTH SIDE EXIT OF WAWA

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
24	Northbound side- at access road just north of Sun National Bank- "REDUCE SPEED AHEAD" sign is worn and on a non-break away post. County considers sign unnecessary. There is no "ONE WAY" sign on the center median facing the driveway. STOP sign on driveway is undersized.	Remove sign and post. Install "ONE WAY" sign. Replace STOP sign with new 30" x 30" sign.	X			X		
25	Northbound side – approaching S.38th Street existing "RIGHT LANE MUST TURN RIGHT " sign at stop line. No advance sign.	Install advance "RIGHT LANE MUST TURN RIGHT" sign.	X			X		
26	**S.38th Street Signalized Intersection:** Southeast corner- two junction boxes are possible tripping hazard. **(Picture #10)**	Consideration be given to taking the appropriate action to eliminate the possible tripping hazard.		X			X	

PICTURE #10

JUNCTION BOX, SOUTH EAST CORNER OF BRIGANTINE BLVD & S. 38TH STREET

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
26	**S.38th Street Signalized Intersection:** Southeast corner-two vehicular indications are being used to control pedestrian movements.	Consideration be given to installing pedestrian indications at the intersection.			X		X	
	The County had requested that back-plates be installed at Harbor Beach Boulevard intersection to increase signal visibility. The team concurs with this comment.	If back-plates are installed at Harbor Beach Boulevard intersection, consideration should be given to also installing them at this intersection.		X			X	
	Signals facing the S.38th Street approach appear not to have the required 8' spread between the primary signal indications. The submitted sign plan has the 8 foot spread. **(Picture #11)**	Investigate discrepancy between plan and field observations to ensure 8 foot spread is provided.	X			X		

PICTURE #11

SIGNAL ALIGNMENT AT BRIGANTINE BLVD & S.38TH STREET

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
	S. 38th Street Signalized Intersection:							
	Existing push buttons and pedestrian push button signs are not installed parallel to the crosswalks they control. The 2009 edition of the MUTCD guidance is that push buttons and push button signs be installed parallel to the crosswalk they control.	Consideration be given to installing push buttons and sign parallel to crosswalk.	X			X		
26	Stop line on the S. 38th Street approach is set back from the intersection.	The County should review the right turn on red crash experience to determine if a possible NTOR prohibition is warranted.	X			X		
	Southeast corner- vehicular pole mounted indication used to control pedestrians across the S. 38th Street crosswalk is miss-aimed.	Re-aim signal indication.	X			X		
	Intersection lacks pedestrian indications as required by MUTCD.	Consideration be given to installing pedestrian indications at the intersection		X			X	
	Southbound side- “LEFT LANE MUST TURN LEFT” sign is missing.	Install missing sign.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
26	**S.38th Street Signalized Intersection:** Southbound side-"NO U TURN" sign is substandard.	Replace with standard sign.	X			X		
	HCS runs were done for the intersection using the traffic counts previously mentioned in the report and the existing signal timing schedules. Those runs indicate that the intersection operates at a level of service of "C" during the weekday AM peak hour, level of service "D" during the weekday PM peak hours and a level of service "B" during the Saturday peak hour.	Review the HCS runs to determine if adjustments in the signal timing would improve the LOS at the intersection.	X			X		
27	Northbound side- missing section of approximately 300' of sidewalk north of the 7-11store.	Consideration be given to installing missing section of sidewalk.		X		X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
28	Northbound side- Steakhouse 38 restaurant driveway has post and rope fence almost to curb forcing pedestrians into roadway to get around it. **(Picture #12)**	Contact property owner to remove part of fence from pedestrian path. It may be installed on public right-of-way.		X			X	
29	Northbound side- At S. 37th Street-"STOP" sign is worn and undersized.	Replace with new 30" x 30" sign.	X			X		
30	Northbound side- "20 MPH "advisory speed plate installed below circle sign is worn.	Replace with new advisory plate.	X			X		
31	Circle at S. 34th Street- many deficiencies noted at the circle including the need to reduce the pavement area and pedestrian access to the circle. Scope of study needed to determine improvements beyond the scope of this project. **(Picture #13)**	Consideration be given to initiating a project to evaluate long term improvements to the circle.			X			X

PICTURE #12

ENTRANCE TO STEAKHOUSE, WOOD POSTS ON BOTH SIDES OF DRIVEWAY

PICTURE #13

LIGHT HOUSE AT THE TRAFFIC CIRCLE

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
32	Northbound side- just north of circle- "SPEED LIMIT 30" worn.	Replace with new sign.	X			X		
33	Northbound side-S.32nd Street southeast corner –appears as if section of curb has been removed leaving exposed vertical face of curb.	Consideration be given to replacing missing section of curb.	X			X		
34	Northbound side –access road north of S.32nd Street- existing "ONE WAY" signs installed too low.	Re-install signs at appropriate height.	X			X		
35	Northbound side- S.31st Street- "NO PARKING IN CROSSWALK " sign installed below pedestrian crossing warning sign.	Remove "NO PARKING IN CROSSWALK" sign	X			X		
36	S.30th Street- very wide intersection.	Consideration be given to installing pavement markings to better guide motorist through the intersection and better accommodate the pedestrians at the intersection.		X			X	
37	Northbound side- in front of number 2804- low hanging branches over bike lane.	Trim tree to remove low hanging branches.	X				X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
38	Northbound side – north of S.29th Street – "STOP HERE FOR PEDESTRIAN" sign adjacent to alley near number 2804. County recommends the sign be replaced with pedestrian advance warning sign with "AHEAD" plate. The team concurs with this comment.	Remove sign and install pedestrian advance warning sign with "AHEAD" plate.	X			X		
39	Northbound side-just north of S. 26th Street-oversized divided highway ends symbol warning sign. There is another concrete island in the center of the road several blocks to the north.	Remove sign and posts.	X			X		
40	Northbound side- alley north of S. 23rd Street "STOP" sign undersized and worn.	Replace with 30" x 30" sign.	X			X		
41	Northbound side- just north of S. 21st Street- road narrows symbol warning sign obstructed by trees.	Consider relocating sign to more visible location.	X			X		
42	Northbound side-just north of S. 19th Street damaged right lane ends symbol warning sign.	Replace with new sign.	X			X		
43	Northbound side- just north of S. 19th Street- low hanging branches over bike lane.	Trim tree to remove low hanging branches.	X				X	
44	Northbound side- At S.17th Street-"STOP" sign is worn and undersized.	Replace with new sign and post.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
45	Northbound side- alley north of S.17th Street-"STOP" sign is worn.	Replace with new sign	X			X		
46	Northbound side- north of S.16th Street - worn fire house warning sign.	Replace with new sign	X			X		
47	Northbound side- at S.15th Street- "YIELD TO PEDESTRIAN IN CROSSWALK" sign is worn.	Remove sign do not replace.	X			X		
48	**S.14th Street Signalized Intersection:**							
	Only two vehicular indications facing both of the Brigantine Boulevard (CR 638) approaches to the intersection.	Consideration be given to installing a second over-the-road far side indication along both of the Brigantine Avenue (CR 638) approaches to the intersection.		X			X	
	There are no mast arm mounted street name signs at the intersection.	Install street name signs on the mast arms.	X			X		
	NTOR signs installed on the southeast and southwest corners of the intersection are worn.	Install new signs.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
48	**S.14th Street Signalized Intersection:** Existing push buttons and pedestrian push button signs are not installed parallel to the crosswalks they control. The 2009 edition of the MUTCD guidance is that push buttons and push button signs be installed parallel to the crosswalk they control.	Consideration be given to installing pedestrian push buttons and signs parallel to the crosswalks.		X		X		
	Southeast corner - "PUSH BUTTON FOR GREEN LIGHT" sign for pedestrian push button. There are WALK_DONT WALK signals at the intersection.	Install appropriate push button sign.	X			X		
49	Northbound side- at S.13th Street "YIELD TO PEDESTRIAN IN CROSSWALK" sign is worn and not on a breakaway post.	Remove sign and post.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
50	Northbound side- between N.4th and N.5th Streets- angle parking in front of businesses forces pedestrians to walk on shoulder of road. **(Picture #14)**	Consideration be given to investigating alternatives to the angle parking.		X			X	
51	Southbound side- vicinity of MP 0.00- substandard guide rail.	Review need for guide rail. If it is to be retained upgrade to current standards.		X			X	
52	Southbound side- vicinity of MP 0.00- no reflectors on utility poles.	Consideration be given to installing reflectors on utility poles.	X				X	
53	Southbound side- vicinity of MP 0.00- R (NJ) 7-4 sign (No Parking) sign worn.	Replace with new sign.	X			X		
54	Southbound side-vicinity of #4821- safety edge needs re-paving.	Re-pave safety edge		X		X		
55	Southbound side- vicinity of #4805- vacant sign post.	Remove sign post.	X			X		

PICTURE #14

PARKING AT HOTEL,
NORTHBOUND AT N.4TH STREET

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
56	Southbound side-vicinity of #4801- water meter lid missing.	Consideration be given to contacting the responsible authority to install water meter lid.	X			X		
57	Southbound side-vicinity of #4701- “NO PARKING WHEN ROAD IS SNOW COVERED“ sign is worn. Also “WRONG WAY” sign is missing.	Replace with new sign. Install “WRONG WAY SIGN".	X			X		
58	Southbound side-vicinity of #4617- missing “U-TURN” sign.	Install missing sign.	X			X		
59	Southbound side- vicinity of #4617- road edge failure.	Repair road edge.		X		X		
60	Southbound side- vicinity of #4601-worn “STOP” sign located in incorrect place. Road edge failure.	Remove existing sign and install new sign in appropriate location. Repair road edge.		X		X		
61	Southbound side- vicinity of #4530-standing water in road.	Investigate what can be done to correct drainage in area.			X		X	
62	Southbound side- vicinity of #4533- STOP sign is worn.	Replace with new sign.	X			X		
63	Southbound side- vicinity of #4533- standing water.	Consideration be given to reviewing the drainage in the area to determine if standing water can be eliminated.			X		X	
64	Southbound side- vicinity of #4521-standing water in road.	Investigate what can be done to improve drainage in area.			X		X	

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
65	Southbound Side- vicinity of #4241- 30” STOP sign. For multi-lane road should be 36” STOP sign.	Replace with 36” x 36” sign.	X			X		
66	Southbound side- vicinity of #4505-missing “U-TURN” sign.	Install missing “U-TURN” sign.	X			X		
67	Southbound side- vicinity of #4321- loose wires wrapped around pole.	Contact appropriate authority regarding removal of loose wires.	X			X		
68	Southbound side- vicinity of #4241-standing water in road.	Investigate what can be done to improve drainage in area.			X		X	
69	Southbound side- vicinity of #4237- improperly sized speed limit sign.	Replace with standard speed limit sign.	X			X		
70	Southbound side- vicinity of #4221- safety edge failure.	Address safety edge failure.		X			X	
71	Southbound side- at Edgewater Avenue- “NO PARKING WHEN ROAD IS SNOW COVERED” sign is worn. “STOP” sign installed to low.	Replace with new sign. Re-install “STOP” sign at appropriate height.	X			X		
72	Southbound side- vicinity of #4121-under sized speed limit sign.	Replace with appropriately sized speed limit sign.	X			X		
73	Southbound Side- vicinity of #4117- 30” STOP sign. For multi-lane road should be 36” STOP sign. Also, sign not installed on breakaway post.	Install 36” x36” sign on breakaway post.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
74	Southbound side- vicinity of #4029-utility pole issue	Contact appropriate authority to have pole replaced.	X			X		
75	Southbound side- vicinity of #4011- planters within right of way.	Relocate planters outside of right of way.	X			X		
76	Southbound side- vicinity of #4005- road edge failure.	Repair road edge.		X			X	
77	Southbound side- vicinity of #3935-“LEFT LANE MUST TURN LEFT” sign is non-standard.	Replace with standard sign.	X			X		
78	Southbound side- vicinity of #3717-curb damaged and a substandard “NO PARKING” sign.	Repair curb. Replace with standard sign.		X		X		
79	Southbound side – at Sunflower Avenue STOP sign substandard and installed on non-breakaway post,	Install 36” x 36” STOP sign on a breakaway post.	X			X		
80	Southbound side- At Harbor Beach Boulevard-substandard guide rail, need for guide rail questionable.	Consideration be give to reviewing the need for guide rail. If retained up grade to current standard.		X			X	
81	Southbound side –vicinity of WAWA- “NO U TURN” sign installed too low. Stop sign 30”. Also, speed limit sign substandard and obstructed by tree branches.	Re-install ‘NO U TURN” sign at appropriate height. Replace existing STOP sign with 36” x 36” sign. Replace speed limit sign and trim trees.	X			X		
82	Southbound side at John Rogers Road-worn stop sign.	Replace with new sign	X			X		

SAFETY ISSUE		REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
83	Southbound side at S.27th street- signs obstructed by trees.	Trim trees to remove obstructions.	X			X		
84	Southbound side-bench for bus stop located far from bus stop.	Move bench closer to bus stop.	X			X		
85	Southbound side- vicinity of S.34th Street- circle ahead warning sign is worn.	Replace with new sign.	X			X		
86	Southbound side at Revere- no painted crosswalks at intersection, no painted stop line, benches in sidewalk area. **(Picture #15)**	Consideration be given to installing crosswalks at the intersection as well as a stop line. Benches be relocated out of the sidewalk area.	X			X		

PICTURE #15

BENCHES ON THE SIDEWALK AT BRIGANTINE BLVD. & REVERE BLVD.

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
87	Southbound side-at S.32nd Street- STOP sign obstructed by tree, no painted crosswalks at the intersection.	Trim tree to remove obstruction of STOP sign. Consideration be given to installing crosswalks at the intersection.	X			X		
88	Southbound side- vicinity of S.30th Street- Pedestrian crossing warning sign obstructed by trees.	Trim trees to remove obstruction of sign or if more practical relocate sign.	X			X		
89	Southbound side—vicinity of S.39th Street- lane drop lack a lane drop warning sign (W4-2)	Install lane drop warning sign at appropriate location.	X			X		
90	Southbound side at S.27th Street- no painted crosswalks, no detectable warning surface on handicapped ramps.	Consideration be given to installing crosswalks at the intersection and to installing the missing detectable warning surface on the handicapped ramps.	X			X		
91	Southbound side at S.26th Street- no detectable warning surface on the handicapped ramps.	Consideration be given to installing the detectable warning surface on the handicapped ramps.	X			X		
92	Southbound side- between S.15th and S.17th Streets- Two way left turn lane lacks required accompanying signage.	Install appropriate signing identifying the two way left turn lane.	X			X		
93	Southbound side- at S.15th Street- no pedestrian crossing warning sign.	Consideration be given to installing a pedestrian crossing warning sign.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
94	S.11th Street- no crosswalks to seawall access point.	Consideration be given to installing the appropriate painted crosswalk.	X			X		
95	Southbound side-at S.6th, S.9th and S.10th Streets- one way signs (R6-2) are worn.	Replace with new signs.	X			X		
96	Southbound side at S.2nd Street- Dip warning sign is worn.	Replace with new sign.	X			X		
97	S.3rd Street- it was observed that there was significant pedestrian traffic and no painted crosswalks for beach access points.	Consideration be given to installing the appropriate painted crosswalks.	X			X		
	NIGHTTIME FIELD VIEW IDENTIFIED THE FOLLOWING SAFETY ISSUES							
98	Northbound side- at S.33rd Street- crosswalks and related signs are worn	Re-paint crosswalk and replace signs	X			X		
99	It has been previously mentioned that the physical left turn slots south of Harbor Beach Boulevard lack the appropriate lane use signs and pavement markings. Without the needed signs it is more difficult to locate the left turn slots during darkness.	Install appropriate lane use control signs.	X			X		
100	Northbound side- “NO U TURN” sign south of S.38th Street is worn.	Replace with new sign.	X			X		

	SAFETY ISSUE	REMEDIAL ACTION	LEVEL OF EFFORT REQUIRED			POTENTIAL SAFETY BENEFIT		
			LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
NIGHTTIME FIELD VIEW IDENTIFIED THE FOLLOWING SAFETY ISSUES								
101	Northbound side- "20 MPH" advisory speed plate installed below circle warning sign is worn.	Replace advisory plate.	X			X		
102	"KEEP RIGHT" signs facing both of the Brigantine Boulevard (CR 638) approaches at the circle are worn.	Replace both signs.	X			X		
103	All "SPEED LIMIT 30" signs along the road are worn.	Replace all "SPEED LIMIT 30" signs.	X			X		
104	The red flashing device at the northern end of Brigantine Boulevard (CR 638) flashes alternately. Devices such as this should flash simultaneously. Also, there are no hazard markers supplementing the flashing device.	Revise device to flash simultaneously and install appropriate hazard markers.	X			X		
105	Brigantine Boulevard (CR 638) experiences a slight horizontal curve in the vicinity of 3rd Street. While the road curves the pavement markings are installed straight.	Revise pavement markings to follow curve in the road.	X				X	
106	Street lights at both of the intersections with the physical pedestrian islands are out.	Contact the appropriate authority to address lighting.	X				X	

Recommendations

As stated earlier, the intent of the road safety assessment process is to conduct a formal examination of highway features and the surrounding environment that increase the potential for crashes and identify countermeasures that will reduce (or eliminate) the probability of such crashes. The safety issues identified during the conduct of this assessment and included in this report have been organized to provide the convenience and flexibility necessary to allow the implementation of the safety improvements as time and budget limitations allow. To the extent possible, the findings have been separated into line items so that the improvements can be implemented independently as appropriate. Clearly, consolidating a number of the safety recommendations will reduce the overall cost of improvements. We recommend that the appropriate management staff review the findings and decide which items can be completed in the immediate future (within one year). Many of the deficiencies can be corrected in the short term if the roadway owners dedicate both the time and financial resources to the task. The Level of Effort (an estimate of expenditures and man hours) indicated on the finding sheets of the report represent the team's best effort at categorizing each item.

The findings of the report with the greatest potential for reducing the crash experience along the road appear to be the upgrading of the traffic signals and related recommendations described in Item #17 (The relocation of the pedestrian crossing across Brigantine Boulevard (CR 638) and the other signal upgrades at the intersection of Brigantine Boulevard with Harbor Beach Boulevard), Item #26 (The upgrading of the traffic signal installation at South 38th Street) and Item #48 (The upgrading of the traffic signal installation at the intersection of South 14th Street). The extent of the necessary revisions to the traffic signal in conjunction with the need to relocate the pedestrian crosswalk across Brigantine Boulevard (CR 638) at Harbor Beach Boulevard (Item 17) probably justifies the installation of a complete new signal installation at that intersection.

Implementing Items #1 (Re-installing the pavement markings along the entire road), #2 (Repairing or replacing the RPM's along the entire road), #3 (Repairing the pavement along the section of road between Harbor Beach Boulevard and its southern terminus),

and #5 (addressing the method of sign installation along the entire road) which are all general comments would significantly contribute to the over all safe operation of the road.

As noted in Item #6, the street name signs are old and faded. They are difficult to read, especially at night. Motorist indecision and subsequent erratic maneuvers could be significantly reduced if new street name signs with letter sizes in accordance with the MUTCD were installed throughout the corridor. Item # 31 (long term improvements to the circle) should also be given serious consideration. Bicycle safe inlet grates and periodic tree trimming over the bike lane would enhance bicycle safety throughout the corridor.

Unfortunately, with many roads and many of the assessments we have conducted, there is no easy quick-fix solution to many of the crash patterns. While the safety assessment focuses on roadway features, enforcement is still a crucial component of safety on a road. Enforcement discourages the motorist from becoming lax in obeying or observing the traffic regulations along the road. Just as resources must be allocated to the physical improvements of the road, they must also be allocated to enforcement to maintain the safe operation of the road.

The opinions found in the findings of this Safety Assessment report are those of the Safety Assessment Team, as a whole, and not necessarily the opinions of the SJTPO or the individual team members.

Appendix A

Crash Data Summary Sheets

BRIGANTINE AVENUE (CR 638)
MP 0.00-3.91
BRIGANTINE CITY
CRASH SUMMARY 2008-2010
TOTAL-90 CRASHES
Month

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
4	5	9	8	5	14	16	9	9	3	6	2

Time of Day				Day of Week	
AM Midnight - Noon	**Number of Crashes**	**PM Noon - Midnight**	**Number of Crashes**		**Number of Crashes**
Midnight – 1:00	1	12:00-1300	6	Monday	10
1:00 – 2:00	1	1300-1400	6	Tuesday	10
2:00 – 3:00	1	1400-1500	14	Wednesday	14
3:00 – 4:00	1	1500-1600	7	Thursday	13
4:00 – 5:00	1	1600-1700	9	Friday	13
5:00 – 6:00	1	1700-1800	6	Saturday	17
6:00 – 7:00		1800-1900	5	Sunday	13
7:00 – 8:00	2	1900-2000	3		
8:00 – 9:00	7	2000-2100	4	TOTAL	90
9:00 – 10:00	2	2100-2200			
10:00 – 11:00	2	2200-2300	4		
11:00 – 12 Noon	6	2300-2400	1		

DAY 70 NIGHT 19 OTHER 1

DRY 77 WET 11 SNOWY 2 ICY__ OTHERS 0

CLEAR 77 RAIN 9 SNOW 2 FOG OTHERS 2 OVERCAST

INJURY 25 NON-INJURY 65 FATAL 0

Right Angle	Same Direction	Left Turn	Side swipe opposite direction	Side Swipe Same direction
15	26	4	1	11

Fixed Object	Head On	Other	Pedestrian	Bike
13	1	2- backing	3	6

Parking Related 8 STRUCK PARKED VEHICLE

Year	Number of Crashes
2003	35
2004	35
2005	30
2006	19
2007	39
2008	29
2009	24
2010	37
2011	3
Grand Total	**251**
2008-2010 Total	**90**

Month	Number of Crashes by Year									Grand Total	2008-2010 Total
	2003	2004	2005	2006	2007	2008	2009	2010	2011		
January		2	1	1		1		3		8	4
February	1	1			5		3	2		12	5
March	1	3	2	1	1	2	2	5	2	19	9
April	3	1	1	2	2		3	5	1	18	8
May	2	3	4		2	2		3		16	5
June	3	3	1		6	7	1	6		27	14
July	4	4	6	2	4	5	6	5		36	16
August	9	6	6	5	5	4	2	3		40	9
September	2	6	4	5	4	2	5	2		30	9
October	3	2	1		4	1	1	1		13	3
November	2	4	4	2	4	3	1	2		22	6
December	5			1	2	2				10	2
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**

Day of Week	Number of Crashes by Year									Grand Total	2008-2010 Total
	2003	2004	2005	2006	2007	2008	2009	2010	2011		
Sunday	3	6	2	4	4	6	4	3		32	13
Monday	4	5	8	2	8	3	3	4		37	10
Tuesday	2	5	3	3	4	4	1	5		27	10
Wednesday	4	3	3	3	3	5	1	8	1	31	14
Thursday	6	2	5	3	2	1	4	8		31	13
Friday	15	6	6		8	4	4	5	1	49	13
Saturday	1	8	3	4	10	6	7	4	1	44	17
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**

Time of Day	Number of Crashes by Year									Grand Total	2008-2010 Total
	2003	2004	2005	2006	2007	2008	2009	2010	2011		
12:00 MIDNIGHT-1:00 AM		1		1				1		3	1
1:00-2:00 AM					2		1			3	1
2:00-3:00 AM	1			1				1		3	1
3:00-4:00 AM		1					1			2	1
4:00-5:00 AM								1		1	1
5:00-6:00 AM		1		1		1				3	1
6:00-7:00 AM					2					2	0
7:00-8:00 AM	1	1	1			1		1		5	2
8:00-9:00 AM	1	8		1		4	1	2		17	7
9:00-10:00 AM	2	3	2	3	5		1	1		17	2
10:00-11:00 AM	2	3	1		1	1	1			9	2
11:00AM-12:00 NOON	6	2	1	2	4	1	3	2		21	6
12:00-1:00 PM	3		2		2	2	1	3	1	14	6
1:00-2:00 PM	5	1	6		7	1	3	2		25	6
2:00-3:00 PM	3	1	3		4	4	6	4		25	14
3:00-4:00 PM	1	2	3	2	1	2	2	3		16	7
4:00-5:00 PM		2	1	4	2	3	1	5	1	19	9
5:00-6:00 PM	2					2	1	3		8	6
6:00-7:00 PM		1	1	1	3	3		2		11	5
7:00-8:00 PM			1	2	3	2		1		9	3
8:00-9:00 PM	2	2				1	1	2	1	9	4
9:00-10:00 PM	1	2	5							8	0
10:00-11:00 PM	2	1	2	1	1	1		3		11	4
11:00PM-12:00 MIDNIGHT	2	3	1		2		1			9	1
Unknown Time	1									1	0
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**

Road Surface Condition	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Dry	28	30	24	15	30	25	19	33	2	206	77	86%
Wet	6	4	6	4	8	4	5	2	1	40	11	12%
Snowy		1			1			2		4	2	2%
Icy	1									1	0	0%
Slush										0	0	0%
Water (Standing/Moving)										0	0	0%
Sand, Mud, Dirt										0	0	0%
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**	**100%**

Weather Condition	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Clear	28	28	26	13	32	26	20	31	2	206	77	86%
Rain	5	4	4	4	5	3	4	2	1	32	9	10%
Snow	1	1			1			2		5	2	2%
Fog/Smog/Smoke	1	1								2	0	0%
Overcast				1				2		3	2	2%
Sleet/Hail/Freezing Rain										0	0	0%
Other		1								1	0	0%
Unknown				1	1					2	0	0%
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**	**100%**

Light Condition	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Daylight	26	24	21	14	31	23	19	28	2	188	70	78%
Dawn		1		1						2	0	0%
Dusk						1				1	1	1%
Dark - Street Lights Off						1				1	1	1%
Dark - No Street Lights					1			1		2	1	1%
Dark - Street Lights On/ continuous	8	10	8	4	7	3	3	7	1	51	13	14%
Dark - Street Lights On/ spot						1	2	1		4	4	4%
Unknown	1		1							2	0	0%
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**	**100%**

Severity	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Fatal										0	0	0%
Injury	11	11	9	5	13	6	10	9		74	25	28%
Property Damage Only	24	24	21	14	26	23	14	28	3	177	65	72%
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**	**100%**

Crash Type	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Same Direction - Rear End	8	7	8	8	14	10	5	11	1	72	26	29%
Same Direction - Side Swipe	3	3	4	3	6	3	1	7	1	31	11	12%
Right Angle	4	4	5	3	2	4	7	4		33	15	17%
Opposite Direction - Head On, Angular	3		1	1				1		6	1	1%
Opposite Direction - Side Swipe								1		1	1	1%
Struck Parked Vehicle	6	7	2	1	4	1	2	5		28	8	9%
Left Turn / U Turn	3		3	1		2	1	1	1	12	4	4%
Backing	2	1				1	1			5	2	2%
Encroachment										0	0	0%
Overturned										0	0	0%
Fixed Object				2	8	5	4	4		23	13	14%
Animal										0	0	0%
Pedestrain					2	1	1	1		5	3	3%
Pedalcyclist					2	2	2	2		8	6	7%
Non-fixed Object										0	0	0%
Railcar - Vehicle										0	0	0%
Other	4	9	7		1					21	0	0%
Unknown	2	4								6	0	0%
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**	**100%**

Nearest Cross Street	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
NORTHBOUND BRIGANTINE BRIDGE		1								1	0	0%
CHEROKEE DRIVE		2			2					4	0	0%
EDGEWATER DRIVE							1			1	1	1%
HARBOR BEACH BOULEVARD	8	9	7	5	17	7	6	8		67	21	23%
SOUTH 38TH STREET	4	2	2	2	5		3	2	1	21	5	6%
SOUTH 37TH STREET			1		1					2	0	0%
BAYSHORE AVENUE	2	2	2	3	1	2	1	5		18	8	9%
SOUTH 34TH STREET	1		1	1				5		8	5	6%
ALLEY, MP 1.56				1						1	0	0%
SOUTH 33RD STREET		3		2		1	1			7	2	2%
REVERE BOULEVARD		1		1						2	0	0%
SOUTH 32ND STREET	1	1			2					4	0	0%
SOUTH 31ST STREET				1	1	2	1	1		6	4	4%
BRIGANTINE AVENUE		1								1	0	0%
SOUTH 30TH STREET	1		3			2				6	2	2%
SOUTH 29TH STREET		1	1		1					3	0	0%
SOUTH 28TH STREET						1		2		3	3	3%
SOUTH 27TH STREET	1		1							2	0	0%
SOUTH 26TH STREET			1	1	2	1	1			6	2	2%
SOUTH 25TH STREET					1					1	0	0%
SOUTH 24TH STREET					1			1	1	3	1	1%
SOUTH 23RD STREET	1		1			1				3	1	1%
SOUTH 22ND STREET						1				1	1	1%
ALLEY, MP 2.20							1			1	1	1%
SOUTH 21ST STREET					1		1			2	1	1%
SOUTH 20TH STREET	1									1	0	0%
SOUTH 18TH STREET			1							1	0	0%
SOUTH 16TH STREET						1				1	1	1%
SOUTH 15TH STREET		1					1		1	3	1	1%
SOUTH 14TH STREET	1	1		2		4		2		10	6	7%
LA SAMMANA RESORT, MP 2.57	1									1	0	0%
SOUTH 13TH STREET	1	2	2		1	1		1		8	2	2%
SOUTH 12TH STREET					1	1		2		4	3	3%
SOUTH 11TH STREET		1	1				1			3	1	1%
SOUTH 10TH STREET	1							2		3	2	2%
SOUTH 9TH STREET							2	2		4	4	4%
CVS PHARMACY, MP 2.82	2		1							3	0	0%
SOUTH 8TH STREET	2	2	1					1		6	1	1%
WAWA, MP 2.87	3									3	0	0%
SOUTH 7TH STREET	1						1			2	1	1%
SOUTH 6TH STREET		1								1	0	0%
SOUTH 5TH STREET						1				1	1	1%
ROOSEVELT BOULEVARD						1		1		2	2	2%
NORTH 3RD STREET	1				1					2	0	0%
NORTH 4TH STREET						1		1		2	2	2%
NORTH 5TH STREET			2							2	0	0%
NORTH 7TH STREET					1					1	0	0%
NORTH 8TH STREET							1			1	1	1%
NORTH 9TH STREET								1		1	1	1%
QUAY BOULEVARD	1									1	0	0%
NORTH 10TH STREET	1									1	0	0%
NORTH 11TH STREET							1			1	1	1%
NORTH 12TH STREET		1	1			1				3	1	1%
NORTH 13TH STREET		1	1							2	0	0%
NORTH 14TH STREET		2								2	0	0%
DEAD END							1			1	1	1%
Grand Total	**35**	**35**	**30**	**19**	**39**	**29**	**24**	**37**	**3**	**251**	**90**	**100%**

Crash Type / Nearest Cross Street	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Backing	**2**	**2**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**5**	**2**	**2%**
DEAD END							1			1	1	
NORTH 14TH STREET		1								1	0	
SOUTH 14TH STREET						1				1	1	
WAWA, MP 2.87	2									2	0	
Fixed Object	**0**	**0**	**0**	**2**	**8**	**5**	**4**	**4**	**0**	**23**	**13**	**14%**
CHEROKEE DRIVE					2					2	0	
HARBOR BEACH BOULEVARD					4	2	1	2		9	5	
NORTH 11TH STREET							1			1	1	
SOUTH 12TH STREET								1		1	1	
SOUTH 24TH STREET					1					1	0	
SOUTH 25TH STREET					1					1	0	
SOUTH 26TH STREET				1		1	1			3	2	
SOUTH 28TH STREET						1				1	1	
SOUTH 30TH STREET						1				1	1	
SOUTH 34TH STREET				1				1		2	1	
SOUTH 38TH STREET							1			1	1	
Left Turn / U Turn	**3**	**0**	**3**	**1**	**0**	**2**	**1**	**1**	**1**	**12**	**4**	**4%**
BAYSHORE AVENUE			1			1				2	1	
HARBOR BEACH BOULEVARD							1			1	1	
NORTH 5TH STREET			1							1	0	
SOUTH 14TH STREET	1					1				2	1	
SOUTH 24TH STREET									1	1	0	
SOUTH 30TH STREET	1									1	0	
SOUTH 38TH STREET			1	1				1		3	1	
SOUTH 8TH STREET	1									1	0	
Opposite Direction - Head On/Angular	**3**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**6**	**1**	**1%**
BAYSHORE AVENUE	2			1				1		4	1	
SOUTH 20TH STREET	1									1	0	
SOUTH 29TH STREET			1							1	0	
Opposite Direction - Side Swipe	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1%**
BAYSHORE AVENUE								1		1	1	
Other	**4**	**9**	**7**	**0**	**1**	**0**	**0**	**0**	**0**	**21**	**0**	**0%**
BAYSHORE AVENUE		1								1	0	
BRIGANTINE AVENUE		1								1	0	
CHEROKEE DRIVE		1								1	0	
HARBOR BEACH BOULEVARD	3	2	3		1					9	0	
NORTH 13TH STREET			1							1	0	
NORTH 14TH STREET		1								1	0	
SOUTH 13TH STREET		1								1	0	
SOUTH 23RD STREET	1									1	0	
SOUTH 30TH STREET			1							1	0	
SOUTH 32ND STREET		1								1	0	
SOUTH 34TH STREET			1							1	0	
SOUTH 38TH STREET			1							1	0	
SOUTH 8TH STREET		1								1	0	
Pedalcyclist	**0**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**0**	**8**	**6**	**6%**
NORTH 3RD STREET					1					1	0	
ROOSEVELT BOULEVARD						1		1		2	2	
SOUTH 13TH STREET					1					1	0	
SOUTH 14TH STREET						1				1	1	
SOUTH 28TH STREET								1		1	1	
SOUTH 7TH STREET							1			1	1	
SOUTH 9TH STREET							1			1	1	
Pedestrian	**0**	**0**	**0**	**0**	**2**	**1**	**1**	**1**	**0**	**5**	**3**	**3%**
SOUTH 10TH STREET								1		1	1	
SOUTH 15TH STREET							1			1	1	
SOUTH 16TH STREET						1				1	1	
SOUTH 26TH STREET					1					1	0	
SOUTH 38TH STREET					1					1	0	
Sub Total - 1	**12**	**11**	**12**	**4**	**13**	**10**	**9**	**11**	**1**	**81**	**30**	**32%**

Crash Type / Nearest Cross Street	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Right Angle	**4**	**4**	**5**	**3**	**2**	**4**	**7**	**4**	**0**	**33**	**15**	**16%**
ALLEY, MP 1.56				1						1	0	
ALLEY, MP 2.20							1			1	1	
BAYSHORE AVENUE		1					1			2	1	
CVS PHARMACY, MP 2.82	2		1							3	0	
EDGEWATER DRIVE							1			1	1	
HARBOR BEACH BOULEVARD		1				2	3	1		7	6	
NORTH 12TH STREET			1			1				2	1	
SOUTH 10TH STREET								1		1	1	
SOUTH 13TH STREET	1									1	0	
SOUTH 22ND STREET						1				1	1	
SOUTH 27TH STREET			1							1	0	
SOUTH 28TH STREET								1		1	1	
SOUTH 29TH STREET		1								1	0	
SOUTH 30TH STREET			1							1	0	
SOUTH 32ND STREET					1					1	0	
SOUTH 33RD STREET				1			1			2	1	
SOUTH 34TH STREET								1		1	1	
SOUTH 37TH STREET			1							1	0	
SOUTH 38TH STREET				1	1					2	0	
SOUTH 7TH STREET	1									1	0	
SOUTH 8TH STREET		1								1	0	
Same Direction - Rear End	**8**	**7**	**8**	**8**	**14**	**10**	**5**	**11**	**1**	**72**	**29**	**31%**
BAYSHORE AVENUE				2	1	1		1		5	2	
HARBOR BEACH BOULEVARD	3	2	2	2	7	3		3		22	6	
NORTH 4TH STREET						1		1		2	5	
NORTH 5TH STREET			1							1	0	
NORTH 9TH STREET								1		1	1	
NORTHBOUND BRIGANTINE BRIDGE		1								1	0	
REVERE BOULEVARD				1						1	0	
SOUTH 11TH STREET			1							1	0	
SOUTH 12TH STREET						1				1	1	
SOUTH 13TH STREET		1	1							2	0	
SOUTH 14TH STREET		1		1		1		2		5	3	
SOUTH 21ST STREET					1		1			2	1	
SOUTH 23RD STREET			1			1				2	1	
SOUTH 26TH STREET			1		1					2	0	
SOUTH 27TH STREET	1									1	0	
SOUTH 29TH STREET					1					1	0	
SOUTH 30TH STREET						1				1	1	
SOUTH 31ST STREET				1	1		1			3	1	
SOUTH 33RD STREET		1		1						2	0	
SOUTH 34TH STREET								2		2	2	
SOUTH 38TH STREET	3				2		2		1	8	2	
SOUTH 5TH STREET						1				1	1	
SOUTH 6TH STREET		1								1	0	
SOUTH 8TH STREET	1		1							2	0	
SOUTH 9TH STREET							1	1		2	2	
Sub Total - 2	**12**	**11**	**13**	**11**	**16**	**14**	**12**	**15**	**1**	**105**	**44**	**47%**

Crash Type / Nearest Cross Street	Number of Crashes by Year									Grand Total	2008-2010 Total	Percentage
	2003	2004	2005	2006	2007	2008	2009	2010	2011			
Same Direction - Side Swipe	**3**	**3**	**4**	**3**	**6**	**3**	**1**	**7**	**1**	**31**	**11**	**12%**
BAYSHORE AVENUE			1					2		3	2	
HARBOR BEACH BOULEVARD			1	2	4		1	1		9	2	
NORTH 10TH STREET	1									1	0	
NORTH 7TH STREET					1					1	0	
REVERE BOULEVARD		1								1	0	
SOUTH 10TH STREET	1									1	0	
SOUTH 13TH STREET			1			1				2	1	
SOUTH 14TH STREET				1						1	0	
SOUTH 15TH STREET									1	1	0	
SOUTH 18TH STREET			1							1	0	
SOUTH 24TH STREET								1		1	1	
SOUTH 31ST STREET						1		1		2	2	
SOUTH 33RD STREET						1				1	1	
SOUTH 34TH STREET	1							1		2	1	
SOUTH 38TH STREET		2			1			1		4	1	
Struck Parked Vehicle	**6**	**7**	**2**	**1**	**4**	**1**	**2**	**5**	**0**	**28**	**8**	**9%**
CHEROKEE DRIVE		1								1	0	
HARBOR BEACH BOULEVARD	1	1	1	1	1			1		6	1	
LA SAMMANA RESORT, MP 2.57	1									1	0	
NORTH 12TH STREET		1								1	0	
NORTH 13TH STREET		1								1	0	
NORTH 3RD STREET	1									1	0	
NORTH 8TH STREET							1			1	1	
QUAY BOULEVARD	1									1	0	
SOUTH 11TH STREET		1					1			2	1	
SOUTH 12TH STREET					1			1		2	1	
SOUTH 13TH STREET								1		1	1	
SOUTH 15TH STREET		1								1	0	
SOUTH 30TH STREET			1							1	0	
SOUTH 31ST STREET						1				1	1	
SOUTH 32ND STREET	1				1					2	0	
SOUTH 33RD STREET		1								1	0	
SOUTH 37TH STREET					1					1	0	
SOUTH 38TH STREET	1									1	0	
SOUTH 8TH STREET								1		1	1	
SOUTH 9TH STREET								1		1	1	
Unknown	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0%**
HARBOR BEACH BOULEVARD	1	3								4	0	
SOUTH 33RD STREET		1								1	0	
WAWA, MP 2.87	1									1	0	
Sub Total - 1	12	11	12	4	13	10	9	11	1	81	30	32%
Sub Total - 2	12	11	13	11	16	14	12	15	1	105	44	47%
Sub Total - 3	11	14	6	4	10	4	3	12	1	65	19	20%
Grand Total	**35**	**36**	**31**	**19**	**39**	**28**	**24**	**38**	**3**	**251**	**93**	**100%**

Appendix B

Traffic Counts

Orth-Rodgers & Associates, Inc.

810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

File Name : 003_07-27-11
Site Code : 00000000
Start Date : 7/27/2011
Page No : 1

Groups Printed- Unshifted

	Southbound	Brigantine Avenue Westbound					38th Street Northbound					Brigantine Avenue Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
10:00 AM	0	12	96	0	0	108	99	0	19	0	118	0	76	49	0	125	351
10:15 AM	0	17	113	0	0	130	76	0	17	1	94	0	154	64	0	218	442
10:30 AM	0	25	102	0	0	127	98	0	16	0	114	0	112	53	0	165	406
10:45 AM	0	12	125	0	0	137	90	0	19	0	109	0	144	65	0	209	455
Total	0	66	436	0	0	502	363	0	71	1	435	0	486	231	0	717	1654
11:00 AM	0	26	109	0	0	135	81	0	20	0	101	0	158	72	0	230	466
11:15 AM	0	12	94	0	0	106	110	0	19	2	131	0	180	84	0	264	501
11:30 AM	0	21	124	0	0	145	108	0	23	0	131	0	169	76	0	245	521
11:45 AM	0	11	101	0	0	112	100	0	28	0	128	0	167	70	0	237	477
Total	0	70	428	0	0	498	399	0	90	2	491	0	674	302	0	976	1965
12:00 PM	0	19	115	0	0	134	97	0	22	1	120	0	211	69	0	280	534
12:15 PM	0	14	118	0	0	132	107	0	13	1	121	0	163	77	0	240	493
12:30 PM	0	16	96	0	0	112	81	0	24	0	105	0	173	70	0	243	460
12:45 PM	0	14	102	0	0	116	100	0	14	0	114	0	168	81	0	249	479
Total	0	63	431	0	0	494	385	0	73	2	460	0	715	297	0	1012	1966
*** BREAK ***																	
01:30 PM	0	19	93	0	0	112	102	0	17	0	119	0	130	65	0	195	426
01:45 PM	0	8	101	0	0	109	92	0	15	0	107	0	164	66	0	230	446
Total	0	27	194	0	0	221	194	0	32	0	226	0	294	131	0	425	872
02:00 PM	0	16	109	0	0	125	91	0	6	2	99	0	152	81	0	233	457
02:15 PM	0	13	123	0	0	136	86	0	18	0	104	0	204	90	0	294	534
02:30 PM	0	13	133	0	0	146	110	0	19	2	131	0	134	70	0	204	481
02:45 PM	0	15	134	0	0	149	97	0	7	0	104	0	132	72	0	204	457
Total	0	57	499	0	0	556	384	0	50	4	438	0	622	313	0	935	1929
03:00 PM	0	15	139	0	0	154	102	0	10	0	112	0	138	82	0	220	486
03:15 PM	0	4	160	0	0	164	96	0	11	0	107	0	165	80	0	245	516
03:30 PM	0	12	132	0	0	144	130	0	12	0	142	0	150	82	0	232	518
03:45 PM	0	16	145	0	0	161	102	0	23	0	125	0	152	80	0	232	518
Total	0	47	576	0	0	623	430	0	56	0	486	0	605	324	0	929	2038
04:00 PM	0	6	154	0	0	160	109	0	13	0	122	0	139	86	0	225	507
04:15 PM	0	11	153	0	0	164	103	0	20	0	123	0	184	81	0	265	552
*** BREAK ***																	

Orth-Rodgers & Associates, Inc.

810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

File Name : 003_07-27-11
Site Code : 00000000
Start Date : 7/27/2011

Groups Printed- Unshifted

	Southbound	Brigantine Avenue Westbound					38th Street Northbound					Brigantine Avenue Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Total	0	17	307	0	0	324	212	0	33	0	245	0	323	167	0	490	1059
05:00 PM	0	10	132	0	0	142	131	0	10	0	141	0	160	83	0	243	526
05:15 PM	0	14	136	0	0	150	108	0	11	0	119	0	167	89	0	256	525
05:30 PM	0	9	156	0	0	165	130	0	10	0	140	0	165	82	1	248	553
05:45 PM	0	23	124	0	0	147	97	0	9	0	106	0	157	99	0	256	509
Total	0	56	548	0	0	604	466	0	40	0	506	0	649	353	1	1003	2113
Grand Total	0	403	3419	0	0	3822	2833	0	445	9	3287	0	4368	2118	1	6487	13596
Apprch %		10.5	89.5	0	0		86.2	0	13.5	0.3		0	67.3	32.6	0		
Total %	0	3	25.1	0	0	28.1	20.8	0	3.3	0.1	24.2	0	32.1	15.6	0	47.7	

	Southbound	Brigantine Avenue Westbound					38th Street Northbound					Brigantine Avenue Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	12	94	0	0	106	**110**	0	19	**2**	**131**	0	180	**84**	0	264	501
11:30 AM	0	**21**	**124**	0	0	**145**	108	0	23	0	131	0	169	76	0	245	521
11:45 AM	0	11	101	0	0	112	100	0	**28**	0	128	0	167	70	0	237	477
12:00 PM	0	19	115	0	0	134	97	0	22	1	120	0	**211**	69	0	**280**	**534**
Total Volume	0	63	434	0	0	497	415	0	92	3	510	0	727	299	0	1026	2033
% App. Total		12.7	87.3	0	0		81.4	0	18	0.6		0	70.9	29.1	0		
PHF	.000	.750	.875	.000	.000	.857	.943	.000	.821	.375	.973	.000	.861	.890	.000	.916	.952
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	10	132	0	0	142	**131**	0	10	0	**141**	0	160	83	0	243	526
05:15 PM	0	14	136	0	0	150	108	0	**11**	0	119	0	**167**	89	0	**256**	525
05:30 PM	0	9	**156**	0	0	**165**	130	0	10	0	140	0	165	82	**1**	248	**553**
05:45 PM	0	**23**	124	0	0	147	97	0	9	0	106	0	157	**99**	0	256	509
Total Volume	0	56	548	0	0	604	466	0	40	0	506	0	649	353	1	1003	2113
% App. Total		9.3	90.7	0	0		92.1	0	7.9	0		0	64.7	35.2	0.1		
PHF	.000	.609	.878	.000	.000	.915	.889	.000	.909	.000	.897	.000	.972	.891	.250	.979	.955

Orth-Rodgers & Associates, Inc.

810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

File Name : 002_07-26-11
Site Code : 00000000
Start Date : 7/26/2011
Page No : 1

Groups Printed- Unshifted

	South bound	Brigantine Boulevard Westbound					Harbor Beach Boulevard Northbound					Brigantine Boulevard Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
10:00 AM	0	24	131	0	1	156	9	0	21	1	31	0	127	12	0	139	326
10:15 AM	0	14	116	0	0	130	6	0	12	2	20	0	149	11	0	160	310
10:30 AM	0	36	133	0	0	169	3	0	11	1	15	0	146	10	0	156	340
10:45 AM	0	18	112	0	0	130	9	0	11	1	21	0	143	5	0	148	299
Total	0	92	492	0	1	585	27	0	55	5	87	0	565	38	0	603	1275
11:00 AM	0	25	137	0	0	162	7	0	15	3	25	0	152	7	0	159	346
11:15 AM	0	21	146	0	0	167	4	0	15	2	21	0	190	12	1	203	391
11:30 AM	0	17	152	0	0	169	9	0	13	1	23	0	144	11	0	155	347
11:45 AM	0	26	134	0	0	160	5	0	16	0	21	0	173	7	0	180	361
Total	0	89	569	0	0	658	25	0	59	6	90	0	659	37	1	697	1445
12:00 PM	0	18	139	0	0	157	10	0	14	0	24	0	172	11	0	183	364
12:15 PM	0	17	117	0	0	134	5	0	13	1	19	0	162	9	0	171	324
*** BREAK ***																	
Total	0	35	256	0	0	291	15	0	27	1	43	0	334	20	0	354	688
01:00 PM	0	18	126	0	0	144	6	0	17	1	24	0	131	8	0	139	307
01:15 PM	0	14	133	0	0	147	10	0	16	0	26	0	157	15	0	172	345
01:30 PM	0	26	160	0	0	186	2	0	8	1	11	0	176	10	1	187	384
01:45 PM	0	20	138	0	0	158	13	0	6	0	19	0	146	11	0	157	334
Total	0	78	557	0	0	635	31	0	47	2	80	0	610	44	1	655	1370
02:00 PM	0	16	129	0	0	145	10	0	8	0	18	0	162	8	0	170	333
02:15 PM	0	14	105	0	0	119	11	0	11	0	22	0	133	9	1	143	284
02:30 PM	0	22	158	0	0	180	6	0	14	2	22	0	157	10	0	167	369
02:45 PM	0	11	136	0	0	147	8	0	11	1	20	0	139	6	0	145	312
Total	0	63	528	0	0	591	35	0	44	3	82	0	591	33	1	625	1298
03:00 PM	0	18	130	0	0	148	7	0	10	0	17	0	148	7	0	155	320
03:15 PM	0	20	173	0	0	193	6	0	15	0	21	0	144	9	0	153	367
*** BREAK ***																	
Total	0	38	303	0	0	341	13	0	25	0	38	0	292	16	0	308	687
04:00 PM	0	29	178	0	0	207	10	0	21	1	32	0	130	9	0	139	378
04:15 PM	0	13	155	0	0	168	10	0	19	1	30	0	154	10	0	164	362
04:30 PM	0	15	151	0	0	166	7	0	15	0	22	0	155	11	0	166	354
04:45 PM	0	24	137	0	1	162	11	0	12	0	23	0	161	9	0	170	355
Total	0	81	621	0	1	703	38	0	67	2	107	0	600	39	0	639	1449
05:00 PM	0	20	162	0	0	182	11	0	11	1	23	0	168	6	0	174	379
05:15 PM	0	14	133	0	0	147	6	0	14	0	20	0	143	13	0	156	323
05:30 PM	0	18	141	0	0	159	9	0	18	0	27	0	169	12	1	182	368
05:45 PM	0	14	116	0	1	131	6	0	19	1	26	0	143	3	0	146	303
Total	0	66	552	0	1	619	32	0	62	2	96	0	623	34	1	658	1373
Grand Total	0	542	3878	0	3	4423	216	0	386	21	623	0	4274	261	4	4539	9585
Apprch %		12.3	87.7	0	0.1		34.7	0	62	3.4		0	94.2	5.8	0.1		
Total %	0	5.7	40.5	0	0	46.1	2.3	0	4	0.2	6.5	0	44.6	2.7	0	47.4	

Orth-Rodgers & Associates, Inc.

810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

File Name : 002_07-26-11
Site Code : 00000000
Start Date : 7/26/2011

	South bound	Brigantine Boulevard Westbound					Harbor Beach Boulevard Northbound					Brigantine Boulevard Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	21	146	0	0	167	4	0	15	**2**	21	0	**190**	**12**	**1**	**203**	**391**
11:30 AM	0	17	**152**	0	0	**169**	9	0	13	1	23	0	144	11	0	155	347
11:45 AM	0	**26**	134	0	0	160	5	0	**16**	0	21	0	173	7	0	180	361
12:00 PM	0	18	139	0	0	157	**10**	0	14	0	**24**	0	172	11	0	183	364
Total Volume	0	82	571	0	0	653	28	0	58	3	89	0	679	41	1	721	1463
% App. Total		12.6	87.4	0	0		31.5	0	65.2	3.4		0	94.2	5.7	0.1		
PHF	.000	.788	.939	.000	.000	.966	.700	.000	.906	.375	.927	.000	.893	.854	.250	.888	.935
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	13	155	0	0	168	10	0	**19**	**1**	**30**	0	154	10	0	164	362
04:30 PM	0	15	151	0	0	166	7	0	15	0	22	0	155	**11**	0	166	354
04:45 PM	0	**24**	137	0	**1**	162	**11**	0	12	0	23	0	161	9	0	170	355
05:00 PM	0	20	**162**	0	0	**182**	11	0	11	1	23	0	**168**	6	0	**174**	**379**
Total Volume	0	72	605	0	1	678	39	0	57	2	98	0	638	36	0	674	1450
% App. Total		10.6	89.2	0	0.1		39.8	0	58.2	2		0	94.7	5.3	0		
PHF	.000	.750	.934	.000	.250	.931	.886	.000	.750	.500	.817	.000	.949	.818	.000	.968	.956

Orth-Rodgers & Associates, Inc.

810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

File Name : 001B_07-23-11
Site Code : 00000000
Start Date : 7/23/2011
Page No : 1

Groups Printed- Unshifted

	Southbound	Brigantine Avenue Westbound					38th Street Northbound					Brigantine Avenue Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
10:00 AM	0	26	154	0	0	180	13	0	23	2	38	0	198	18	0	216	434
10:15 AM	0	45	155	0	1	201	16	0	18	0	34	0	210	14	1	225	460
10:30 AM	0	32	172	0	1	205	3	0	26	0	29	0	199	8	0	207	441
10:45 AM	0	35	185	0	1	221	12	0	16	2	30	0	241	8	0	249	500
Total	0	138	666	0	3	807	44	0	83	4	131	0	848	48	1	897	1835
11:00 AM	0	41	142	0	0	183	8	0	13	0	21	0	237	17	1	255	459
11:15 AM	0	23	177	0	0	200	17	0	25	0	42	0	258	13	1	272	514
11:30 AM	0	31	213	0	0	244	51	0	19	0	70	0	221	16	0	237	551
11:45 AM	0	28	185	0	0	213	45	0	17	0	62	0	247	9	1	257	532
Total	0	123	717	0	0	840	121	0	74	0	195	0	963	55	3	1021	2056
*** BREAK ***																	
12:30 PM	0	23	149	0	0	172	12	0	24	0	36	0	309	14	1	324	532
12:45 PM	0	27	156	0	1	184	9	0	15	2	26	0	247	12	3	262	472
Total	0	50	305	0	1	356	21	0	39	2	62	0	556	26	4	586	1004
01:00 PM	0	27	179	0	0	206	10	0	18	0	28	0	236	20	1	257	491
01:15 PM	0	28	150	0	0	178	9	0	17	2	28	0	242	16	0	258	464
01:30 PM	0	20	136	0	0	156	10	0	13	2	25	0	196	11	0	207	388
01:45 PM	0	29	133	0	0	162	11	0	19	2	32	0	191	12	1	204	398
Total	0	104	598	0	0	702	40	0	67	6	113	0	865	59	2	926	1741
Grand Total	0	415	2286	0	4	2705	226	0	263	12	501	0	3232	188	10	3430	6636
Apprch %		15.3	84.5	0	0.1		45.1	0	52.5	2.4		0	94.2	5.5	0.3		
Total %	0	6.3	34.4	0	0.1	40.8	3.4	0	4	0.2	7.5	0	48.7	2.8	0.2	51.7	

	Southbound	Brigantine Avenue Westbound					38th Street Northbound					Brigantine Avenue Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	**41**	142	0	0	183	8	0	13	0	21	0	237	**17**	**1**	255	459
11:15 AM	0	23	177	0	0	200	17	0	**25**	0	42	0	**258**	13	1	**272**	514
11:30 AM	0	31	**213**	0	0	**244**	**51**	0	19	0	**70**	0	221	16	0	237	**551**
11:45 AM	0	28	185	0	0	213	45	0	17	0	62	0	247	9	1	257	532
Total Volume	0	123	717	0	0	840	121	0	74	0	195	0	963	55	3	1021	2056
% App. Total		14.6	85.4	0	0		62.1	0	37.9	0		0	94.3	5.4	0.3		

Orth-Rodgers & Associates, Inc.

810 Bear Tavern Road, Suite 307
West Trenton, NJ 08628

File Name : 001_07-23-11
Site Code : 00000000
Start Date : 7/23/2011
Page No : 1

Groups Printed- Unshifted

	Southbound	Brigantine Boulevard Westbound					Harbor Beach Boulevard Northbound					Brigantine Boulevard Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
10:00 AM	0	21	126	0	1	148	103	7	30	0	140	0	168	45	2	215	503
10:15 AM	0	40	110	0	1	151	85	0	19	3	107	0	160	65	0	225	483
10:30 AM	0	28	118	0	0	146	103	0	17	1	121	0	177	69	3	249	516
10:45 AM	0	44	126	0	0	170	106	0	22	2	130	0	156	64	0	220	520
Total	0	133	480	0	2	615	397	7	88	6	498	0	661	243	5	909	2022
11:00 AM	0	15	83	0	0	98	98	0	18	0	116	0	190	46	1	237	451
11:15 AM	0	30	119	0	0	149	102	0	9	0	111	0	153	36	0	189	449
11:30 AM	0	23	144	0	0	167	72	0	5	0	77	0	164	24	1	189	433
11:45 AM	0	28	124	0	0	152	80	0	15	0	95	4	137	30	0	171	418
Total	0	96	470	0	0	566	352	0	47	0	399	4	644	136	2	786	1751
*** BREAK ***																	
12:15 PM	0	16	81	9	0	106	103	0	17	0	120	0	188	48	0	236	462
12:30 PM	0	18	80	5	0	103	100	0	13	0	113	0	264	65	0	329	545
12:45 PM	0	6	69	0	0	75	86	0	13	0	99	0	195	49	0	244	418
Total	0	40	230	14	0	284	289	0	43	0	332	0	647	162	0	809	1425
*** BREAK ***																	
01:15 PM	0	17	89	0	0	106	75	0	8	0	83	0	160	50	0	210	399
01:30 PM	0	7	84	0	0	91	85	0	11	0	96	0	168	60	1	229	416
01:45 PM	0	16	105	0	0	121	79	0	12	0	91	0	132	61	0	193	405
Total	0	40	278	0	0	318	239	0	31	0	270	0	460	171	1	632	1220
Grand Total	0	309	1458	14	2	1783	1277	7	209	6	1499	4	2412	712	8	3136	6418
Apprch %		17.3	81.8	0.8	0.1		85.2	0.5	13.9	0.4		0.1	76.9	22.7	0.3		
Total %	0	4.8	22.7	0.2	0	27.8	19.9	0.1	3.3	0.1	23.4	0.1	37.6	11.1	0.1	48.9	

	Southbound	Brigantine Boulevard Westbound					Harbor Beach Boulevard Northbound					Brigantine Boulevard Eastbound					
Start Time	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:00 AM																	
10:00 AM	0	21	**126**	0	**1**	148	103	**7**	**30**	0	**140**	0	168	45	2	215	503
10:15 AM	0	40	110	0	1	151	85	0	19	**3**	107	0	160	65	0	225	483
10:30 AM	0	28	118	0	0	146	103	0	17	1	121	0	**177**	**69**	**3**	**249**	516
10:45 AM	0	**44**	126	0	0	**170**	**106**	0	22	2	130	0	156	64	0	220	**520**
Total Volume	0	133	480	0	2	615	397	7	88	6	498	0	661	243	5	909	2022

HCS+: Signalized Intersections Release 5.4

Analyst: krc
Agency: Orth-Rodgers & Associates
Date: 11/1/2011
Period: AM Peak Hour
Project ID: SJTPO RSA - 2011025
E/W St: Brigantine Avenue

Inter.: Brigantine Blvd & 38th Street
Area Type: All other areas
Jurisd: Atlantic County
Year : 2011

N/S St: 38th Street

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	0	2	0	0	0	0	0	0	0
LGConfig		T	R		LT			LR				
Volume		727	299	63	434		415		92			
Lane Width		12.0	12.0		12.0			12.0				
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	P		
Thru		P			Thru			
Right		P			Right	P		
Peds					Peds			
WB Left		P			SB Left			
Thru		P			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		47.0				25.0		
Yellow		5.0				4.0		
All Red		2.0				2.0		

Cycle Length: 85.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
T	1961	3547	0.43	0.55	11.8	B	11.9	B
R	875	1583	0.38	0.55	12.1	B		
Westbound								
LT	1388	2510	0.42	0.55	11.9	B	11.9	B
Northbound								
LR	512	1742	1.08	0.29	93.1	F	93.1	F
Southbound								

Intersection Delay = 31.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: krc
Agency: Orth-Rodgers & Associates
Date: 11/1/2011
Period: PM Peak Hour
Project ID: SJTPO RSA - 2011025
E/W St: Brigantine Avenue

Inter.: Brigantine Blvd & 38th Street
Area Type: All other areas
Jurisd: Atlantic County
Year : 2011

N/S St: 38th Street

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	0	2	0	0	0	0	0	0	0
LGConfig		T	R		LT			LR				
Volume		649	353	56	548		466		40			
Lane Width		12.0	12.0		12.0			12.0				
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	P		
Thru		P			Thru			
Right		P			Right	P		
Peds					Peds			
WB Left		P			SB Left			
Thru		P			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		57.0				25.0		
Yellow		5.0				4.0		
All Red		2.0				2.0		

Cycle Length: 95.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
T	2128	3547	0.31	0.60	9.8	A	10.4	B
R	950	1583	0.42	0.60	11.5	B		
Westbound								
LT	1616	2693	0.44	0.60	11.2	B	11.2	B
Northbound								
LR	464	1762	1.22	0.26	153.8	F	153.8	F
Southbound								

Intersection Delay = 45.3 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: krc
Agency: Orth-Rodgers & Associates
Date: 11/1/2011
Period: Saturday Peak Hour
Project ID: SJTPO RSA - 2011025
E/W St: Brigantine Avenue

Inter.: Brigantine Blvd & 38th Street
Area Type: All other areas
Jurisd: Atlantic County
Year : 2011

N/S St: 38th Street

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	0	2	0	0	0	0	0	0	0
LGConfig		T	R		LT			LR				
Volume		963	55	123	717		121		74			
Lane Width		12.0	12.0		12.0			12.0				
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	P		
Thru		P			Thru			
Right		P			Right	P		
Peds					Peds			
WB Left		P			SB Left			
Thru		P			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		57.0				25.0		
Yellow		5.0				4.0		
All Red		2.0				2.0		

Cycle Length: 95.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
T	2128	3547	0.54	0.60	12.2	B	12.0	B
R	950	1583	0.07	0.60	8.1	A		
Westbound								
LT	1192	1987	0.85	0.60	23.0	C	23.0	C
Northbound								
LR	453	1722	0.67	0.26	39.1	D	39.1	D
Southbound								

Intersection Delay = 19.6 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: krc
Agency: Orth-Rodgers & Associates
Date: 11/1/2011
Period: AM Peak Hour
Project ID: SJTPO RSA - 2011025
E/W St: Brigantine Boulevard

Inter.: Brigantine Blvd & Harbor Beach
Area Type: All other areas
Jurisd: Atlantic County
Year : 2011

N/S St: Harbor Beach Blvd.

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	0	2	0	2	0	1	0	0	0
LGConfig		T	R		LT		L		R			
Volume		679	41	82	571		28		58			
Lane Width		12.0	12.0		12.0		12.0		12.0			
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	P		
Thru		P			Thru			
Right		P			Right	P		
Peds		X			Peds			
WB Left	P	A			SB Left			
Thru	P	P			Thru			
Right					Right			
Peds					Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	10.0	30.0			25.0			
Yellow	4.0	4.0			4.0			
All Red	3.0	3.0			2.0			

Cycle Length: 85.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
T	1252	3547	0.61	0.35	24.9	C	24.5	C
R	559	1583	0.09	0.35	18.7	B		
Westbound								
LT	1308	3521	0.54	0.55	13.8	B	13.8	B
Northbound								
L	1011	3437	0.04	0.29	21.5	C		
							22.2	C
R	466	1583	0.14	0.29	22.7	C		
Southbound								

Intersection Delay = 19.7 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: krc
Agency: Orth-Rodgers & Associates
Date: 11/1/2011
Period: PM Peak Hour
Project ID: SJTPO RSA - 2011025
E/W St: Brigantine Boulevard

Inter.: Brigantine Blvd & Harbor Beach
Area Type: All other areas
Jurisd: Atlantic County
Year : 2011

N/S St: Harbor Beach Blvd.

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	0	2	0	2	0	1	0	0	0
LGConfig		T	R		LT		L		R			
Volume		638	36	72	605		39		57			
Lane Width		12.0	12.0		12.0		12.0		12.0			
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	P		
Thru		P			Thru			
Right		P			Right	P		
Peds		X			Peds			
WB Left	P	A			SB Left			
Thru	P	P			Thru			
Right					Right			
Peds					Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	10.0	40.0			25.0			
Yellow	4.0	4.0			4.0			
All Red	3.0	3.0			2.0			

Cycle Length: 95.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
T	1493	3547	0.45	0.42	20.6	C	20.4	C
R	667	1583	0.07	0.42	16.6	B		
Westbound								
LT	1498	3524	0.50	0.60	12.0	B	12.0	B
Northbound								
L	904	3437	0.05	0.26	26.2	C		
							27.4	C
R	417	1583	0.18	0.26	28.0	C		
Southbound								

Intersection Delay = 17.0 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: krc
Agency: Orth-Rodgers & Associates
Date: 11/1/2011
Period: Saturday Peak Hour
Project ID: SJTPO RSA - 2011025
E/W St: Brigantine Boulevard

Inter.: Brigantine Blvd & Harbor Beach
Area Type: All other areas
Jurisd: Atlantic County
Year : 2011

N/S St: Harbor Beach Blvd.

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	0	2	0	2	0	1	0	0	0
LGConfig		T	R	DefL	T		L		R			
Volume		661	243	133	480		397		88			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
RTOR Vol			0						0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	P		
Thru		P			Thru			
Right		P			Right	P		
Peds		X			Peds			
WB Left	P	A			SB Left			
Thru	P	P			Thru			
Right					Right			
Peds					Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	10.0	40.0			25.0			
Yellow	4.0	4.0			4.0			
All Red	3.0	3.0			2.0			

Cycle Length: 95.0 secs

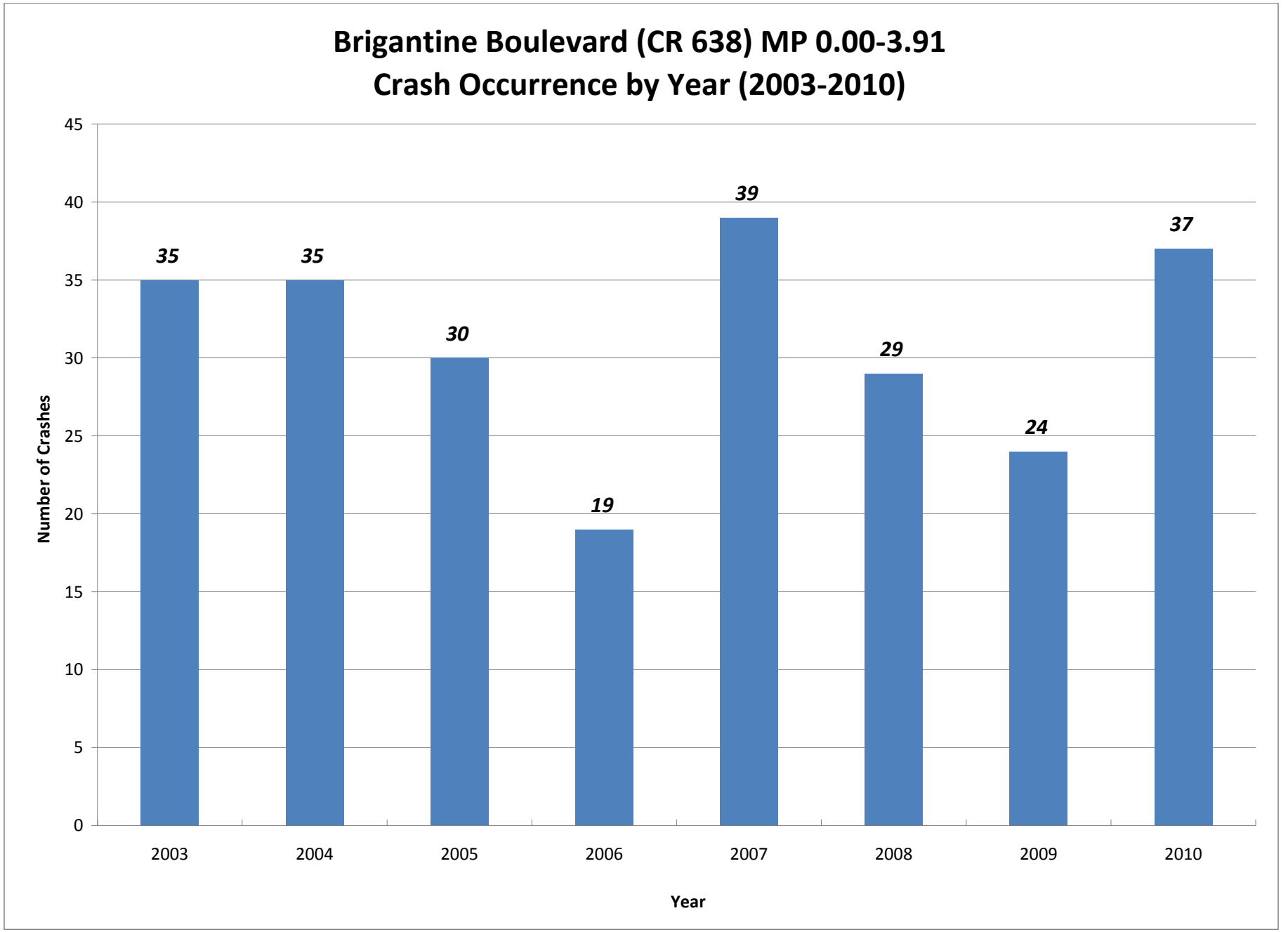
Intersection Performance Summary

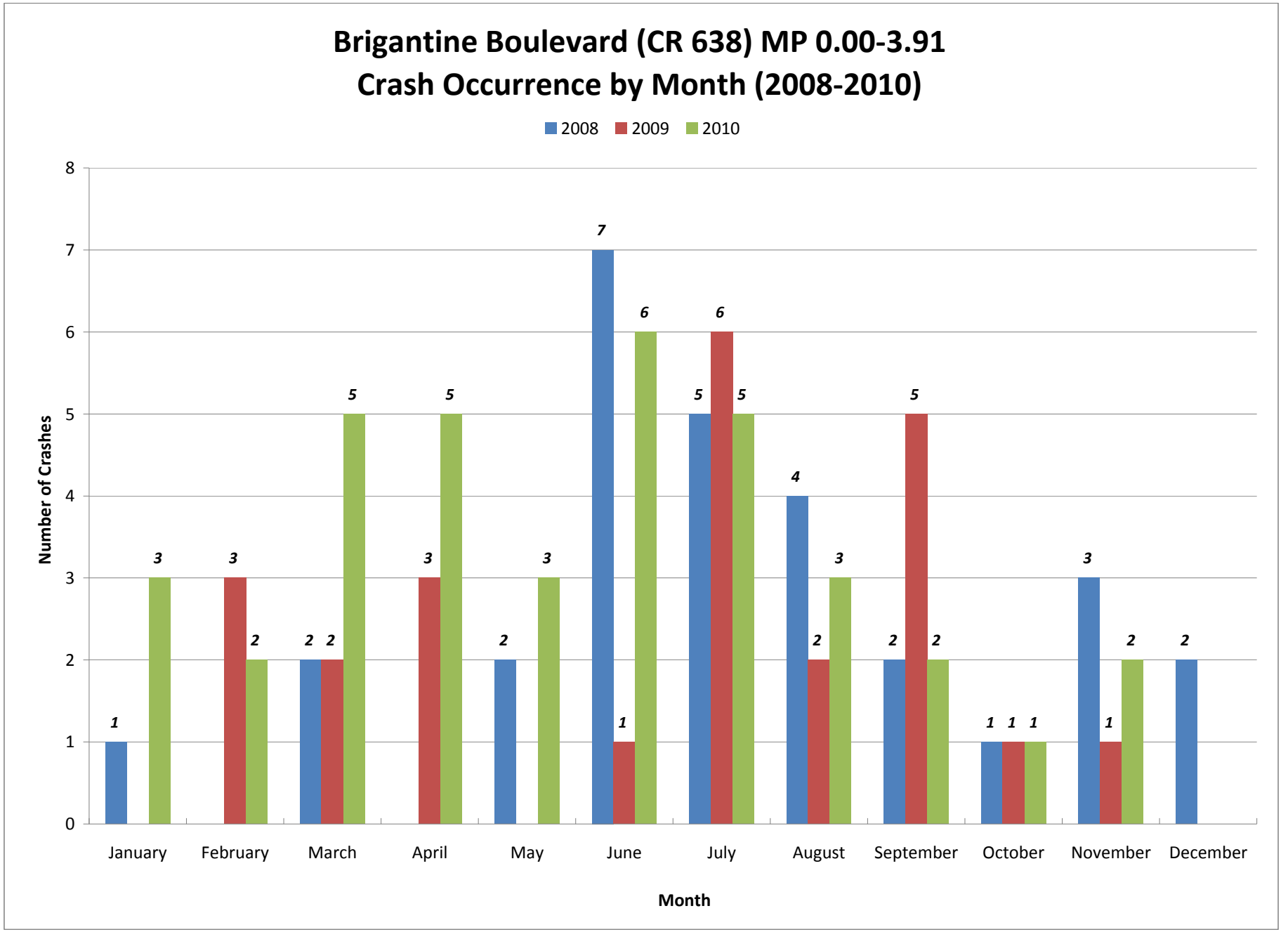
Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
T	1493	3547	0.48	0.42	21.0	C	21.1	C
R	663	1575	0.42	0.42	21.2	C		
Westbound								
DefL	430	1767	0.41	0.60	10.5	B		
T	1118	1863	0.45	0.60	11.7	B	11.4	B
Northbound								
L	904	3437	0.47	0.26	31.1	C		
							30.8	C
R	417	1583	0.29	0.26	29.7	C		
Southbound								

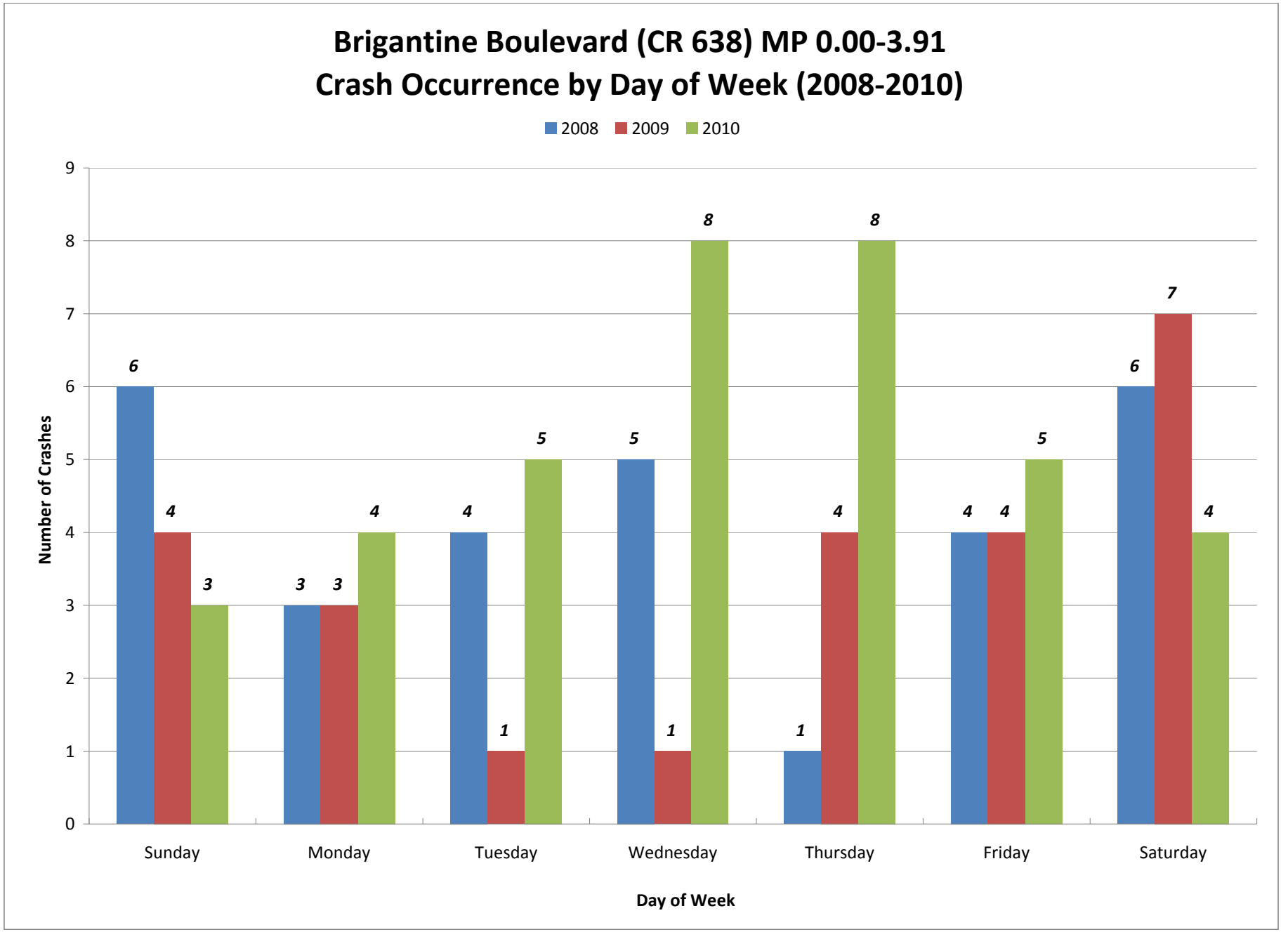
Intersection Delay = 20.5 (sec/veh) Intersection LOS = C

Appendix C

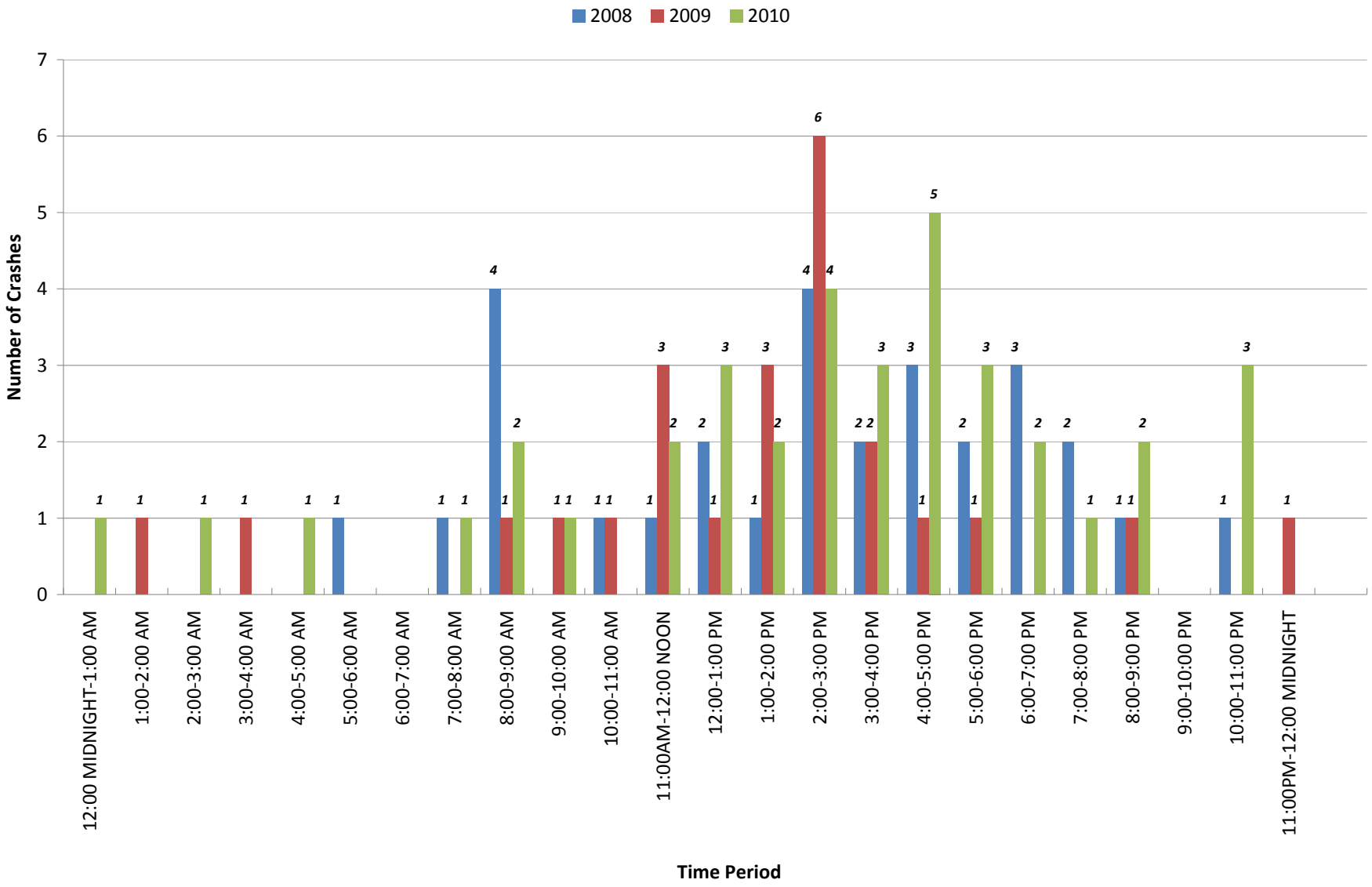
Crash Data Charts

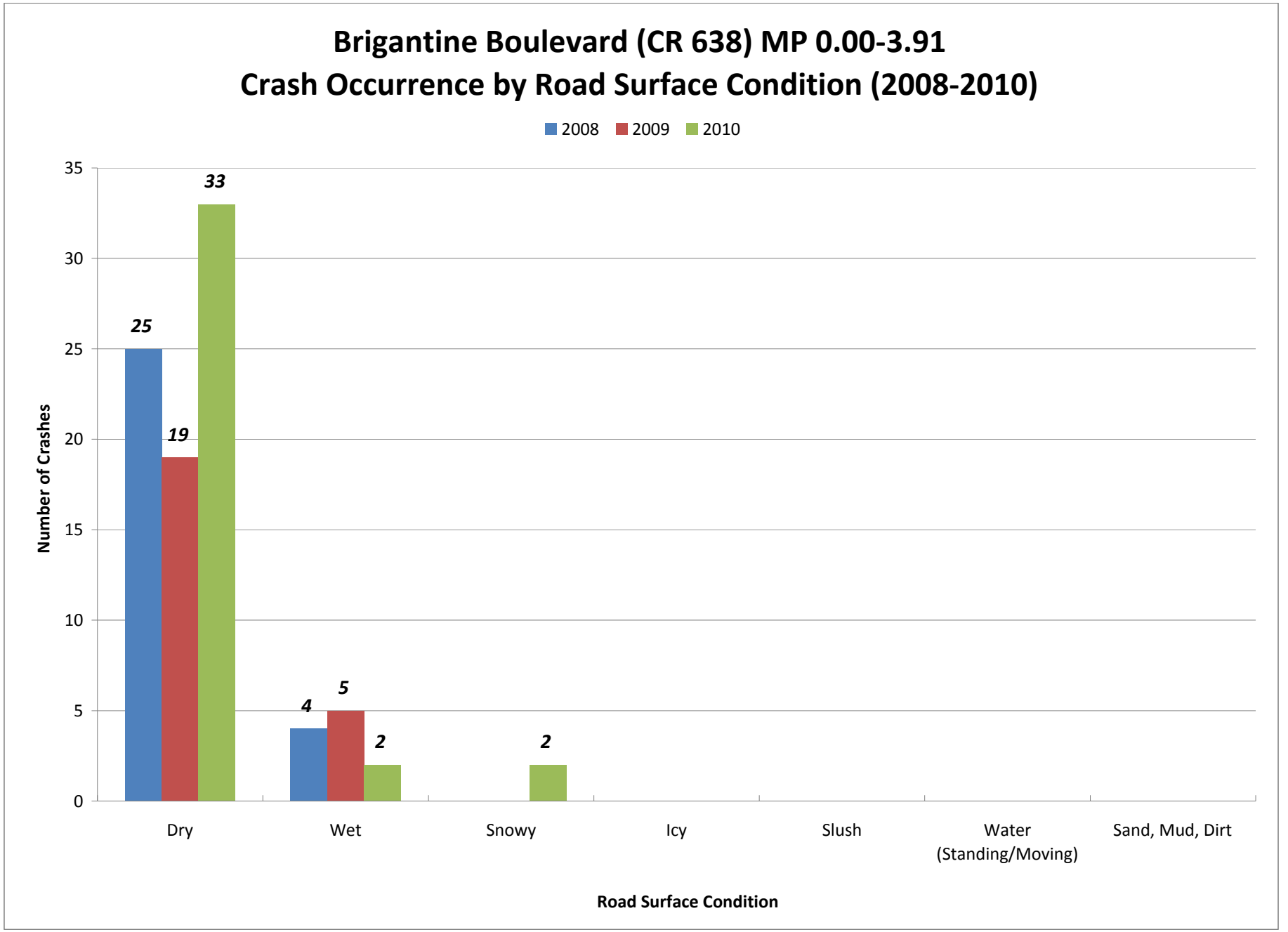

Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Year (2003-2010)
Number of Crashes
45
40
35
30
25
20
15
10
5
0
35
35
30
19
39
29
24
37
2003
2004
2005
2006
2007
2008
2009
2010
Year

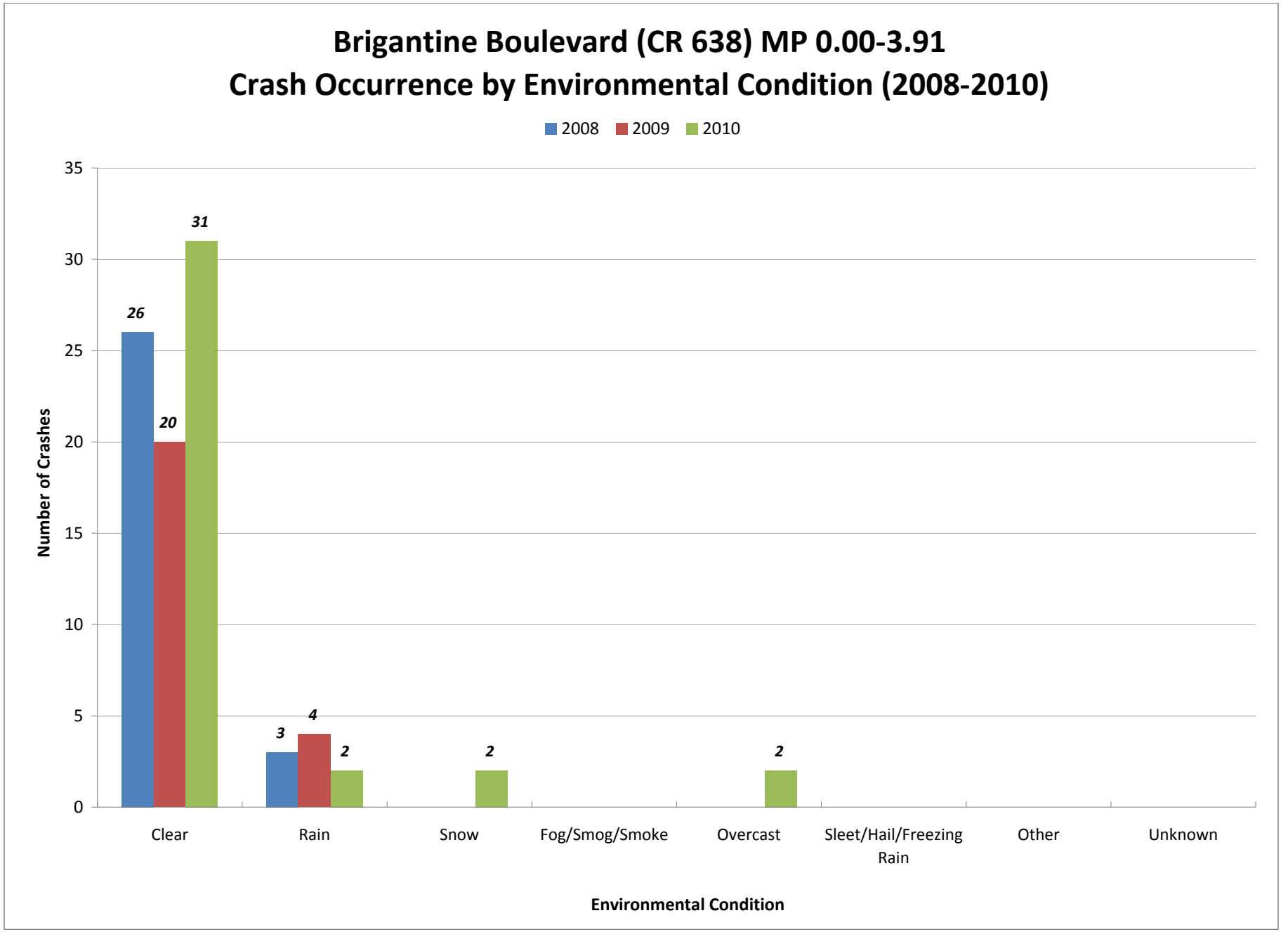

Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Month (2008-2010)
2008
2009
2010
Number of Crashes
0
1
2
3
4
5
6
7
8
1
3
3
2
2
2
5
3
5
2
3
7
1
6
5
6
5
4
2
3
2
5
2
1
1
1
3
1
2
2
January
February
March
April
May
June
July
August
September
October
November
December
Month

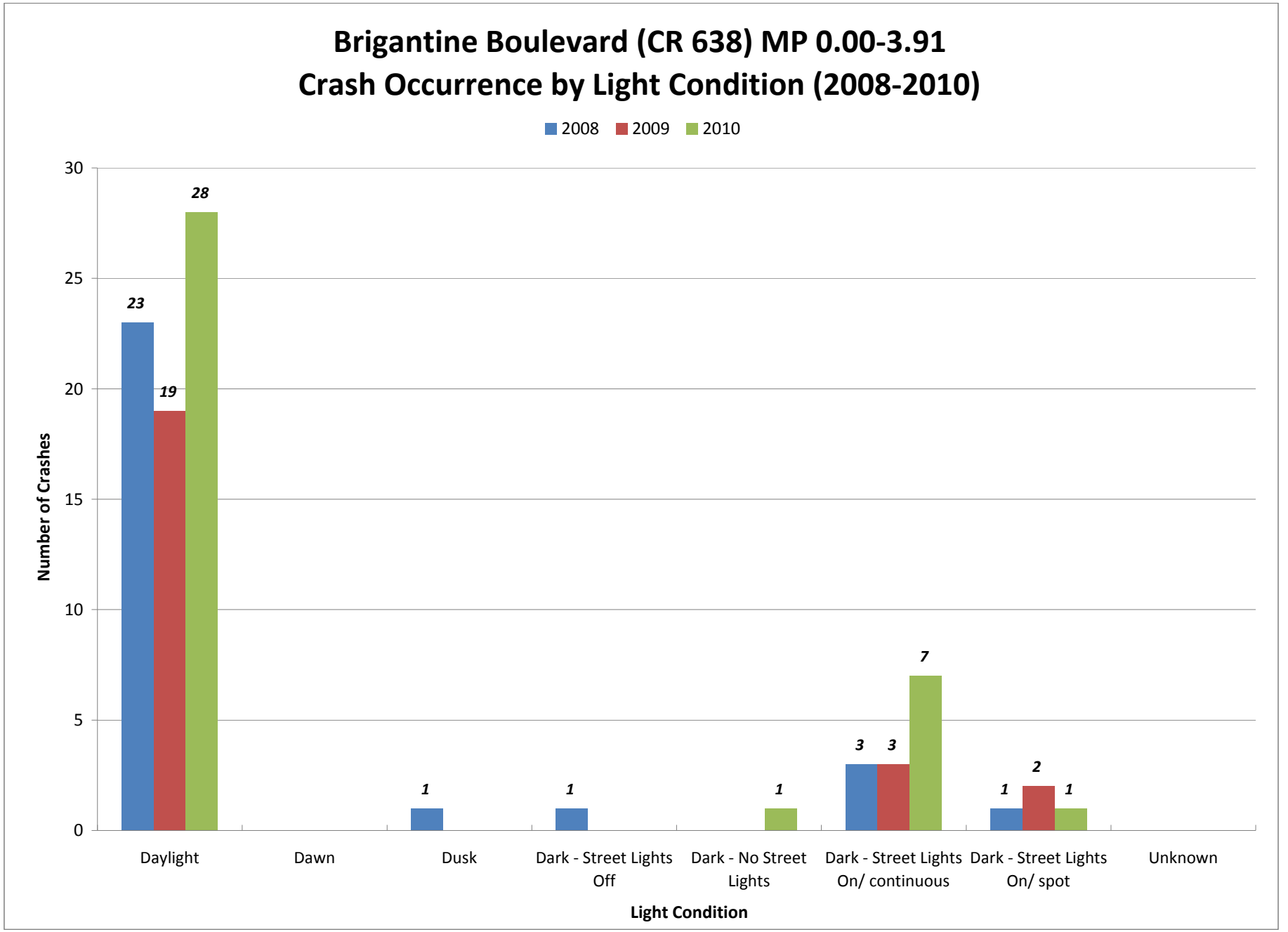

Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Day of Week (2008-2010)
2008
2009
2010
Number of Crashes
0
1
2
3
4
5
6
7
8
9
6
4
3
3
3
4
4
1
5
5
1
8
1
4
8
4
4
5
6
7
4
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Day of Week

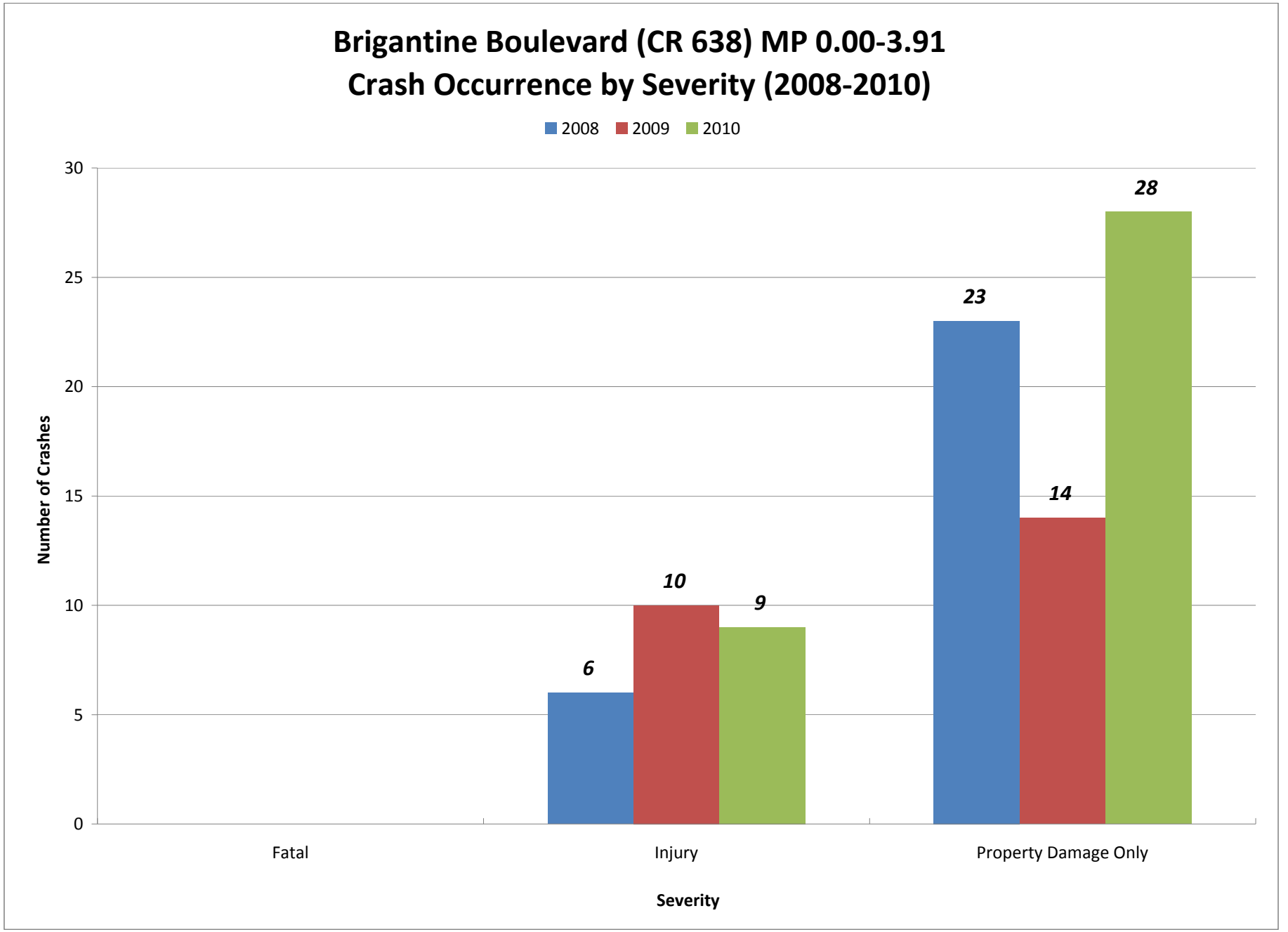
Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Time of Day (2008-2010)



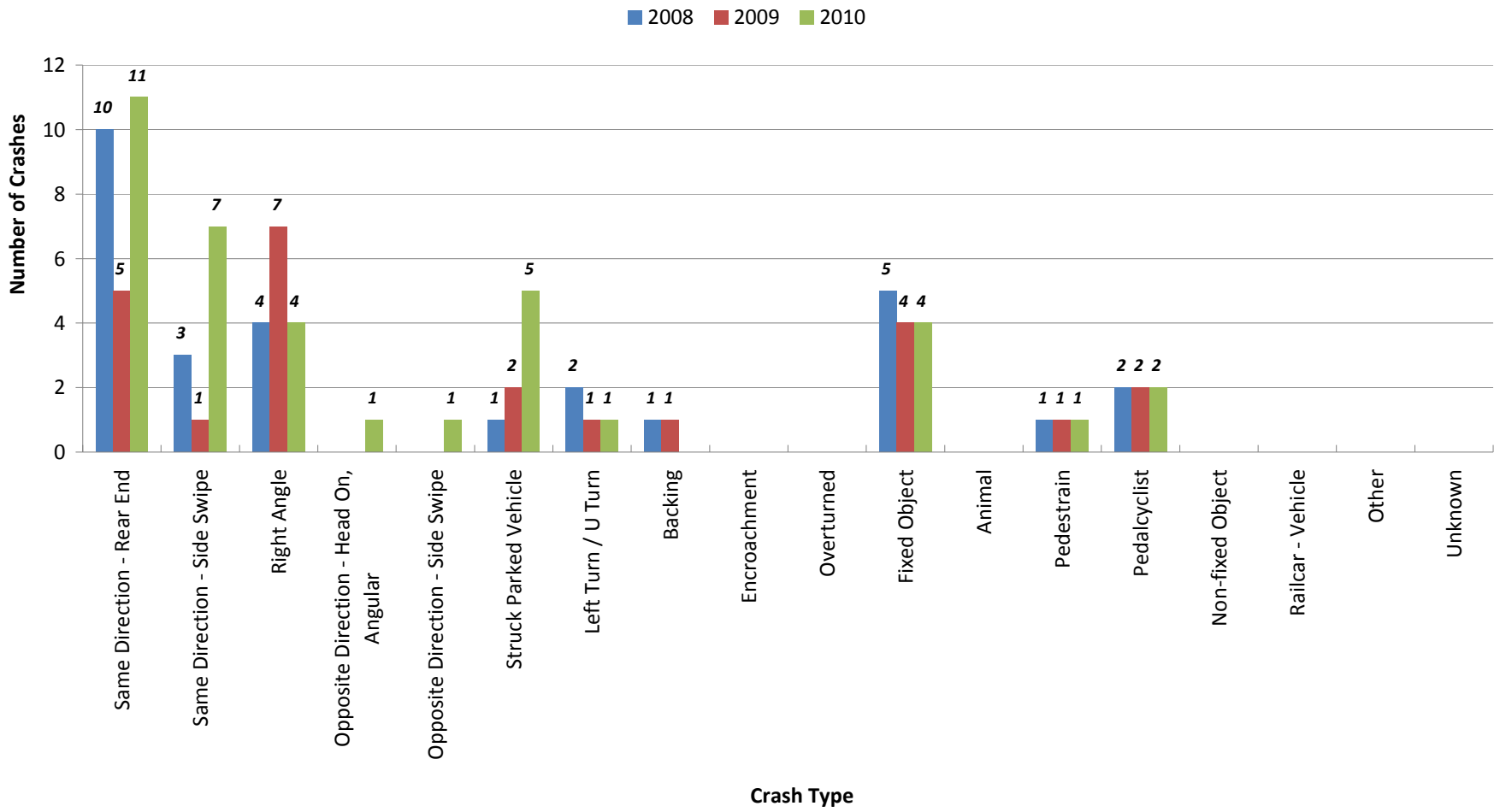

Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Road Surface Condition (2008-2010)
2008
2009
2010
Number of Crashes
35
30
25
20
15
10
5
0
25
19
33
4
5
2
2
Dry
Wet
Snowy
Icy
Slush
Water (Standing/Moving)
Sand, Mud, Dirt
Road Surface Condition


Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Environmental Condition (2008-2010)
2008
2009
2010
Number of Crashes
35
30
25
20
15
10
5
0
26
20
31
3
4
2
2
2
Clear
Rain
Snow
Fog/Smog/Smoke
Overcast
Sleet/Hail/Freezing Rain
Other
Unknown
Environmental Condition

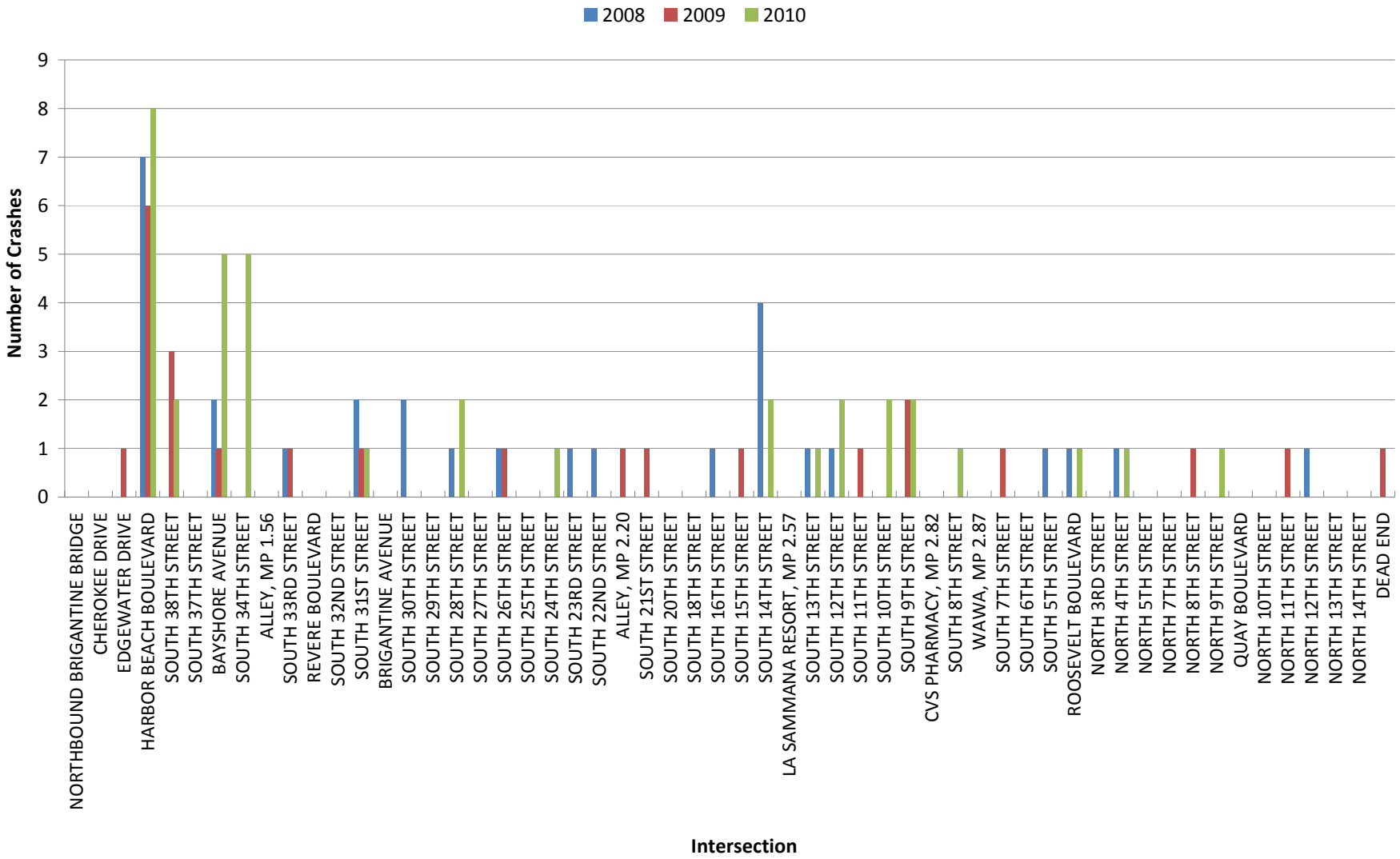

Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Light Condition (2008-2010)
2008
2009
2010
Number of Crashes
30
25
20
15
10
5
0
23
19
28
1
1
1
3
3
7
1
2
1
Daylight
Dawn
Dusk
Dark - Street Lights Off
Dark - No Street Lights
Dark - Street Lights On/ continuous
Dark - Street Lights On/ spot
Unknown
Light Condition


Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Severity (2008-2010)
2008
2009
2010
30
25
20
15
10
5
0
Number of Crashes
6
10
9
23
14
28
Fatal
Injury
Property Damage Only
Severity

Brigantine Boulevard (CR 638) MP 0.00-3.91
Crash Occurrence by Crash Type (2008-2010)



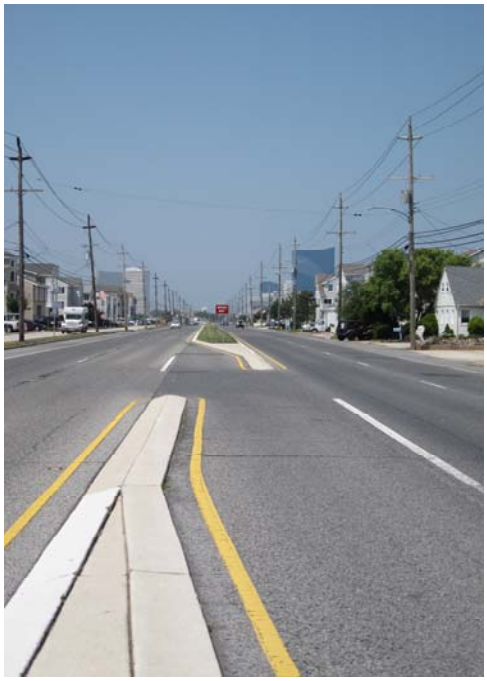
Brigantine Boulevard (CR 638) MP 0.00-3.91
Spot Location of Crashes (Proximity to Nearest Intersection)
(2008-2010)

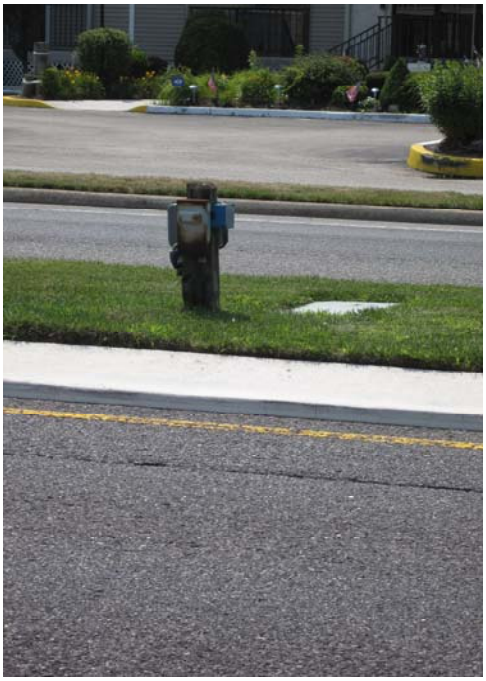


Appendix D

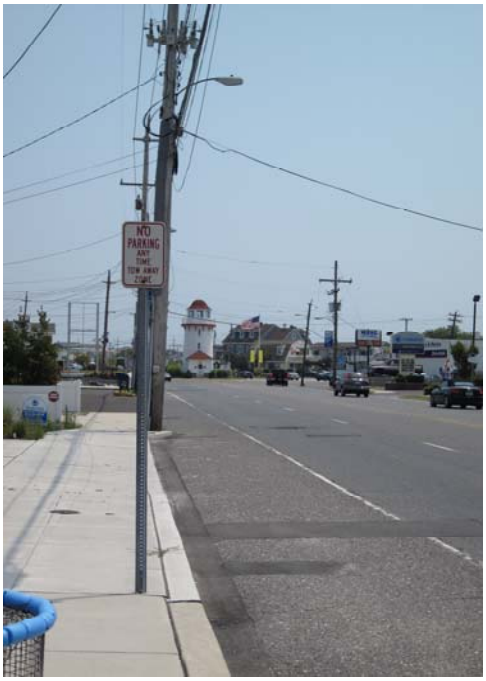
Photographs

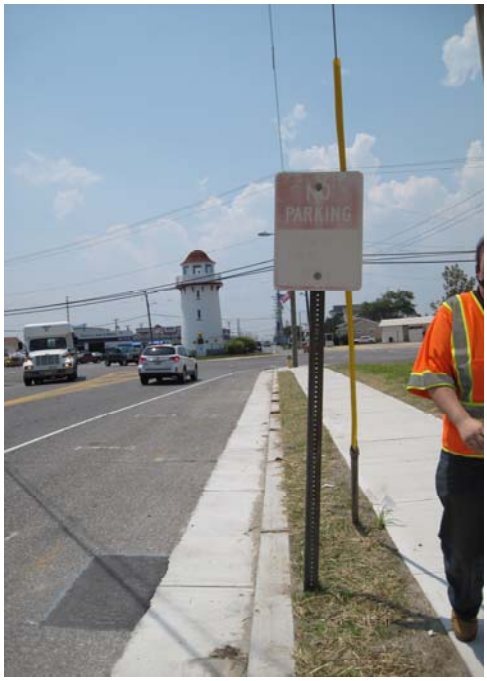

ONE
WAY






CAUTION
VEHICLE ENTERING
AND LEAVING
ROADWAY
SPEED
LIMIT
45


NO
PARKING


NO
PARKING


CIRCLE
20
M.P.H.
CVS

Appendix E

Straight Line Diagram

Appendix E

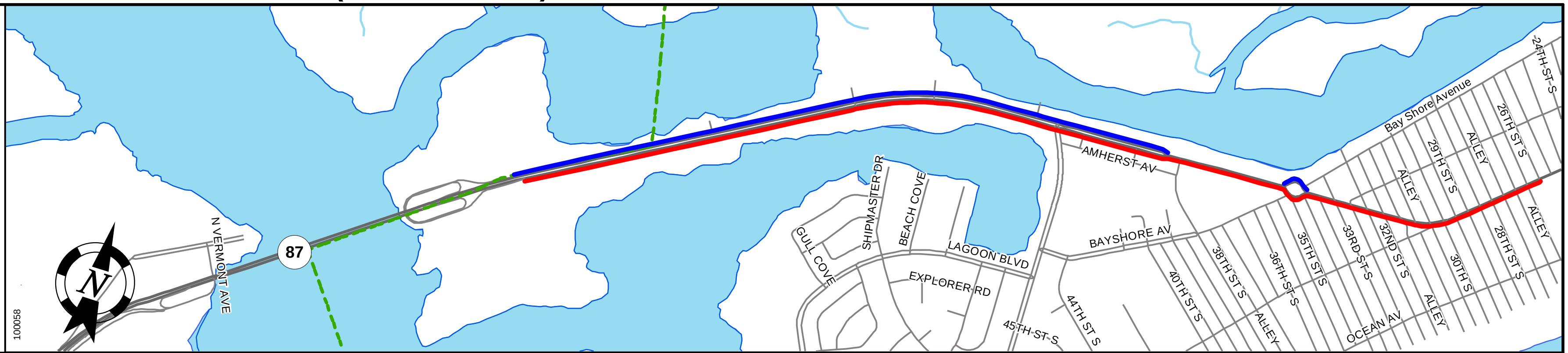
Straight Line Diagram

ATLANTIC COUNTY 638 (South to North)

Mile Posts: 0.000 - 2.000

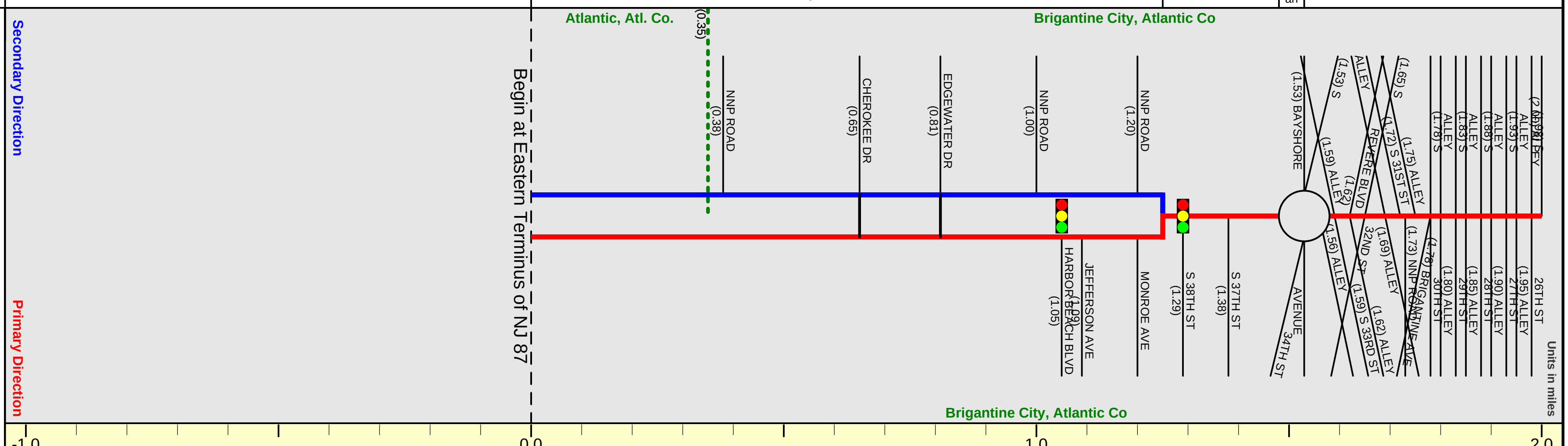
Secondary Direction

Primary Direction



	-1.0 – 0.0	0.0 – 1.03	1.03 – 1.23	1.23 – 1.25	1.25 – 1.48	1.48 – 1.53	1.53 – 2.0
Pavement		24				48	
Shoulder		8				6	
Number of Lanes		2				2	
Speed Limit		45	35	30		30	
Street Name		Brigantine Avenue				Brig an	

Legend	
Interstate Route	287
US Route	22
NJ Route	21
County Road	689
Interchange Number	2
Grade Separated Interchange	
Traffic Signal	
Traffic Monitoring Sites	WIM AVC VOL
Road Underpass	
Road Overpass	



	-1.0 – 0.0	0.0 – 1.03	1.03 – 1.23	1.23 – 1.25	1.25 – 1.48	1.48 – 1.53	1.53 – 1.78	1.78 – 2.0
Street Name	Begin Atlantic County 638 MP=0.000	Brigantine Avenue						
Jurisdiction		County						
Functional Class		Urban Principal Arterial						
Federal Aid - NHS Sy		STP						
Control Section								
Speed Limit		45	35	30				
Number of Lanes		2			4	2		4
Med. Type		Curbed			None	Cur bed	None	
Med. Width		VAR			0	VAR	0	
Pavement		24			44	50		59
Shoulder		6			2	0		
Traffic Volume								
Traffic Sta. ID								
Structure No.								
Enlarged Views								

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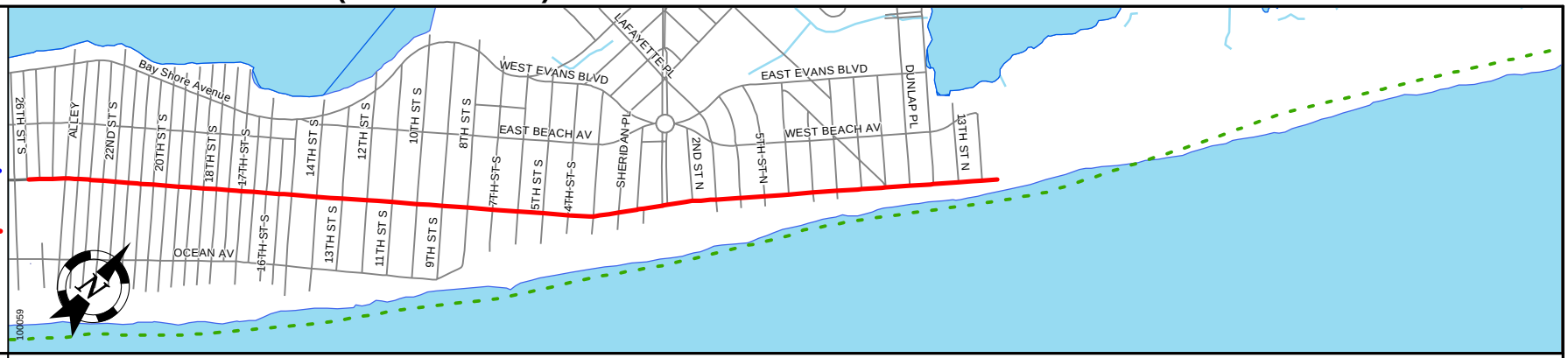
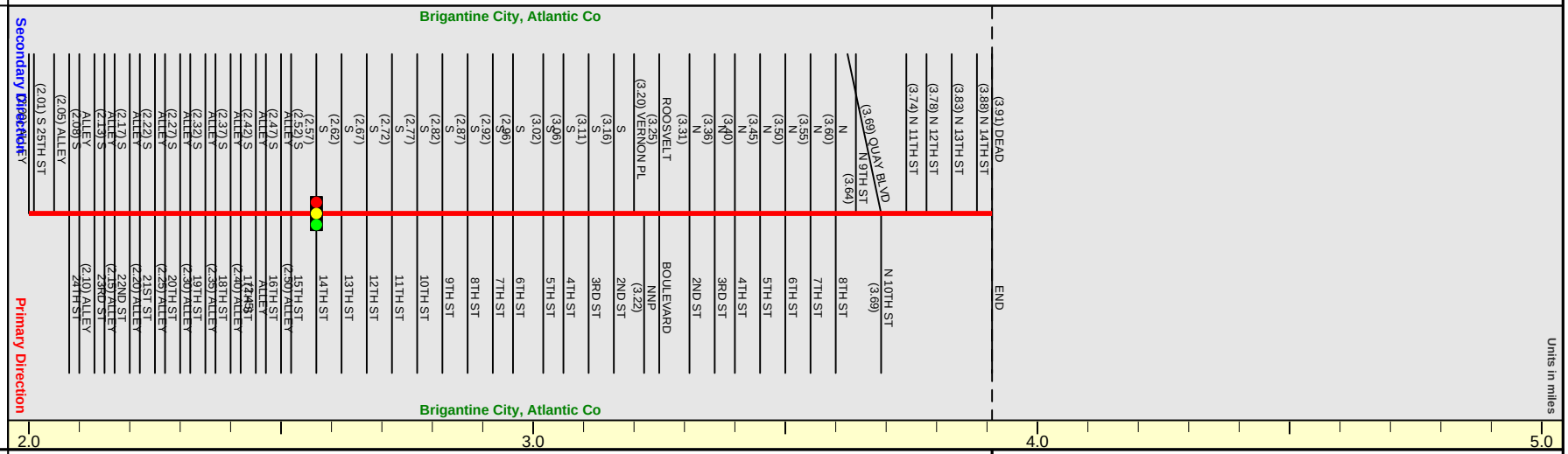
ATLANTIC COUNTY 638 (South to North)

Mile Posts: 2.000 - 3.910



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	Brigantine Avenue
Jurisdiction	County
Functional Class	Urban Principal Arterial
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	30
Number of Lanes	4
Med. Type	None
Med. Width	0
Pavement	59
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

End Atlantic County 638 MP=3.91

SRI = 01000638__

Date last inventoried: August 2001

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