

# EVALUATION OF HIGH CRASH LOCATIONS (DARK CRITERIA) STUDY



**LOCATION #5:  
SR 1 (Bay Road)  
MILEPOST 9.40 to 10.79  
November 2012**



**Prepared for:  
Delaware Department of  
Transportation**



**By:  
Urban Engineers, Inc.**



## EXECUTIVE SUMMARY

The purpose of this study was to evaluate locations with the highest ratios of crashes occurring during dark conditions throughout the state of Delaware. The study included reviewing crash history and existing conditions of the locations, identifying specific sites where crashes are occurring and providing recommendations to improve conditions.

The Hazard Elimination Program (HEP) site selection process was used to determine ten (10) locations statewide with a dark crashes Critical Ratio greater than one and ten (10) or more crashes occurring in the three year study period within a one-mile roadway segment. SR 1 (Bay Road), from Milepost 9.40 to 10.79, was determined to be one of the ten locations with the highest dark crashes Critical Ratios statewide.

There is no existing roadway lighting along SR 1 throughout the project area.

Police crash reports covering three years were analyzed to identify high crash sites along SR 1 from Milepost 9.40 to 10.79. Crash clusters were identified at the following five (5) locations:

- Site #1: SR 1 (Bay Road) @ Bowers Beach Road Intersection (M.P. 9.62)
- Site #2: SR 1 (Bay Road), North of Bowers Beach Road (M.P. 9.7-10.0)
- Site #3: SR 1 (Bay Road) @ Clapham Road Intersection (M.P. 10.13)
- Site #4: SR 1 (Bay Road) @ Mulberrie Point Road Intersection (M.P. 10.3)
- Site #5: SR 1 (Bay Road), North of Mulberrie Point Road (M.P. 10.4-10.79)

Upon analysis of the crash history, Sites #1, #3, and #4 did not have a high enough night-to-day crash ratio to warrant closer evaluation for potential nighttime safety improvements.

The area of SR 1, North of Bowers Beach Road was selected for evaluation for potential nighttime safety improvements based on the crash history. The site experienced three run-off-the-road crashes during the three year period. Spot improvements considered to mitigate these crashes included delineators, rumble strips and removing roadside obstacles. However, each of these improvements was either already present, or unlikely to improve safety given the existing geometry of the site. Roadway lighting is not expected to improve safety based on the types of crashes occurring at the site.

The geometric alignment within the project area will be changing significantly as part of an upcoming project. The SR 1, Little Heaven Grade Separated Intersection project includes plans to construct a bridge carrying SR 1 over Bowers Beach Road, and adding service roads on both sides of SR 1 to provide access to the developments along the corridor. This project will include the installation of roadway lighting at multiple locations throughout the study area. The project will also introduce new traffic patterns at all of the major intersections of this study area. Construction is expected to begin in the Summer of 2014.

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## 1. INTRODUCTION

The purpose of this study was to evaluate locations with the highest ratios of crashes occurring during dark conditions throughout the state of Delaware. The study included reviewing crash history and existing conditions of the locations, identifying specific sites where crashes are occurring and providing recommendations to improve conditions.

The study included three parts:

**Part 1: Location Selection** – The Hazard Elimination Program (HEP) site selection process was used to determine ten (10) locations statewide with a dark crashes Critical Ratio greater than one and ten (10) or more crashes occurring in the three year study period within a one-mile roadway segment. Results from the location selection process were reviewed in coordination with DeIDOT. Corridors that were already part of an ongoing HSIP or HEP project were not included in this study. The Critical Ratio methodology was used in the location selection process. The list of statewide 1.0 mile corridors ranked by Critical Ratio is included in Appendix D.

**Part 2: Evaluation** – After the list of the top ten locations was approved by DeIDOT, initial review was performed for each selected location. The evaluation included field visits to the sites; collecting information on existing roadway and traffic conditions; crash analysis; preliminary lighting evaluation; and this report. The report includes existing lighting analysis; concept lighting improvement alternatives; other signing, striping and signal recommendations in accordance with the Delaware Strategic Highway Safety Plan (SHSP), particularly related to dark crashes; potential design/implementation issues, and identification of the need for more detailed studies (Phase II studies).

**Part 3: Coordination** – Coordination of implementation with ongoing DeIDOT projects (HEP, Pavement & Rehabilitation, PD, etc.). When possible, DeIDOT-approved recommendations are coordinated for inclusion into the construction of ongoing projects.

The location selection process resulted in a list of ten locations, including SR 1 (Bay Road) from milepost 9.40 to 10.79 near Little Heaven, Delaware.

### *SR 1 (Bay Road)*

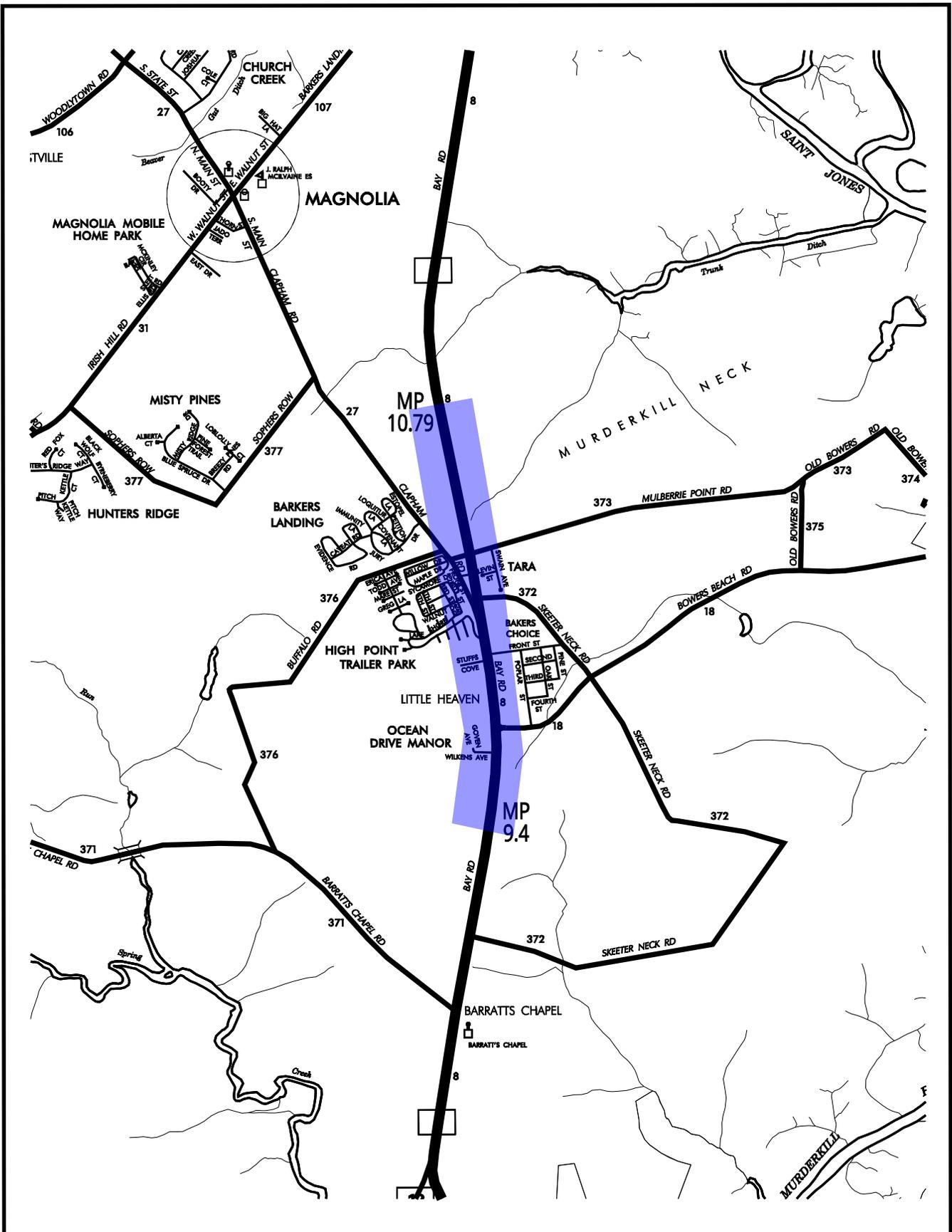
The evaluation and recommendations for SR 1, from milepost 9.40 to 10.79, are included in this report. The study location is a 1.39-mile stretch of roadway in a rural area southeast of Magnolia, near the community of Little Heaven, Delaware.

SR 1 is a four-lane, divided highway. Shoulders are present on both sides of the road in each direction throughout the project area. In 2010, SR 1 experienced an ADT of 34,720 vehicles in the project area.

There are two signalized intersections in the project area. The intersection of SR 1 and Bowers Beach Road is signalized. The intersection of SR 1 and Clapham Road is half-signalized, with signal control for only SR 1 southbound and SR 1 northbound left turning traffic.

Raised pavement markers are present on SR 1 throughout the project area.

A study area map is provided in Figure 1.



**FIGURE 1 - STUDY AREA MAP**  
 SR 1, MP 9.40-10.79  
 Kent County  
 Delaware

## 2. CRASH DATA SUMMARY

This evaluation was based on crash data during the three year period from May 16, 2008 to May 16, 2011.

A total of 66 crashes occurred on SR 1 (Bay Road) from milepost 9.40 to 10.79 during the evaluation period.

Twenty-two (22) crashes resulted in personal injuries. There were no crashes resulting in fatalities.

Rear end collisions were the most predominant type of impact, with 34 of the 66 crashes (52%).

Of the 66 crashes, forty-one (41) of the crashes occurred during daylight (62%). Nineteen (19) of the crashes occurred during dark conditions (29%). One (1) of the dark crashes occurred in dark-lighted conditions (2%). Eighteen (18) of the dark crashes occurred in dark-not lighted conditions (27%). Six (6) of the crashes occurred during dawn or dusk conditions (9%).

The highest number of crashes (23) at an individual site occurred at the intersection of SR 1 and Bowers Beach Road.

Crashes were grouped together into sites based on their location along SR 1.

### Site #1: SR 1 (Bay Road) @ Bowers Beach Road Intersection (M.P. 9.62)

There were 23 total crashes at the site during the evaluation period. Four (4) of the 23 crashes (17%) occurred during dark hours.

This site was not selected for evaluation based on the crash history.

### Site #2: SR 1 (Bay Road), North of Bowers Beach Road (M.P. 9.7 to 10.0)

Crashes from SR 1 Milepost 9.7 to 10.0 were grouped into this site. There were ten (10) total crashes at this site during the evaluation period. Five (5) of the ten (10) crashes (50%) occurred during dark hours.

This site was selected for evaluation based on the crash history.

### Site #3: SR 1 (Bay Road) @ Clapham Road Intersection (M.P. 10.13)

There were 12 total crashes at the site during the evaluation period. One (1) of the 12 crashes (8%) occurred during dark hours.

This site was not selected for evaluation based on the crash history.

Site #4: SR 1 (Bay Road) @ Mulberrie Point Road Intersection (M.P. 10.3)

There were 2 total crashes at the site during the evaluation period. Two (2) of the nine (9) crashes (22%) occurred during dark hours.

This site was not selected for evaluation based on the crash history.

Site #5: SR 1 (Bay Road), North of Mulberrie Point Road (M.P. 10.4 to 10.79)

Crashes from SR 1 Milepost 10.4 to 10.79 were grouped into this site. There were eight (8) total crashes at this site during the evaluation period. Six (6) of the eight (8) crashes (75%) occurred during dark hours.

This site was selected for evaluation based on the crash history.

### 3. ROADWAY AND SITE CHARACTERISTICS

The prevailing speed limit for SR 1 is 55 miles per hour in the study area. However, existing “Watch For Entering Traffic” signs (W21-10-DE) with “45 MPH” speed limit plaques (W13-1P) are present near both ends of the study area, on SR 1 northbound just north of Bowers Beach Road and on SR 1 southbound just north of Mulberrie Point Road.

Rumble strips are present on both sides of SR 1 northbound and SR 1 southbound throughout the project area. These rumble strips were installed in 2011.

*Site #2: SR 1 (Bay Road), North of Bowers Beach Road (M.P. 9.7 to 10.0)*

This area includes a 0.3-mile stretch of SR 1 bordered by Bowers Beach Road to the south and Clapham Road to the north.

SR 1 is a divided highway with two through lanes in each direction in this area. There are no sidewalks or crosswalks. The posted speed limit for SR 1 is 45 miles per hour.



***Photo 1: SR 1 between Clapham Road and Bowers Beach Road***

There are no major crossroads between Bowers Beach Road and Clapham Road. There are two median crossovers within the limits of this site. Each median crossover includes turning lanes for both northbound and southbound SR 1 traffic.

SR 1 features an approximately 9,000-foot radius horizontal curve throughout this site.



***Photo 2: SR 1 and Clapham Road Intersection, facing south***

**Site #5: SR 1 (Bay Road), North of Mulberrie Point Road (M.P. 10.4 to 10.79)**

SR 1 is a divided highway with two through lanes in each direction in this area. There are rumble strips along the road on both sides of the roadway in each direction. There are no sidewalks or crosswalks present in this area. The posted speed limit for SR 1 is 45 miles per hour south of M.P. 10.5, and 55 miles per hour north of M.P. 10.5.



***Photo 3: SR 1 and Mulberrie Point Road Intersection, facing south***



***Photo 4: SR 1, north of Mulberrie Point Road Intersection***

This area includes nearly 0.4 miles of roadway north of the intersection of SR 1 and Mulberrie Point Road. Wooded areas are present on both sides of SR 1 north of Mulberrie Point Road. The only access point to SR 1 at this site is one driveway to a private property on SR 1 southbound.



***Photo 5: SR 1, north of Mulberrie Point Road Intersection, facing north***

## 4. LIGHTING WARRANT EVALUATION

The DeIDOT Lighting Guidelines contain the conditions for determining if lighting is warranted at a given site. A warrant analysis is included below for each site that was chosen for evaluation.

Section 2.3, *Lighting Warrants*, of the DeIDOT Lighting Guidelines states that lighting *should* be installed at “locations where crash patterns indicate that lighting may reduce crashes and where the percentage of nighttime accidents is 40 percent or greater.” Section 2.3 also states that lighting *may* be installed at “locations where crash patterns indicate that lighting may reduce crashes and where the percentage of nighttime accidents is 35 percent or greater.”

### Site #2: SR 1 (Bay Road), North of Bowers Beach Road (M.P. 9.7 to 10.0)

#### *Crash Patterns*

The Crash Data Summary and Evaluation showed that there were 10 total crashes near this intersection during the three year evaluation period. Five (5) of these crashes occurred during dark conditions.

The manner of impact of the five (5) dark crashes was as follows:

- 3 Run off the road
  - Intoxicated 31 year old female, travelling SB at 4:17 am on a Saturday morning, ran off into median, struck turn signal
  - 38 year old female, travelling NB at 10:15 pm on a Wednesday night, fell asleep, struck curb, spun across road into median
  - 25 year old female, travelling NB at 5:38 am on a Sunday morning, driving too fast, ran off road into median to avoid striking vehicle, then re-entered roadway and struck other vehicle
- 1 Driving the wrong direction
- 1 Sideswipe after U-turn

A pattern of run off the road crashes is seen in the crash history at this site. However, no crash patterns that would benefit from lighting were identified.

#### *Percentage of Nighttime Crashes*

Fifty percent (5 out of 10) of the crashes in this area occurred during dark conditions. The crash history at this intersection meets the conditions for a location where lighting “should be installed,” as per Section 2.3 of the DeIDOT Lighting Guidelines.

#### *Lighting Warrant Results*

This site has greater than 40% of crashes occurring during dark conditions, therefore meeting part of the warrant for a site where roadway lighting *should* be installed. However, no crash patterns that would benefit from lighting were identified.

Site #5: SR 1 (Bay Road), North of Mulberrie Point Road (M.P. 10.4 to 10.79)

*Crash Patterns*

The Crash Data Summary and Evaluation showed that there were eight (8) total crashes near this intersection during the three year evaluation period. Six (6) of these crashes occurred during dark conditions.

The manner of impact of the six (6) dark crashes was as follows:

- 3 Deer in road
- 2 Rear end
- 1 Ran off road

The deer-related crashes occurred near wooded areas on both sides of SR 1 north of the Mulberrie Point Road. All of the crashes occurred in either October or November. The times of the crashes were 6:08 am, 7:15 pm, and 9:15 pm.

An examination of the police crash reports for the rear end crashes showed that one crash was the result of a driver travelling at 25 mph because she was running out of gas, and one crash was the result of an intoxicated driver striking a large piece of farm equipment driving slowly halfway in the shoulder.

No crash patterns that would benefit from lighting were identified.

*Percentage of Nighttime Crashes*

Seventy-five percent (6 out of 8) of the crashes in this area occurred during dark conditions. The percentage of nighttime crashes at this intersection meets the conditions for a location where lighting “should be installed,” as per Section 2.3 of the DelDOT Lighting Guidelines.

*Lighting Warrant Results*

This site has greater than 40% of crashes occurring during dark conditions, therefore meeting part of the warrant for a site where roadway lighting *should* be installed. However, no crash patterns that would benefit from lighting were identified.

## 5. RECOMMENDATIONS

### Site #2: SR 1 (Bay Road), North of Bowers Beach Road (M.P. 9.7 to 10.0)

#### *Roadway Lighting*

The crash history did not show a pattern of crashes that would benefit from lighting the area. Therefore, roadway lighting is not recommended for this site.

#### *Other Improvements*

The SHSP includes several possible spot improvements for areas that experience roadway departure crashes, including delineators, rumble strips, and removing roadside obstacles. The horizontal curve is so slight that delineators are unlikely to improve safety. Rumble strips were installed on both shoulders of each direction of SR 1 in 2011, after most of the crash data used in this study was collected. Also, the roadside and median is relatively free of fixed objects. Therefore, no safety improvements are recommended for this site.

#### *Ongoing Projects*

The SR 1, Little Heaven Grade Separated Intersection project includes plans to construct a bridge carrying SR 1 over Bowers Beach Road, and adding service roads on both sides of SR 1 to provide access to the developments along the corridor. This project will include the installation of roadway lighting at multiple locations throughout the study area. The project will also introduce new traffic patterns at all of the major intersections of this study area. Construction is expected to begin in the Summer of 2014.

### Site #5: SR 1 (Bay Road), North of Mulberrie Point Road (M.P. 10.4 to 10.79)

#### *Roadway Lighting*

The crash history did not show a pattern of crashes that would benefit from lighting the area. Therefore, roadway lighting is not recommended for this site.

#### ***Recommended Improvements***

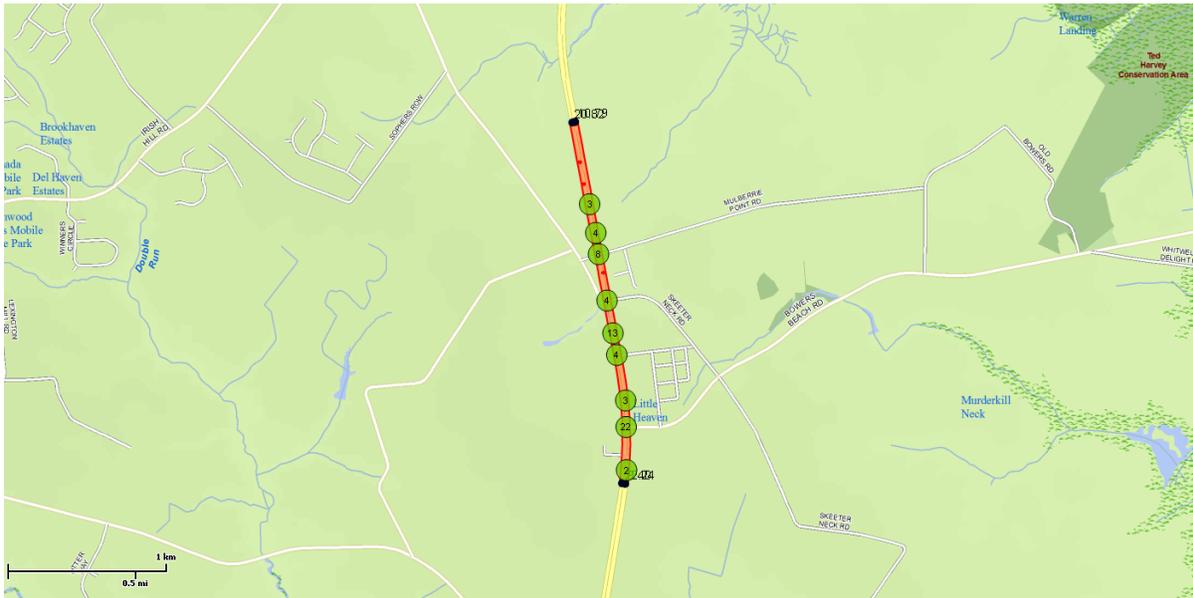
<b>Site</b>	<b>Recommended Improvement</b>
	There were no recommendations.

**APPENDIX A: Crash Data Summary**

## Delaware Crash Analysis Reporting System (CARS)

**Crash Study Time Period:** Study Period from 05-16-2008 to 05-16-2011  
**Query Type:** dualHwyBuffer  
**Description:** K8 DE 1 Bay Road  
MP 9.40-10.79

**Study Requested By:** LD  
**Study Generated By:** tdtsswn  
**Number of Crashes:** 66  
**Includes Non-Reportable Crashes:** N  
**Study Code:**



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## State of Delaware Crash Study Summary

Study Period from 05-16-2008 to 05-16-2011

Summary		Classification			Manner Of Impact		
	# of Crashes		# of Crashes	% of Total Crashes		# of Crashes	% of Total Crashes
<b>Total Crashes</b>	66	Non-Reportable	0	0.00%	Front to rear	34	51.52%
<b>Fatal Crashes</b>	0	Reportable	44	66.67%	Front to front	2	3.03%
<b>Total Alcohol-Related Crashes</b>	7	Personal Injury	22	33.33%	Angle	11	16.67%
<b>Total Non Alcohol-Related Crashes</b>	59	Fatality	0	0.00%	Sideswipe, same direction	10	15.15%
<b>Total Fatalities</b>	0	<b>Total</b>	66		Sideswipe, opposite direction	1	1.52%
<b>Total Pedestrian Fatalities</b>	0				Rear to side	1	1.52%
<b>Total Pedestrian Injuries</b>	0				Rear to rear	1	1.52%
<b>Total Pedestrian Crashes</b>	0				Other	2	3.03%
<b>Total Motorcycle Crashes</b>	0				Unknown	0	0.00%
<b>Total Pedalcyclist Crashes</b>	0				Not a collision between two vehicles	4	6.06%
					<b>Total</b>	66	

Alcohol Related Crashes by Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	Total
Alcohol Related	0	3	4	0	7
Non-Alcohol Related	0	41	18	0	59
<b>Total</b>	0	44	22	0	66

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	Total
Front to rear	0	22	12	0	34
Front to front	0	1	1	0	2
Angle	0	4	7	0	11
Sideswipe, same direction	0	10	0	0	10
Sideswipe, opposite direction	0	1	0	0	1
Rear to side	0	1	0	0	1
Rear to rear	0	1	0	0	1
Other	0	1	1	0	2
Unknown	0	0	0	0	0
Not a collision between two vehicles	0	3	1	0	4
<b>Total</b>	0	44	22	0	66

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Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	6	9.09%
Monday	7	10.61%
Tuesday	9	13.64%
Wednesday	11	16.67%
Thursday	11	16.67%
Friday	13	19.70%
Saturday	9	13.64%
<b>Total</b>	<b>66</b>	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	2	3.03%
01:00 - 01:59	1	1.52%
02:00 - 02:59	3	4.55%
03:00 - 03:59	0	0.00%
04:00 - 04:59	1	1.52%
05:00 - 05:59	2	3.03%
06:00 - 06:59	2	3.03%
07:00 - 07:59	3	4.55%
08:00 - 08:59	4	6.06%
09:00 - 09:59	2	3.03%
10:00 - 10:59	4	6.06%
11:00 - 11:59	4	6.06%
<b>Total</b>	<b>28</b>	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	7	10.61%
13:00 - 13:59	3	4.55%
14:00 - 14:59	4	6.06%
15:00 - 15:59	4	6.06%
16:00 - 16:59	7	10.61%
17:00 - 17:59	2	3.03%
18:00 - 18:59	2	3.03%
19:00 - 19:59	3	4.55%
20:00 - 20:59	2	3.03%
21:00 - 21:59	3	4.55%
22:00 - 22:59	1	1.52%
23:00 - 23:59	0	0.00%
<b>Total</b>	<b>38</b>	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	53	80.30%
Wet	11	16.67%
Snow	1	1.52%
Ice/Frost	1	1.52%
Sand	0	0.00%
Water (standing,mo)	0	0.00%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
<b>Total</b>	<b>66</b>	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	41	62.12%
Dawn	2	3.03%
Dusk	4	6.06%
Dark-Lighted	1	1.52%
Dark-Not Lighted	18	27.27%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
<b>Total</b>	<b>66</b>	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	50	75.76%
Cloudy	7	10.61%
Fog, Smog, Smoke	1	1.52%
Rain	7	10.61%
Sleet, Hail (freezing rain or drizzle)	0	0.00%
Snow	1	1.52%
Blowing Snow	1	1.52%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	0	0.00%
<b>Total</b>	<b>67</b>	

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First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	0	0.00%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed Object	3	4.55%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed Object	59	89.39%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed Object	0	0.00%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	1	1.52%
Ditch, Collision With Fixed Object	0	0.00%
Embankment, Collision With Fixed Object	2	3.03%

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Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
Concrete Traffic Barrier, Collision With Fixed Object	0	0.00%
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	1	1.52%
Utility Pole, Collision With Fixed Object	0	0.00%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	0	0.00%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	0	0.00%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision with person, vehicle, or object not fixed	0	0.00%
Stopped Motor Vehicle, Collision with person, vehicle, or object not fixed	0	0.00%
Unknown, Collision With Fixed Object	0	0.00%
<b>Total</b>	<b>66</b>	

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Primary Contributing Circumstance		
	# of Crashes	% of Total Crashes
Speeding	0	0.00%
Failed to yield right of way	3	4.55%
Passed Stop Sign	0	0.00%
Disregard Traffic Signal	1	1.52%
Wrong side or wrong way	0	0.00%
Improper passing	0	0.00%
Improper lane change	1	1.52%
Following too close	9	13.64%
Made improper turn	1	1.52%
Driving under the influence	3	4.55%
Driver inattention, distraction, or fatigue	3	4.55%
Driving in a careless or reckless manner	1	1.52%
Driving in an aggressive manner	0	0.00%
Improper backing	1	1.52%
Other improper driving	0	0.00%
Mechanical defects	1	1.52%
Animal in Roadway - Deer	1	1.52%
Animal in Roadway - Other Animal	0	0.00%
Other environmental circumstances - weather, glare	1	1.52%
Roadway circumstances - debris, holes, work zone	0	0.00%
Other	1	1.52%
Unknown	2	3.03%
<b>Total</b>	<b>29</b>	

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Driver Contributing Circumstance		
	# of Drivers	% of Total Drivers
No Contributing Action		0.00%
Failed to yield right of way		10.34%
Ran Red Light		0.00%
Ran Stop Sign		3.45%
Disregard other traffic sign		0.00%
Disregard other road markings		0.00%
Exceeded authorized speed limit		3.45%
Driving too fast for conditions		31.03%
Made an improper turn		3.45%
Improper backing		10.34%
Wrong side or wrong way		10.34%
Followed too closely		3.45%
Failure to keep in proper lane		0.00%
Ran off roadway		3.45%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner		0.00%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.		3.45%
Over-correcting/over-steering		3.45%
Improper Passing		0.00%
Other Contributing Action		3.45%
Unknown		6.90%
<b>Total</b>		

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
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### 2008

K	8	5.32	21.15	2	0308026019	7/29/08	0204	3	0	0	N	05	01	01	13		03	01
K	8	6.19	22.02	2	0308032227	9/11/08	1340	5	0	0	N	01	01	01	13		03	01
K	8	9.72	9.72	1	0308024160	7/16/08	0824	4	0	0	N	01	01	01	13		02	04
K	18	0.01	0.01	5	0308021779	6/29/08	1216	1	0	0	N	01	01	01	13		02	01
K	8	5.88	21.71	2	0308018113	6/1/08	1248	1	0	0	N	01	01	01	13		02	04
K	8	5.86	21.69	2	0308024520	7/18/08	1540	6	0	0	N	01	01	01	13		02	01
K	8	5.15	20.98	2	0308025296	7/24/08	1054	5	0	0	N	01	01	01	13		02	01
K	8	9.92	9.92	1	0308041686	11/26/08	1053	4	0	0	N	01	01	01	13		02	04
K	8	9.59	9.59	1	0308043422	12/12/08	0830	6	0	0	N	01	02	02	13		03	01
K	373	0.05	0.05	5	0308042268	12/1/08	1445	2	0	0	Y	01	01	01	13		03	03

### 2009

K	8	6.12	21.95	2	0309024358	7/27/09	2108	2	0	0	N	05	01	01	13		02	04
K	8	9.45	9.45	1	0309021903	7/8/09	1610	4	0	0	N	01	01	01	13		02	01
K	8	10.1	10.14	1	0309000160	1/2/09	1719	6	0	1	N	05	01	01	13		03	03
K	8	10.0	10.07	1	0309000599	1/6/09	1918	3	0	0	N	05	04	02	13		02	04
K	8	6.12	21.95	2	0309025721	8/7/09	1606	6	0	0	N	01	01	01	13		03	01
K	8	9.71	9.71	1	0309020461	6/27/09	1116	7	0	0	N	01	01	01	13		02	01
K	8	6.15	21.98	2	0309023132	7/18/09	1210	7	0	0	N	01	01	01	13		02	01
K	8	9.64	9.64	1	0309022260	7/11/09	1207	7	0	0	N	01	01	01	13		02	01
K	8	6.17	22	2	0309019436	6/19/09	1418	6	0	0	N	01	01	01	13		02	04
K	8	9.53	9.53	1	0309022135	7/10/09	1245	6	0	0	N	01	01	01	13		02	07
K	8	9.61	9.61	1	0309008555	3/21/09	1257	7	0	1	N	01	01	01	13		03	01
K	27	0	0	5	0309029700	9/9/09	1650	4	0	0	N	01	04	02	13		02	04
K	8	9.71	9.71	1	0309038354	11/25/09	1913	4	0	0	N	04	03	02	13		02	04
K	8	9.95	9.95	1	0309009828	3/31/09	0835	3	0	0	N	01	01	01	13		02	01
K	8	10.0	10.02	1	0309007605	3/13/09	0655	6	0	0	N	02	01	01	13		02	03
K	373	0.05	0.05	5	0309018680	6/13/09	1151	7	0	0	N	01	01	01	13		02	02
K	8	5.87	21.7	2	0309009898	3/31/09	1807	3	0	0	N	01	01	01	13		02	01
K	8	5.95	21.78	2	0309032252	9/30/09	2215	4	0	0	N	05	01	01	26		02	00
K	8	5.24	21.07	2	0309034275	10/19/09	2155	2	0	0	N	05	01	01	12		02	00
K	8	10.4	10.48	1	0309033848	10/14/09	1915	4	0	0	N	05	02	01	12		02	00
K	8	10.3	10.39	1	0309027305	8/20/09	1548	5	0	0	N	01	01	01	13		02	01
K	8	9.95	9.95	1	0309033453	10/11/09	0538	1	0	0	N	05	01	01	13		02	04
K	8	10.2	10.21	1	0309031546	9/25/09	0110	6	0	0	Y	05	01	01	13		03	01
K	8	5.86	21.69	2	0309040082	12/11/09	1355	6	0	0	N	01	01	01	13		02	01
K	373	0.05	0.05	5	0309029089	9/4/09	1505	6	0	0	N	01	01	01	13		02	01
K	8	10.3	10.35	1	0309038383	11/26/09	0207	5	0	0	Y	05	01	02	26		03	00
K	8	6.13	21.96	2	0309040168	12/12/09	0700	7	0	0	N	02	01	01	13		02	01

### 2010

K	00008	5.75			0310003050	1/30/10	1135	7	0	0	N	01	06 -	03	13	19	02	01
K	00008	9.56			0310010730	4/10/10	2140	7	0	0	N	05	01 -	01	13	07	02	04

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
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2010

K	00008	5.79	21.62	2	0310014923	5/19/10	0719	4	0	0	N	01	02 -	01	13	16	02	03
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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
-----	----	----	------	-----	----------	------	------	-----	-----	-----	----	----	----	----	-----	----	-------	-----

**2010**

K	00008	6.19			0310003608	2/4/10	1129	5	0	0	N	01	01 -	01	13	08	02	01
K	00008	6.15			0310011048	4/13/10	1507	3	0	1	N	01	01 -	02	13	08	03	01
													04					
K	00008	10.2			0310009003	3/26/10	1715	6	0	1	N	01	01 -	01	13	99	03	03
K	00018	0.02			0310009152	3/28/10	0200	1	0	0	Y	05	01 -	01	24	99	02	88
K	00008	9.59			0310004372	2/10/10	1637	4	0	0	N	03	07 -	04	13	08	02	01
K	00008	9.45	9.45	1	0310016417	5/31/10	1200	2	0	0	N	01	01 -	01	13	11	02	01
K	00008	6.18	22.01	2	0310019631	6/26/10	1055	7	0	0	N	01	01 -	01	13	08	02	01
K	00008	10.2			0310009643	4/1/10	2010	5	0	1	N	05	01 -	01	13	12	03	03
K	00008	9.54	9.54	1	0310016525	6/1/10	1000	3	0	1	N	01	01 -	01	13	11	03	01
K	00008	5.88			0310005531	2/23/10	0835	3	0	2	N	01	04 -	02	13	02	03	02
K	00008	10.2	10.29	1	0310025273	8/10/10	0501	3	0	0	N	05	01 -	01	13	11	02	01
K	00008	10.3	10.34	1	0310032689	10/14/10	0936	5	0	2	N	01	02 -	01	31	88	03	88
K	00008	10.3	10.37	1	0310032698	10/14/10	0944	5	0	0	N	01	02 -	01	13	08	02	01
K	00018	0.02	0.02	3	0310031224	9/30/10	1817	5	0	1	N	03	04 -	02	13	14	03	01
K	00027	0	0.00	1	0310027799	8/30/10	0000	2	0	0	Y	05	01 -	01	13	10	02	06
K	00008	10.4	10.46	1	0310036856	11/21/10	0608	1	0	0	N	05	01 -	01	12	17	02	03
K	00373	0.06	0.06	3	0310032056	10/8/10	1612	6	0	1	N	01	01 -	01	13	02	03	03
K	00008	6.17	22.00	2	0310034728	11/1/10	1628	2	0	0	N	01	01 -	01	13	08	02	01

**2011**

K	00008	5.94	21.77	2	0311002427	1/26/11	0000	4	0	0	Y	05	02 -	01	13	09	02	03
K	00027	0	0.00	2	0311001769	1/18/11	1410	3	0	0	N	01	02 -	02	13	10	02	05
K	00008	9.61	9.61	1	0311005388	2/23/11	1457	4	0	3	N	01	01 -	01	13	04	03	01
K	00008	10.1	10.10	1	0311003316	2/3/11	1613	5	0	1	N	03	01 -	01	13	08	03	01
K	00008	9.97	9.97	1	0311013101	5/1/11	2012	1	0	2	N	03	04 -	02	13	08	03	01
K	00008	6.17	22.00	2	0311013494	5/5/11	0758	5	0	0	N	01	01 -	01	13	08	02	01
K	00008	5.99	21.82	2	0311007116	3/11/11	0417	6	0	1	Y	05	04 -	02	13	10	03	03
K	00008	5.55	21.38	2	0311013988	5/9/11	1342	2	0	2	N	01	01 -	01	13	02	03	03

Report generated by tdtsswn at 2011-05-23 12:23:35.251

*"Disclaimer for CARS: Crash data and associated police reports are intended for DelDOT use only and shall not be transmitted, copied, distributed or provided to any entity other than DelDOT unless written approval is received from the DelDOT Legal Section. Police reports are the property of the Delaware State Police."*

**Report Legend**

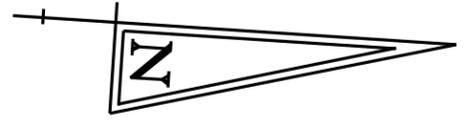
**Cty - County**  
**Rd - Maintenance Road**  
**MP - Milepoint**  
**C-MP - Continuous Milepoint**  
**Dir - Direction of Highway**  
**COMP/HQ# - Complaint Number/Headquarters Number**  
**DAY - Day Of Week Code**  
**Fat - Fatality**  
**Inj - Injury**  
**AL - Alcohol Involved**  
**LC - Lighting Condition**  
**WC - Weather Condition**  
**SC - Surface Condition**  
**MHE - Most Harmful Event**  
**PC - Primary Contributing Circumstance**  
**Class - Report Classification**  
**MOI - Manner of Impact**

## **APPENDIX B: Crash Diagrams**

*Site #2: SR 1 (Bay Road), North of Bowers Beach Road (M.P. 9.7-10.0)*

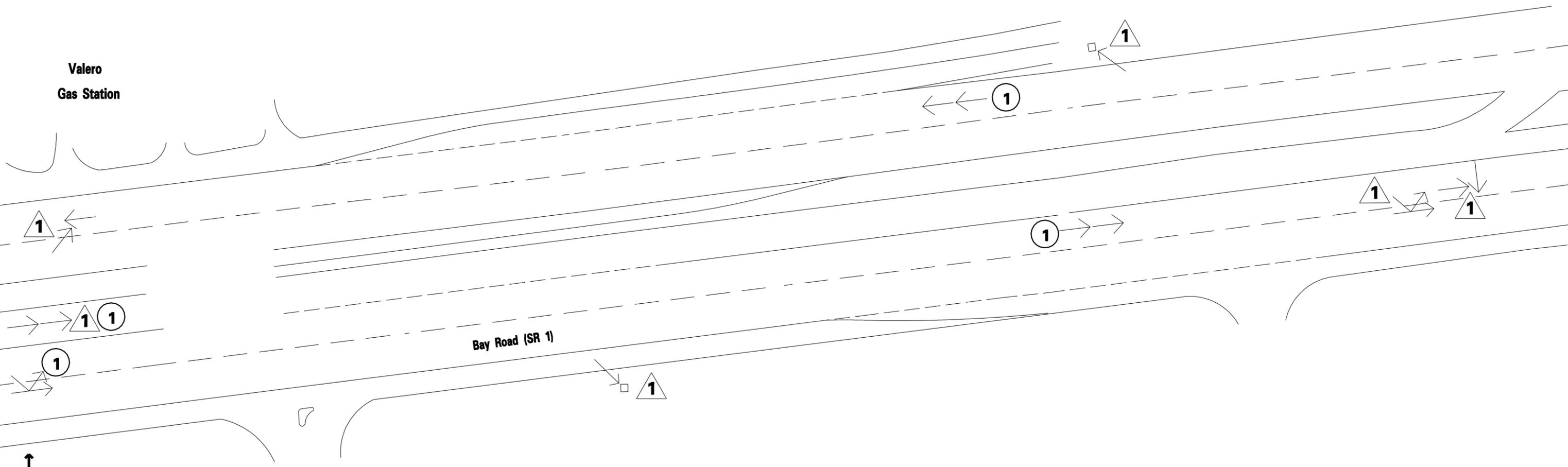
*Site #5: SR 1 (Bay Road), North of Mulberrie Point Road (M.P. 10.4-10.79)*

Total Number of Crashes = 10



Clapham Road

Valero Gas Station



Bay Road (SR 1)

↑  
Approximately  
1500 ft north of  
Bowers Beach Road

**LEGEND:**

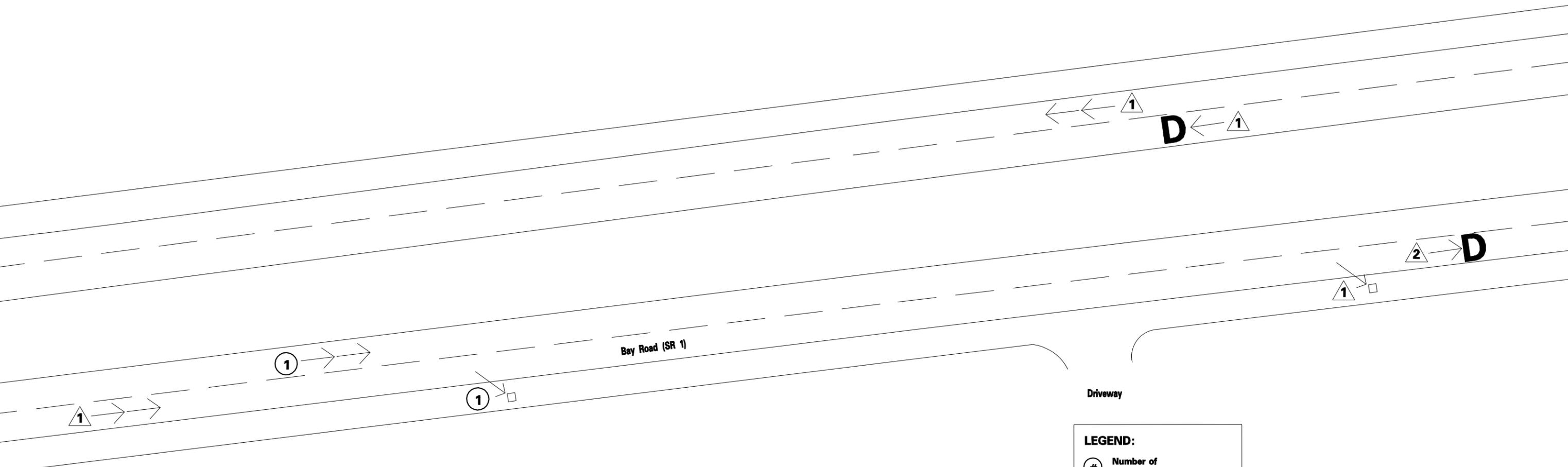
- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| Number of Daylight Conditions Crashes | Number of Dark Conditions Crashes |
| Hit Fixed Object                      | Angle                             |
| Rear End                              | Sideswipe                         |

Site #2: North of Bowers Beach Rd/  
South of Clapham Rd  
May 2008 to May 2011  
Location #5: Bay Road, MP 9.40 to 10.79  
Evaluation of High Crash Locations  
(Dark Criteria) Study



Urban Engineers, Inc.  
2 Penns Way, Suite 309  
New Castle, DE 19720

Total Number of Crashes = 8



↑  
Approximately  
550 ft north of  
Mulberrie Point Road

**LEGEND:**

- Number of Daylight Conditions Crashes
- Number of Dark Conditions Crashes
- Hit Fixed Object
- Rear End
- Hit Deer

Site #5: North of Mulberrie Point Road  
May 2008 to May 2011  
Location #5: Bay Road, MP 9.40 to 10.79  
Evaluation of High Crash Locations  
(Dark Criteria) Study



**Urban Engineers, Inc.**  
2 Penns Way, Suite 309  
New Castle, DE 19720

## **APPENDIX C: Previous Study**

*2005 HSIP – Site V Report*



**INTRODUCTION**

Site V is a 0.69-mile corridor located southeast of Magnolia along SR 1/U.S. 113 from 0.01-mile north of Front Street to 0.31-mile north of Mulberrie Point Road. SR 1/U.S. 113 is a four-lane, divided, open-section roadway with shoulders. The posted speed limit along SR 1 is 55 miles per hour throughout the corridor. The ADT is approximately 32,500. Within the limits of the site, there are the following signalized and unsignalized intersections:

**Signalized**

- U.S. 113 Alt/Clapham Road

**Unsignalized**

- Mulberrie Point Road
- Skeeter Neck Road

**Other Relevant Projects:** As part of Contract #24-122-02, SR 1 within the limits of the site is included in the Corridor Capacity Preservation Program. Improvements proposed include a grade separated intersection at Bowers Beach Road as well as service roads adjacent to both sides of SR 1 from south of Front Street to north of Mulberrie Point Road. Construction is scheduled for FY 2007 (pending funding availability).

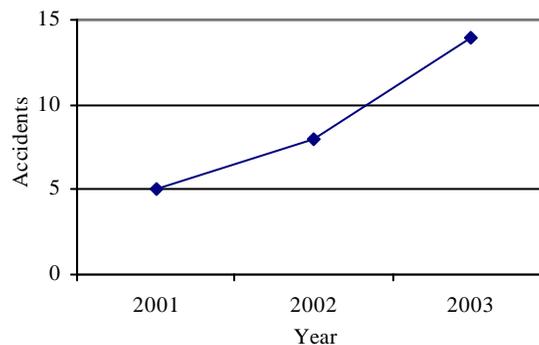
In addition, SR 1/U.S. 113 within the site limits was recently resurfaced as a part of the FY04 Paving Program – Contract #24-062-03.

**ACCIDENT DATA SUMMARIES**

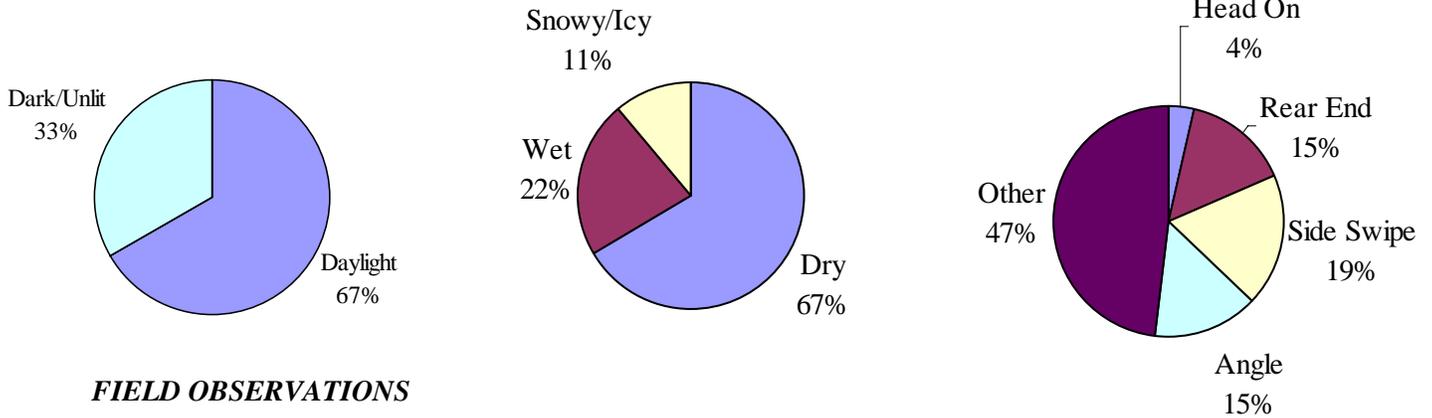
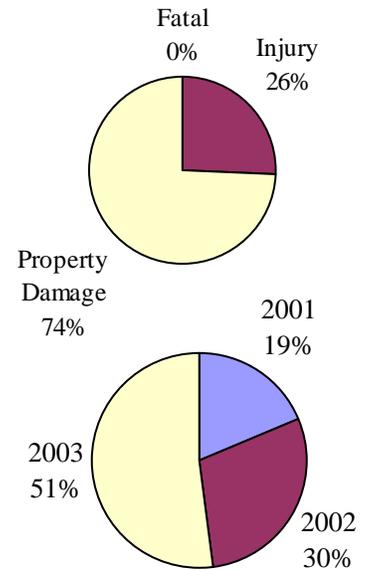
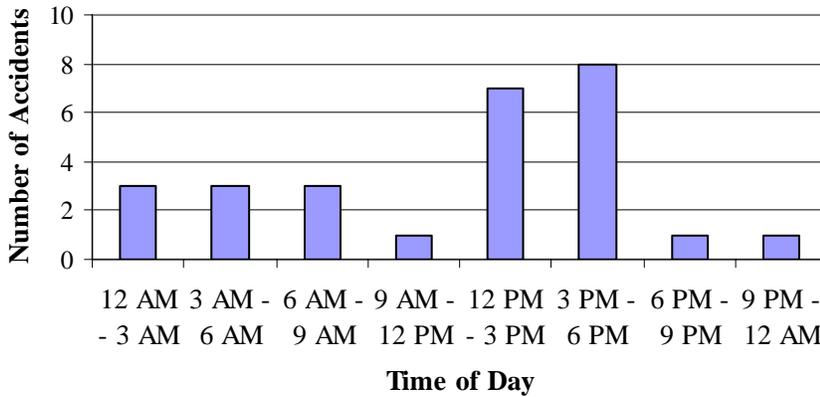
A total of 27 accidents were reported during the three-year study period between January 2001 and December 2003 including 13 (48 percent) accidents classified as “other”, including 11 fixed-object or run off the road accidents and 2 accidents involving deer. As shown in Figure 1, the number of collisions per year has increased over recent years, with 14 (52 percent) of the total number of accidents occurring in 2003. There were no clusters of accidents indicating a specific safety problem within this site.

A categorical summary of the accidents by type, severity, surface condition, lighting condition, year, and time of day is shown in Figure 2.

**FIGURE 1  
Number of Accidents per Year**



**FIGURE 2  
Accident Data Summary**



**FIELD OBSERVATIONS**

- No street lighting is provided along SR 1/U.S. 113 within the site limits.
- SR 1/U.S. 113 has recently been resurfaced within the site corridor, and pavement markings are in good condition.

**SR 1/U.S. 113 at U.S. 113A/Clapham Road/Skeeter Neck Road**

- This intersection operates with a half-signal with northbound through traffic receiving a continuous green indication. Southbound traffic is stopped to allow northbound left-turning queues to clear. Northbound left-turns operate with protected/permissive left-turn phasing with a flashing red arrow during the permissive phase. Southbound left-turns and westbound Skeeter Neck Road traffic operate under “Yield” control.
- The northbound U.S. 113 approach includes a left-turn lane, two through lanes and a right-turn lane, and the southbound SR 1/U.S. 113 approach includes a left-turn lane and two through lanes. The eastbound approach has a right-turn lane only. All eastbound traffic is forced to make a right-turn onto southbound SR 1. Westbound Skeeter Neck Road is restricted to right-turns only.

- “Signal Ahead” warning signs are provided on the southbound SR 1/U.S. 113 approach to U.S. 113A.
- Although signing does not direct eastbound U.S. 113A/Chapham Road destined to northbound SR 1/U.S. 113 to make a left onto Mulberrie Point Road prior to the SR 1/U.S. 113 intersection, a median opening at Mulberrie Point Road at SR 1/U.S. 113 accommodates eastbound left-turns onto northbound SR 1/U.S. 113.

#### ***ADDITIONAL STUDIES***

The improvements proposed as part of the Corridor Capacity Preservation Program will address the majority of the identified accidents; therefore, the HSIP committee recommends no additional studies.

2005 HSIP Photos  
Site V  
U.S. 113  
From 0.01 North of Front Street  
to 0.31 North of Road 373

**In-House Working Document (Not for external distribution)**



Northbound SR 1 approaching Skeeter Neck Road



Southbound SR 1 at Skeeter Neck Road



Northbound SR 1 approaching Mulberrie Point  
Road



Southbound SR 1 approaching Mulberrie Point  
Road

**APPENDIX D: Statewide 1.0 Mile Corridors Ranked by Critical Ratio**

Delaware - Statewide  
 Accident Date Range  
 01/01/2007 - 12/31/2009

Interval Length  
 1.0 mile

Parameters  
 AMBIENT\_LIGHT\_PARAMETER-05

Rank	Crit. Ratio	County	Road	Road Name	Beg MP	End MP	# Accs	Notes
1	10.12	1	355D	Harmony Road	0	0.05	1	<10 accidents - Did not meet criteria
2	5.93	1	34H	US 13	0	0.1	1	<10 accidents - Did not meet criteria
3	4.48	1	367	Welsh Tract Road	0	0.99	19	Location #1
4	4.48	1	367	Welsh Tract Road	0.1	1.09	19	Location #1
5	4.01	1	367	Welsh Tract Road	0.2	1.19	17	Location #1
6	4.01	1	367	Welsh Tract Road	0.3	1.29	17	Location #1
7	3.78	1	367	Welsh Tract Road	0.4	1.39	16	Location #1
8	3.76	1	367	Welsh Tract Road	0.5	1.49	16	Location #1
9	3.7	3	199	Fowlers Beach Road	1.2	2.15	4	<10 accidents - Did not meet criteria
10	3.6	1	11A	Delaware Park Road	0	0.15	4	<10 accidents - Did not meet criteria
11	3.56	3	246	Albury Avenue	0.9	1.89	7	<10 accidents - Did not meet criteria
12	3.55	3	199	Fowlers Beach Road	1.1	2.09	4	<10 accidents - Did not meet criteria
13	3.51	3	396		1.8	2.79	6	<10 accidents - Did not meet criteria
14	3.51	3	396		1.9	2.89	6	<10 accidents - Did not meet criteria
15	3.46	2	14	SR 42	3	3.91	5	<10 accidents - Did not meet criteria
16	3.43	1	31A	Old Limestone Road	0	0.31	1	<10 accidents - Did not meet criteria
17	3.43	3	14C		0	0.29	1	<10 accidents - Did not meet criteria
18	3.27	3	60	SR 54	3.1	4.09	7	<10 accidents - Did not meet criteria
19	3.27	3	60	SR 54	3.2	4.19	7	<10 accidents - Did not meet criteria
20	3.27	3	60	SR 54	3.3	4.29	7	<10 accidents - Did not meet criteria
21	3.25	1	38	St. Andrews School Road	0	0.99	7	<10 accidents - Did not meet criteria
22	3.23	2	429	Mechanic Street	3.1	4.09	6	<10 accidents - Did not meet criteria
23	3.23	2	429	Mechanic Street	3.2	4.19	6	<10 accidents - Did not meet criteria
24	3.23	2	429	Mechanic Street	3.3	4.29	6	<10 accidents - Did not meet criteria
25	3.18	1	429	Mechanic Street	3.8	4.79	7	<10 accidents - Did not meet criteria
26	3.14	2	14	SR 42	2.9	3.89	5	<10 accidents - Did not meet criteria
27	3.09	2	14	SR 42	2.8	3.79	5	<10 accidents - Did not meet criteria
28	3.05	2	14	SR 42	2.7	3.69	5	<10 accidents - Did not meet criteria
29	3.05	3	246	Albury Avenue	1	1.99	6	<10 accidents - Did not meet criteria
30	3.04	2	14	SR 42	2.6	3.59	5	<10 accidents - Did not meet criteria
31	3.02	1	367	Welsh Tract Road	0.6	1.59	13	Location #1
32	3.02	3	396		2.2	3.16	5	<10 accidents - Did not meet criteria
33	3	3	542A		0	0.18	1	<10 accidents - Did not meet criteria
34	2.93	3	396		2	2.99	5	<10 accidents - Did not meet criteria
35	2.93	3	396		2.1	3.09	5	<10 accidents - Did not meet criteria
36	2.83	1	355B		0	0.26	1	<10 accidents - Did not meet criteria
37	2.83	3	361	West Avenue	2.3	3.29	8	<10 accidents - Did not meet criteria
38	2.81	1	12A	Farrand Drive Ext.	0	0.1	2	<10 accidents - Did not meet criteria
39	2.8	3	60	SR 54	4.8	5.79	6	<10 accidents - Did not meet criteria
40	2.8	3	60	SR 54	4.9	5.89	6	<10 accidents - Did not meet criteria
41	2.8	3	60	SR 54	5	5.99	6	<10 accidents - Did not meet criteria
42	2.79	3	361	West Avenue	2.2	3.19	8	<10 accidents - Did not meet criteria
43	2.78	3	361	West Avenue	2.1	3.09	8	<10 accidents - Did not meet criteria
44	2.75	3	261		1.1	2.09	8	<10 accidents - Did not meet criteria
45	2.71	1	429	Mechanic Street	3.7	4.69	6	<10 accidents - Did not meet criteria
46	2.71	3	544		0.2	1.19	6	<10 accidents - Did not meet criteria
47	2.69	1	224	Upper Snuffmill Road	0	0.95	6	<10 accidents - Did not meet criteria
48	2.69	1	429	Mechanic Street	3.6	4.59	6	<10 accidents - Did not meet criteria
49	2.69	2	429	Mechanic Street	2.8	3.79	5	<10 accidents - Did not meet criteria
50	2.69	2	429	Mechanic Street	2.9	3.89	5	<10 accidents - Did not meet criteria
51	2.69	2	429	Mechanic Street	3	3.99	5	<10 accidents - Did not meet criteria
52	2.66	3	199	Fowlers Beach Road	0.8	1.79	3	<10 accidents - Did not meet criteria
53	2.66	3	199	Fowlers Beach Road	0.9	1.89	3	<10 accidents - Did not meet criteria
54	2.66	3	199	Fowlers Beach Road	1	1.99	3	<10 accidents - Did not meet criteria
55	2.65	1	315A		0	0.08	1	<10 accidents - Did not meet criteria
56	2.65	3	261		1.2	2.19	7	<10 accidents - Did not meet criteria
57	2.58	1	318A	St. James Church Road	0	0.24	1	<10 accidents - Did not meet criteria
58	2.58	3	246		0.5	1.49	5	<10 accidents - Did not meet criteria
59	2.58	3	544		0.1	1.09	6	<10 accidents - Did not meet criteria
60	2.56	3	246	Albury Avenue	0.6	1.59	5	<10 accidents - Did not meet criteria
61	2.55	2	127		0	0.41	1	<10 accidents - Did not meet criteria
62	2.55	3	246	Albury Avenue	0.7	1.69	5	<10 accidents - Did not meet criteria
63	2.55	3	246	Albury Avenue	0.8	1.79	5	<10 accidents - Did not meet criteria
64	2.55	3	246	Albury Avenue	1.1	2.09	5	<10 accidents - Did not meet criteria

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Rank	Crit. Ratio	County	Road	Road Name	Beg MP	End MP	# Accs	Notes
65	2.55	3	261		1	1.99	8	<10 accidents - Did not meet criteria
66	2.51	3	28	US 9	6	6.99	14	Location #2
67	2.5	2	295		0	0.99	3	<10 accidents - Did not meet criteria
68	2.5	2	295		0.1	1.09	3	<10 accidents - Did not meet criteria
69	2.46	3	361	West Avenue	1.9	2.89	8	<10 accidents - Did not meet criteria
70	2.44	2	88		0.2	1.19	4	<10 accidents - Did not meet criteria
71	2.43	2	14	SR 42	2.4	3.39	4	<10 accidents - Did not meet criteria
72	2.43	2	14	SR 42	2.5	3.49	4	<10 accidents - Did not meet criteria
73	2.42	2	88		0.3	1.29	4	<10 accidents - Did not meet criteria
74	2.4	2	88		0.4	1.39	4	<10 accidents - Did not meet criteria
75	2.4	3	544		0.3	1.29	5	<10 accidents - Did not meet criteria
76	2.38	2	14	SR 42	2.3	3.29	4	<10 accidents - Did not meet criteria
77	2.37	1	454	Sawmill Branch Road	0.5	1.46	3	<10 accidents - Did not meet criteria
78	2.37	3	28	US 9	5.9	6.89	13	Location #2
79	2.35	1	275	Golden Ring Road	1.4	2.39	8	<10 accidents - Did not meet criteria
80	2.35	1	275	Golden Ring Road	1.5	2.49	8	<10 accidents - Did not meet criteria
81	2.35	3	261		0.9	1.89	8	<10 accidents - Did not meet criteria
82	2.34	2	88		0.5	1.49	4	<10 accidents - Did not meet criteria
83	2.34	3	396		1.7	2.69	4	<10 accidents - Did not meet criteria
84	2.34	3	60	SR 54	3	3.99	5	<10 accidents - Did not meet criteria
85	2.34	3	60	SR 54	3.4	4.39	5	<10 accidents - Did not meet criteria
86	2.34	3	60	SR 54	3.5	4.49	5	<10 accidents - Did not meet criteria
87	2.34	3	60	SR 54	3.6	4.59	5	<10 accidents - Did not meet criteria
88	2.34	3	60	SR 54	3.7	4.69	5	<10 accidents - Did not meet criteria
89	2.34	3	60	SR 54	3.8	4.79	5	<10 accidents - Did not meet criteria
90	2.34	3	60	SR 54	5.1	6.09	5	<10 accidents - Did not meet criteria
91	2.32	3	361		2	2.99	7	<10 accidents - Did not meet criteria
92	2.31	2	271		3.1	4.01	2	<10 accidents - Did not meet criteria
93	2.28	1	260	Brecks Lane Road	0	0.57	2	<10 accidents - Did not meet criteria
94	2.28	2	384		3	3.99	7	<10 accidents - Did not meet criteria
95	2.27	2	88		0.1	1.09	4	<10 accidents - Did not meet criteria
96	2.22	1	429	Mechanic Street	3.5	4.49	5	<10 accidents - Did not meet criteria
97	2.22	2	207		2.9	3.89	4	<10 accidents - Did not meet criteria
98	2.22	2	207		3	3.99	4	<10 accidents - Did not meet criteria
99	2.21	1	429	Mechanic Street	3.3	4.29	5	<10 accidents - Did not meet criteria
100	2.21	1	82	SR 1	5.5	6.49	12	Location #3
101	2.19	3	261		0.8	1.79	8	<10 accidents - Did not meet criteria
102	2.17	1	275	Golden Ring Road	1.6	2.59	7	<10 accidents - Did not meet criteria
103	2.17	1	469	Black Diamond Road	0.4	1.39	3	<10 accidents - Did not meet criteria
104	2.17	1	469	Black Diamond Road	0.5	1.49	3	<10 accidents - Did not meet criteria
105	2.17	1	469	Black Diamond Road	0.6	1.59	3	<10 accidents - Did not meet criteria
106	2.17	1	469	Black Diamond Road	0.7	1.69	3	<10 accidents - Did not meet criteria
107	2.16	3	28	US 9	9.1	10.09	13	Location #4
108	2.15	2	30	Main Street	1.5	2.49	9	<10 accidents - Did not meet criteria
109	2.15	2	429		2.7	3.69	4	<10 accidents - Did not meet criteria
110	2.15	2	429		3.4	4.39	4	<10 accidents - Did not meet criteria
111	2.15	2	429		3.6	4.59	4	<10 accidents - Did not meet criteria
112	2.15	3	353		2.3	3.29	3	<10 accidents - Did not meet criteria
113	2.15	3	525		1.8	2.79	7	<10 accidents - Did not meet criteria
114	2.15	3	525		1.9	2.89	7	<10 accidents - Did not meet criteria
115	2.15	3	525		2	2.99	7	<10 accidents - Did not meet criteria
116	2.15	3	525		2.1	3.09	7	<10 accidents - Did not meet criteria
117	2.15	3	525		2.2	3.19	7	<10 accidents - Did not meet criteria
118	2.14	3	28	US 9	6.1	7.09	12	Location #2
119	2.14	3	361		2.4	3.39	6	<10 accidents - Did not meet criteria
120	2.13	1	452	Fieldsboro Road	0	0.99	3	<10 accidents - Did not meet criteria
121	2.13	1	452	Fieldsboro Road	0.1	1.09	3	<10 accidents - Did not meet criteria
122	2.13	1	452	Fieldsboro Road	0.2	1.19	3	<10 accidents - Did not meet criteria
123	2.13	1	452	Fieldsboro Road	0.3	1.29	3	<10 accidents - Did not meet criteria
124	2.13	1	452	Fieldsboro Road	0.4	1.39	3	<10 accidents - Did not meet criteria
125	2.13	1	452	Fieldsboro Road	0.5	1.49	3	<10 accidents - Did not meet criteria
126	2.13	1	452	Fieldsboro Road	0.6	1.59	3	<10 accidents - Did not meet criteria
127	2.13	2	30	Main Street	1.6	2.59	9	<10 accidents - Did not meet criteria
128	2.13	3	353		2.4	3.39	3	<10 accidents - Did not meet criteria

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129	2.12	2	8	US 113	9.6	10.59	13	Location #5
130	2.12	3	24	SR 24	18.2	19.19	7	<10 accidents - Did not meet criteria
131	2.12	3	24	SR 24	18.4	19.39	7	<10 accidents - Did not meet criteria
132	2.12	3	24	SR 24	18.5	19.49	7	<10 accidents - Did not meet criteria
133	2.11	3	246	Albury Avenue	0.3	1.29	4	<10 accidents - Did not meet criteria
134	2.11	3	261		1.3	2.29	5	<10 accidents - Did not meet criteria
135	2.11	3	353		2.1	3.09	3	<10 accidents - Did not meet criteria
136	2.11	3	477		0	0.99	3	<10 accidents - Did not meet criteria
137	2.1	1	26	Old Baltimore Pike	2.5	3.49	21	Location #6
138	2.1	3	48		7.2	8.19	7	<10 accidents - Did not meet criteria
139	2.1	3	48		7.3	8.29	7	<10 accidents - Did not meet criteria
140	2.1	3	48		7.4	8.39	7	<10 accidents - Did not meet criteria
141	2.1	3	48		7.5	8.49	7	<10 accidents - Did not meet criteria
142	2.1	3	48		7.6	8.59	7	<10 accidents - Did not meet criteria
143	2.1	3	48		7.7	8.69	7	<10 accidents - Did not meet criteria
144	2.1	3	48		7.8	8.79	7	<10 accidents - Did not meet criteria
145	2.1	3	48		7.9	8.89	7	<10 accidents - Did not meet criteria
146	2.1	3	48		8	8.99	7	<10 accidents - Did not meet criteria
147	2.09	2	30	Main Street	0.7	1.69	7	<10 accidents - Did not meet criteria
148	2.09	3	246	Albury Avenue	0.4	1.39	4	<10 accidents - Did not meet criteria
149	2.09	3	28	US 9	8.9	9.89	12	Location #4
150	2.07	3	246	Albury Avenue	1.8	2.7	3	<10 accidents - Did not meet criteria
151	2.07	3	326	State Street	0.8	1.79	8	<10 accidents - Did not meet criteria
152	2.06	2	188		0	0.32	1	<10 accidents - Did not meet criteria
153	2.06	3	353		2	2.99	3	<10 accidents - Did not meet criteria
154	2.06	3	353		2.5	3.49	3	<10 accidents - Did not meet criteria
155	2.05	1	26	Old Baltimore Pike	2.8	3.79	21	Location #6
156	2.05	3	594		0	0.99	6	<10 accidents - Did not meet criteria
157	2.04	2	30	Main Street	0.4	1.39	7	<10 accidents - Did not meet criteria
158	2.04	3	246		1.2	2.19	4	<10 accidents - Did not meet criteria
159	2.04	3	28	US 9	9	9.99	12	Location #4
160	2.04	3	544		0.4	1.39	4	<10 accidents - Did not meet criteria
161	2.03	2	303		1.2	2.19	2	<10 accidents - Did not meet criteria
162	2.02	1	301	Thompson's Station Road	0.3	1.29	9	<10 accidents - Did not meet criteria
163	2.02	1	301	Thompson's Station Road	0.4	1.39	9	<10 accidents - Did not meet criteria
164	2.02	2	54	Main Street	0.1	1.09	6	<10 accidents - Did not meet criteria
165	2.02	2	54	Main Street	0.2	1.19	6	<10 accidents - Did not meet criteria
166	2.02	2	54	Main Street	0.3	1.29	6	<10 accidents - Did not meet criteria
167	2.02	2	54	Main Street	0.4	1.39	6	<10 accidents - Did not meet criteria
168	2.02	2	54	Main Street	0.5	1.49	6	<10 accidents - Did not meet criteria
169	2.01	3	28	US 9	5.8	6.79	11	Location #4
170	2.01	3	488		2.8	3.79	4	<10 accidents - Did not meet criteria
171	2.01	3	488		2.9	3.89	4	<10 accidents - Did not meet criteria
172	2	1	82	SR 1	5.6	6.59	12	Location #3
173	2	1	9	SR 52	3.2	4.19	16	Location #7
174	2	2	8	US 113	9.7	10.69	12	Location #5
175	1.99	3	361		1.8	2.79	7	<10 accidents - Did not meet criteria
176	1.99	3	479A		0	0.6	2	<10 accidents - Did not meet criteria
177	1.98	1	26	Old Baltimore Pike	2.6	3.59	20	Location #6
178	1.98	1	26	Old Baltimore Pike	2.9	3.89	20	Location #6
179	1.98	1	9	SR 52	3.1	4.09	16	Location #7
180	1.98	2	325	Big Oak Road	1.4	2.39	4	<10 accidents - Did not meet criteria
181	1.98	2	73	North Street	4.3	5.29	7	<10 accidents - Did not meet criteria
182	1.98	3	207		1.3	2.29	7	<10 accidents - Did not meet criteria
183	1.98	3	353		1.9	2.89	3	<10 accidents - Did not meet criteria
184	1.98	3	544		1	1.99	2	<10 accidents - Did not meet criteria
185	1.97	1	26	Old Baltimore Pike	2.7	3.69	20	Location #6
186	1.97	2	30	Main Street	1.4	2.39	8	<10 accidents - Did not meet criteria
187	1.97	3	2	US 13	3.6	4.59	18	Location #8
188	1.96	1	383	Church Road	0.4	1.37	8	<10 accidents - Did not meet criteria
189	1.96	2	30	Main Street	0.3	1.29	7	<10 accidents - Did not meet criteria
190	1.96	2	384		3.1	4.09	6	<10 accidents - Did not meet criteria
191	1.96	3	16	SR 16	25.8	26.79	5	<10 accidents - Did not meet criteria
192	1.96	3	16	SR 16	25.9	26.89	5	<10 accidents - Did not meet criteria

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Rank	Crit. Ratio	County	Road	Road Name	Beg MP	End MP	# Accs	Notes
193	1.96	3	16	SR 16	26	26.99	5	<10 accidents - Did not meet criteria
194	1.96	3	16	SR 16	26.1	27.09	5	<10 accidents - Did not meet criteria
195	1.96	3	353		2.6	3.59	3	<10 accidents - Did not meet criteria
196	1.95	2	73	North Street	4.2	5.19	7	<10 accidents - Did not meet criteria
197	1.95	3	326	State Street	0.7	1.69	8	<10 accidents - Did not meet criteria
198	1.94	1	32	US 40	4.2	5.19	25	Location #9
199	1.94	2	73	North Street	4.4	5.39	7	<10 accidents - Did not meet criteria
200	1.94	3	213	Walnut Street	8.1	9.09	5	<10 accidents - Did not meet criteria
201	1.94	3	484		2.7	3.69	4	<10 accidents - Did not meet criteria
202	1.92	1	17	SR 92	0	0.99	17	Location #10