

Hazard Elimination Project Evaluation

Order # 41000021337

Hazard Elimination Project W-5006

**Evaluation of the Installation of Directional Crossovers on NC 87
At its Intersects with SR 2235/2261 (Grays Creek Ch/Alderman) and
SR 2233 (Butler Nursery) in Cumberland County**

Documents Prepared By:

Safety Evaluation Group
Traffic Safety Systems Management Section
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North Carolina Department of Transportation

Principal Investigator



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1/11/2013

Date

Traffic Safety Project Engineer

Hazard Elimination Project Evaluation Documentation

Subject Location

The project involved two intersections: NC 87 at SR 2235/2261 (Grays Creek Ch/Alderman) and NC 87 at SR 2233 (Butler Nursery).



Project Information and Background from the Project File Folder

The hazard elimination project improvement chosen for the subject location was the installation of directional crossovers on NC 87 at its intersection with SR 2235/2261 (Grays Creek Ch/Alderman) and SR 2233 (Butler Nursery).

NC 87 is a 4-lane divided facility with a speed limit of 55 mph in the subject area. Both of the side roads are 2-lane facilities with stop sign control at the subject intersections.

A high number of angle crashes had occurred at the two intersections, most involving vehicles from the side road making it to the median but then failing to yield to the second direction of traffic on NC 87. The directional crossovers with appropriate median U-turn locations were constructed to prevent vehicles on the side roads from having to cross four lanes of traffic at one time.

The initial crash analysis was completed from February 15, 2001 to February 15, 2006 with 17 total reported crashes, nine of which were correctable angle crashes. The improvement was completed on April 15, 2009 with a total cost of \$193,000. The projected B/C ratio was 8.71.

Naive Before and After Analysis

After reviewing the project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period were from February 1, 2009 through May 31, 2009. The before period consisted of reported crashes from December 1, 2005 through January 31, 2009 (3.17 years); and the after period consisted of reported crashes from June 1, 2009 through July 31, 2012 (3.17 years). The ending date for this analysis was determined by the date of available crash data at the time of analysis. The before period ADT year was 2007 and the after period ADT year was 2010. The treatment data includes all crashes within 150 feet of the subject intersections.

The following data tables depict the Naïve Before and After Analysis for the treatment locations. Please note that Angle Crashes and Left Turn-Same Roadway Crashes involving vehicles entering the intersection from the side roads were the target crashes for the applied countermeasures.

<u>Treatment Information</u> <u>NC 87 @ SR 2235/2264</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	5	8	60.0
Total Severity Index	16.16	3.77	-76.7
Target Crashes	3	0	-100.0
Target Severity Index	26.27	0	-100.0
Volume	12,400	13,200	6.5

Target Crash Severity Summary			
Fatal Crashes	1	0	-100.0
Class A Crashes	0	0	N/A
Class B Crashes	0	0	N/A
Class C Crashes	0	0	N/A
PDO Crashes	2	0	-100.0

Total crashes increased by 60 percent at the intersection of NC 87 and SR 2235/2264. However, target crashes decreased by 100 percent. Six of the eight after period crashes were rear-end crashes that occurred on the side roads.

Treatment Information	Before	After	Percent Reduction (-) Percent Increase (+)
NC 87 @ SR 2233			
Total Crashes	10	2	-80.0
Total Severity Index	20.60	4.70	-77.2
Target Crash Severity Summary			
Target Crashes	9	0	-100.0
Target Severity Index	21.96	0	-100.0
Volume			
Volume	10,300	10,600	2.9
Target Crash Severity Summary			
Fatal Crashes	0	0	N/A
Class A Crashes	2	0	-100.0
Class B Crashes	4	0	-100.0
Class C Crashes	1	0	-100.0
PDO Crashes	2	0	-100.0

Total Crashes decreased by 80 percent and target crashes decreased by 100 percent at the intersection of NC 87 and SR 2233.

Results and Discussion

Using naïve before and after analysis, target crashes decreased by 100 percent at both of the subject intersections. In addition, the total severity index decreased by 77 percent at both of the intersections. In the before period there was a fatal angle crash at the SR 2235/2261 intersection and two Class A angle crashes at the SR 2233 intersection. There were no serious injury crashes at either intersection in the after period.

There are three U-turn locations on NC 87 that were constructed for vehicles to use that can no longer make a left turn from the side roads. One is located approximately 0.36 miles north of SR 2261, one is between the intersection of SR 2235/2261 and SR 2233, and the third is located approximately 0.24 miles south of SR 2233. Crashes were looked at between the subject intersections and their respective U-turn locations in order to see if there were any crash migration patterns that developed due to the directional crossovers. The following table summarizes the data.

Target Crashes are sideswipe-same direction crashes on the strip and left-turn/U-turn crashes in the U-turn location.

This data is broken into four sections:

- Section 1 – From SR 2235/2261 northward to U-Turn location
- Section 2 – From SR 2235/2261 southward to U-Turn location
- Section 3- From SR 2233 northward to U-Turn location
- Section 4 – From SR 2233 southward to U-Turn location

	Before	After
Section 1 – Total	2	4
Section 1 - Target	0	1
Section 2 – Total	7	4
Section 2 - Target	1	1
Section 3 – Total	4	6
Section 3 - Target	0	0
Section 4 – Total	1	5
Section 4 - Target	0	0

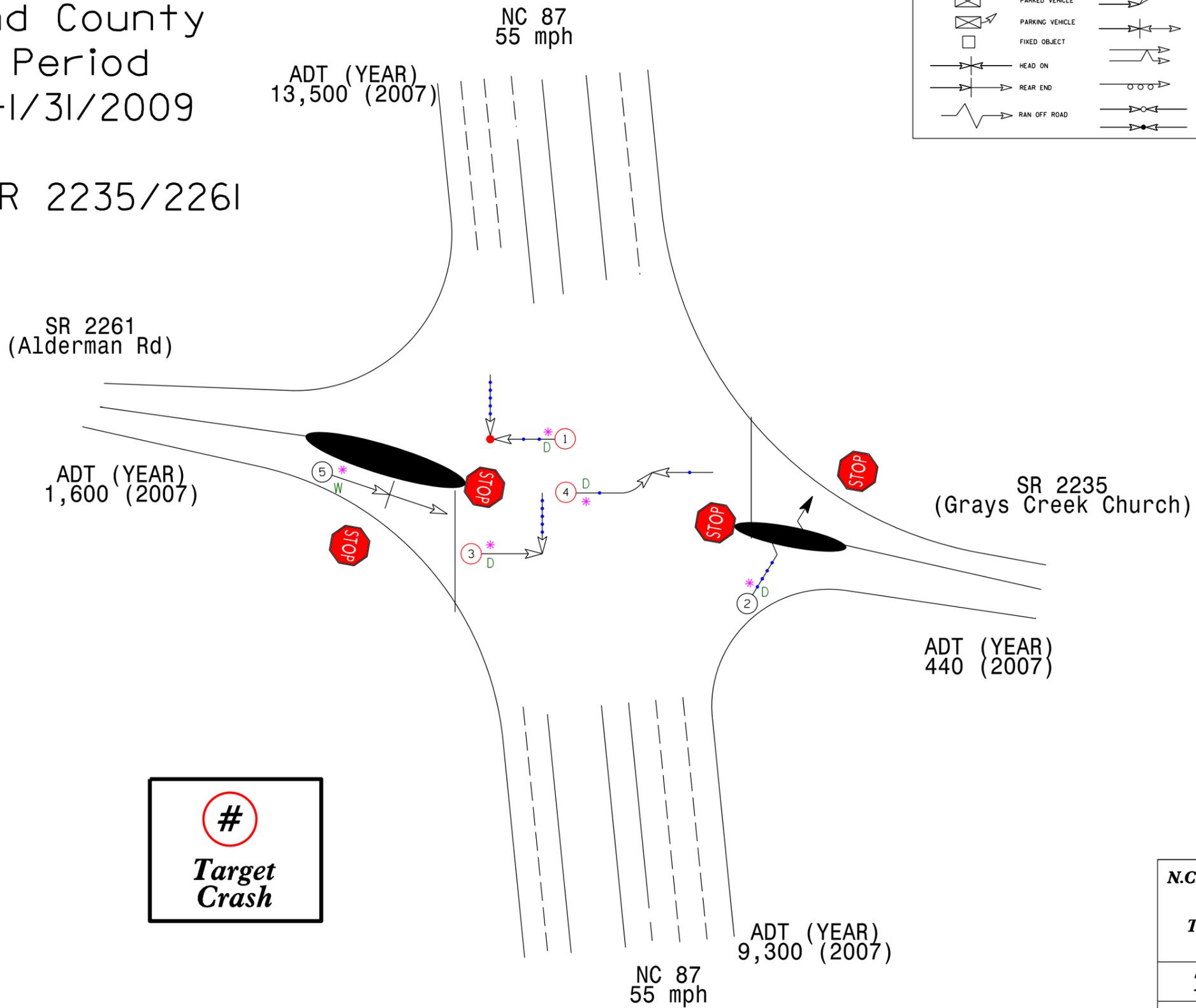
Total crashes at these sections increased from 14 to 19 and target crashes increased from one to two. There was one sideswipe-same direction crash in the before period and one the after period. The second after period target crash involved a vehicle traveling south from SR 2235/2261 attempting to make a U-turn and failing to yield to a northbound vehicle. No injury resulted from this crash.

As the Safety Evaluation Group completes additional safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of treatment.

W-5006
 Order# 4100021337
 Cumberland County
 BEFORE Period
 12/1/2005-1/31/2009

NC 87 at SR 2235/2261

LEGEND			
	MOVING VEHICLE		ANGLE
	PEDESTRIAN		TURNING
	PARKED VEHICLE		BACKING
	PARKING VEHICLE		SIDESWIPE
	FIXED OBJECT		OUT OF CONTROL
	HEAD ON		INJURY
	REAR END		FATALITY
	RAN OFF ROAD		9 MPH OR LESS
			10 MPH TO 19
			20 MPH TO 29
			30 MPH TO 39
			40 MPH TO 49
			50 MPH TO 59
			60 MPH TO 69
			70 AND UP
			SPEED UNKNOWN
			P PEDESTRIAN
			T TRAIN
			* DRIVER AT FAULT
			D DRY
			W WET
			I ICY OR SNOWY
			O ONLY



 Target
 Crash

N.C. DEPARTMENT of TRANSPORTATION
 DIVISION of HIGHWAYS
 TRANSPORTATION MOBILITY and
 SAFETY DIVISION

TRAFFIC SAFETY UNIT

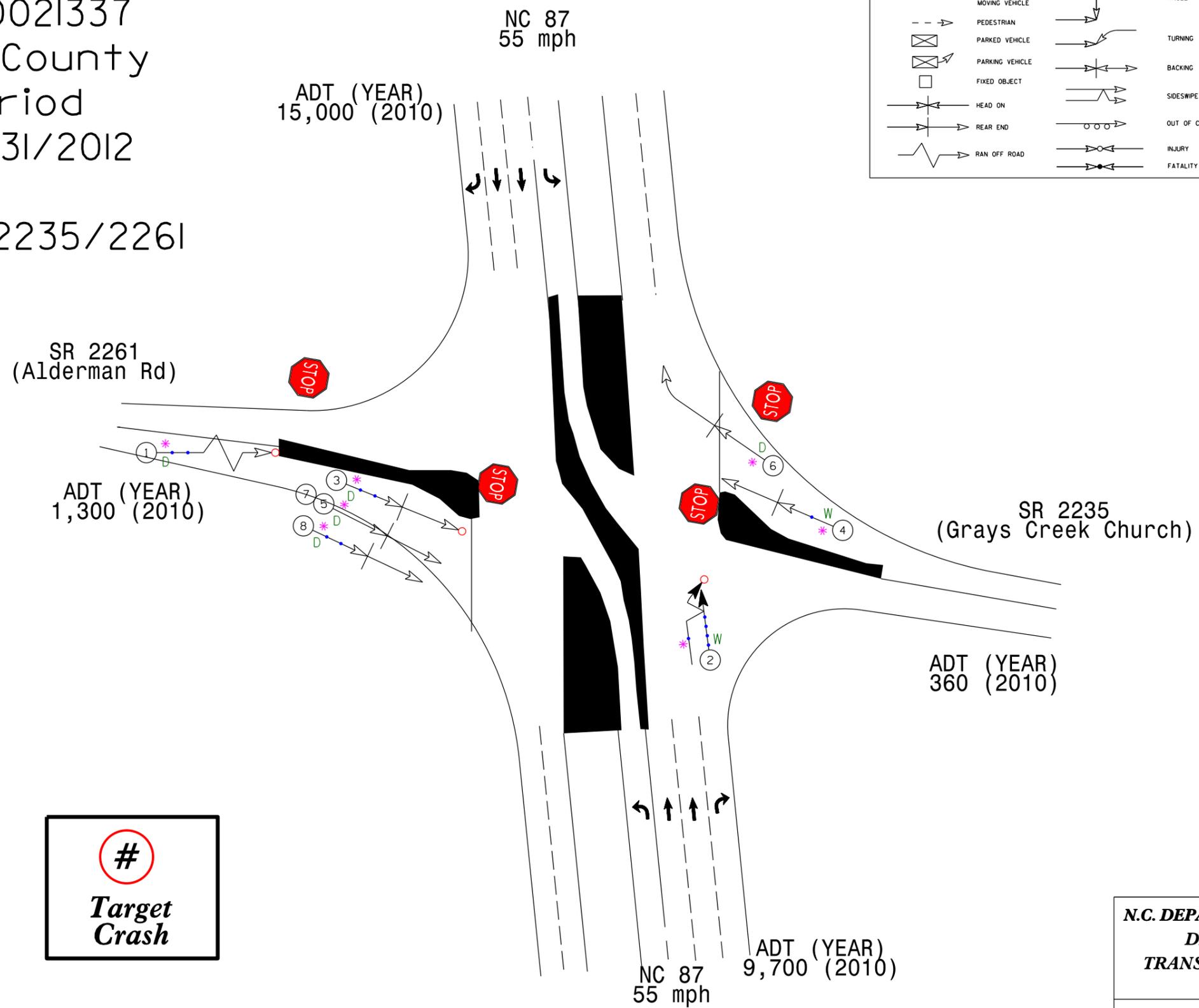
Date: September 2012

Prepared By: bdr

W-5006
 Order# 4100021337
 Cumberland County
 AFTER Period
 6/1/2009-7/31/2012

NC 87 at SR 2235/2261

LEGEND			
	MOVING VEHICLE		ANGLE
	PEDESTRIAN		TURNING
	PARKED VEHICLE		BACKING
	PARKING VEHICLE		SIDESWIPE
	FIXED OBJECT		OUT OF CONTROL
	HEAD ON		INJURY
	REAR END		FATALITY
	RAN OFF ROAD		9 MPH OR LESS
			10 MPH TO 19
			20 MPH TO 29
			30 MPH TO 39
			40 MPH TO 49
			50 MPH TO 59
			60 MPH TO 69
			70 AND UP
			SPEED UNKNOWN
			P PEDESTRIAN
			T TRAIN
			* DRIVER AT FAULT
			D DRY
			W WET
			I ICY OR SNOWY
			O ONLY



**Target
 Crash**

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DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and
SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: September 2012

Prepared By: bdr

W-5006
 Order# 4100021337
 Cumberland County
 BEFORE Period
 12/1/2005-1/31/2009
 NC 87 at SR 2233

NC 87
 55 mph
 ADT (YEAR)
 9,300 (2007)

SR 2233
 (School Rd)
 ADT (YEAR)
 1,200 (2007)

SR 2233
 (Butler Nursery Rd)
 ADT (YEAR)
 710 (2007)

ADT (YEAR)
 9,300 (2007)

NC 87
 55 mph

LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		INJURY		50 MPH TO 59		ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69		OILY
	RAN OFF ROAD		SPEED UNKNOWN		70 AND UP		

**Target
 Crash**

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W-5006
 Order# 4100021337
 Cumberland County
 AFTER Period
 6/1/2009-7/31/2012
 NC 87 at SR 2233

LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		INJURY		50 MPH TO 59		ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69		70 AND UP
	RAN OFF ROAD		SPEED UNKNOWN		9 MPH OR LESS		OILY

SR 2233
 (School Rd)

ADT (YEAR)
 1,100 (2010)

NC 87
 55 mph

ADT (YEAR)
 9,700 (2010)

SR 2233
 (Butler Nursery Rd)

ADT (YEAR)
 650 (2010)

NC 87
 55 mph

ADT (YEAR)
 9,700 (2010)

**Target
 Crash**



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 TRANSPORTATION MOBILITY and
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TRAFFIC SAFETY UNIT

Date: September 2012

Prepared By: bdr

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	5	100.00
Fatal Crashes	1	20.00
Non-Fatal Injury Crashes	0	0.00
Total Injury Crashes	1	20.00
Property Damage Only Crashes	4	80.00
Night Crashes	1	20.00
Wet Crashes	1	20.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	5	100.00
Fatal Crashes	1	20.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	0	0.00
Property Damage Only Crashes	4	80.00

Vehicle Exposure Statistics

Annual ADT = 12400

Total Vehicle Exposure = 14.36 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	34.82
Fatal Crash Rate	6.96
Non Fatal Crash Rate	0.00
Night Crash Rate	6.96
Wet Crash Rate	6.96
EPDO Rate	562.71

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Miscellaneous Statistics

Severity Index = 16.16
EPDO Crash Index = 80.80
Estimated Property Damage Total = \$ 33700.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	2	40.00
FIXED OBJECT	1	20.00
LEFT TURN, SAME ROADWAY	1	20.00
REAR END, SLOW OR STOP	1	20.00

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	3	100.00
Class A Injuries	0	0.00
Class B Injuries	0	0.00
Class C Injuries	0	0.00
Total Non-Fatal Injuries	0	0.00
Total Injuries	3	100.00

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	1	20.00
Mar	1	20.00
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	1	20.00
Sep	0	0.00
Oct	0	0.00
Nov	1	20.00
Dec	1	20.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	20.00
Tue	0	0.00
Wed	1	20.00
Thu	0	0.00
Fri	2	40.00
Sat	0	0.00
Sun	1	20.00

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	1	20.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	2	40.00
0800-0859	0	0.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	1	20.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	0	0.00
1500-1559	0	0.00
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	0	0.00
1900-1959	1	20.00
2000-2059	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

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Intersection Analysis Report**

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	3	1	0	4
Dark	1	0	0	1
Other	0	0	0	0
Total	4	1	0	5

Object Struck Summary

Object Type	Times Struck	Percent of Total
DITCH	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	3	33.33
PICKUP	1	11.11
SPORT UTILITY	3	33.33
TRACTOR/SEMI-TRAILER	1	11.11
UNKNOWN	1	11.11

North Carolina Department of Transportation
 Traffic Engineering Accident Analysis System
 Intersection Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2005	0	0	0	0
2006	1	1	0	0
2007	2	0	0	2
2008	2	0	0	2
2009	0	0	0	0
Total	5	1	0	4

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2005	0	0
2006	3	0
2007	0	0
2008	0	0
2009	0	0
Total	3	0

Miscellaneous Totals

Year	Property Damage	EPDO Index
2005	\$ 0	0.00
2006	\$ 23000	76.80
2007	\$ 4900	2.00
2008	\$ 5800	2.00
2009	\$ 0	0.00
Total	\$ 33700	80.80

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &			
				Fixed Object	Angle	Side Swipe	Other
2005	0	0	0	0	0	0	0
2006	0	0	0	0	1	0	0
2007	0	0	0	1	1	0	0
2008	1	0	1	0	0	0	0
2009	0	0	0	0	0	0	0
Total	1	0	1	1	2	0	0

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op

Legend for Report Details:

- Acc No - Accident Number
- Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
- Condition: R - Road Surface, L - Ambient Light, W - Weather
- Rd Ch - Road Character
- Rd Ci - Roadway Contributing Circumstances
- Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
- Alchl/Drugs - Alcohol Drugs Suspected
- Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
- Obj Strk - Object Struck

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	8	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	3	37.50
Total Injury Crashes	3	37.50
Property Damage Only Crashes	5	62.50
Night Crashes	1	12.50
Wet Crashes	2	25.00
Alcohol/Drugs Involvement Crashes	1	12.50

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	8	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	1	12.50
Class C Crashes	2	25.00
Property Damage Only Crashes	5	62.50

Vehicle Exposure Statistics

Annual ADT = 13200

Total Vehicle Exposure = 15.27 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	52.38
Fatal Crash Rate	0.00
Non Fatal Crash Rate	19.64
Night Crash Rate	6.55
Wet Crash Rate	13.10
EPDO Rate	197.74

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Miscellaneous Statistics

Severity Index =	3.77
EPDO Crash Index =	30.20
Estimated Property Damage Total = \$	16500.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	1	12.50
FIXED OBJECT	1	12.50
REAR END, SLOW OR STOP	5	62.50
REAR END, TURN	1	12.50

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	1	33.33
Class C Injuries	2	66.67
Total Non-Fatal Injuries	3	100.00
Total Injuries	3	100.00

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	1	12.50
Mar	1	12.50
Apr	2	25.00
May	1	12.50
Jun	0	0.00
Jul	1	12.50
Aug	1	12.50
Sep	0	0.00
Oct	0	0.00
Nov	1	12.50
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	2	25.00
Tue	1	12.50
Wed	2	25.00
Thu	0	0.00
Fri	2	25.00
Sat	0	0.00
Sun	1	12.50

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	1	12.50
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	2	25.00
0800-0859	1	12.50
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	2	25.00
1500-1559	1	12.50
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	0	0.00
1900-1959	0	0.00
2000-2059	1	12.50
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

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Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	6	1	0	7
Dark	0	1	0	1
Other	0	0	0	0
Total	6	2	0	8

Object Struck Summary

Object Type	Times Struck	Percent of Total
OFFICIAL HIGHWAY SIGN NON-BREAKAWAY	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
MOTORCYCLE	1	6.67
PASSENGER CAR	6	40.00
PICKUP	1	6.67
SPORT UTILITY	6	40.00
UNKNOWN	1	6.67

North Carolina Department of Transportation
 Traffic Engineering Accident Analysis System
 Intersection Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2009	2	0	2	0
2010	3	0	1	2
2011	2	0	0	2
2012	1	0	0	1
Total	8	0	3	5

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2009	0	2
2010	0	1
2011	0	0
2012	0	0
Total	0	3

Miscellaneous Totals

Year	Property Damage	EPDO Index
2009	\$ 6400	16.80
2010	\$ 6800	10.40
2011	\$ 1700	2.00
2012	\$ 1600	1.00
Total	\$ 16500	30.20

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &			
				Fixed Object	Angle	Side Swipe	Other
2009	0	0	0	1	1	0	0
2010	0	0	3	0	0	0	0
2011	0	0	2	0	0	0	0
2012	0	0	1	0	0	0	0
Total	0	0	6	1	1	0	0

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
8	102340371	06/06/2008 09:35	ANGLE	\$ 13150	0	0	1	1	1	1	1	1	0	1	1
Unit	1 : 1	Alch/Drgs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk: 38									
Unit	2 : 1	Alch/Drgs: 0	Speed: 50 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									

9	102358268	07/02/2008 09:55	ANGLE	\$ 14000	0	0	1	2	1	1	1	1	0	1	1
Unit	1 : 1	Alch/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 5	Alch/Drgs: 0	Speed: 55 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									

10	102479757	12/27/2008 16:32	ANGLE	\$ 4000	0	0	0	1	2	1	2	1	0	1	1
Unit	1 : 1	Alch/Drgs: 0	Speed: 55 MPH Dir: S	Veh Mnvr / Ped Actn: 4		Obj Strk:									
Unit	2 : 2	Alch/Drgs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn: 4		Obj Strk:									

Legend for Report Details:
 Acc No - Accident Number
 Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
 Condition: R - Road Surface, L - Ambient Light, W - Weather
 Rd Ch - Road Character
 Rd Ci - Roadway Contributing Circumstances
 Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
 Alch/Drgs - Alcohol Drugs Suspected
 Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
 Obj Strk - Object Struck

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	10	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	8	80.00
Total Injury Crashes	8	80.00
Property Damage Only Crashes	2	20.00
Night Crashes	1	10.00
Wet Crashes	1	10.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	10	100.00
Fatal Crashes	0	0.00
Class A Crashes	2	20.00
Class B Crashes	4	40.00
Class C Crashes	2	20.00
Property Damage Only Crashes	2	20.00

Vehicle Exposure Statistics

Annual ADT = 10300

Total Vehicle Exposure = 11.93 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	83.84
Fatal Crash Rate	0.00
Non Fatal Crash Rate	67.07
Night Crash Rate	8.38
Wet Crash Rate	8.38
EPDO Rate	1727.12

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Miscellaneous Statistics

Severity Index =	20.60
EPDO Crash Index =	206.00
Estimated Property Damage Total = \$	104950.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	8	80.00
LEFT TURN, DIFFERENT ROADWAYS	1	10.00
LEFT TURN, SAME ROADWAY	1	10.00

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	2	10.00
Class B Injuries	7	35.00
Class C Injuries	11	55.00
Total Non-Fatal Injuries	20	100.00
Total Injuries	20	100.00

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	2	20.00
Feb	0	0.00
Mar	2	20.00
Apr	1	10.00
May	0	0.00
Jun	2	20.00
Jul	1	10.00
Aug	0	0.00
Sep	0	0.00
Oct	0	0.00
Nov	0	0.00
Dec	2	20.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	0	0.00
Tue	1	10.00
Wed	4	40.00
Thu	0	0.00
Fri	3	30.00
Sat	2	20.00
Sun	0	0.00

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
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Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	0	0.00
0800-0859	1	10.00
0900-0959	2	20.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	1	10.00
1400-1459	1	10.00
1500-1559	1	10.00
1600-1659	2	20.00
1700-1759	1	10.00
1800-1859	1	10.00
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

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Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	8	1	0	9
Dark	1	0	0	1
Other	0	0	0	0
Total	9	1	0	10

Object Struck Summary

Object Type	Times Struck	Percent of Total
MOVABLE OBJECT	1	33.33
OFFICIAL HIGHWAY SIGN BREAKAWAY	1	33.33
TRAFFIC ISLAND CURB OR MEDIAN	1	33.33

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	13	59.09
PICKUP	5	22.73
SPORT UTILITY	1	4.55
TRACTOR/SEMI-TRAILER	1	4.55
VAN	2	9.09

**North Carolina Department of Transportation
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Intersection Analysis Report**

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2005	1	0	1	0
2006	0	0	0	0
2007	4	0	3	1
2008	5	0	4	1
2009	0	0	0	0
Total	10	0	8	2

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2005	0	1
2006	0	0
2007	0	7
2008	0	12
2009	0	0
Total	0	20

Miscellaneous Totals

Year	Property Damage	EPDO Index
2005	\$ 5500	8.40
2006	\$ 0	0.00
2007	\$ 41800	94.60
2008	\$ 57650	103.00
2009	\$ 0	0.00
Total	\$ 104950	206.00

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &			
				Fixed Object	Angle	Side Swipe	Other
2005	1	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	4	0	0
2008	1	0	0	0	4	0	0
2009	0	0	0	0	0	0	0
Total	2	0	0	0	8	0	0

North Carolina Department of Transportation
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Intersection Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	2	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	1	50.00
Total Injury Crashes	1	50.00
Property Damage Only Crashes	1	50.00
Night Crashes	0	0.00
Wet Crashes	0	0.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	2	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	1	50.00
Property Damage Only Crashes	1	50.00

Vehicle Exposure Statistics

Annual ADT = 10600

Total Vehicle Exposure = 12.26 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	16.31
Fatal Crash Rate	0.00
Non Fatal Crash Rate	8.15
Night Crash Rate	0.00
Wet Crash Rate	0.00
EPDO Rate	76.65

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Intersection Analysis Report**

Miscellaneous Statistics

Severity Index =	4.70
EPDO Crash Index =	9.40
Estimated Property Damage Total = \$	3400.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
REAR END, SLOW OR STOP	2	100.00

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	0	0.00
Class C Injuries	1	100.00
Total Non-Fatal Injuries	1	100.00
Total Injuries	1	100.00

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	0	0.00
Mar	2	100.00
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	0	0.00
Sep	0	0.00
Oct	0	0.00
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	50.00
Tue	0	0.00
Wed	0	0.00
Thu	0	0.00
Fri	1	50.00
Sat	0	0.00
Sun	0	0.00

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Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	0	0.00
0800-0859	0	0.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	0	0.00
1500-1559	1	50.00
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	0	0.00
1900-1959	1	50.00
2000-2059	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

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Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	2	0	0	2
Dark	0	0	0	0
Other	0	0	0	0
Total	2	0	0	2

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	2	50.00
PICKUP	1	25.00
SPORT UTILITY	1	25.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2009	0	0	0	0
2010	1	0	0	1
2011	1	0	1	0
2012	0	0	0	0
Total	2	0	1	1

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2009	0	0
2010	0	0
2011	0	1
2012	0	0
Total	0	1

Miscellaneous Totals

Year	Property Damage	EPDO Index
2009	\$ 0	0.00
2010	\$ 600	1.00
2011	\$ 2800	8.40
2012	\$ 0	0.00
Total	\$ 3400	9.40

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &			
				Fixed Object	Angle	Side Swipe	Other
2009	0	0	0	0	0	0	0
2010	0	0	1	0	0	0	0
2011	0	0	1	0	0	0	0
2012	0	0	0	0	0	0	0
Total	0	0	2	0	0	0	0