

# **Spot Safety Project Evaluation**

Project Log # 200501264

Spot Safety Project # 04-99-203

**Spot Safety Project Evaluation, of “Vehicle Entering When Flashing” Signs and Flashers  
At the Intersection of US 70 and SR 1326-Clairidge Nursery Road, Wayne County**

Documents Prepared By:

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

**Principal Investigator**

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Carrie L. Goodrich

08/02/2005  
Date

Traffic Safety Project Engineer

# ***Spot Safety Project Evaluation Documentation***

## **Subject Location**

Evaluation of Spot Safety Project Number 04-99-203 – The Intersection of US 70 and SR 1326-Clairidge Nursery Road, Wayne County

## **Introduction**

In an attempt to assess the safety of our roads, the Safety Evaluation Group of the Traffic Safety Systems Management Section has evaluated the above project. The methodologies used in this evaluation offer various philosophies and ideas, in an effort to provide objective countermeasure crash reduction results. A naive before and after analysis has been completed to measure the effectiveness of the spot safety improvement. Additional analysis methods were not utilized for this evaluation because a suitable comparison group was unattainable. This information is provided to you so the benefit or lack of benefit for this type of project can be recognized and utilized for future projects.

## **Project Information and Background from the Project File Folder**

The spot safety project improvement countermeasure chosen for the subject location was the installation of “Vehicle Entering When Flashing” signs and flashers on cantilevered mast arms over the US 70 travel lanes with detectors on SR 1326-Clairidge Nursery Road. Ms. Danielle Harper, a citizen of Goldsboro, originally requested the improvements. US 70 is a four lane divided roadway with exclusive left turn lanes in each direction at the subject location. Exclusive right turn lanes are also provided for westbound US 70 traffic. SR 1326-Clairidge Nursery Road is a two-lane facility that intersects with US 70 to form a “T” type intersection. US 70 has a speed limit of 45 mph and SR 1326 has a speed limit of 55 mph within the vicinity of the subject location. SR 1326-Clairidge Nursery Road was under stop sign control for the duration of this analysis. However, please note that in 2004 a traffic signal was installed at this location.

It was felt that the limited sight distance for motorists accessing US 70 from SR 1326-Clairidge Nursery Road combined with high traffic volumes on US 70 increased the accident potential at this location. Due to the accident history and the accident potential of the subject intersection, it was felt that the improvement would provide a safer intersection for motorists. In addition, the improvement would alert approaching motorists on US 70 of possible conflicts at the location. The initial crash analysis for this location was completed from November 1, 1995 through October 31, 1998 with a total of ten reported crashes. According to the initial analysis, there were two Angle crashes, two Left-Turn crashes, and one Sideswipe crash, resulting in one class C injury. The final completion date for the improvements at the subject intersection was on November 1, 2000.

## **Naive Before and After Analysis**

After reviewing the spot safety 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 was from September 1, 2000 through December 31, 2000. The before period consisted of reported crashes from September 1, 1997 through August 31, 2000 (3 Years) and the after period consisted of reported crashes from January 1, 2001 through December 31, 2003 (3 Years). The ending date for this analysis was determined by the installation of a traffic signal at the treatment intersection. The treatment data consisted of all crashes within 150 feet of the subject intersection. Please see attached *Location Map* for further detail.

The attached data Table 1 depicts the Naive Before and After Analysis for the above information. The data in Tables 1 consists of an overall crash summary and a crash type summary for the treatment intersection. The overall crash summary contains high level crashes, crash rates, and vehicle exposure statistics. The crash type summary contains crashes broken down by accident type. The before period ADT year was 1999, and the after period ADT year was 2002. Please note that Frontal Impact crashes were the target crashes for the applied countermeasure. The Frontal Impact Crash types considered are as follows: Left turn, same roadway; Left turn, different roadways; Right turn, same roadway; Right turn, different roadways; Head on; and Angle.

As shown in Table 1, the naive before and after analysis at the treatment location resulted in a 200.0 percent increase in Total Crashes, a 209.9 percent increase in the Total Crash Rate, and a 52.6 percent decrease in the Severity Index. The number of Frontal Impact Crashes increased from one crash in the before period to five crashes in the after period.

## **Results and Discussion**

The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 200.0 percent increase in Total Crashes and a 400.0 percent increase in Frontal Impact Crashes. The summary results above demonstrate that the treatment location appears to have had an increase in the number of Total Crashes and Frontal Impact Crashes from the before to the after period.

Flashing traffic signals are installed to help motorists better identify the existing traffic control. However, analysis of the crash data in the before period reveals that none of the crashes at the treatment intersection were caused by a vehicle running through the stop sign located on SR 1326-Clairidge Nursery Road. In addition, only one of the four crashes in the before period is considered a “correctable” crash type. The accidents that occurred at this location in the before period do not appear to be caused by a lack of recognizing the stop condition.

The countermeasure crash reduction for Total Crashes at the subject intersection is a 200.0 percent increase in crashes. The countermeasure crash reduction for Frontal Impact Crashes at the subject intersection is a 400.0 percent increase in crashes. As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors.

Upon field investigation, a traffic signal has been installed at the subject location. It is recommended that another study be performed at this intersection in the future to evaluate the traffic signal installation countermeasure. Please see the attached *Treatment Site Location Photos*. Photos are provided for each leg of the treatment intersection.

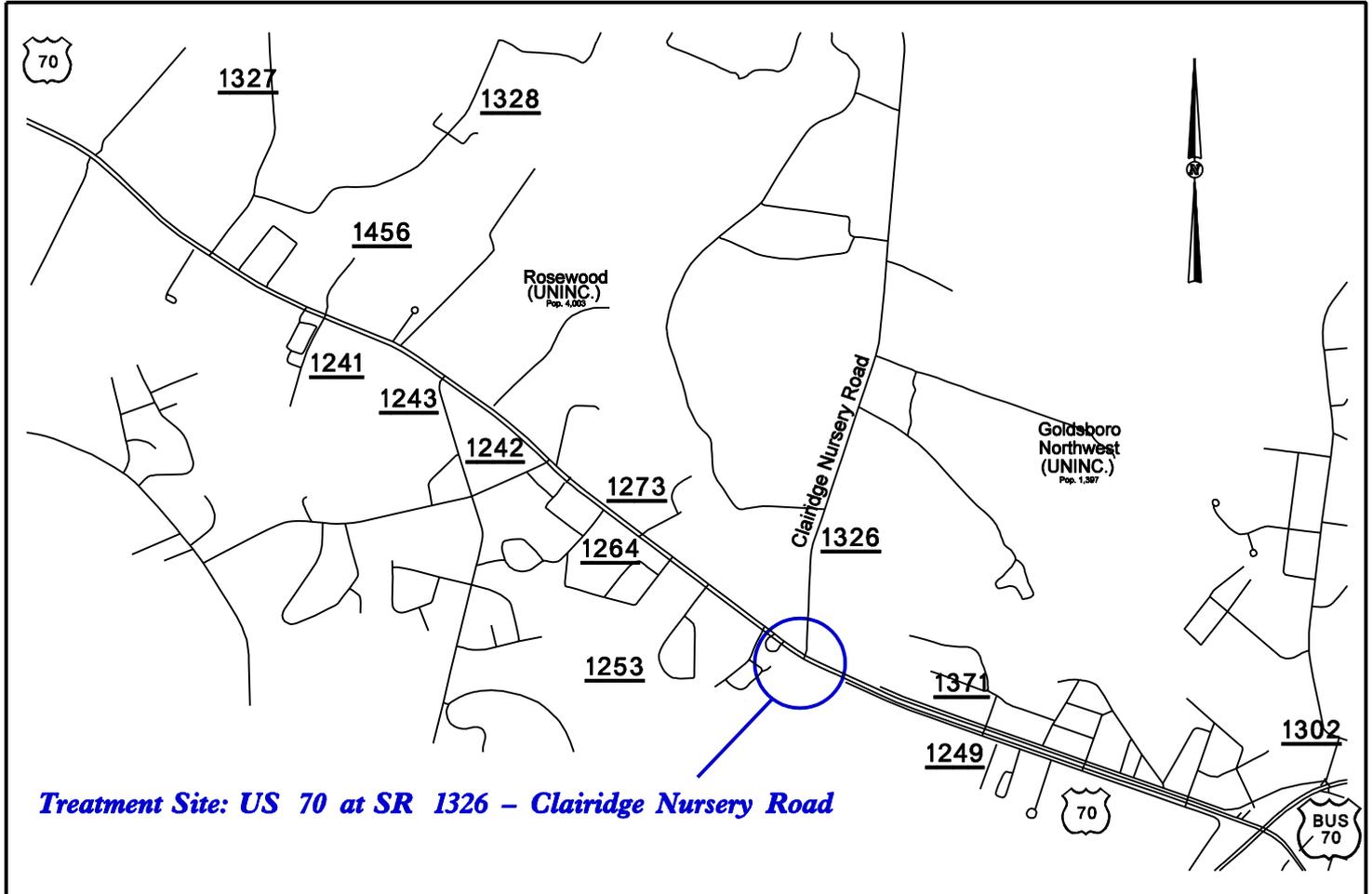
**Table 1. Treatment Intersection Overall Crash Summary and Crash Type Summary**

<b>OVERALL CRASH SUMMARY</b>	<b>Before Period</b>	<b>After Period</b>	<b>Percent Change</b>
Total Crashes	4	12	200.0
Fatal Crashes	0	0	n/a
Non-Fatal Injury Crashes	2	2	0.0
Total Injury Crashes	2	2	0.0
PDO Crashes	2	10	400.0
Night Crashes	0	4	n/a
Wet Crashes	0	4	n/a
<b>Rate</b>			
Total Crash Rate	10.34	32.04	209.9
Fatal Crash Rate	0	0	n/a
Non Fatal Crash Rate	5.17	5.34	3.3
Night Crash Rate	0	10.68	n/a
Wet Crash Rate	0	10.68	n/a
<b>ADT</b>			
Annual ADT	35,300	34,200	-3.1
Total Vehicle Exposure	38.69	37.45	-3.2
Severity Index	4.7	2.23	-52.6

<b>CRASH TYPE SUMMARY</b>	<b>Before Period</b>	<b>After Period</b>	<b>Percent Change</b>
Angle	1	1	0.0
Head On	0	1	n/a
Left Turn, Different Roadways	0	2	n/a
Left Turn, Same Roadway	0	1	n/a
Ran Off Road - Left	1	0	-100.0
Ran Off Road - Right	0	1	n/a
Rear End, Slow or Stop	1	3	200.0
Sideswipe, Same Direction	1	3	200.0

# Evaluation of Spot Safety Project Number 04-99-203

## Location Map, Wayne County



*Treatment Site Photo (Taken on May 18, 2005)*



Looking north toward SR 1326-Clairidge Nursery Road



Looking south on SR 1326-Clairidge Nursery Road

*Treatment Site Photo (Taken on May 18, 2005)*



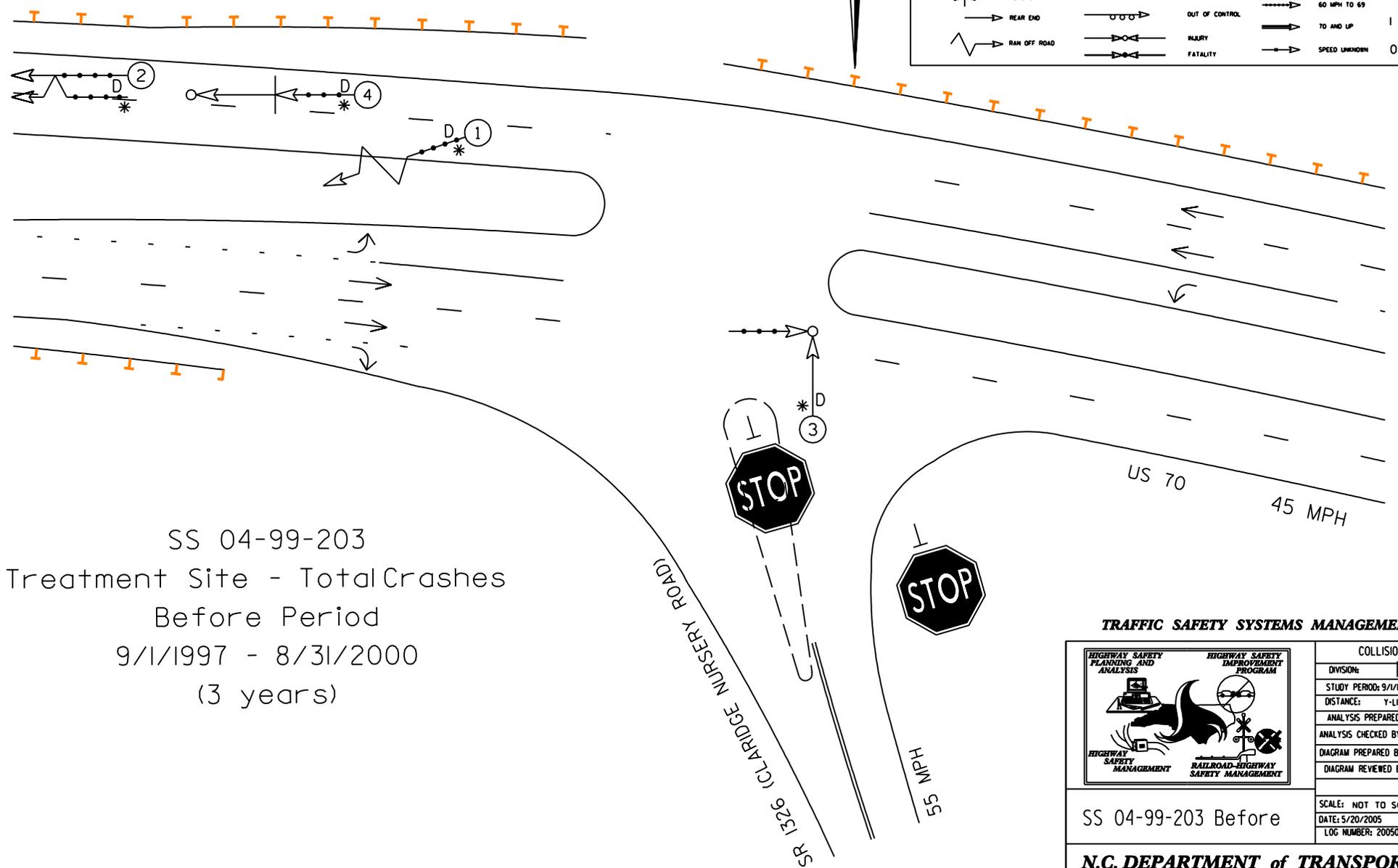
Looking east on US 70



Looking west on US 70

**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
	DEER		OUT OF CONTROL		40 MPH TO 49		WET
	FIXED OBJECT		INJURY		50 MPH TO 59		ICY OR SNOWY
	HEAD ON		FATALITY		60 MPH TO 69		ONLY
	REAR END		SPEED UNKNOWN		TO AND UP		
	RAN OFF ROAD						



SS 04-99-203  
 Treatment Site - TotalCrashes  
 Before Period  
 9/1/1997 - 8/31/2000  
 (3 years)

**TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT**



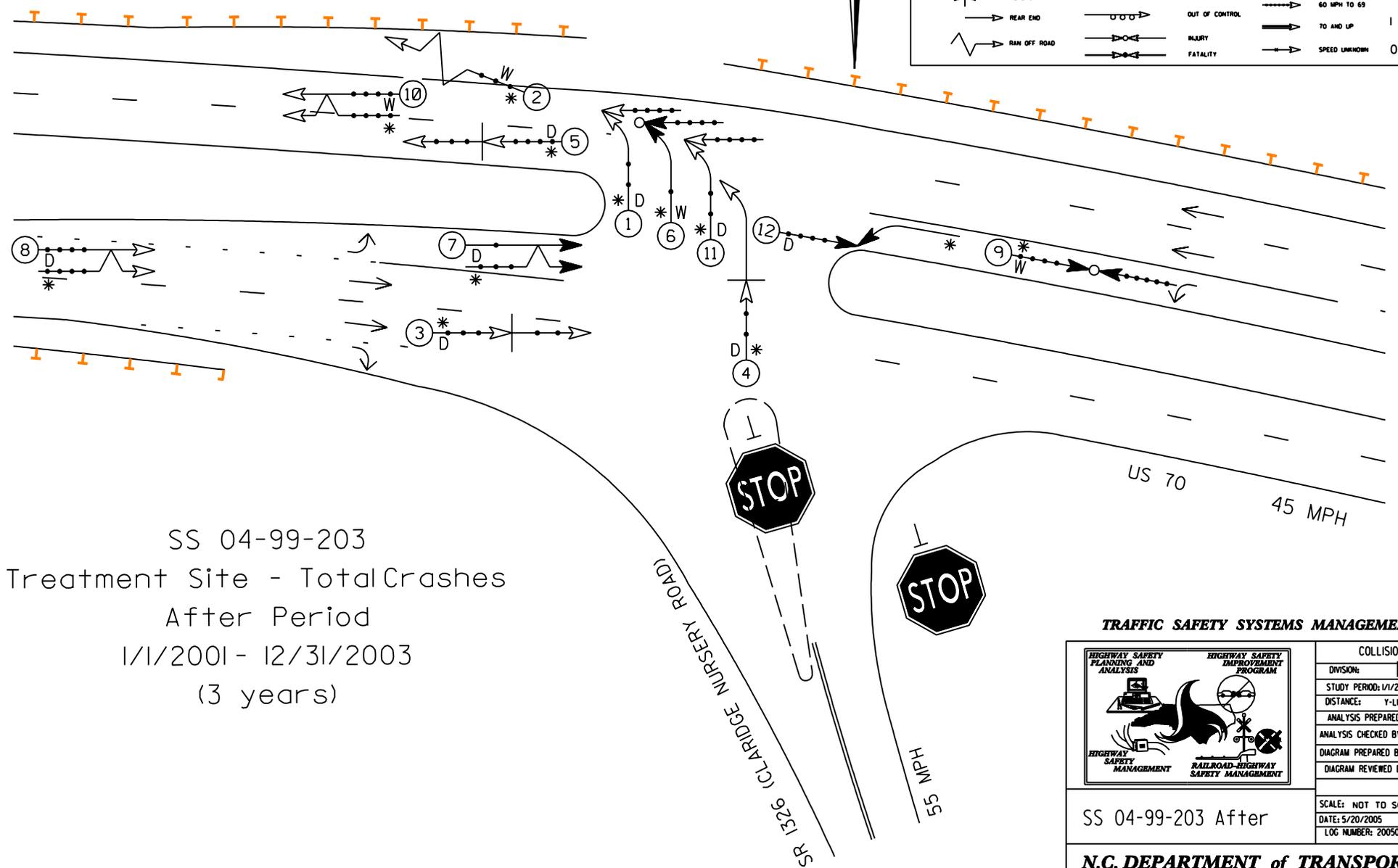
COLLISION DIAGRAM	
DIVISION:	AREA:
STUDY PERIOD: 9/1/1997 - 8/31/2000	
DISTANCE: Y-LINE = 150 ft	
ANALYSIS PREPARED BY: CLG	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: CLG	
DIAGRAM REVIEWED BY:	

SS 04-99-203 Before  
 SCALE: NOT TO SCALE  
 DATE: 5/20/2005  
 LOG NUMBER: 20050264

**N.C. DEPARTMENT of TRANSPORTATION**  
**DIVISION of HIGHWAYS**  
**TRAFFIC ENGINEERING AND SAFETY**  
**SYSTEMS BRANCH**

**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		SHOULDER		30 MPH TO 39		DRY
	DEER		OUT OF CONTROL		40 MPH TO 49		WET
	FIXED OBJECT		HAZARD		50 MPH TO 59		ICY OR SNOWY
	HEAD ON		FATALITY		60 MPH TO 69		ONLY
	REAR END				70 AND UP		
	RAN OFF ROAD				SPEED UNKNOWN		



SS 04-99-203  
 Treatment Site - TotalCrashes  
 After Period  
 1/1/2001 - 12/31/2003  
 (3 years)

**TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT**



COLLISION DIAGRAM	
DIVISION:	AREA:
STUDY PERIOD: 1/1/2001 - 12/31/2003	
DISTANCE: Y-LINE = 150 ft	
ANALYSIS PREPARED BY: CLG	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: CLG	
DIAGRAM REVIEWED BY:	

SS 04-99-203 After

SCALE: NOT TO SCALE
DATE: 5/20/2005
LOG NUMBER: 20050264

**N.C. DEPARTMENT of TRANSPORTATION**  
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