Spot Safety Project Evaluation

Project Log # 200610098

Spot Safety Project # 06-97-204

Spot Safety Project Evaluation of the Standard Flasher Installation at the Intersection of NC 210 at SR 1006 (Old Stage Road) in Harnett County

Documents Prepared By:

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_____ 2/22/07
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Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 06-97-204 - Standard Flasher Installation at the Intersection of NC 210 at SR 1006 (Old Stage Road) in Harnett County.

Project Information and Background from the Project File Folder

Both NC 210 and SR 1006 are 55 mph two lane facilities without left turn lanes. The intersection is controlled by oversized, high intensity sheeting stop signs on SR 1006. There are transverse rumble strips and stop ahead warning signs on SR 1006 when approaching the treatment intersection.

The original problem statement was that motorists were failing to stop before entering NC 210 resulting in crashes. The initial crash analysis was completed from 1/1/1988 through 10/31/1997 with 25 reported crashes with 23 being correctable (angle) crashes. There were a total of 8 Class A, 18 Class B, and 16 Class C injuries. The spot safety project improvement countermeasure chosen for the subject location was the installation of a standard flasher. The final completion date for the standard flasher installation at the subject intersection was on November 26, 2002 at a cost of $8,000.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes along the subject road, the crash data omitted from this analysis to consider for an adequate construction period was from October 2002 to December 2002. The before period consisted of reported crashes from January 1, 1999 through September 31, 2002 (3 years, 9 Months) and the after period consisted of reported crashes from January 1, 2003 through September 30, 2006 (3 Years, 9 Months). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed.

The treatment data consisted of all crashes within 150 feet of the subject intersection. The following data table depicts the Naive Before and After Analysis for the above information. Please note that Frontal Impact Crashes were the target crashes for the applied countermeasures. Frontal Impact Crash types are as follows: Left turn, same roadway; Left turn, different roadways; Right turn, same roadway; Right turn, different roadways; Head on; and Angle.

Treatment Information

	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	17	28	64.7
Total Severity Index	17.4	10.1	-42.0
Frontal Impact Crashes	16	23	43.8
Frontal Severity Index	18.5	11.8	-36.2
Volume	7600	7100	-6.6

Treatment Injury Crashes

	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal	0	0	N/A
Class A	3	2	-33.3
Class B	3	6	100.0
Class C	4	8	100.0
Property Damage Only	7	12	71.4

Frontal Injury Crashes

	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal	0	0	N/A
Class A	3	2	-33.3
Class B	3	6	100.0
Class C	4	7	75.0
Property Damage Only	6	8	33.3

Table 2.

The before and after analysis at the treatment location resulted in a 65 percent increase in Total Crashes, a 44 percent increase in Frontal Impact Crashes and a 7 percent decrease in Average Daily Traffic (ADT). The before period ADT year was 2001 and the after period ADT year was 2005.

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 65 percent increase in Total Crashes and a 44 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 an increase in the number of Frontal Impact Crashes from the before to the after period.

Information from the project background folder shows this intersection was subject to a few countermeasures in an attempt to reduce crashes. There were oversized stop signs, transverse rumble strips, and a standard flasher installed. Upon the field investigation there were two other improvements noted. A left turn lane installation was noted on NC 210 at both approaches and a portion of raised grade on NC 210 (east leg) was removed to improve sight distance. Information from the regional office for this location shows these improvements were made during the month of January 2007.

Referencing the collision diagrams and the background information it is apparent that some motorists are still having problems traversing the intersection safely. In the before period there are two angle crashes with the "at fault" vehicle showing a speed of 20 mph or greater. In the after period there are eight angle crashes with the "at fault" vehicle showing a speed of 20 mph or greater. This data may indicate some vehicles are running the stop condition.

Table 2 shows a distribution of crashes over the study period of this evaluation. Notice crashes peaked just before the installation of the flasher, then were reduced and remained consistent for the next two years before peaking again. This information shows that the flasher may have had little to no effect on the decisions made by motorists.

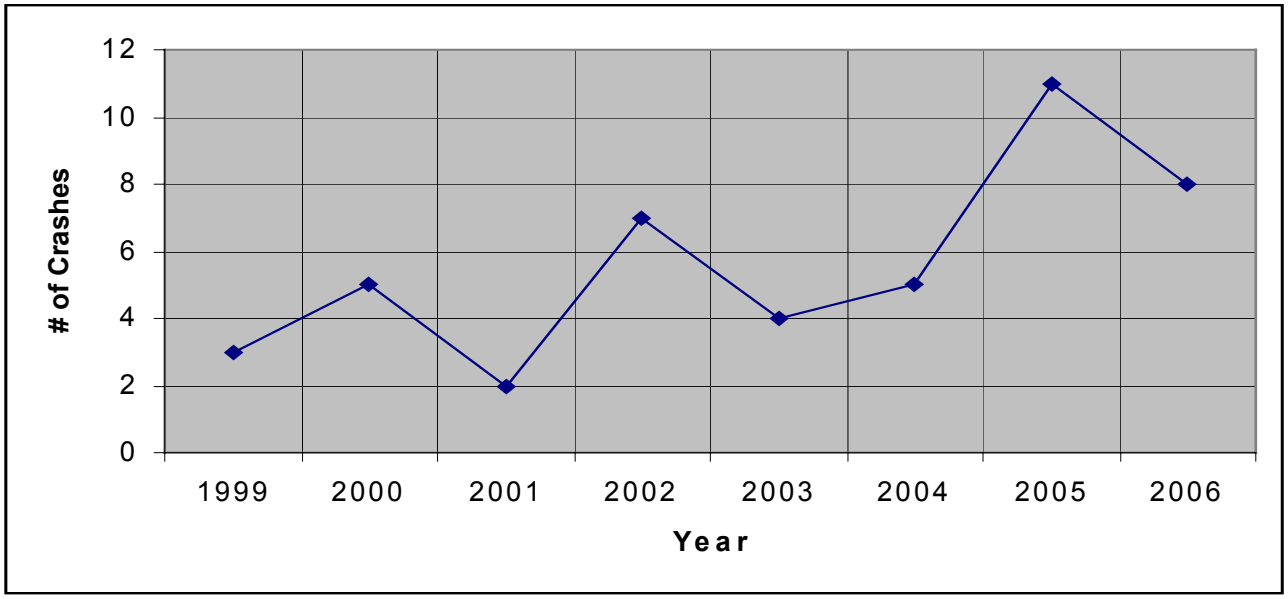
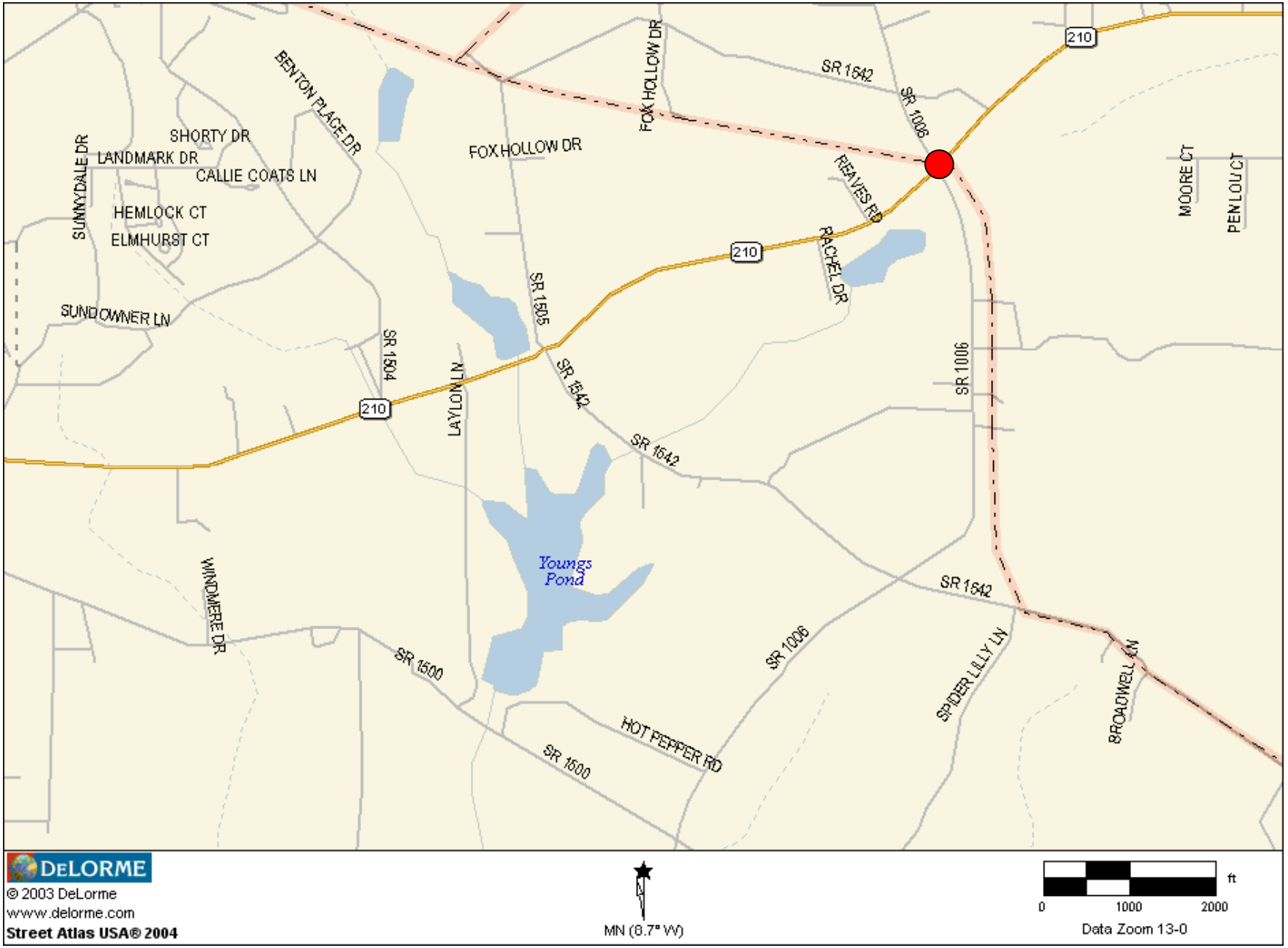


Table 2.

With the two new countermeasures installed (January 2007) it may prove beneficial to have this intersection monitored or re-evaluated in the future. 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 for this type of intersection.



Location Map: NC 210 at SR 1006 (Old Stage Road)

Treatment Site Photos taken January 22, 2007

On NC 210 driving east

On NC 210 driving east

On NC 210 driving west

On NC 210 driving west

On SR 1006 driving north

On SR 1006 driving north

On SR 1006 driving north looking east

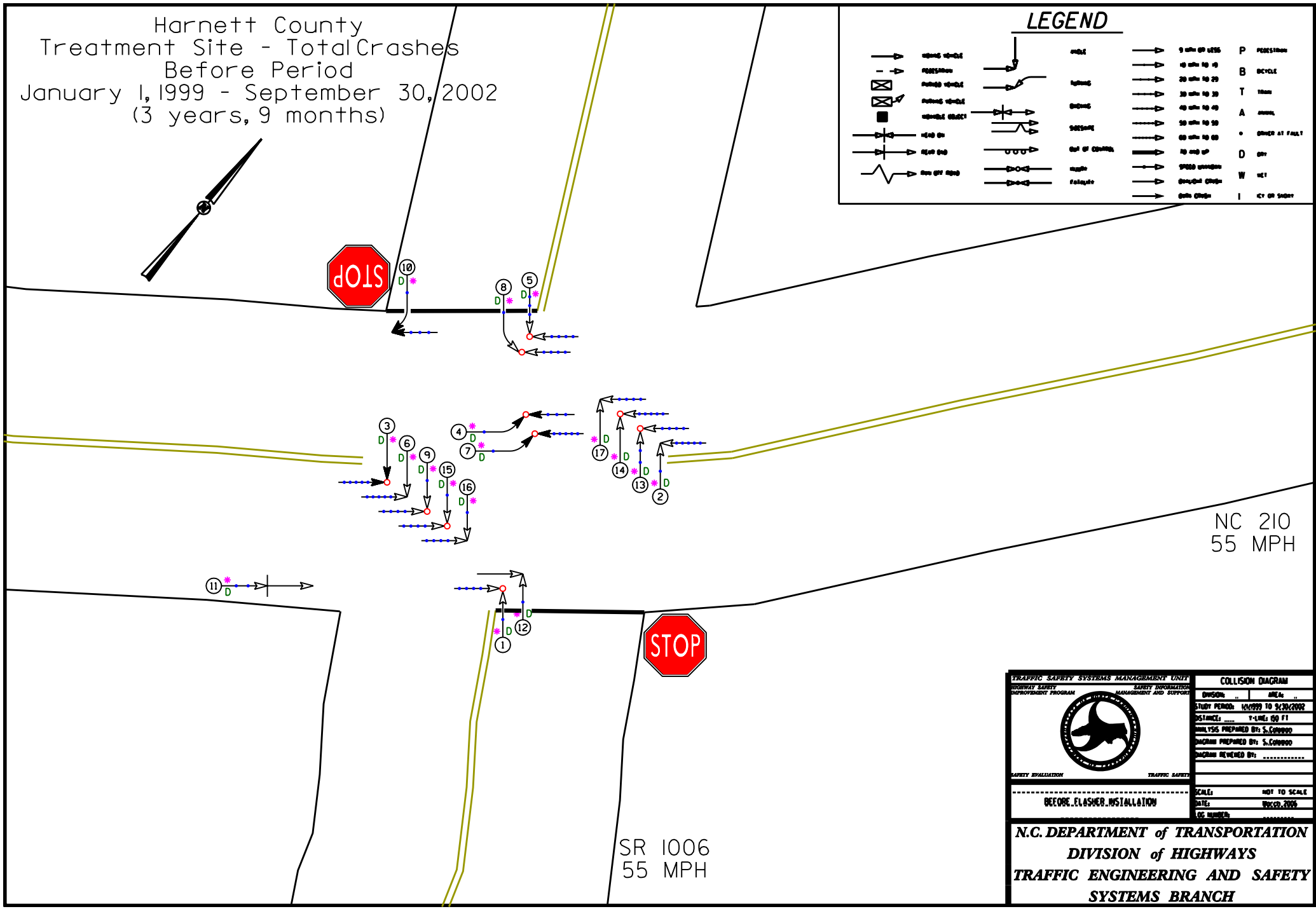
On SR 1006 driving north looking west

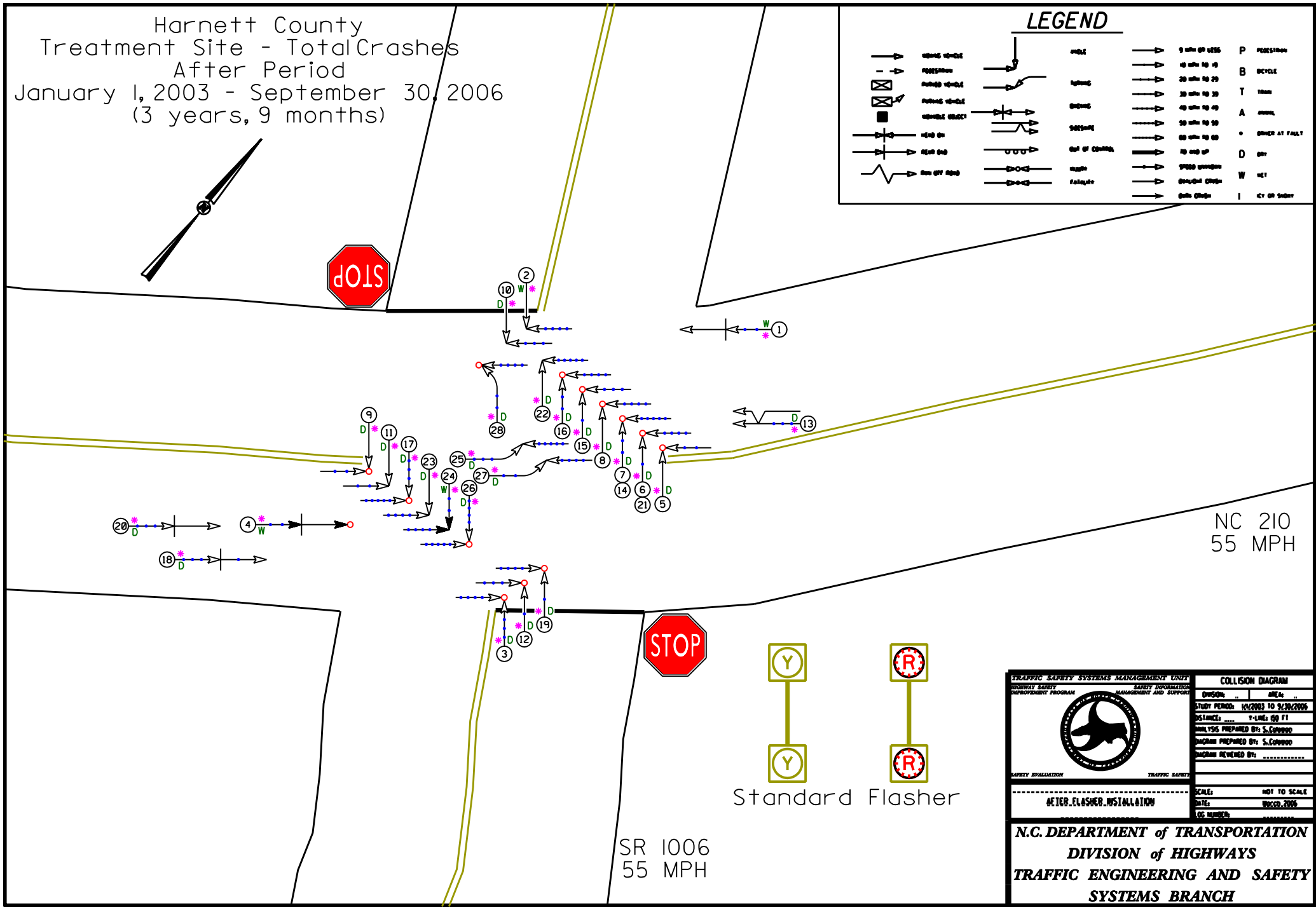
On SR 1006 driving south

On SR 1006 driving south

On SR 1006 driving south looking west


On SR 1006 driving south looking east


Harnett County
Treatment Site - Total Crashes
Before Period
January 1, 1999 - September 30, 2002
(3 years, 9 months)
LEGEND
STOP
STOP
NC 210
55 MPH
SR 1006
55 MPH
TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT
HIGHWAY SAFETY IMPROVEMENT PROGRAM
SAFETY INFORMATION MANAGEMENT AND SUPPORT
SAFETY EVALUATION
TRAFFIC SAFETY
COLLISION DIAGRAM
BEFORE.ELASHER.INSTALLATION
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH


Harnett County
Treatment Site - Total Crashes
After Period
January 1, 2003 - September 30, 2006
(3 years, 9 months)
LEGEND
STOP
STOP
NC 210
55 MPH
SR 1006
55 MPH
Standard Flasher
TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT
COLLISION DIAGRAM
AEIER.FLASHER.INSTALLATION
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH