

Spot Safety Project Evaluation

Project Log # 200512167

Spot Safety Project # 06-98-400

**Spot Safety Project Evaluation of the Traffic Signal Installation at the
Intersection of NC 214 (Sam Potts Hwy) and SR 1001 (Hallsboro Rd)
Columbus County**

Documents Prepared By:

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Traffic Safety Systems Management Section
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Principal Investigator

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2/5/2007
Date

Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 06-98-400 – The Intersection of NC 214 (Sam Potts Hwy) at SR 1001 (Hallsboro Rd) in Columbus County.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was the installation of a two phase, actuated traffic signal. NC 214 (Sam Potts Hwy) and SR 1001 (Hallsboro Rd) are both 2-lane roads with speed limits of 45 mph. The subject intersection is a 4-leg intersection which was controlled by stop signs on SR 1001 (Hallsboro Rd) in the before period.

Sight distance looking left from southbound SR 1001 is restricted due to a building on the corner. The signal was recommended after a fatal accident occurred at the intersection in late 1997.

The initial crash analysis was completed from January 1, 1994 to December 31, 1997 with 17 reported crashes; 11 Angle Crashes, 5 Left-Turn Crashes, and 1 Sideswipe Crash. The final completion date for the improvement at the subject intersection was on December 23, 1998 with a total cost of \$35,000.00.

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 November 1, 1998 to January 31, 1999. The before period consisted of reported crashes from June 1, 1991 through October 31, 1998 (7 years and 5 months) and the after period consisted of reported crashes from February 1, 1999 through June 30, 2006 (7 years and 5 months). The ending date for this analysis was determined by the available crash data at the time the analysis was completed.

The treatment data consisted of all reported crashes within 150 feet of the intersection. Please see attached *Location Map* for further details.

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that Frontal Impact Crashes at the intersection were the target crashes for the applied countermeasure. Frontal Impact Crashes that occurred in the study limits but not at the intersection, such as those that occurred at driveways, are not included in the Target Crashes. 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.

Treatment Information			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	26	12	-53.8
Total Severity Index	19.56	6.55	-66.5
Target Crashes	22	6	-72.7
Target Crash Severity Index	22.26	8.4	-62.3
Volume	4,900	4,200	-14.3
Crash Severity Summary			
Fatal Crashes	1	0	-100.0
Class A Crashes	4	0	-100.0
Class B Crashes	7	5	-28.6
Class C Crashes	7	4	-42.9
PDO Crashes	7	3	-57.1

The naive before and after analysis at the treatment location resulted in a 54 percent decrease in Total Crashes, a 73 percent decrease in Target Crashes, a 67 percent decrease in the Total Severity Index, and a 14 percent decrease in Average Daily Traffic (ADT). The before period ADT year was 1995 and the after period ADT year was 2002.

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 54 percent decrease in Total Crashes and a 73 percent decrease in Target Crashes, with a 14 percent decrease in ADT. The Total Severity Index decreased by 67 percent and the Target Crash Severity Index decreased by 62 percent. The summary results above demonstrate that both Total Crashes and Target Crashes appear to have decreased at the treatment location from the before to the after period.

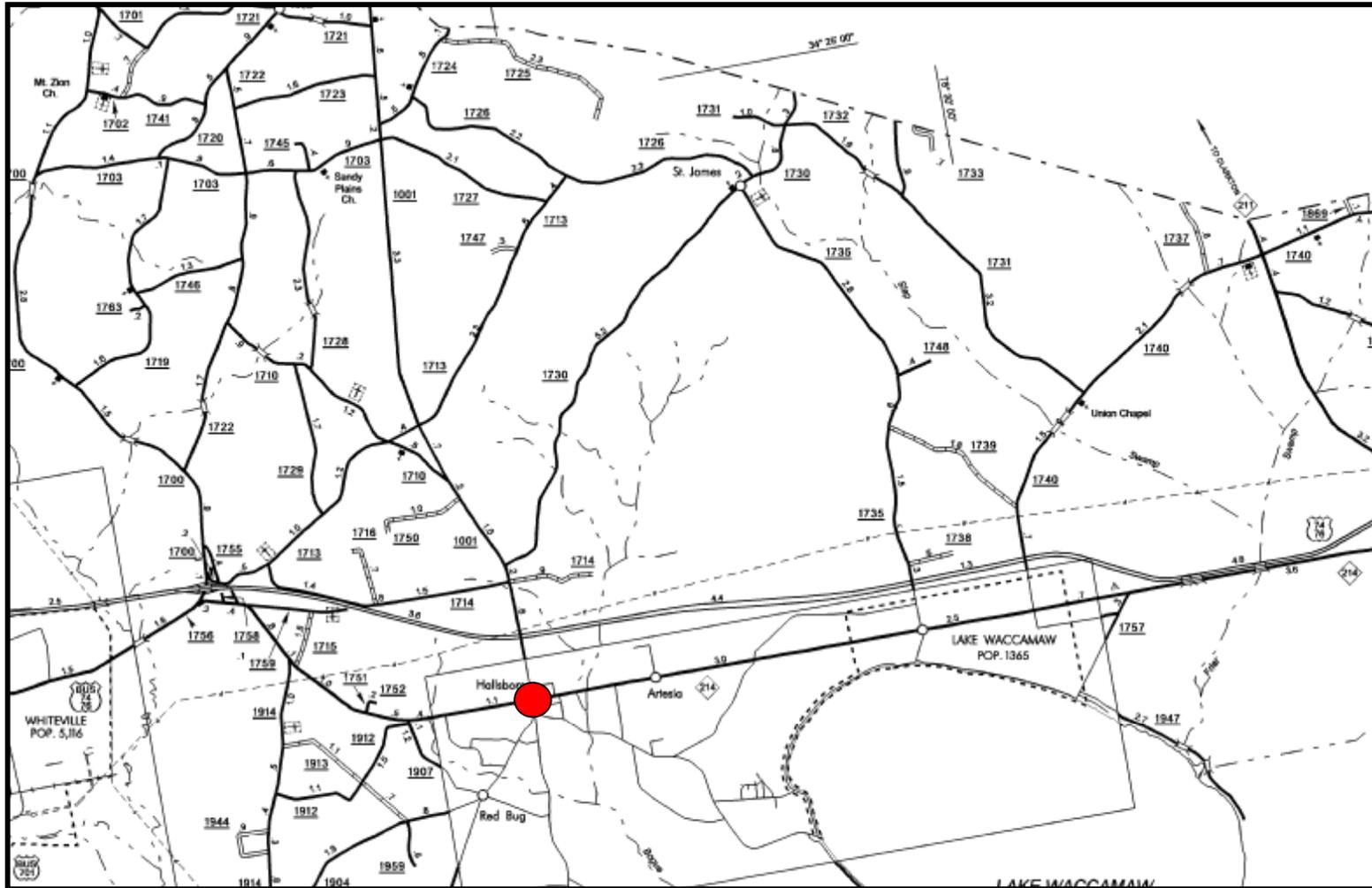
Referencing the *Collision Diagrams*, there were two large crash patterns in the before period that decreased substantially in the after period. One pattern was Angle Crashes between southbound vehicles on SR 1001 and westbound vehicles on NC 214. This pattern decreased 600 percent from the before to the after period (from 7 to 1). The other pattern was Angles Crashes between northbound vehicles on SR 1001 and eastbound vehicles on NC 214. This patter decreased 700 percent (from 8 to 1).

After reviewing the crash reports, it was determined that four before period crashes involving southbound vehicles on SR 1001 resulted from the vehicle running the stop sign (Before Crash #s 2, 10, 25, and 26). One before period crash involving a northbound vehicle on SR 1001 resulted from the vehicle running the stop sign (Before Crash # 23).

Please see the attached *Treatment Site Photos*. Photos are provided for all approaches to the treatment intersection.

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
Columbus County
Evaluation of Spot Safety Project #06-98-400



Treatment Location: NC 214 (Sam Potts Hwy) at SR 1001 (Hallsboro Rd) in Hallsboro

Treatment Site Photos Taken October 18, 2006



Eastbound on NC 214



Eastbound on NC 214



Eastbound on NC 214



Eastbound on NC 214



Northbound on SR 1001 (Hallsboro Rd)



Northbound on SR 1001 (Hallsboro Rd)

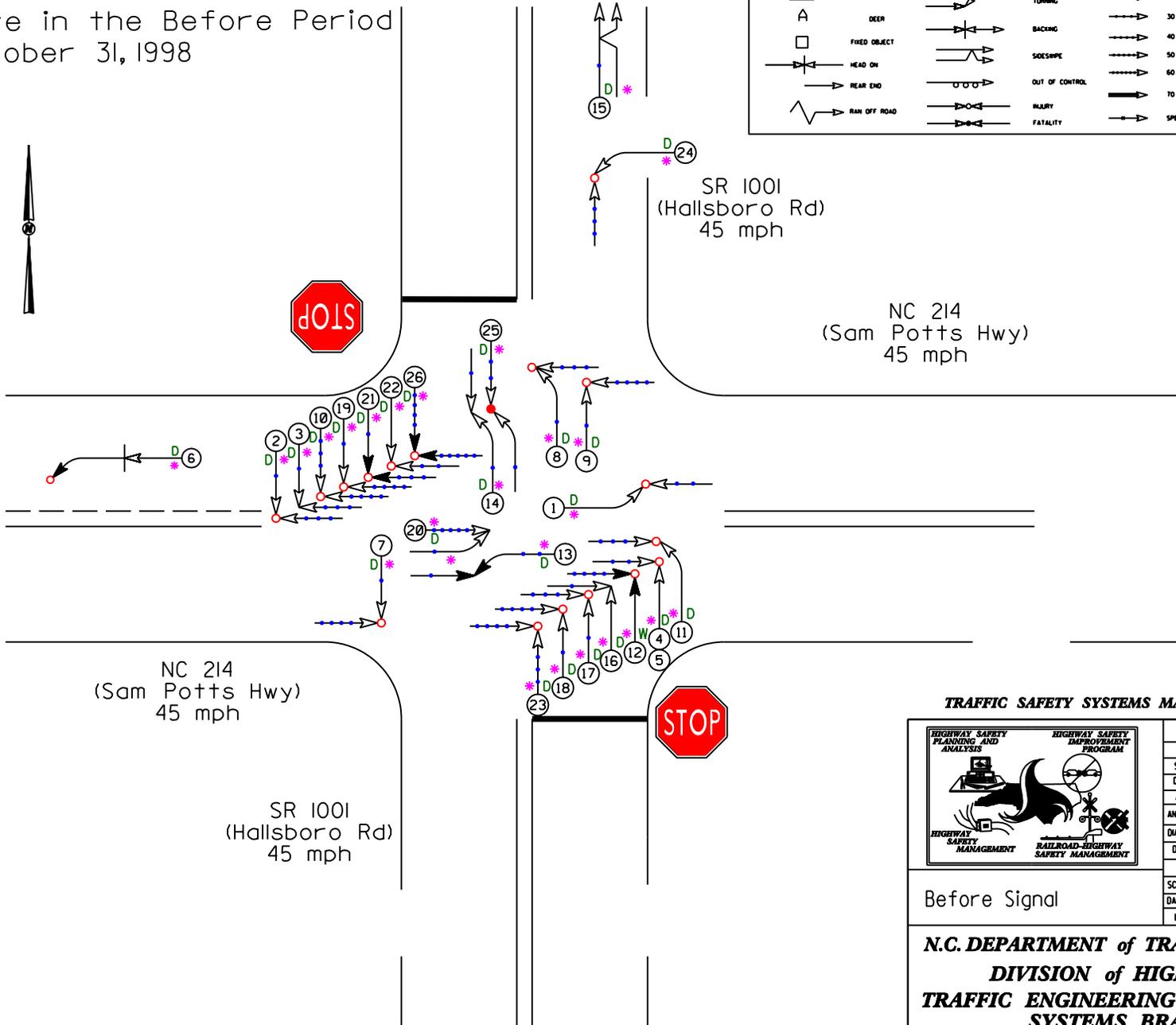


Southbound on SR 1001 (Hallsboro Rd)



Sight Distance Looking Left From SR 1001 (Hallsboro Rd)

Columbus County
 NC 214 (Sam Potts Hwy) at
 SR 1001 (Hallsboro Rd)
 Treatment Site in the Before Period
 June 1, 1991-October 31, 1998



TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT



COLLISION DIAGRAM	
DIVISION: 6	AREA:
STUDY PERIOD: 6/1/91 - 10/31/98	
DISTANCE: Y-LINE = 150 ft	
ANALYSIS PREPARED BY: B Robinson	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: B Robinson	
DIAGRAM REVIEWED BY:	
SCALE: NOT TO SCALE	
DATE: October 2006	
LOG NUMBER: 2005267	

Before Signal

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

