

Project Evaluation

Project Log # 200512003

Project Evaluation of the Four-Way Stop Sign and Overhead Flasher Installation At the Intersection of SR 1117 (Harkey Road) and SR 1122 (Courtland Road) in Lee 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

Carrie L. Simpson, EI

Traffic Safety Project Engineer

7/6/2006
Date

Project Evaluation Documentation

Subject Location

The Intersection of SR 1117 (Harkey Road) and SR 1122 (Courtland Road) in Lee County

Project Information

The project improvement countermeasure chosen for the subject location was the installation of a 4-way stop and an overhead flashing traffic signal. The improvement was requested by the Division in response to a request by the County Manager, the City Council, and the City Manager. The treatment location is located within the City of Sanford, with primarily residential development. Prior to the project improvement, the location was controlled by stop signs located on SR 1117 (Harkey Road). Both SR 1117 (Harkey Road) and SR 1122 (Courtland Road) are two-lane facilities at the treatment intersection with a speed limit of 35 mph.

According to the initial crash analysis, there were 26 crashes at the treatment location within a 3-year period, 23 of which were considered treatable by the four-way stop. The 4-way stop and overhead flasher were installed and operational on March 19, 2003.

Naïve Before and After Analysis

After reviewing all of the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was from February 1, 2003 through April 30, 2003. The before period consisted of reported crashes from February 1, 2000 through January 31, 2003 (3 Years) and the after period consisted of reported crashes from May 1, 2003 through April 30, 2006 (3 Years). 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 intersection of SR 1117 (Harkey Road) and SR 1122 (Courtland Road). Please see the attached *Location Map* for further detail.

The following table depicts the Naïve Before and After Analysis for the Total Crashes and Target Crashes at the treatment location. 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.

Treatment Information

	Before	After	Percent Reduction (-)/ Percent Increase (+)
Total Crashes	24	4	-83.3%
Total Severity Index	3.47	1.00	-71.2%
Target Crashes	23	4	-82.6%
Target Crashes	3.57	1.00	-72.0%
Volume	8100	8500	4.9%

<u>Target Crash Information</u>	Before	After	Percent Reduction (-)/ Percent Increase (+)
Fatal Injury Crashes	0	0	N/A
Non-Fatal Injury Crashes	8	0	-100.0%
Total Injury Crashes	8	0	-100.0%
Night Crashes	2	0	-100.0%
Wet Crashes	5	1	-80.0%

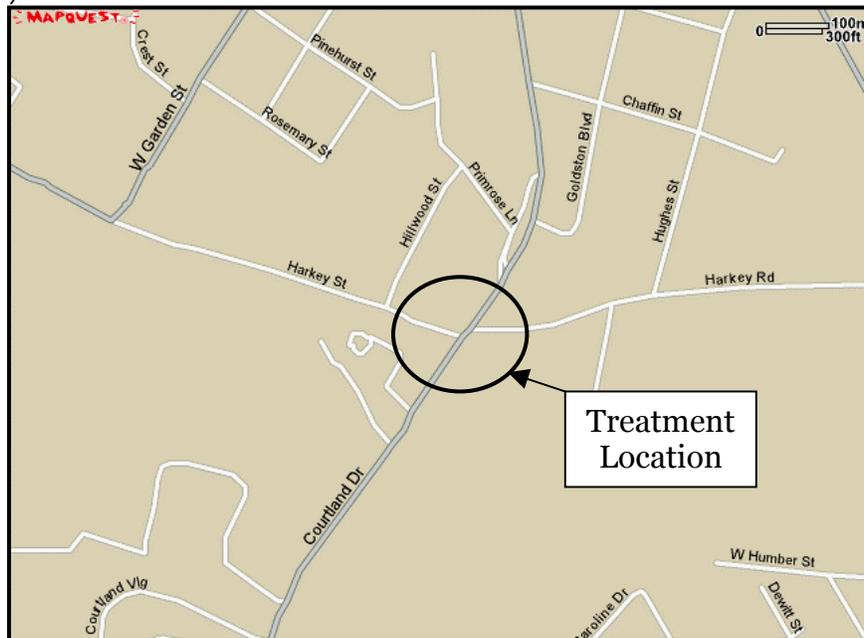
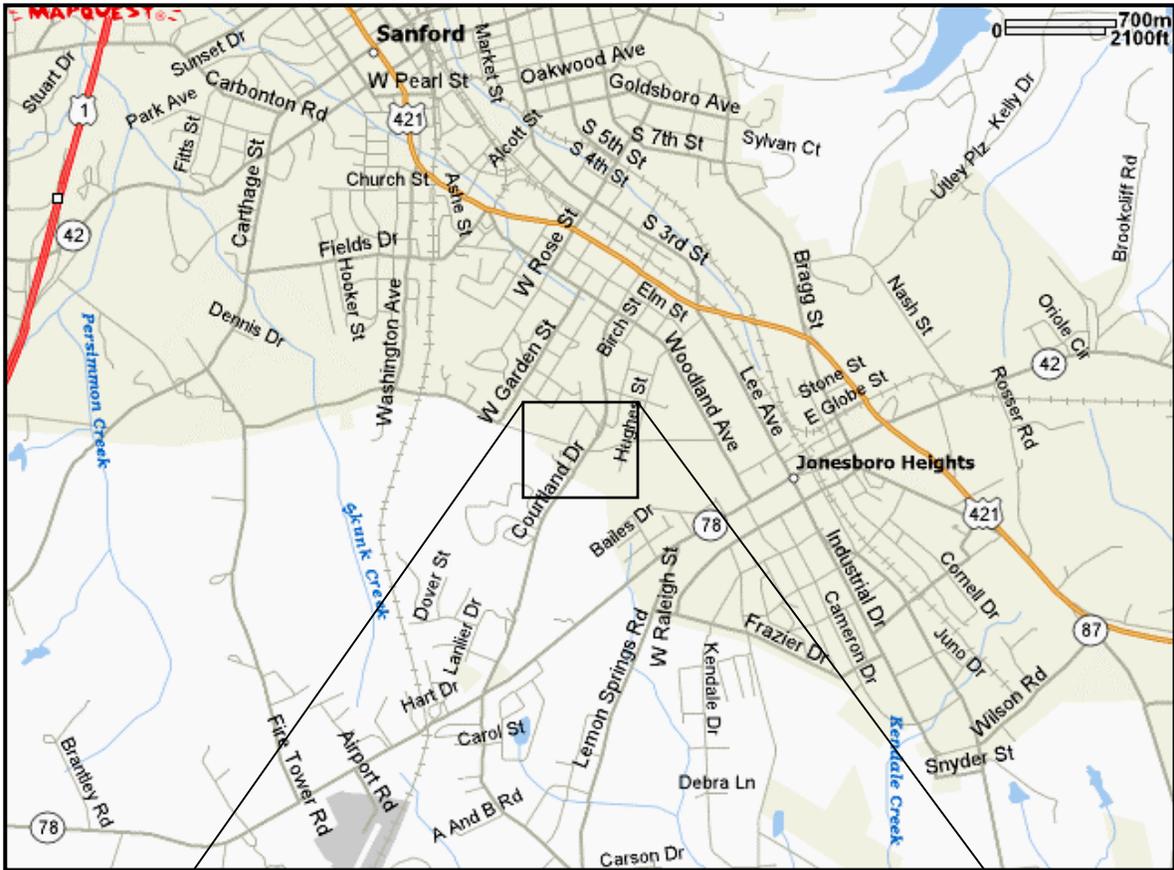
Results and Discussion

The naïve before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in an 83 percent decrease in both Total and Target Crashes. Further investigation shows that the Severity Index of Total and Target Crashes decreased by 71 percent and 72 percent, respectively. The summary results above demonstrate that the Treatment Location appears to have had a substantial decrease in both Total and Target Crashes from the before to after period using naïve methodologies.

The treatment location experienced a considerable decrease in crash severity. Target Injury Crashes decreased by 100 percent from the before to the after period. In the before period, Target Crashes resulted in two Class-B injury crashes, six class-C injury crashes, and fifteen PDO crashes. In the after period, Target Crashes resulted in four PDO crashes. Analysis of the crash data in the after period reveals that two of the four crashes at the treatment intersection were caused by the vehicles at fault running through the stop signs on SR 1122 (Courtland Road). The remaining two after period crashes appeared to be the results of right-of-way ambiguity. In both cases, the drivers stopped at their respective stop signs and then proceeded into the intersection assuming that they had the right-of-way.

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

Location Map



Treatment Site - Total Crashes

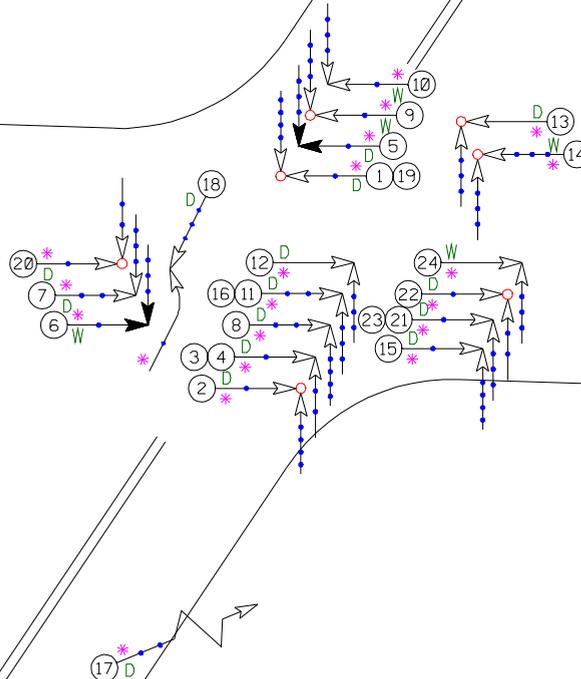
Before Period

2/1/2000 - 1/31/2003

(3 years)

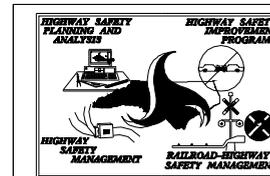
LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		DRY
	DEER		OUT OF CONTROL		40 MPH TO 49		WET
	FIXED OBJECT		INJURY		50 MPH TO 59		ICY OR SNOWY
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

SR 1117 (Harkey Rd)



SR 1122 (Courtland Dr)

TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT



COLLISION DIAGRAM	
DIVISION:	AREA:
STUDY PERIOD: 2/1/00 - 1/31/03	
DISTANCE: Y-LINE = 150 ft	
ANALYSIS PREPARED BY: CLS	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: CLS	
DIAGRAM REVIEWED BY:	

SR 1122 at SR 1117

Before Period

SCALE: NOT TO SCALE
DATE: 6/30/2006
LOG NUMBER: 200522003

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

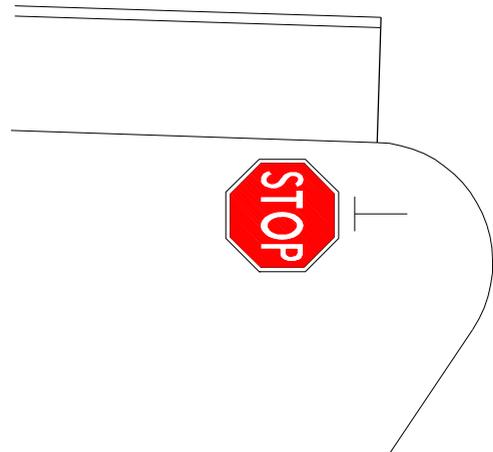
Treatment Site - Total Crashes

After Period

5/1/2003 - 4/30/2006
(3 years)

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
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	HEAD ON		FATALITY		60 MPH TO 69		ONLY
	REAR END				70 AND UP		
	RAN OFF ROAD				SPEED UNKNOWN		

SR 1117 (Harkey Rd)



SR 1122 (Courtland Dr)

TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT



SR 1122 at SR 1117

After Period

COLLISION DIAGRAM	
DIVISION:	AREA:
STUDY PERIOD: 5/1/03 - 4/30/06	DISTANCE: Y-LINE = 150 ft
ANALYSIS PREPARED BY: CLS	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: CLS	
DIAGRAM REVIEWED BY:	

SCALE: NOT TO SCALE
DATE: 6/30/2006
LOG NUMBER: 20052003

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TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH