

Spot Safety Project Evaluation

Project Log # 200505139

Spot Safety Project # 01-95-269

**Spot Safety Project Evaluation of obstruction removal to improve sight distance at the
Currituck County High School/US 158 intersection in Currituck Co.**

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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Traffic Safety Project Engineer

02/20/2006
Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 01-95-269 – Clear obstructions from southeast quadrant of the intersection at US 158 at Currituck County High School to improve sight distance.

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 of the treatment data 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 to clear obstructions from the southeast quadrant of the intersection to improve sight distance. US 158 is a five-lane facility with a center left turn lane and has a 35-MPH school zone speed limit. There was no background information included in the project file folder. For this reason the obstructions removed and the original problem statement are unable to be determined. The final completion date for the obstruction removal along the subject road was on April 15, 1998 at a cost of \$5,000.

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 March 1998 to May 1998. The before period consisted of reported crashes from December 1, 1990 through February 28, 1998 (7 years, 3 Months) and the after period consisted of reported crashes from June 1, 1998 through August 31, 2005 (7 Years, 3 Months). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed. The analysis consisted of the treatment data along US 158 from MP 9.56 to MP 9.94 (1000 feet on either side of the school driveway at MP 9.75) with a 0' y-line.

The following data table depicts the Naive Before and After Analysis for the above information. Please note that all crashes within 150 feet of the intersection were the Target Crashes for this location.

| <u>Treatment Information</u> | | | |
|---------------------------------|---------------|--------------|---|
| | Before | After | Percent Reduction (-) Percent Increase (+) |
| Total crashes | 8 | 9 | 12.5 |
| Total Severity Index | 13.3 | 3.5 | -73.8 |
| Target Crashes | 2 | 3 | 50.0 |
| Target Severity Index | 4.7 | 1.0 | -78.7 |
| Volume | 14500 | 18000 | 24.1 |
| <u>Target Crash Information</u> | | | |
| | Before | After | Percent Reduction (-) Percent Increase (+) |
| Rear End, Slow Stop | 0 | 2 | 200.0 |
| Left Turn, Different Roadway | 2 | 1 | 600.0 |

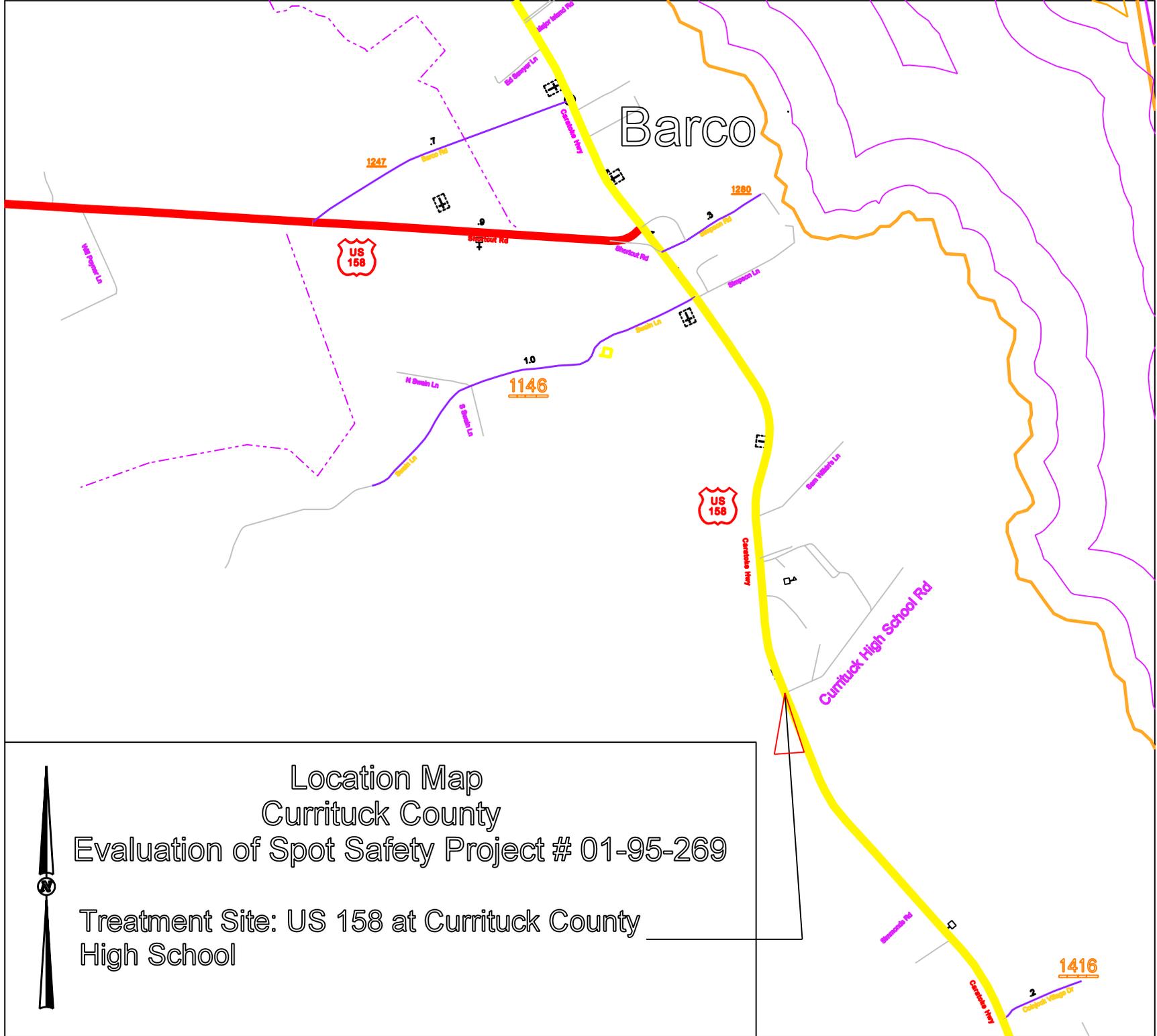
Table 1.

The naive before and after analysis at the treatment location resulted in a 12.5 percent increase in Total Crashes, a 50.0 percent increase in Target Crashes, and a 24.1 percent increase in Average Daily Traffic (ADT).

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 12.5 percent increase in Total Crashes and a 50.0 percent increase in Target 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 Target Crashes from the before to the after period.

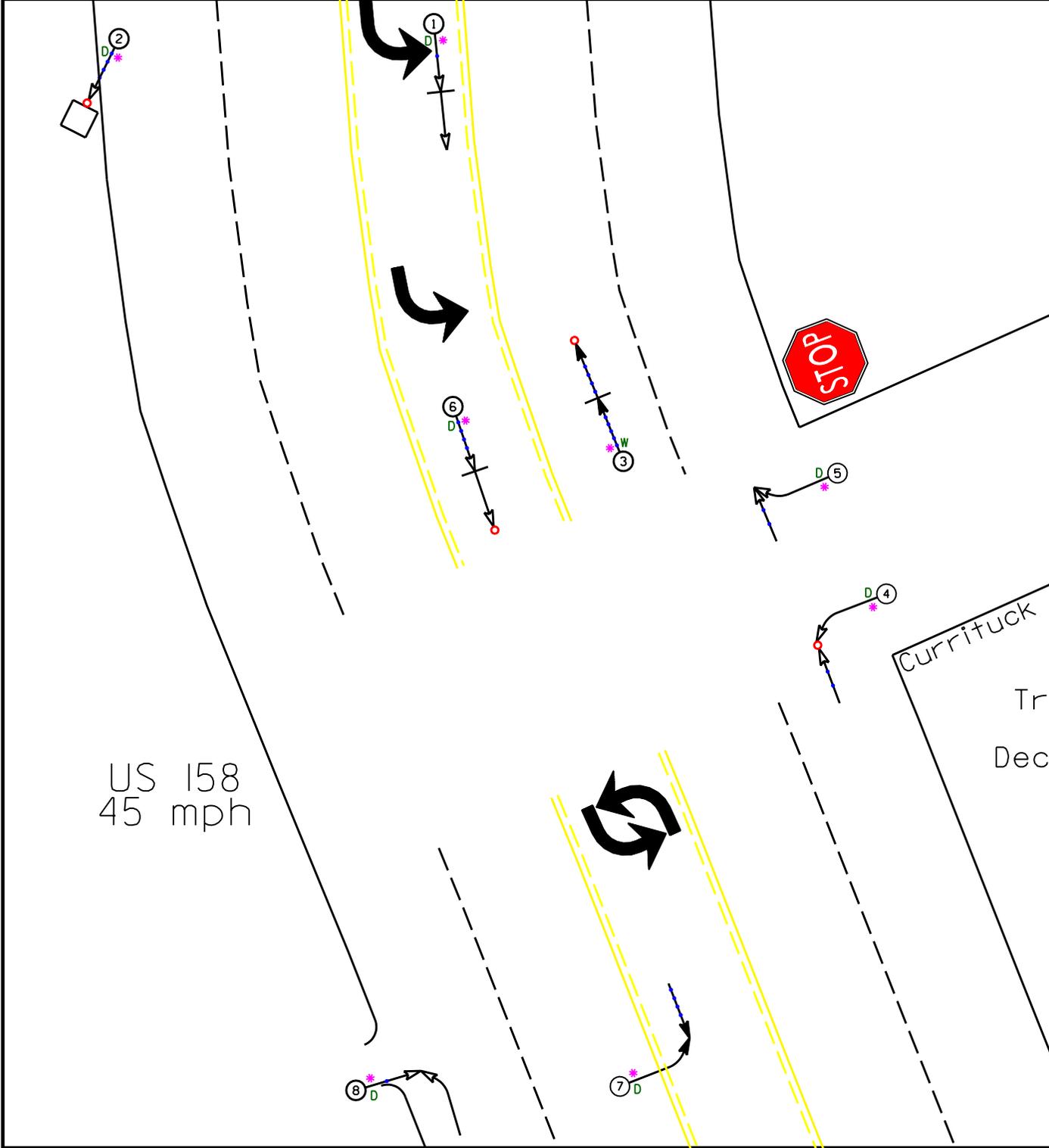
The most significant change noted here is the reduction in severity for total crashes despite the increase in Average Daily Traffic (ADT). Due to the lack of background information, an evaluation of the direct effect of the countermeasure may be unattainable to support this data set.



Location Map
 Currituck County
 Evaluation of Spot Safety Project # 01-95-269



Treatment Site: US 158 at Currituck County
 High School



LEGEND

| | | | | | | | |
|--|------------------|--|----------|--|----------------|--|------------------|
| | MOVING VEHICLE | | YIELD | | 9 MPH OR LESS | | P PEDESTRIAN |
| | PUSHOVER | | LIGHTING | | 10 MPH TO 19 | | B BICYCLE |
| | PUSHOVER VEHICLE | | SLOPING | | 20 MPH TO 29 | | T TRAIN |
| | PUSHOVER VEHICLE | | SLOPING | | 30 MPH TO 39 | | A ANIMAL |
| | PUSHOVER VEHICLE | | SLOPING | | 40 MPH TO 49 | | * OTHER AT FAULT |
| | END ON | | SLOPING | | 50 MPH TO 59 | | D DR* |
| | END ON | | SLOPING | | 60 MPH TO 69 | | D DR* |
| | END ON | | SLOPING | | 70 MPH OR UP | | D DR* |
| | END ON | | SLOPING | | SPEED UNKNOWN | | D DR* |
| | END ON | | SLOPING | | OUT OF CONTROL | | D DR* |
| | END ON | | SLOPING | | NIGHT | | D DR* |
| | END ON | | SLOPING | | FATIGUE | | D DR* |
| | END ON | | SLOPING | | DARK OF NIGHT | | D DR* |
| | END ON | | SLOPING | | DARK OF NIGHT | | D DR* |
| | END ON | | SLOPING | | DARK OF NIGHT | | D DR* |

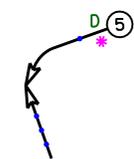
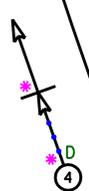
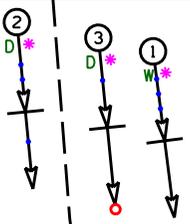
Currituck High School Road

Currituck County
Treatment Site - Total Crashes
Before Period
December 1, 1990 - February 28, 1998
(7 years 3 months)

US 158
45 mph



| | | | |
|---|--|------------------------------------|--------------------|
| TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT | | COLLISION DIAGRAM | |
| HIGHWAY SAFETY IMPROVEMENT PROGRAM | SAFETY INFORMATION MANAGEMENT AND SUPPORT | DIVISION: | AREA: |
| | | STUDY PERIOD: 12/01/90 TO 02/28/98 | Y-LINE: 150 FT |
| SAFETY BYALLOCATION | | TRAFFIC SAFETY | |
| BEFORE OBSTRUCTION CLEARING | | SCALE: NOT TO SCALE | DATE: JUNE 1, 2006 |
| N.C. DEPARTMENT of TRANSPORTATION | | LOG NUMBER: | |
| DIVISION of HIGHWAYS | | | |
| TRAFFIC ENGINEERING AND SAFETY | | | |
| SYSTEMS BRANCH | | | |



Currituck High School Road

US 158
45 mph

Currituck County
Treatment Site - Total Crashes
After Period
June 1, 1998 - August 31, 2005
(7 years 3 months)

| LEGEND | | | | | | | |
|--------|------------------------------------|--|-----------------|--|----------------|--|-------------------|
| | moving vehicle | | yield | | 5 mph or less | | P PEDESTRIAN |
| | stopped vehicle | | left turn | | 10 mph to 15 | | B BICYCLE |
| | stopped vehicle DRIVER AT FAULT | | right turn | | 20 mph to 25 | | T TRAIN |
| | head on | | crossing | | 30 mph to 35 | | A ANIMAL |
| | head on | | out of control | | 40 mph to 45 | | * DRIVER AT FAULT |
| | head on | | speed reduction | | 50 mph to 55 | | D DRIVER |
| | out of road | | night | | 60 mph to 65 | | W WET |
| | out of road | | fatigue | | 70 mph or more | | I ICY OR SNOWY |



| | | | |
|--|---|--------------------------------------|---------------------|
| TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT | | COLLISION DIAGRAM | |
| ROADWAY SAFETY IMPROVEMENT PROGRAM | SAFETY INFORMATION MANAGEMENT AND SUPPORT | DISION: .. | AREA: .. |
| | | STUDY PERIOD: 06/01/98 TO 08/31/2005 | SCALE: NOT TO SCALE |
| | | DISTANCE: .. | TIME: 150 FT |
| SAFETY EVALUATION | | ANALYSIS PREPARED BY: S. COOPER | DATE: JUNE 21, 2006 |
| AFTER OBSTRUCTION CLEARING | | DIAGRAM PREPARED BY: S. COOPER | LOG NUMBER: |
| <p align="center">N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH</p> | | | |