

# Spot Safety Project Evaluation

Spot Safety Project # 13-06-201

**Spot Safety Project Evaluation for Installation of Left-Turn Lane on US 25/US 70**

**US 25/US 70 at SR 1145 (Sharp Hollow Road)  
Madison County**

Documents Prepared By:

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For:

Safety Evaluation Group  
Traffic Safety Systems Management Section  
Transportation Mobility and Safety Division  
North Carolina Department of Transportation

**Principal Investigator**

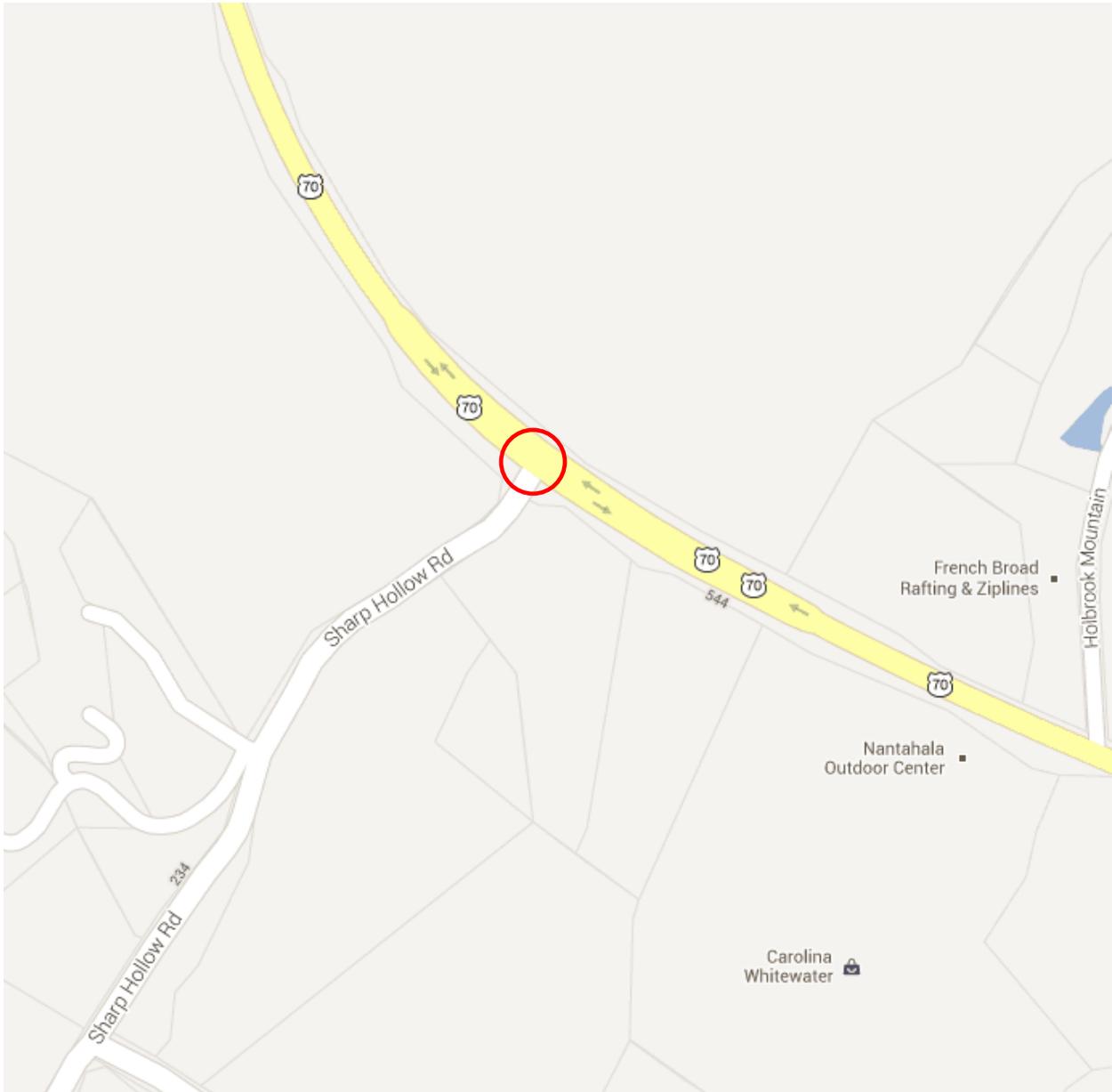
Heath Gore, PE  
Heath Gore  
AECOM

7-17-2013  
Date

# *Spot Safety Project Evaluation Documentation*

## **Subject Location**

Evaluation of Spot Safety Project Number 13-06-201 located at the unsignalized intersection of US 25/US 70 (Sharp Hollow Road) near Marshall in Madison County.



**Location Map Provided from Google Maps**



Aerial Map Provided from Google Maps

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

The spot safety project improvement countermeasure chosen for the subject location was installation of a northbound left-turn lane.

US 25/US 70 is a two-lane roadway with a left-turn lane on the northbound approach and a speed limit of 55 mph. SR 1145 (Sharp Hollow Road) is a two-lane facility with a speed limit of 55 mph.

The original statement of problem was that there are traffic patterns of rear end and run off road type crashes that can be attributed to vehicles on US 25/US 70 waiting to turn left onto SR 1145 (Sharp Hollow Road). The initial crash analysis was completed from October 1, 2000 to September 30, 2005 with eight (8) total reported crashes, of which there were six (6) rear end crashes and two (2) run off road crashes. The final completion date for the improvement at the subject intersection was on February 7, 2008 with a total cost of \$250,000.00.

## 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 were the months of January through March 2008. The before period consisted of reported crashes from November 1, 2002 through December 31, 2007 (5 years 2 months); and the after period consisted of reported crashes from April 1, 2008 through May 31, 2013 (5 years 2 months). The ending date for this analysis was determined by the date of available crash data at the time of analysis.

The treatment data consisted of all crashes within 150 feet of the subject intersection for the US 25/US 70 and SR 1145 (Sharp Hollow Road) intersection. *Please see attached location map and aerial map for further details.*

The following data table depicts the naive before and after analysis for the treatment location. Please note that Rear End Crashes were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	6	0	-100.0 %
Total Severity Index	4.70	0	N/A
Target Crashes	4	0	-100.0 %
Target Crash Severity Index	6.55	0	N/A
Volume (2005, 2010)	5,700	4,900	-14.0 %

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	0	0	N/A
Class B injury Crashes	1	0	-100.0 %
Class C Injury Crashes	2	0	-100.0 %
Property Damage Only	3	0	-100.0 %

The naive before and after analysis at the treatment location resulted in a 100 percent reduction in Total Crashes, a 100 percent reduction in Target Rear End Crashes. The before period ADT year was 2005 and the after period ADT year was 2010.

To further analyze the intersection crash patterns, the following chart shows different traffic movements and the change in crash totals through the study:

<u>Additional Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Ran Off Road	1	0	-100.0 %

## **Results and Discussion**

Referencing the *Collision Diagrams*, target crashes (Rear End Crashes) experienced a reduction from 4 crashes in the before period to 0 crashes in the after period. The installation of the northbound left-turn lanes was beneficial in reducing the target crashes at this location during the after period.

Ran off road crashes decreased from 1 crash in the before period to 0 crashes in the after period.

Please see the attached *Treatment Site Photos*. Photos are provided from Google Street View for all four 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.

## Treatment Site Photos from Google Street View



Google Maps (Image Date: 5/13) - Looking North on US 25/US 70 Approach



Google Maps (Image Date: 5/13) - Looking South on US 25/US 70 Approach



Google Maps (Image Date: 5/13) – Looking East from SR 1145 (Sharp Hollow Road) Approach

SS# 13-06-201  
 Madison County  
 BEFORE Period  
 11/1/02 - 12/31/07

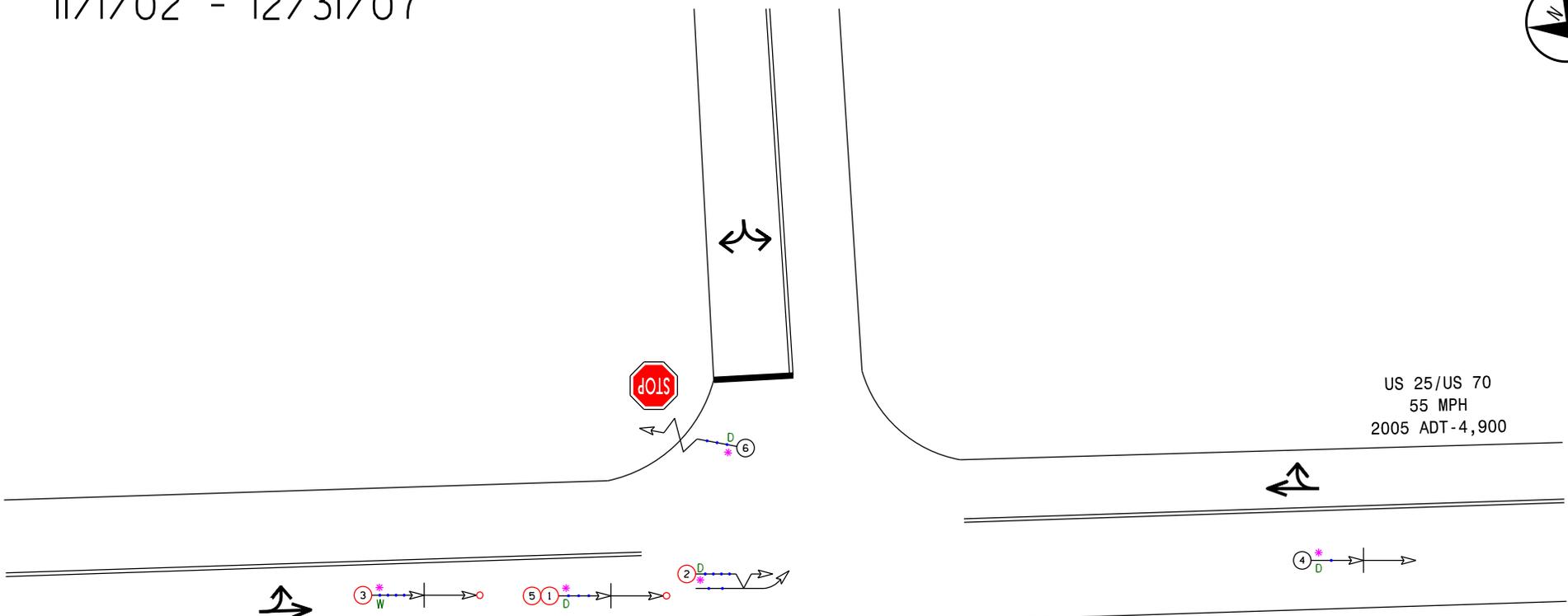
SR 1145 (Sharp Hollow Road)  
 55 MPH  
 2005 ADT-1,000 (Assumed)

US 25/US 70  
 55 MPH  
 2005 ADT-4,900

US 25/US 70  
 55 MPH  
 2005 ADT-5,500

NOTE Crash 2:  
 Sideswipe occurred because vehicle  
 tried to avoid rear-end collision

LEGEND							
	MOVING VEHICLE		ANGLE		1 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
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		REAR END		50 MPH TO 59		ICE OR SNOW
	REAR END		HURRY		60 MPH TO 69		TO AND UP
	RAN OFF ROAD		FATALITY		70 AND UP		SPEED UNKNOWN
					0 ONLY		



# Northbound Rear  
 End Crashes

**AECOM**

Prepared For:  
 N.C. DEPARTMENT of TRANSPORTATION  
 DIVISION of HIGHWAYS  
 TRANSPORTATION MOBILITY and  
 SAFETY DIVISION

**TRAFFIC SAFETY UNIT**

Date: 7-17-2013      Prepared By: Heath Gore, PE

