

# **Spot Safety Project Evaluation**

Spot Safety Project # 04-07-200

**Spot Safety Project Evaluation of Crosswalk and Pedestrian Signal Heads  
NC 97 (Raleigh Road) at West Haven Boulevard/Henry Street  
Nash County**

Documents Prepared By:

Hatch Mott MacDonald for

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

**Principal Investigator**

Travis Braswell

10-2-2013

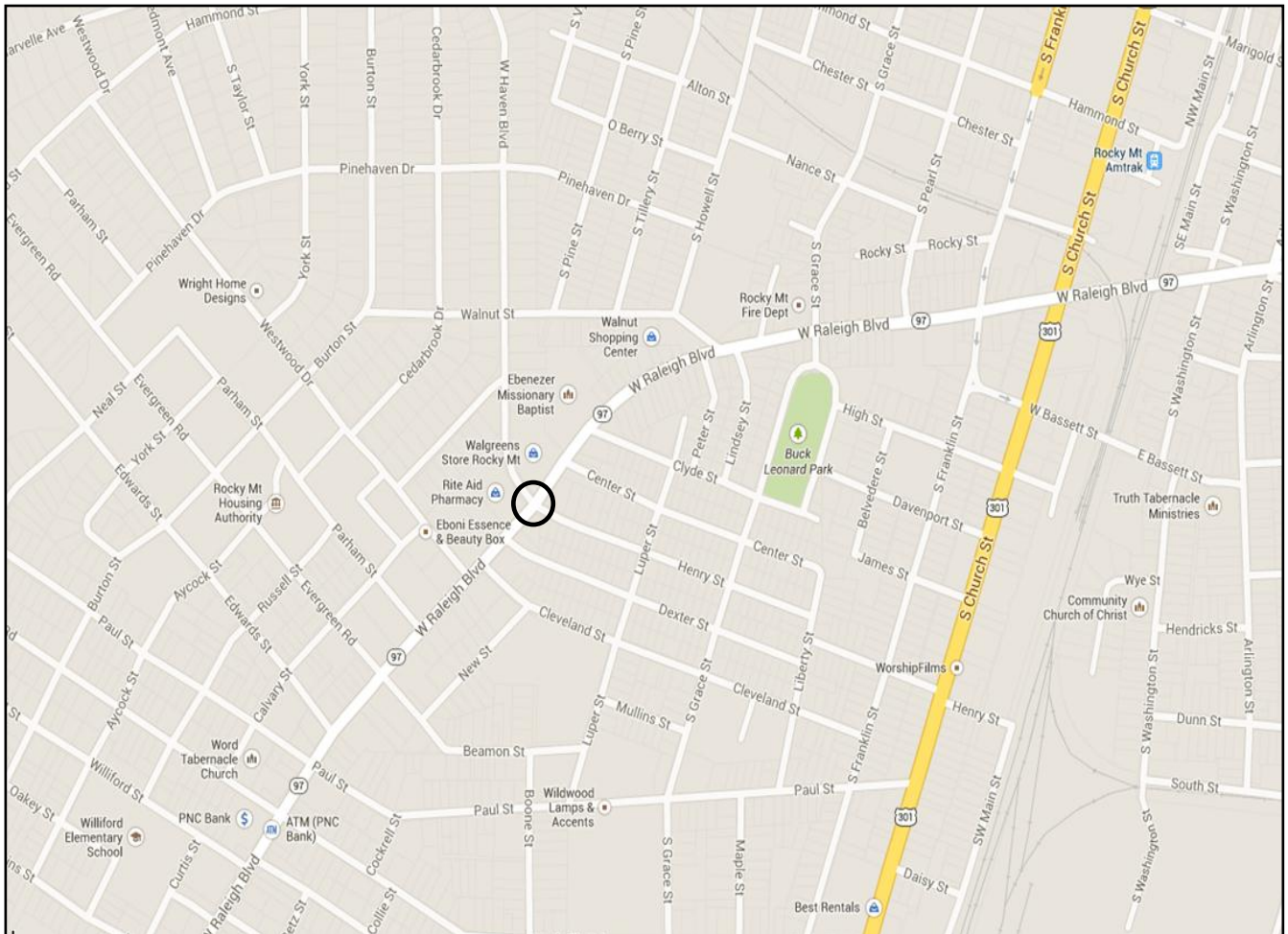
Date

# Spot Safety Project Evaluation Documentation

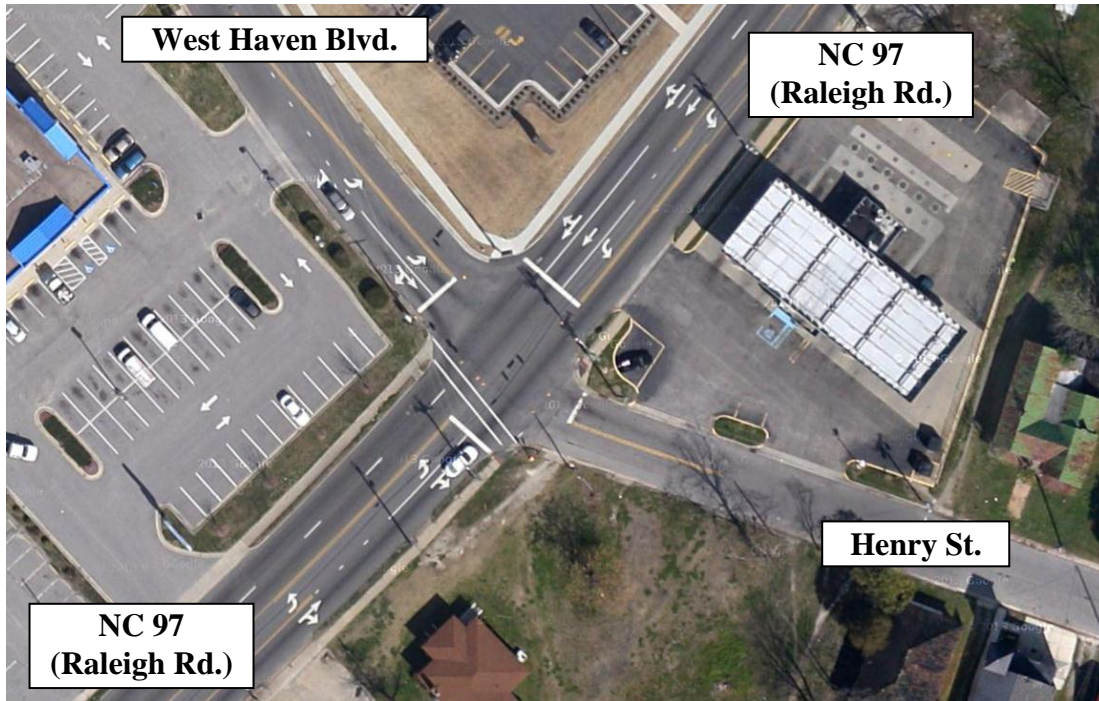
## Subject Location

Evaluation of Spot Safety Project Number 04-07-200 located at the intersection of NC 97 (Raleigh Road) at West Haven Road/Henry Street in Nash County.

The Sig ID is 04-0116 for this existing two phase semi-actuated traffic signal.



Location Map Provided from Google Maps



Aerial 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 the installation of a crosswalk on the eastbound approach of NC 97 (Raleigh Rd.) along with two pedestrian signal heads.

NC 97 (Raleigh Rd.) is a four-lane facility having two westbound lanes, a center left-turn lane and one eastbound lane. West Haven Blvd./Henry St. is a two-lane facility that widens for a left-turn lane on the southbound approach. The speed limit is 35 mph on all approaches. The subject location is a four-leg crossroads intersection, which is controlled by an existing traffic signal.

The original statement of problem was that the lack of pedestrian heads and a crosswalk allowed pedestrians to cross in an unsafe manner instead of congregating them for crossing. The initial crash analysis was completed including data from November 1, 2001 to October 31, 2006 with one (1) reported pedestrian crash during that time frame. The final completion date for the improvement at the subject intersection was on March 19, 2008 with a total cost of \$11,100.00.

## Naïve 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 includes the months of January through March 2008. The before period consists of reported crashes from October 1, 2002 through December 31, 2007 (5 years, 3 months). The after period consists of reported crashes from April 1, 2008 through June 30, 2013 (5 years, 3 months). The ending date for the analysis was determined by the date of the most recent available crash data at the time of analysis.

The treatment data consists of all crashes within 150 feet of the subject intersection. *Please see the above location map and aerial photo for further details.*

The following data table depicts the Naïve Before and After Analysis for the treatment location. Please note that Pedestrian Crashes were the target crashes for the applied countermeasure.

<b><u>Treatment Information</u></b>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Total Crashes	35	16	-54.3%
Total Severity Index	2.9	4.7	62.1%
Target Crashes	1	1	0.0%
Target Crash Severity Index	8.4	8.4	0.0%
Volume (2005, 2010)	15,600	12,800	-17.9%

<b><u>Injury Crash Summary</u></b>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Fatal Injury Crashes	0	0	N/A
Class A Injury Crashes	0	0	N/A
Class B Injury Crashes	1	1	0.0%
Class C Injury Crashes	8	7	-12.5%
Property Damage Only	26	8	-69.2%

The Naïve Before and After Analysis at the treatment location shows a 54.3 percent reduction in the total crashes per year and no change in target pedestrian crashes. The total severity index increased from the before period to the after period by 62.1 percent and there was no change in the target crash severity index. 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 (+)
Eastbound NC 97 Rear-End Crashes	5	4	-20.0%
Southbound West Haven Rear-End Crashes	1	0	-100.0%
Southbound Right-Turn Crashes from West Haven	2	0	-100.0%
Intersection Ran-Off Road Crashes	7	1	-85.7%

## Results and Discussion

Referencing the *Collision Diagrams*, there was no change in the number of target crashes (pedestrian crashes), with one (1) crash each in the before and after periods. Although there was no change in target crashes, the analysis showed that the target crash identified in the after period occurred within the crosswalk, rather than some distance away from the intersection within a travel lane.

From the *Additional Information* table above, the number of eastbound NC 97 (Raleigh Rd.) rear-end crashes remained consistent throughout the analysis. Also in the *Additional Information* table, the southbound West Haven rear-end and right-turning crashes were eliminated from one (1) and two (2), respectively, in the before period.

In addition, the overall intersection experienced an 85.7 percent reduction in ran-off road crashes from seven (7) in the before period to one (1) in the after period. Referencing the *Collision Diagrams*, it appears that these crashes were random in nature.

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 facilitates additional spot safety review for these types of countermeasures, it is the goal to be able to provide objective and definite information regarding actual crash reduction factors for these types of treatments.

**Treatment Site Photos from Google Street View**



**Google Maps (July 2012) – Looking East on NC 97 Approach**



**Google Maps (July 2012) – Looking West on NC 97 Approach**



**Google Maps (July 2012) – Looking North on Henry Street Approach**



**Google Maps (July 2012) – Looking South on West Haven Blvd. Approach**



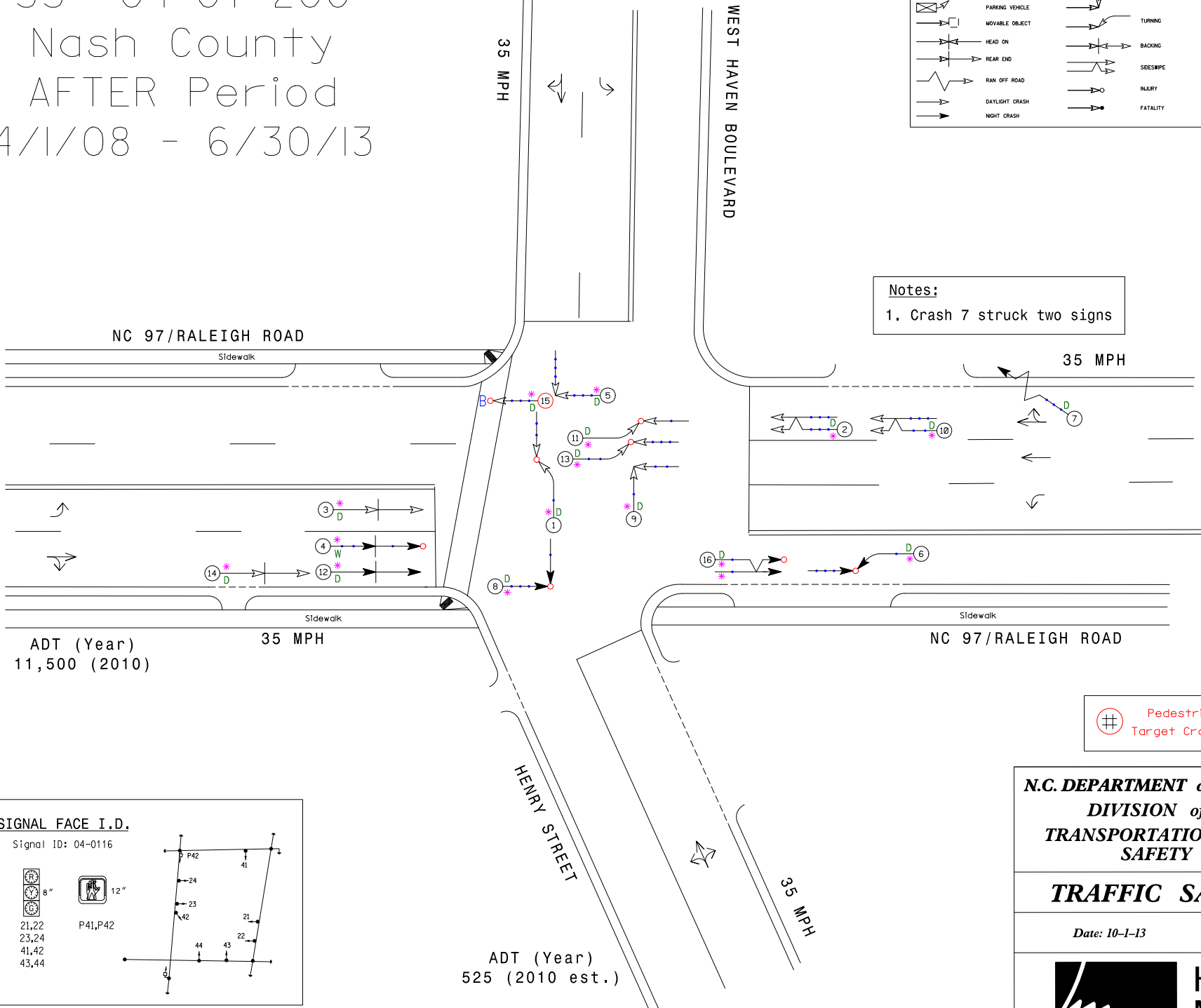


SS# 04-07-200  
 Nash County  
 AFTER Period  
 4/1/08 - 6/30/13

ADT (Year)  
 2,100 (2010)

LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS	A	ANIMAL
	PARKED VEHICLE		TURNING		10 MPH TO 19	P	PEDESTRIAN
	PARKING VEHICLE		BACKING		20 MPH TO 29	B	BICYCLE
	MOVABLE OBJECT		SIDESWIPE		30 MPH TO 39	T	TRUCK
	HEAD ON		INJURY		40 MPH TO 49	*	DRIVER AT FAULT
	REAR END		FATALITY		50 MPH TO 59	D	DRY
	RAN OFF ROAD		60 MPH TO 69		WET	I	ICY OR SNOWY
	DAYLIGHT CRASH		SPEED UNKNOWN			O	Other
	NIGHT CRASH						

Notes:  
 1. Crash 7 struck two signs



ADT (Year)  
 11,500 (2010)

ADT (Year)  
 11,500 (2010)

ADT (Year)  
 525 (2010 est.)

Pedestrian Target Crashes



**SIGNAL FACE I.D.**

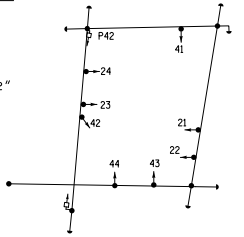
Signal ID: 04-0116



21,22  
 23,24  
 41,42  
 43,44



P41,P42



**N.C. DEPARTMENT of TRANSPORTATION**  
**DIVISION of HIGHWAYS**  
**TRANSPORTATION MOBILITY and SAFETY DIVISION**

**TRAFFIC SAFETY UNIT**

Date: 10-1-13

Prepared By: T. Braswell



**Hatch Mott MacDonald**