

Spot Safety Project Evaluation

Spot Safety Project # 07-02-216

Spot Safety Project Evaluation of the Installation of Pedestrian Signal Heads and Upgrade of Vehicular Signal Heads NC 86 SB Couplet (Pittsboro Street) at Cameron Avenue Orange 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



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Transportation Designer

8-28-2013
Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 07-02-216 located at the Intersection of NC 86 SB Couplet (Pittsboro Street) at Cameron Avenue in Orange County, Town of Chapel Hill.

The Sig ID is 07-1014 for this 3-Phase Fully Actuated Traffic Signal.





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 pedestrian signal heads across the east side of Cameron Avenue, and an upgrade of vehicular signal heads to 12”.

NC 86 SB Couplet (Pittsboro Street) is a 2-lane, one way road with bike lanes. Cameron Avenue is a two-lane road, with bike lanes, that widens for a left and right turn lanes at the intersection. The speed limit on NC 86 SB Couplet (Pittsboro Street) and Cameron Avenue is 25 mph. The subject location is signal-controlled.

The original statement of problem was congested intersection with a high number of pedestrians. The initial crash analysis was completed from October 1, 1999 to September 30, 2004 with forty-five (45) reported crashes. The final completion date for the improvement at the subject intersection was on January 23, 2008 with a total cost of \$28,000.00.

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 November 2008 through January 2009. The before period consisted of reported crashes from June 1, 2004 through October 31, 2008 (4 years, 5 months); and the after period consisted of reported crashes from February 1, 2009 through June 30, 2013 (4 years, 5 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 NC 86 SB couplet and Cameron Avenue approaches. *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 Pedestrian Crashes were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	27	19	- 29.6 %
Total Severity Index	1.27	1.39	+ 9.4 %
Target Crashes	0	0	N/A
Target Crash Severity Index	0	0	N/A
Volume (2006, 2011)	15,700	16,800	+ 7.0 %

<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	0	0	N/A
Class C Injury Crashes	1	1	0.0 %
Property Damage Only	26	18	- 30.8 %

The naive before and after analysis at the treatment location resulted in a 29.6 percent decrease in Total Crashes, and a 9.4 percent increase in the Total Severity Index. The before period ADT year was 2006 and the after period ADT year was 2011.

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 (+)
Sideswipes within Intersection	17	15	- 11.8 %
Sideswipes along NC 86	4	1	- 75.0 %

Results and Discussion

Referencing the *Collision Diagrams*, there were no target crashes in the before or after period. The target crash severity index was zero (0) in both instances.

From the additional information chart above, the number of sideswipe crashes in the intersection are shown reducing from seventeen (17) to fifteen (15) from the before period to the after period. In the before period, thirteen (13) of the sideswipe crashes in the intersection cite the driver in the inside lane as at fault. In the intersection for the after period, nine (9) sideswipes place fault on the inside driver and four (4) place fault on both drivers.

Please see the attached *Treatment Site Photos*. Photos are provided from Google Street View for all three 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 (May 2012) – Looking South from NC 86 (Pittsboro Street) Approach



Google Maps (May 2012) – Looking East from Cameron Avenue Approach



Google Maps (May 2012) – Looking West Cameron Avenue Approach

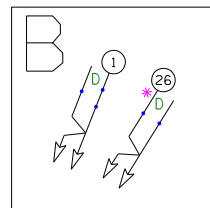
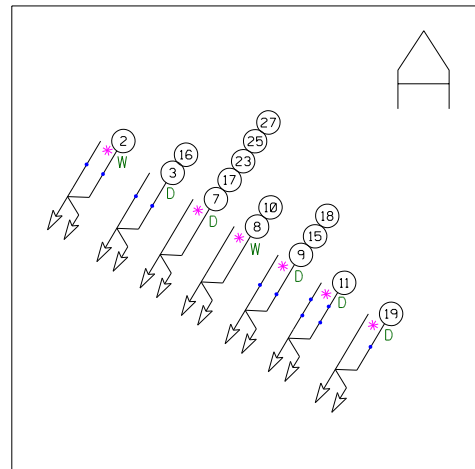
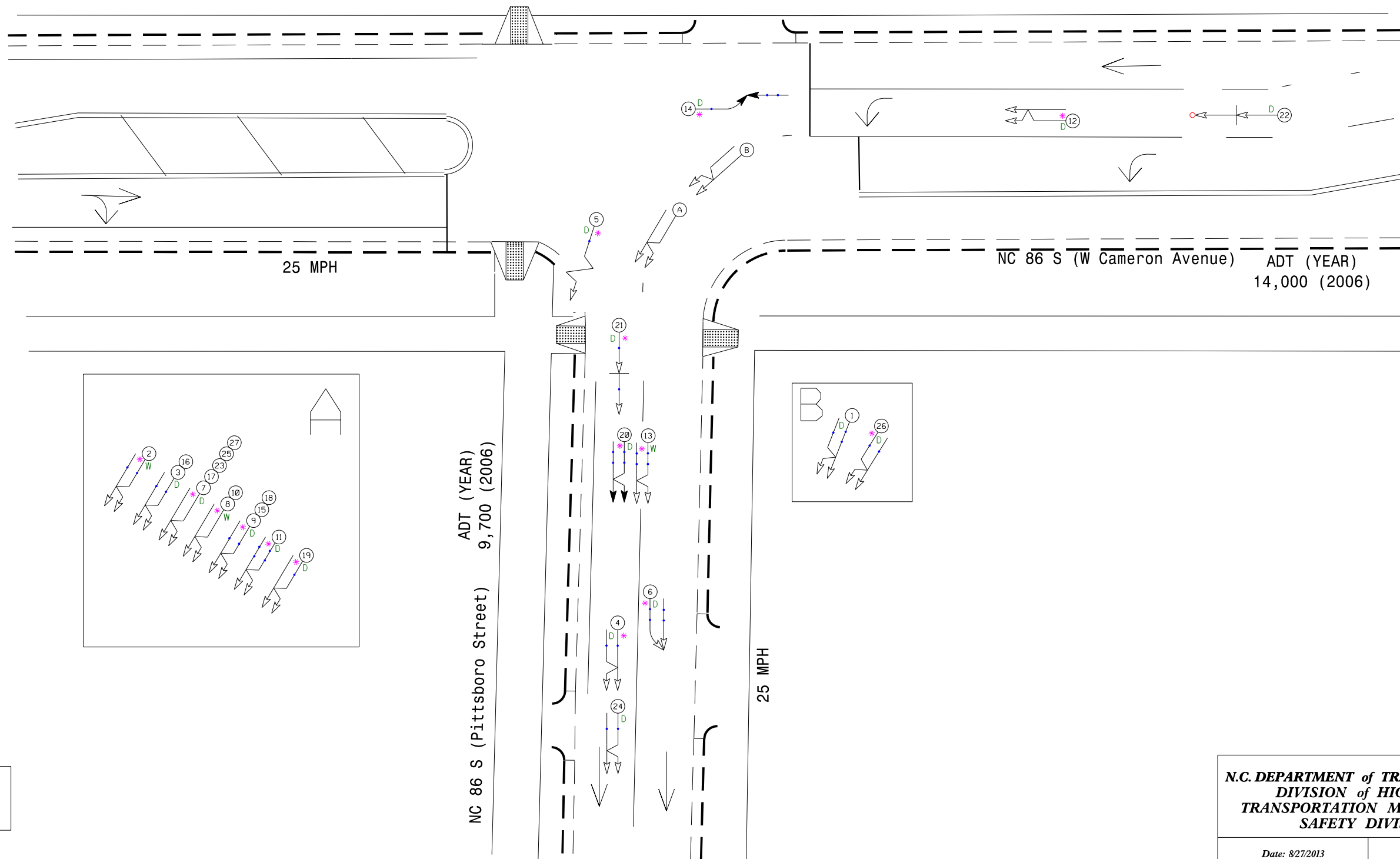
SS# 07-02-216
 Orange County
 Before Period
 6/1/04 - 10/31/08

ADT (YEAR)
 7,700 (2006)

W Cameron Avenue

25 MPH

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 TRAIN
	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		W WET		I ICY OR SNOWY
	DAYLIGHT CRASH		70 AND UP		O Other		
	NIGHT CRASH		SPEED UNKNOWN				



Target Crashes

ADT (YEAR)
 9,700 (2006)
 NC 86 S (Pittsboro Street)

25 MPH

NC 86 S (W Cameron Avenue)

ADT (YEAR)
 14,000 (2006)

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

Date: 8/27/2013

Prepared By: KRG



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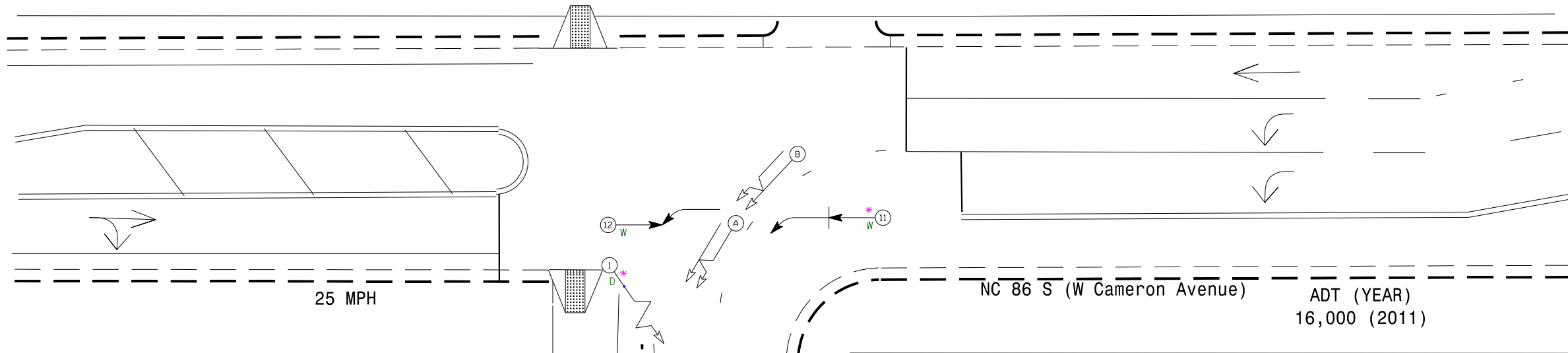
SS# 07-02-216
 Orange County
 After Period
 2/1/09 - 6/30/13

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

ADT (YEAR)
 7,500 (2011)

W Cameron Avenue

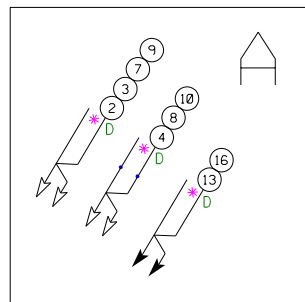
25 MPH



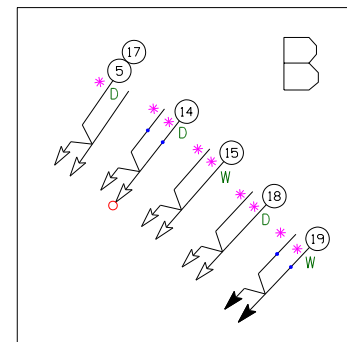
25 MPH

NC 86 S (W Cameron Avenue)

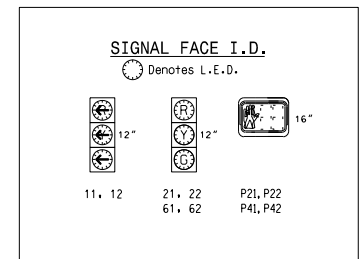
ADT (YEAR)
 16,000 (2011)



ADT (YEAR)
 10,000 (2011)
 NC 86 S (Pittsboro Street)



25 MPH



Target Crashes

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