

Spot Safety Project Evaluation

Spot Safety Project # 03-02-208

Spot Safety Project Evaluation for Installation of Left-Turn Lane

**SR 1411 (Wrightsville Avenue) at Rogersville Road
New Hanover County**

Documents Prepared By:

AECOM Technical Services of North Carolina, Inc.

For:

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

Principal Investigator

Heath Gore, PE

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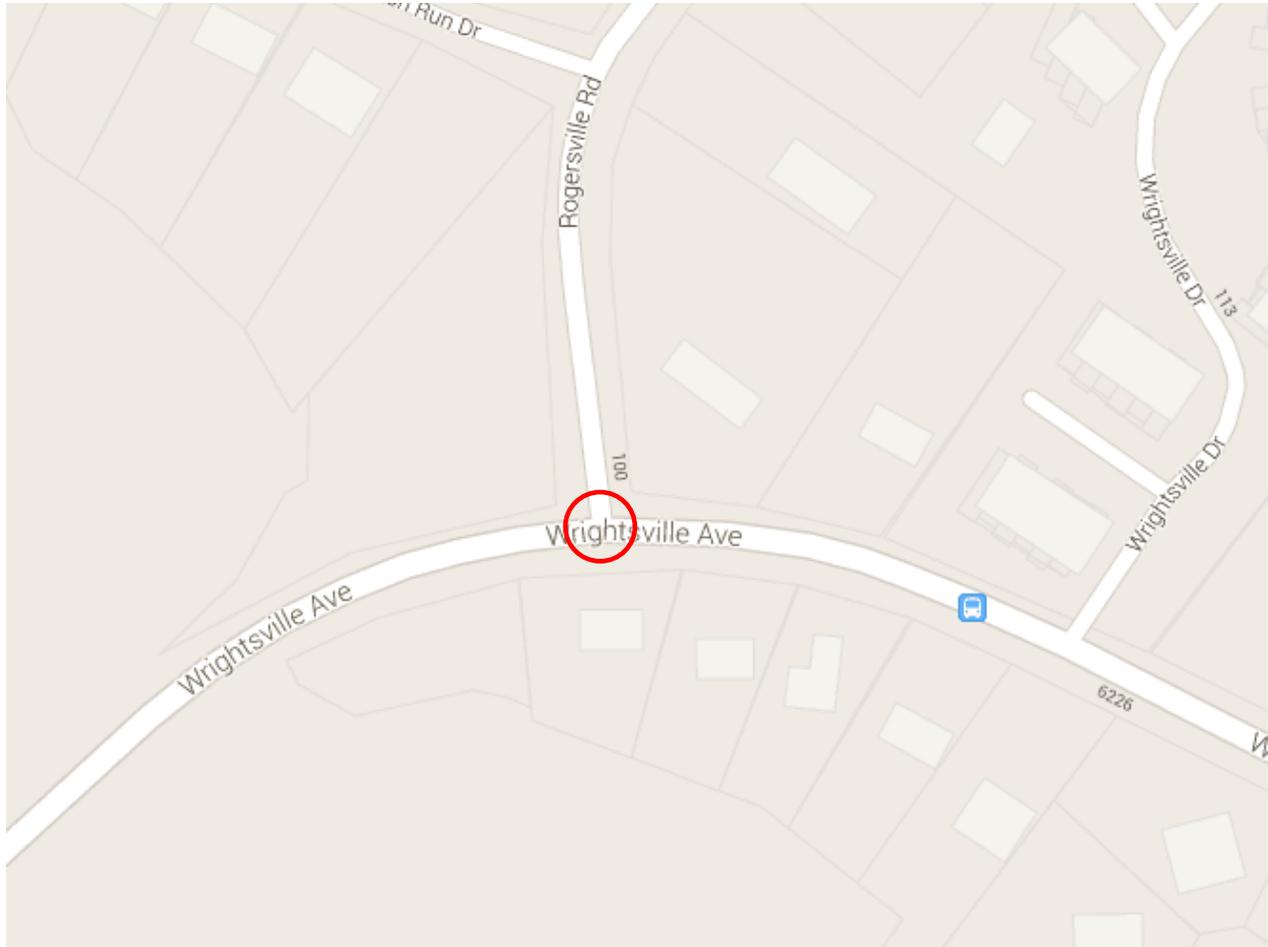
8-22-2013

Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 03-02-208 located at the intersection of SR 1411 (Wrightsville Road) at Rogersville Road in Wilmington in New Hanover County.



Location Map Provided from Google Maps



Aerial Map Provided from Bing Maps

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was installation of an eastbound left-turn lane on SR 1411 (Wrightsville Avenue).

SR 1411 (Wrightsville Avenue) is a two-lane facility with an eastbound left-turn lane and a speed limit of 45 mph. Rogersville Road is a two-lane facility with a speed limit of 45 mph.

The original statement of problem was a pattern of rear end crashes occurred due to vehicles stopped in the travel lane along SR 1411 (Wrightsville Road) waiting to turn left onto Rogersville Road. The initial crash analysis was completed from November 30, 1998 to November 30, 2001 with twenty-five (15) total reported crashes, of which there were eight (8) rear end crashes and three (3) run off road crashes. The final completion date for the improvement at the subject intersection was on November 4, 2008 with a total cost of \$145,000.00.

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 October through December 2008. The before period consisted of reported crashes from May 1, 2004 through September 30, 2008 (4 years 5 months); and the after period consisted of reported crashes from January 1, 2009 through May 31, 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 SR 1411 (Wrightsville Avenue) and Rogersville Road 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 Eastbound Rear End Crashes were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	18	4	-77.8 %
Total Severity Index	8.50	19.95	+134.7 %
Target Crashes	3	0	-100.0 %
Target Crash Severity Index	1.00	0	-100.0 %
Volume (2006, 2011)	13,500	11,100	-17.8 %

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	1	+100.00 %
Class A injury Crashes	1	0	-100.0 %
Class B injury Crashes	3	0	-100.0 %
Class C Injury Crashes	4	0	-100.0 %
Property Damage Only	10	3	-70.0 %

The naive before and after analysis at the treatment location resulted in a 78 percent reduction in Total Crashes, a 135 percent increase in Total Severity Index, and a 100 percent reduction in Target Eastbound Read End Crashes. 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 (+)
Ran Off Road	9	2	-77.8 %

Results and Discussion

Referencing the *Collision Diagrams*, target crashes (Eastbound Rear End Crashes) experienced a reduction from 3 crashes in the before period to 0 crashes in the after period. The installation of the eastbound left-turn lane was beneficial in reducing the target crashes at this location during the after period.

Ran off road crashes decreased from 9 crashes in the before period to 2 crashes in the after period. It should be noted that one of the ran off road crashes in the after period was a fatality.

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: 9/12) - Looking South on Rogersville Rd Approach



Google Maps (Image Date: 9/12) - Looking East on SR 1411 (Wrightsville Rd) Approach



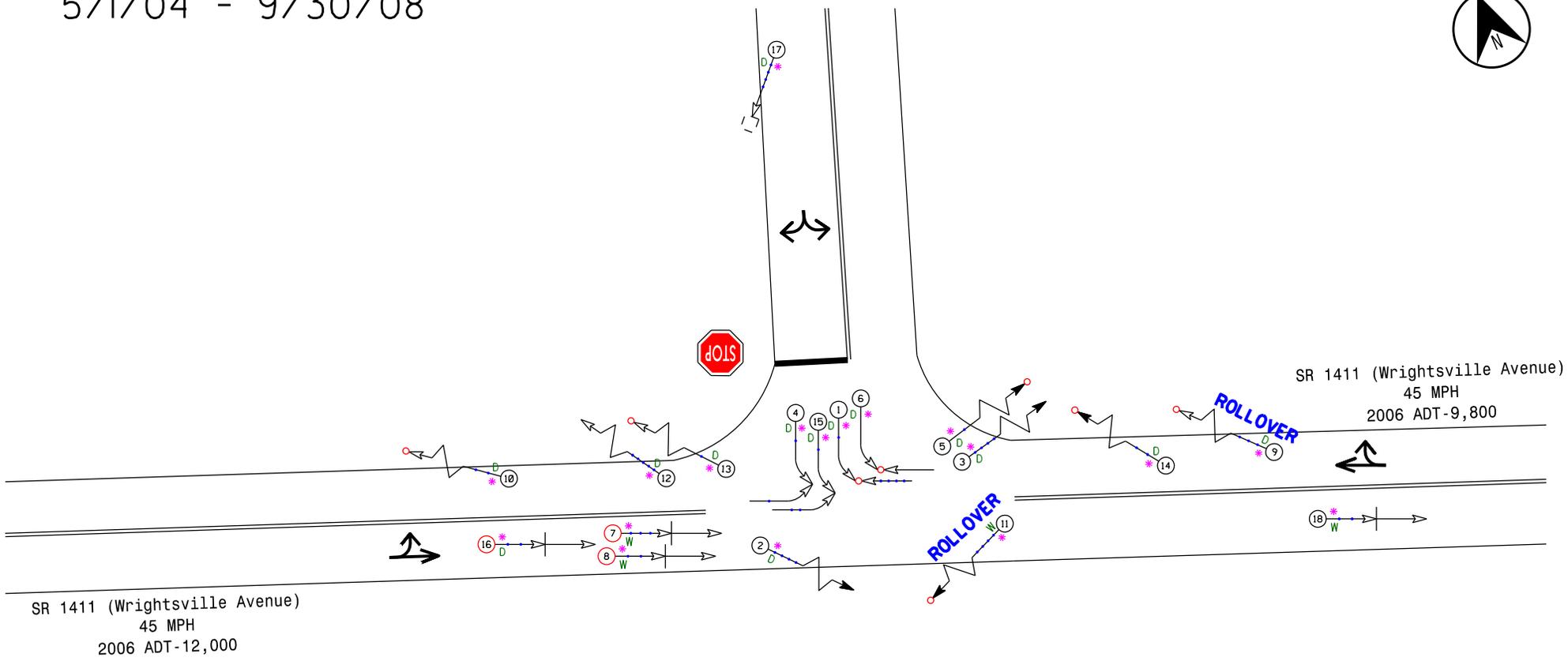
Google Maps (Image Date: 9/12) - Looking West on SR 1411 (Wrightsville Rd) Approach

SS# 03-02-208
 New Hanover County
 BEFORE Period
 5/1/04 - 9/30/08

Rogersville Road
 45 MPH
 2006 ADT-5,200

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		RAN OFF ROAD		50 MPH TO 59		ICY OR SHORT
	REAR END		INJURY		60 MPH TO 69		FATALITY
	FATALITY		SPEED UNKNOWN		70 AND UP		ONLY



SR 1411 (Wrightsville Avenue)
 45 MPH
 2006 ADT-9,800

SR 1411 (Wrightsville Avenue)
 45 MPH
 2006 ADT-12,000

EB Rear End Crashes

AECOM

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

TRAFFIC SAFETY UNIT

Date: 8-22-2013 Prepared By: Heath Gore, PE

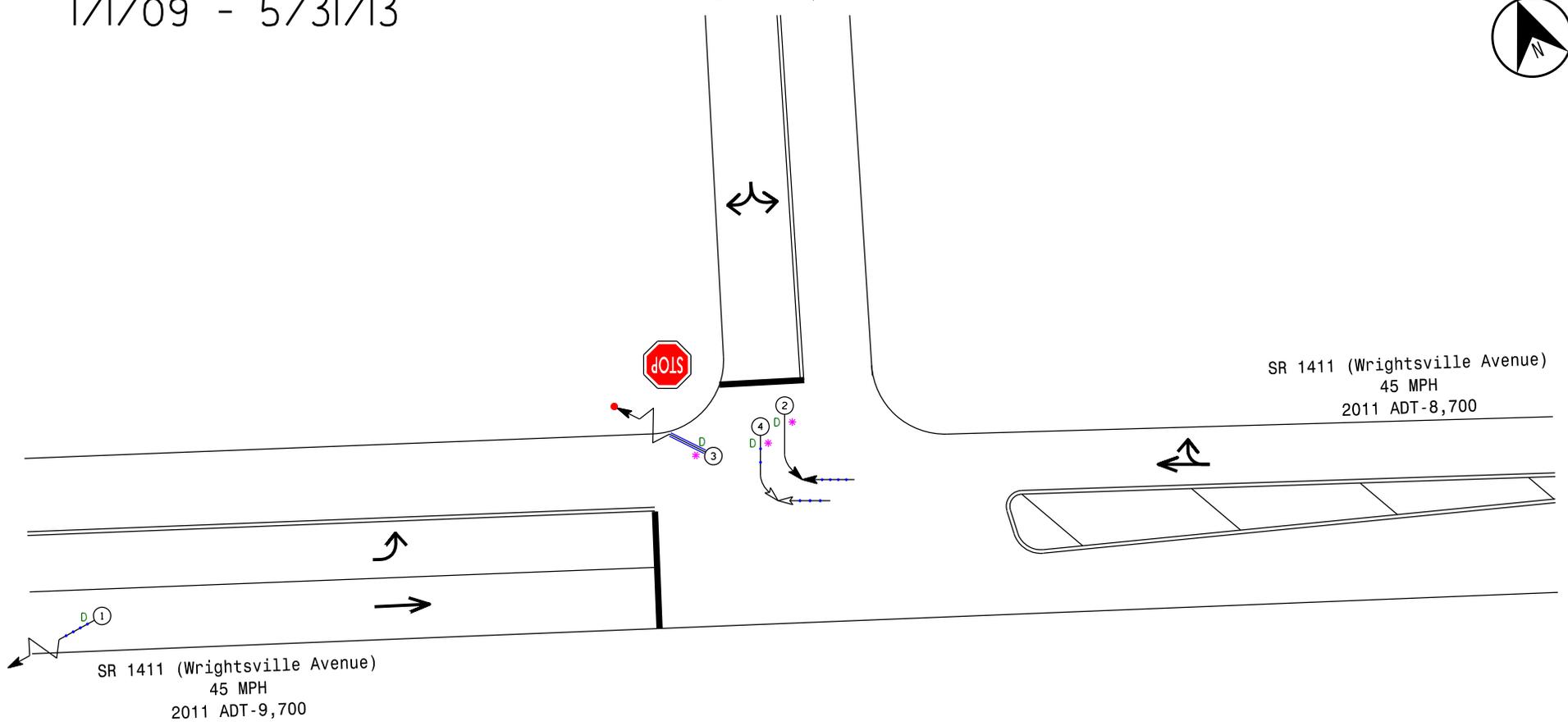
SS# 03-02-208
 New Hanover County
 AFTER Period
 1/1/09 - 5/31/13

Rogersville Road
 45 MPH
 2011 ADT-3,700

SR 1411 (Wrightsville Avenue)
 45 MPH
 2011 ADT-8,700

SR 1411 (Wrightsville Avenue)
 45 MPH
 2011 ADT-9,700

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
	FIXED OBJECT		SIDESWIPE		30 MPH TO 39		DRY
	HEAD ON		OUT OF CONTROL		40 MPH TO 49		WET
	REAR END		HIT AND RUN		50 MPH TO 59		ICY OR SNOW
	RAN OFF ROAD		HURRY		60 MPH TO 69		UNKNOWN
			FATALITY		70 AND UP		ONLY
					SPEED UNKNOWN		



EB Rear End Crashes

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