

Spot Safety Project Evaluation

Spot Safety Project # 03-07-230

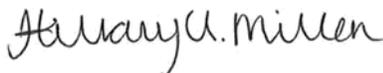
**Spot Safety Project Evaluation of the Split Side Street Phasing
NC 53 (Burgaw Highway) at SR 1212 (Pony Farm Road) / SR 1113 (Murrill Hill Road)
Onslow County**

Documents Prepared By:

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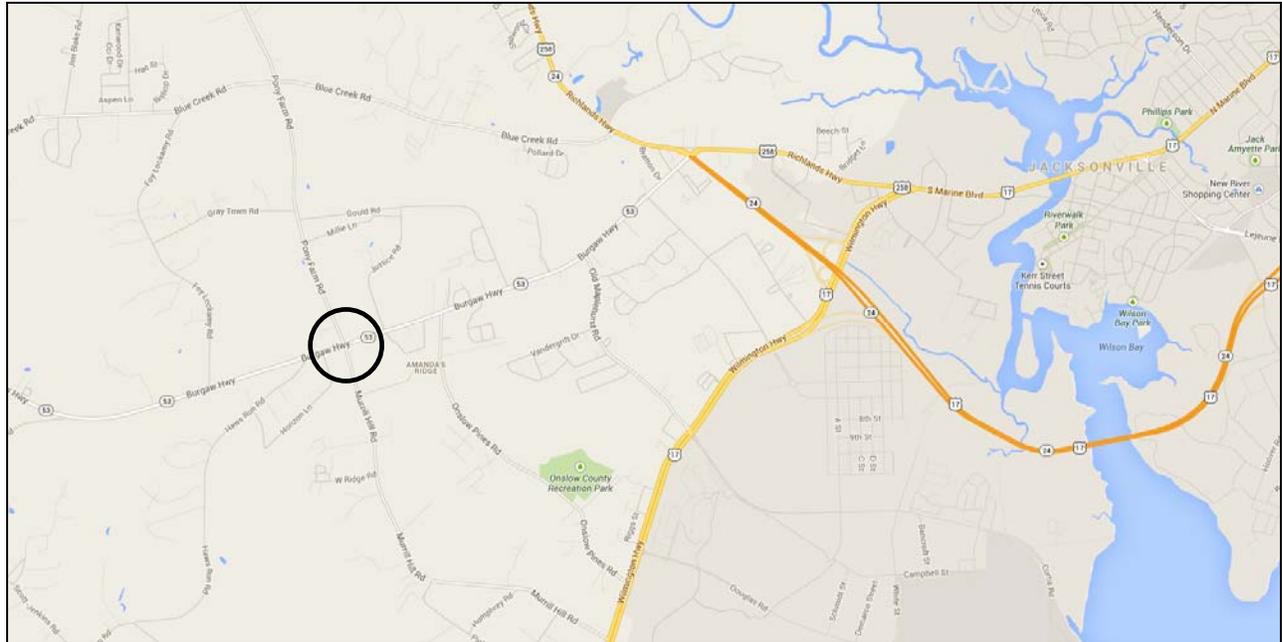
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Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 03-07-230 located at the Intersection of NC 53 (Burgaw Highway) at SR 1212 (Pony Farm Road)/ SR 1113 (Murrill Hill Road) in Onslow County.

The intersection is signalized in the Before and After periods. Signal ID is 03-0172.



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 to alter the traffic signal phasing to provide split side street phasing for the SR 1212 (Pony Farm Road) and SR 1113 (Murrill Hill Road) approaches.

NC 53 (Burgaw Highway), SR 1212 (Pony Farm Road) and SR 1113 (Murrill Hill Road) are all 2-lane facilities except for NC 53 (Burgaw Highway) where there is a center left turn lane beginning about 0.2 miles west of the intersection and ending at the subject intersection. Speed limits around the intersection are 45 mph except for SR 1113 (Murrill Hill Road) where the speed limit is 35 mph. The subject location is a four-leg crossroads intersection, which is controlled by a six phase fully actuated traffic signal.

The original statement of problem was the history of numerous left turn same road crashes on the SR 1212 and SR 1113 approaches. The initial crash analysis was completed from July 1, 2002 to July 1, 2007 with thirty nine (39) reported crashes. The final completion date for the improvement at the subject intersection was on August 6, 2008 with a total cost of \$10,000.00.

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 July 2008 through August 2008. The before period consisted of reported crashes from August 1, 2003 through June 30, 2008 (4 years, 11 months); and the after period consisted of

reported crashes from September 1, 2008 through July 31, 2013 (4 years, 11 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. *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 frontal impact crashes between vehicles from SR 1212 (Pony Farm Road) and vehicles from SR 1113 (Murrill Hill Road) are the target crashes for the applied countermeasure. The target crashes are only from the northbound and southbound approaches because the countermeasure directly affects these approaches.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	42	35	- 16.7 %
Total Severity Index	5.2	2.9	- 44.5 %
Target Crashes	11	0	- 100.0 %
Target Crash Severity Index	3.7	N/A	N/A
Volume (2006, 2011)	14,400	15,800	- 9.7 %

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	3	0	-100.0 %
Class B injury Crashes	5	2	-60.0 %
Class C Injury Crashes	15	7	- 53.3 %
Property Damage Only	19	26	36.8 %

The naive before and after analysis at the treatment location resulted in a 16.7 percent reduction in Total Crashes, and a 44.5 percent reduction in the Total Severity Index. The analysis also resulted in the elimination of in target crashes from 11 to 0 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 (+)
NC 53 Rear End Crashes	7	15	114.3%
Frontal Impact Crashes b/t SR 1212/1113 and NC 53	10	6	-40.0%
Left Turn Same Road on NC 53 Crashes	6	6	0.0%

Results and Discussion

Referencing the *Collision Diagrams*, the target crashes were eliminated, from 11 to 0 crashes. Benefit of the countermeasure was noticed with the analysis of the target crashes.

From the additional information chart above, rear end crashes on NC 53 (Burgaw Highway) experienced a 114.3 percent increase from 7 to 15 crashes. Also, frontal impact crashes between vehicles on SR 1212 (Pony Farm Road)/ SR 1113 (Murrill Hill Road) and NC 53 (Burgaw Highway) saw a decrease of 40 percent.

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 (September 2012) – Looking North on SR 1113



Google Maps (September 2012) – Looking South on SR 1212



Google Maps (December 2007) – Looking East on NC 53



Google Maps (September 2012) – Looking West on NC 53

SS# 03-07-230
 Onslow County
 AFTER Period
 9/1/08 - 7/31/13

AADT (Year)
 2,800 (2011)

(Pony Farm Road)
 SR 1212
 45 m.p.h.

AADT (Year)
 13,000 (2011)

NC 53 (Burgaw Highway)
 45 m.p.h.

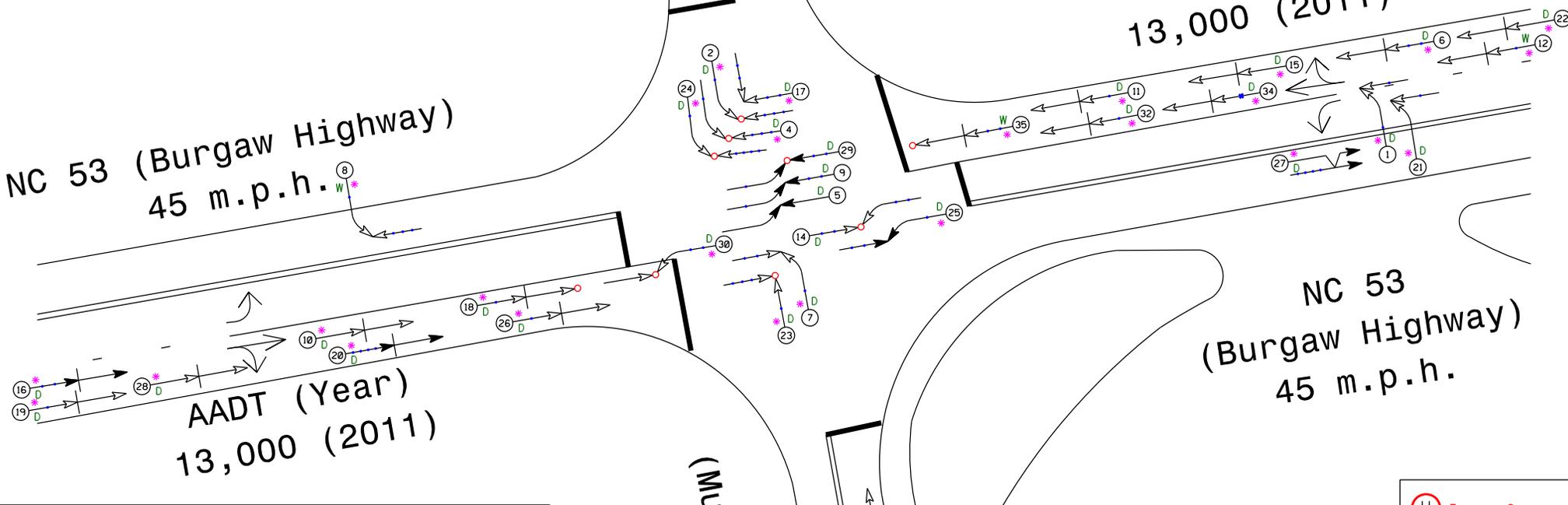
AADT (Year)
 13,000 (2011)

NC 53
 (Burgaw Highway)
 45 m.p.h.

(Murrill Hill Road)
 SR 1113
 35 m.p.h.

LEGEND

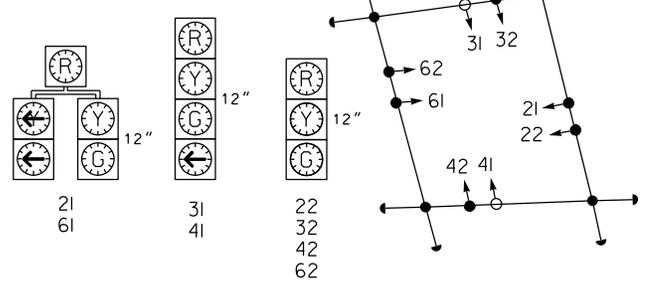
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		A ANIMAL
	PAKED VEHICLE		TURNING		10 MPH TO 19		P PEDESTRIAN
	PARKING VEHICLE		BACKING		20 MPH TO 29		B BICYCLE
	MOVABLE OBJECT		REAR END		30 MPH TO 39		T TRUCK
	HEAD ON		SIDESWIPE		40 MPH TO 49		* DRIVER AT FAULT
	REAR END		INJURY		50 MPH TO 59		D DRY
	RAN OFF ROAD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



Target Crashes

SIGNAL FACE I.D.

Denotes L.E.D.



SIG. INVENTORY NO. 03-0172

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

TRAFFIC SAFETY UNIT

Date: 9/25/2013

Prepared By: H. Millen



**Hatch Mott
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