

Spot Safety Project Evaluation

Spot Safety Project # 03-05-206

**Spot Safety Project Evaluation of the Addition of a Left-Turn Lane
SR 1911 (Brooks-Quinn Rd) at Rose Hill-Magnolia Elementary School
Duplin County**

Documents Prepared By:
Stantec Consulting Ltd.
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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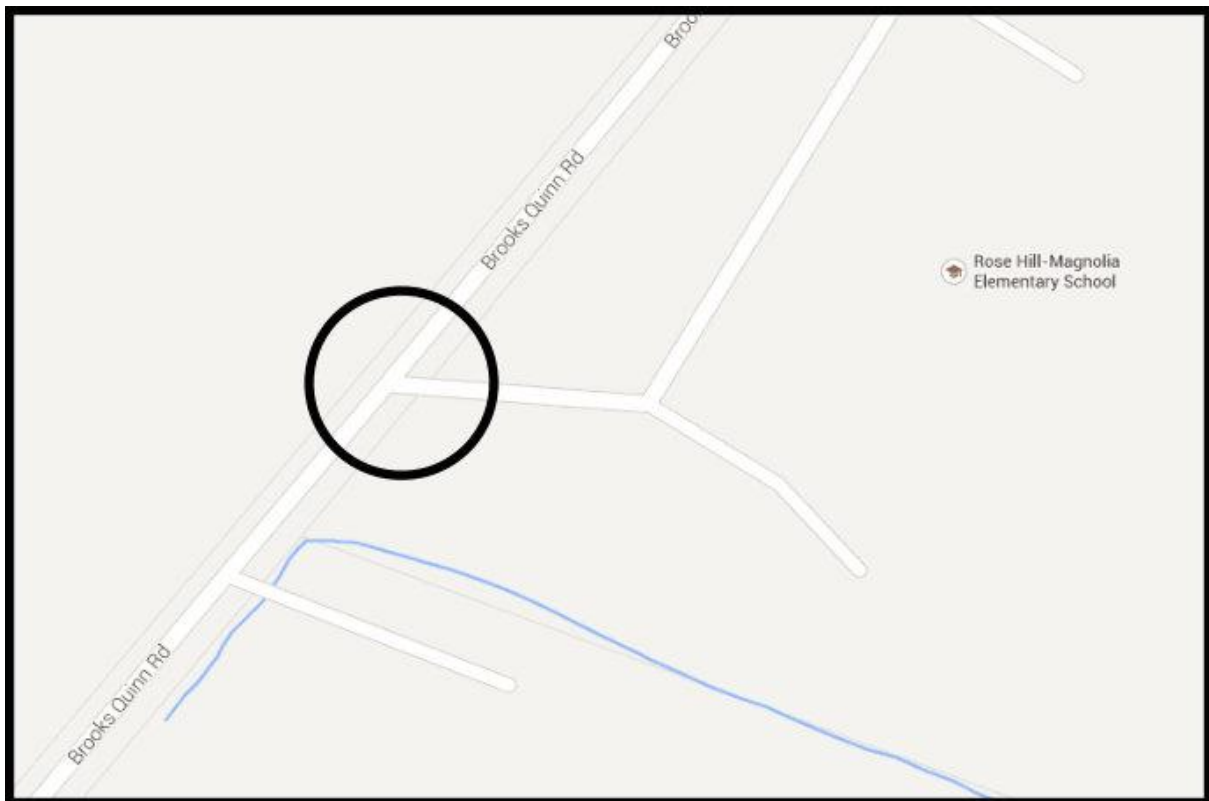
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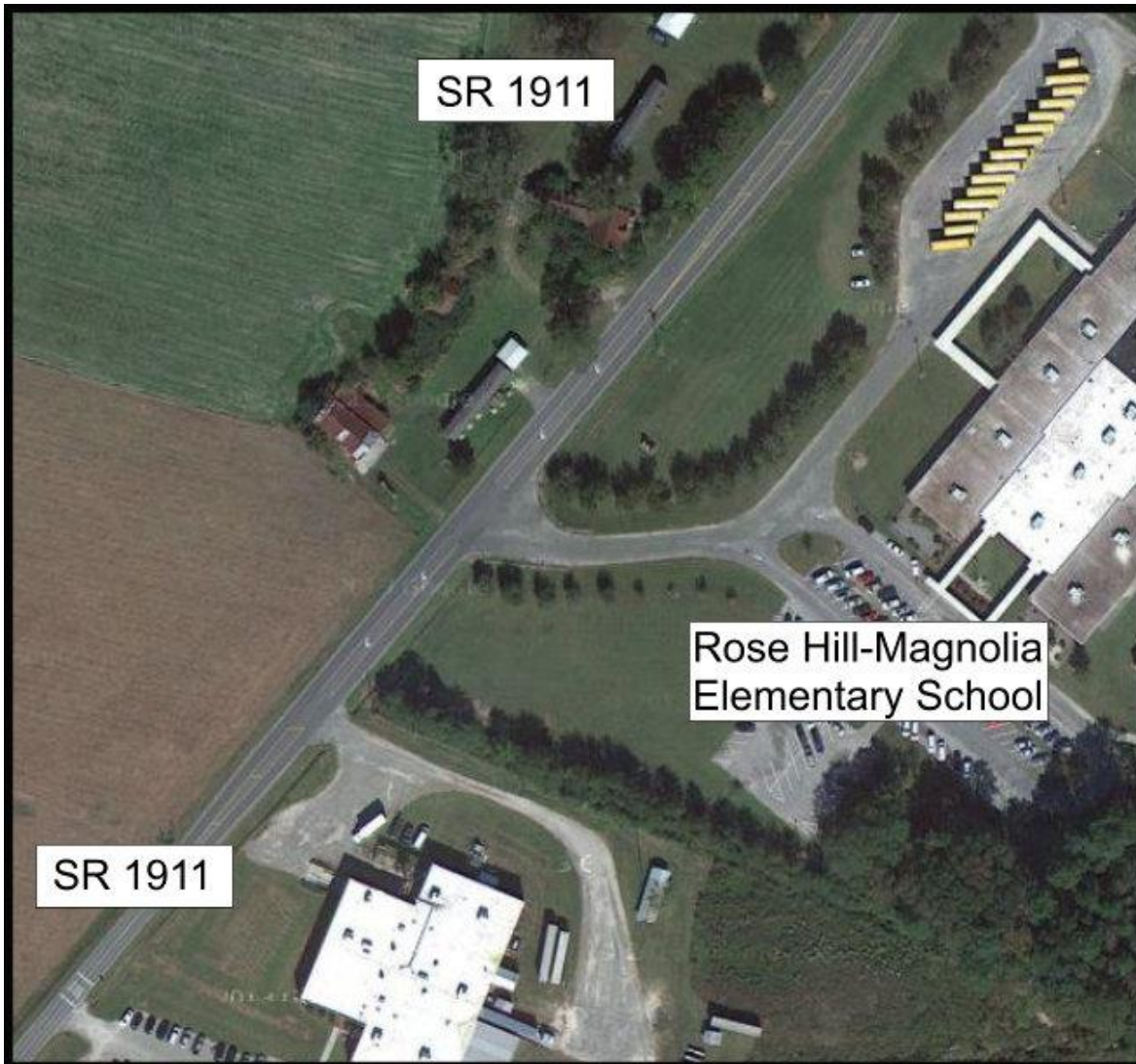
Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 03-05-206 located at the Intersection of SR 1911 (Brooks-Quinn Road) at Rose Hill-Magnolia Elementary School in Duplin County.

This intersection is stop-controlled.





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 addition of a left turn lane in the southbound direction of SR 1911 (Brooks-Quinn Rd) into Rose Hill-Magnolia Elementary School.

SR 1911 (Brooks-Quinn Rd) is a 2-lane facility in the vicinity of the study location. The speed limit on SR 1911 (Brooks-Quinn Rd) is 55-mph. The drive to Rose Hill-Magnolia Elementary School is a 2-lane entrance/exit. The subject location is a three-leg intersection, which is stop-controlled at the exit of Rose Hill-Magnolia Elementary School.

The original statement of problem was the location of the school drive just south of a horizontal curve which allows the potential for crashes to increase during times when vehicles are waiting to turn left into the school. The initial crash analysis was completed from August 1, 2001 to August 1,

2006 with six (6) reported crashes. The final completion date for the improvement at the subject intersection was on December 9, 2008 with a total cost of \$160,000.00.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with the crash 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 April 1, 2004 through September 30, 2008 (4 years, 6 months); and the after period consisted of reported crashes from January 1, 2009 through June 30, 2013 (4 years, 6 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 1911 (Brooks-Quinn Rd) and Rose Hill-Magnolia Elementary School 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 Rear End Crashes were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	1	0	- 100.0 %
Total Severity Index	1	0	- 100.0 %
Target Crashes	0	0	N/A
Target Crash Severity Index	0	0	N/A
Volume (2006, 2011)	770	810	+ 5.2 %

<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	0	0	N/A %
Property Damage Only	1	0	- 100.0 %

The naive before and after analysis at the treatment location resulted in a 100 percent decrease in Total Crashes and a 100 percent decrease 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 (+)
Left Turn, Same Roadway	1	0	- 100.0%

Results and Discussion

Referencing the *Collision Diagrams*, there were no target crashes in the before and after period. Additionally, there were no crashes at the intersection in the after period.

There was one left-turn same roadway crash on the southbound approach at the intersection with the Rose Hill-Magnolia Elementary School in the before period. This crash was property-damage only.

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 Earth



Google Maps (October 2012) – Looking North on SR 1911 (Brooks-Quinn Road) Approach



Google Maps (October 2012) – Looking South from SR 1911 (Brooks-Quinn Road) Approach



Google Maps (October 2012) – Looking West from Rose Hill-Magnolia Elementary School Approach

SS# 03-05-206
 Duplin County
 Before Period
 4/1/04 - 9/30/2008

LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		A ANIMAL
	PARKED VEHICLE		10 MPH TO 19		P PEDESTRIAN		
	PARKING VEHICLE		20 MPH TO 29		B BICYCLE		
	MOVABLE OBJECT		30 MPH TO 39		T TRAIN		
	HEAD ON		40 MPH TO 49		* DRIVER AT FAULT		
	REAR END		50 MPH TO 59		D DRY		
	RAN OFF ROAD		60 MPH TO 69		W WET		
	DAYLIGHT CRASH		70 AND UP		I ICY OR SNOWY		
	NIGHT CRASH		SPEED UNKNOWN		O Other		

ADT (Year)
 460 (2006)

55 mph

SR 1911 (Brooks Quinn Rd)

ADT (Year)
 400 (2006) (Estimate)

Entrance to Rose Hill-Magnolia Elementary School

ADT (Year)
 680 (2006)

55 mph



Target Crashes

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

Date: 8/29/2013

Prepared By: KRG

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SS# 03-05-206
 Duplin County
 After Period
 1/1/2009 - 6/30/2013

Note: There were no crashes during the after period

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

ADT (Year)
510 (2011)

55 mph

SR 1911 (Brooks Quinn Rd)

ADT (Year)
400 (2011) (Estimate)

55 mph

ADT (Year)
710 (2011)

Entrance to Rose Hill-Magnolia Elementary School



N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
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