

# Spot Safety Project Evaluation

Spot Safety Project # 10-07-215

**Spot Safety Project Evaluation of the Signal Installation  
SR 1315 (New Town Road) at SR 1008 (Waxhaw- Indian Trail Road)  
Union 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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Transportation Designer

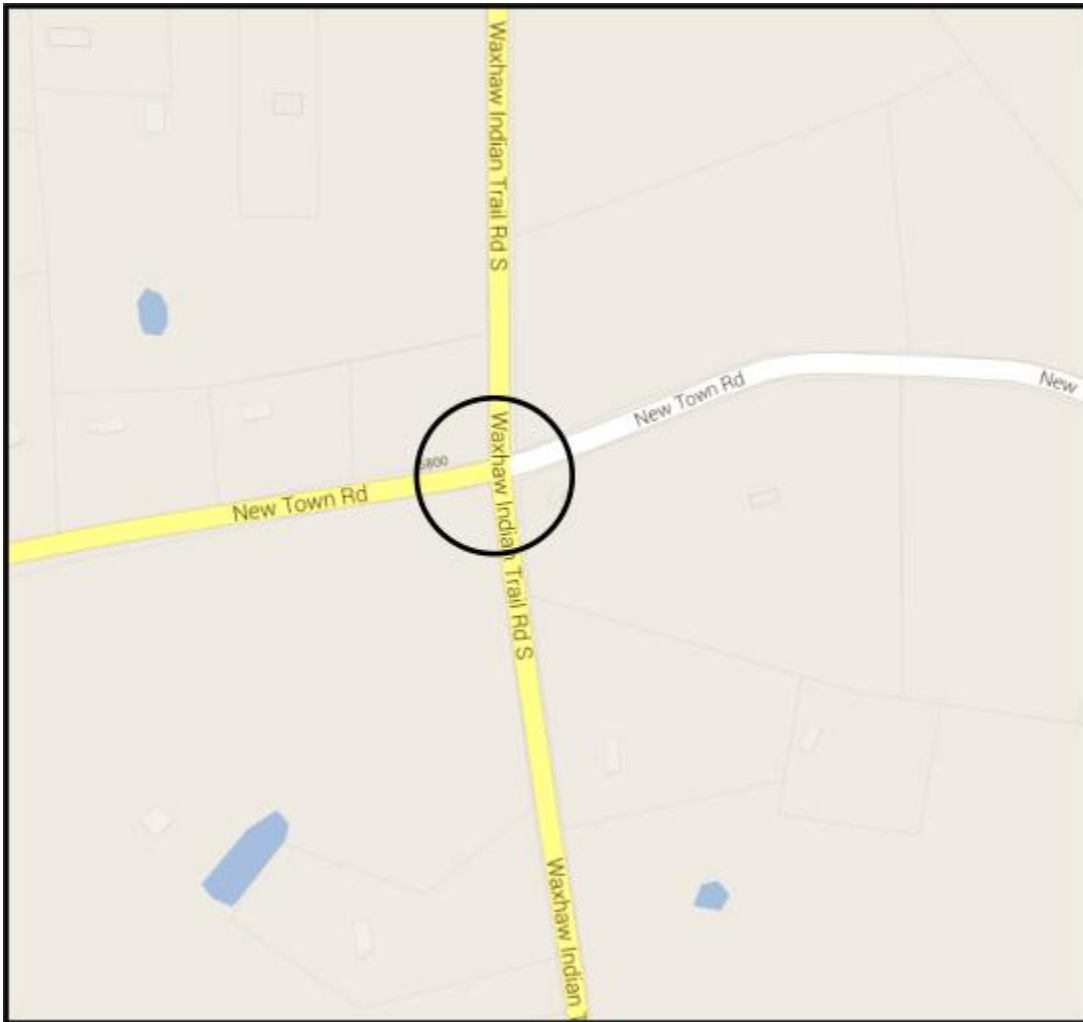
8-16-2013  
Date

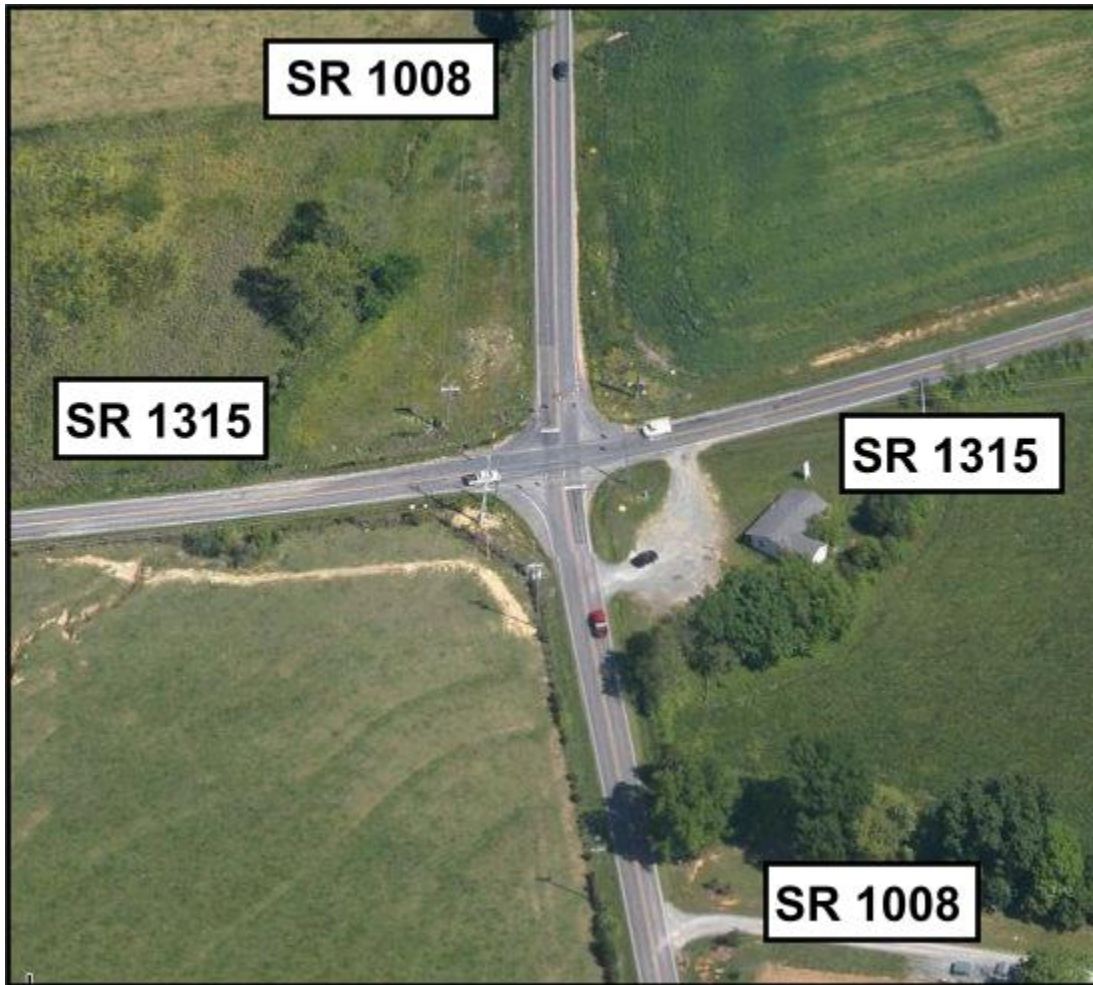
## *Spot Safety Project Evaluation Documentation*

### **Subject Location**

Evaluation of Spot Safety Project Number 10-07-215 located at the Intersection of SR 1315 (New Town Road) at SR 1008 (Waxhaw-Indian Trail Road) in Union County.

The Sig ID is 10-1559 for this 2-Phase 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 a signal.

SR 1315 and SR 1008 are 2-lane roadways. The speed limit on all approaches is 45-mph. The subject location is a four-leg intersection, which is stop-controlled on SR 1008 and has a flashing signal.

The original statement of problem was congestion and accidents due to volume of traffic. The initial crash analysis was completed from May 1, 2002 to April 30, 2007 with forty-four (44) reported crashes. The final completion date for the improvement at the subject intersection was on March 31, 2008 with a total cost of \$65,000.00.

## 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 December 2007 through April 2008. The before period consisted of reported crashes from October 1, 2002 through November 30, 2007 (5 years, 2 months); and the after period consisted of reported crashes from May 1, 2008 through June 30, 2013 (5 years, 2 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 1315 and SR1008 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 Frontal Impact Crashes were the target crashes for the applied countermeasure. Frontal Impact crashes include: Left turn, same roadway; Left turn, different roadways; Right turn, same roadway; Right turn, different roadways; Head on; and Angle.

<u>Treatment Information</u>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Total Crashes	51	18	- 64.7 %
Total Severity Index	4.48	3.47	- 22.5 %
Target Crashes	43	7	- 83.7 %
Target Crash Severity Index	4.79	3.11	- 35.1 %
Volume (2005, 2010)	13,100	15,900	+ 21.4 %

<u>Injury Crash Summary</u>	<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	7	3	- 57.1 %
Class C Injury Crashes	17	12	- 29.4 %
Property Damage Only	27	15	- 44.4 %

The naive before and after analysis at the treatment location resulted in a 64.7 percent decrease in Total Crashes, a 83.7 percent reduction in Target Frontal Impact Crashes, and a 35.1 percent decrease 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>	<b>Before</b>	<b>After</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Angle	33	4	- 88.2 %
Left Turn, Different Roadway	6	1	- 80.0 %
Northbound Approach Rear End crashes	0	4	+ 400.0 %

## **Results and Discussion**

Referencing the *Collision Diagrams*, the target crashes decreased from forty-three (43) to seven (7) from the before to the after period. There were also thirty-three (33) fewer crashes total in the after study.

From the additional information chart above, the angle crashes reduced from thirty-three (33) to four (4) in the after period. Of the angle crashes, seventeen (17) in the before period and three (3) in the after period occurred between northbound vehicles and westbound vehicles. The left turn, different roadway crashes decreased from six (6) to one (1) through the evaluation time frame.

The target severity index did decrease by 35.1 percent, and the total severity index decreased by 22.5 percent, but, there were fifteen (15) B and C level crashes in the after period. However, this was a decrease from the twenty-four (24) B and C injury crashes in the before period.

On the northbound approach of SR 1008, the rear end crashes increased from zero (0) to four (4) throughout the evaluation period.

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 (October 2007) – Looking West on SR 1315 Approach**



**Google Maps (September 2007) – Looking South from SR 1008 Approach**



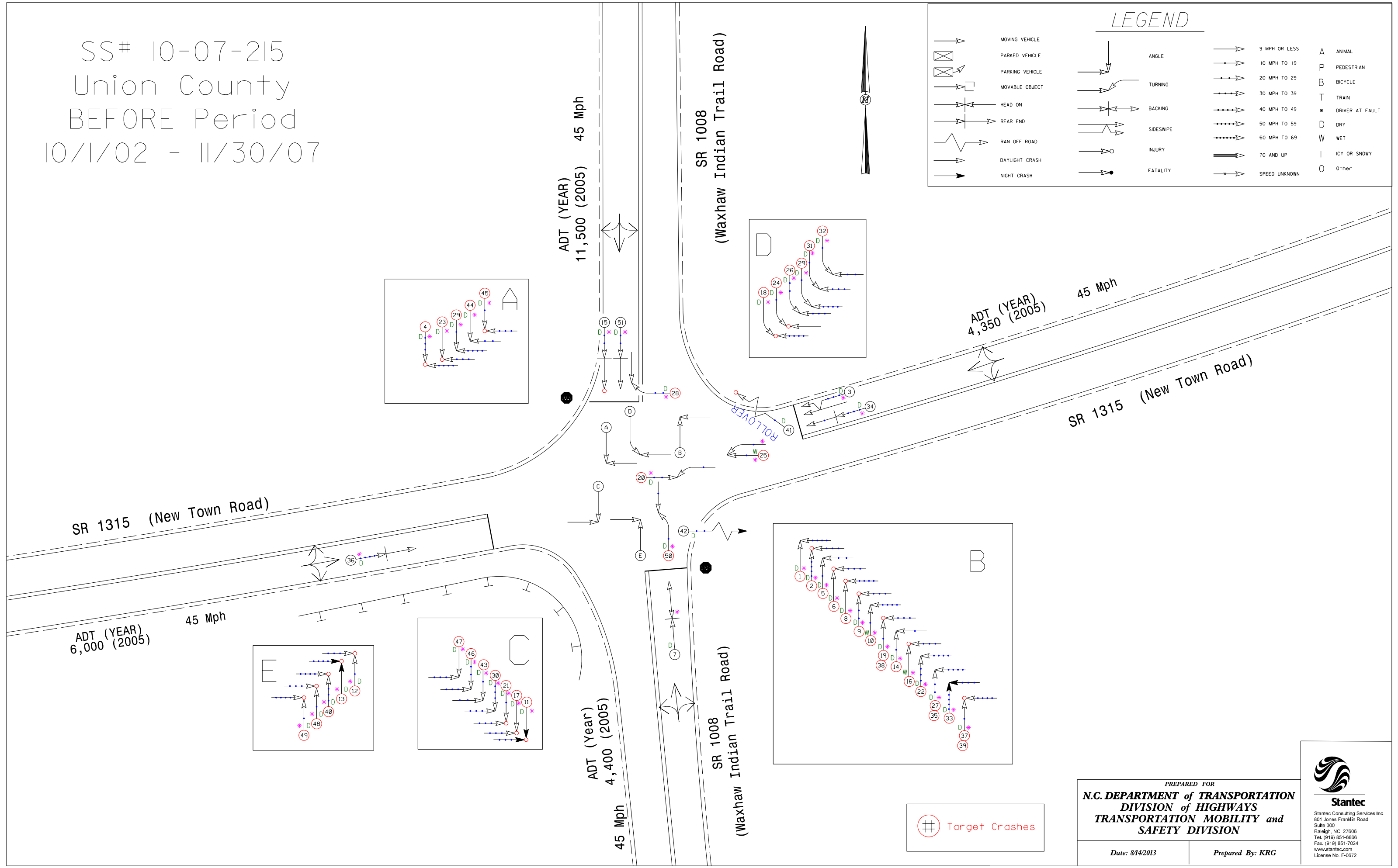
Google Maps (October 2007) – Looking East from SR 1315 Approach



Google Maps (September 2007) – Looking North from SR 1008 Approach

SS# 10-07-215  
 Union County  
 BEFORE Period  
 10/1/02 - 11/30/07

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		50 MPH TO 59		60 MPH TO 69
	REAR END		BACKING		70 AND UP		I INJURY
	RAN OFF ROAD		SIDESWIPE		FATALITY		SPEED UNKNOWN
	DAYLIGHT CRASH						
	NIGHT CRASH						



Target Crashes

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

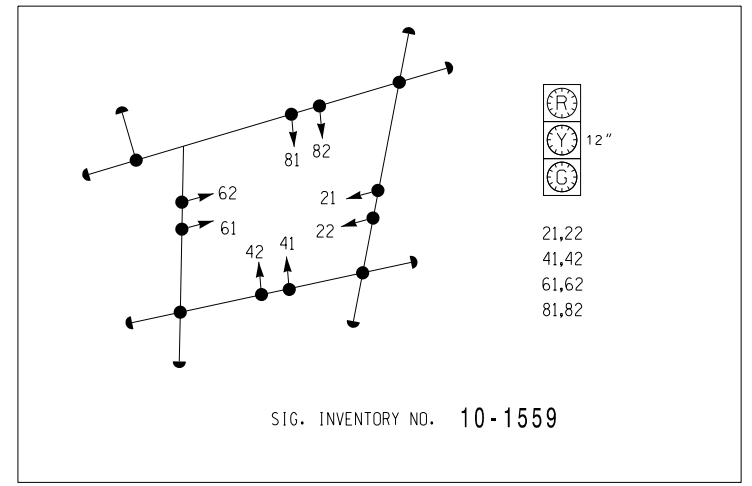
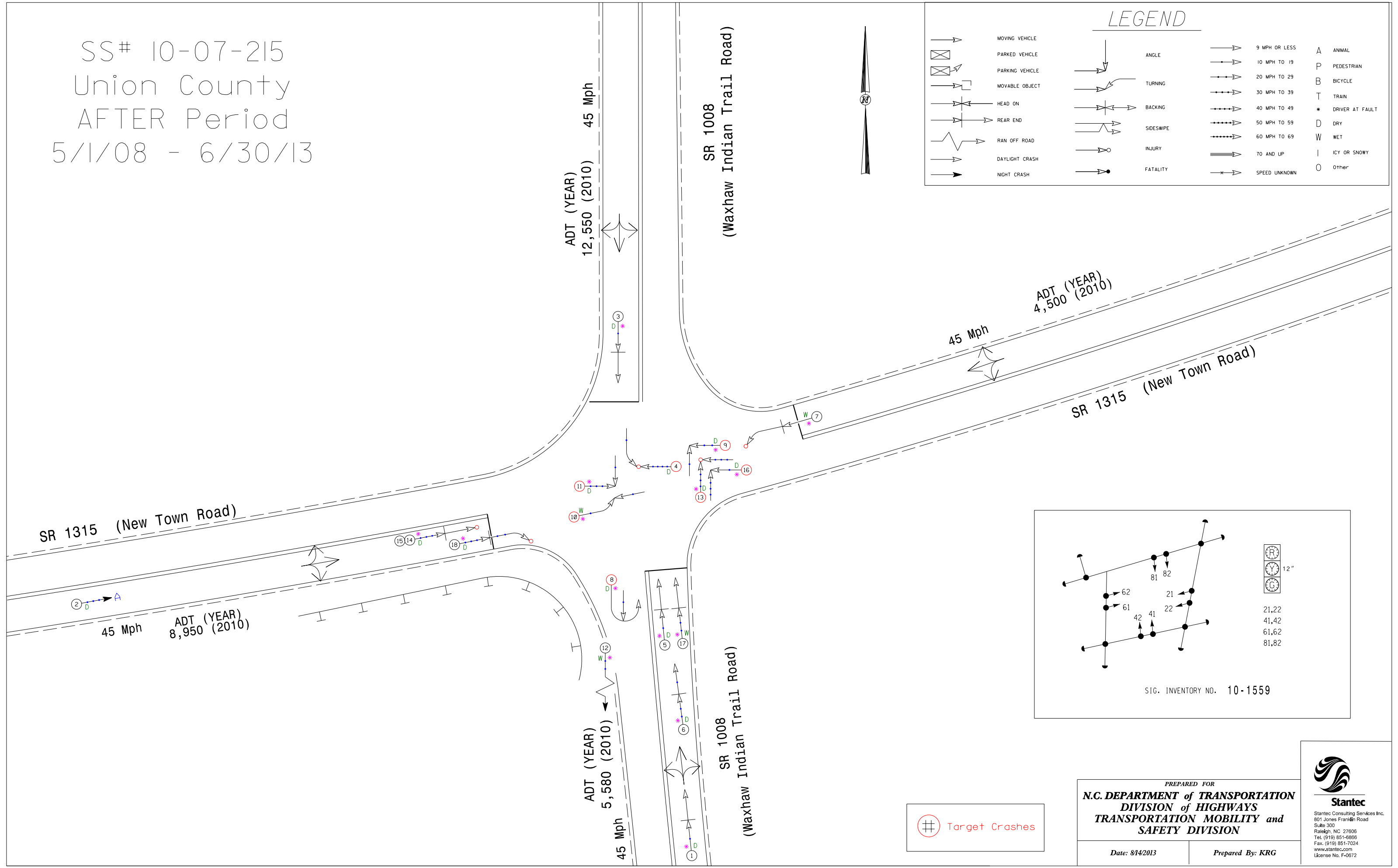
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SS# 10-07-215  
 Union County  
 AFTER Period  
 5/1/08 - 6/30/13

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

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

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