

Spot Safety Project Evaluation

Spot Safety Project # 01-06-204

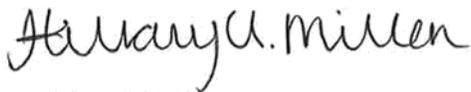
**Spot Safety Project Evaluation of the Sight Distance Improvements
(Cutting the Back of Ditch Slope)
NC 35 at SR 1333 / 1351
Northampton County**

Documents Prepared By:

Hatch Mott MacDonald For:

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

Principal Investigator



Hillary U. Millen

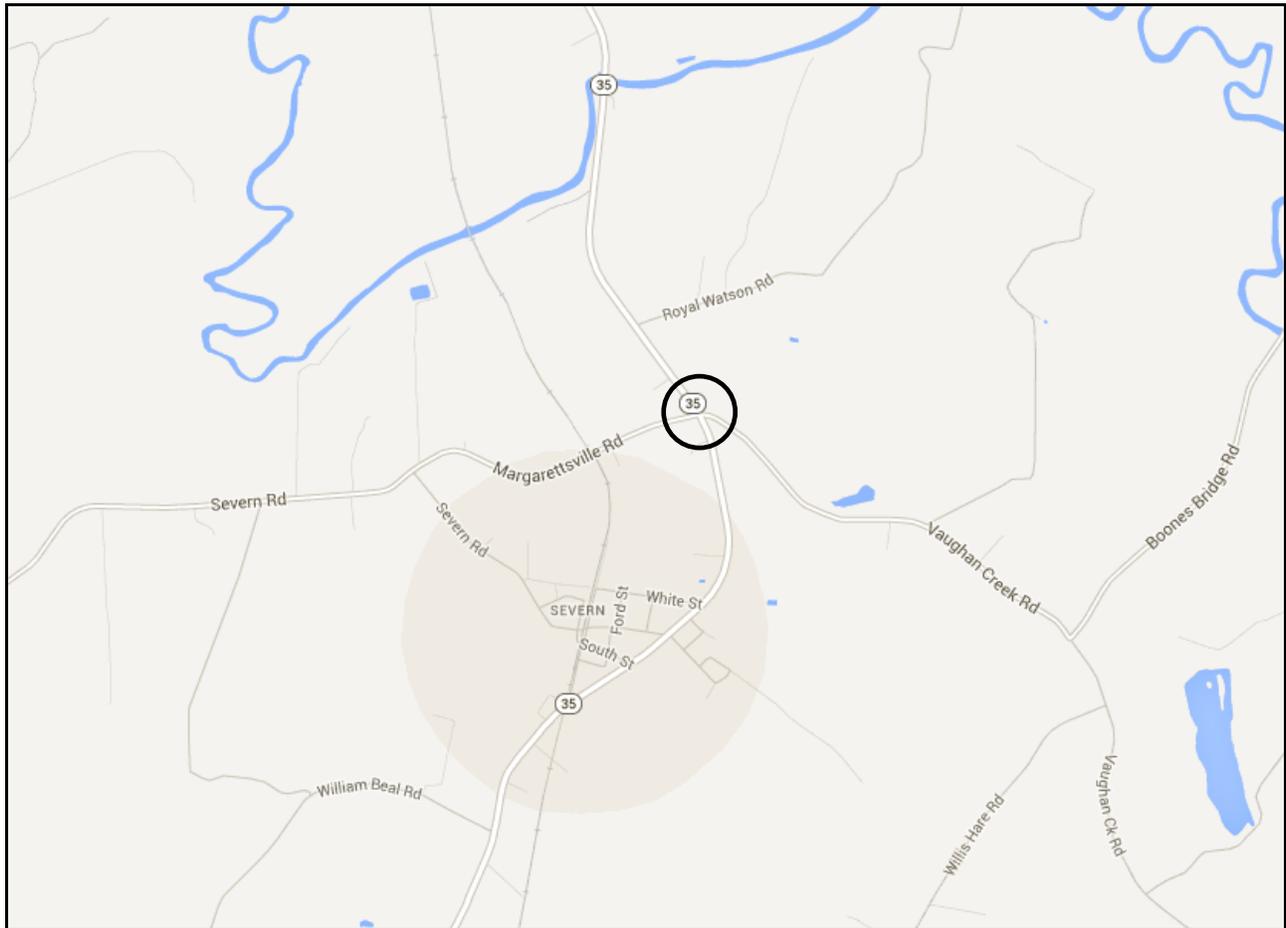
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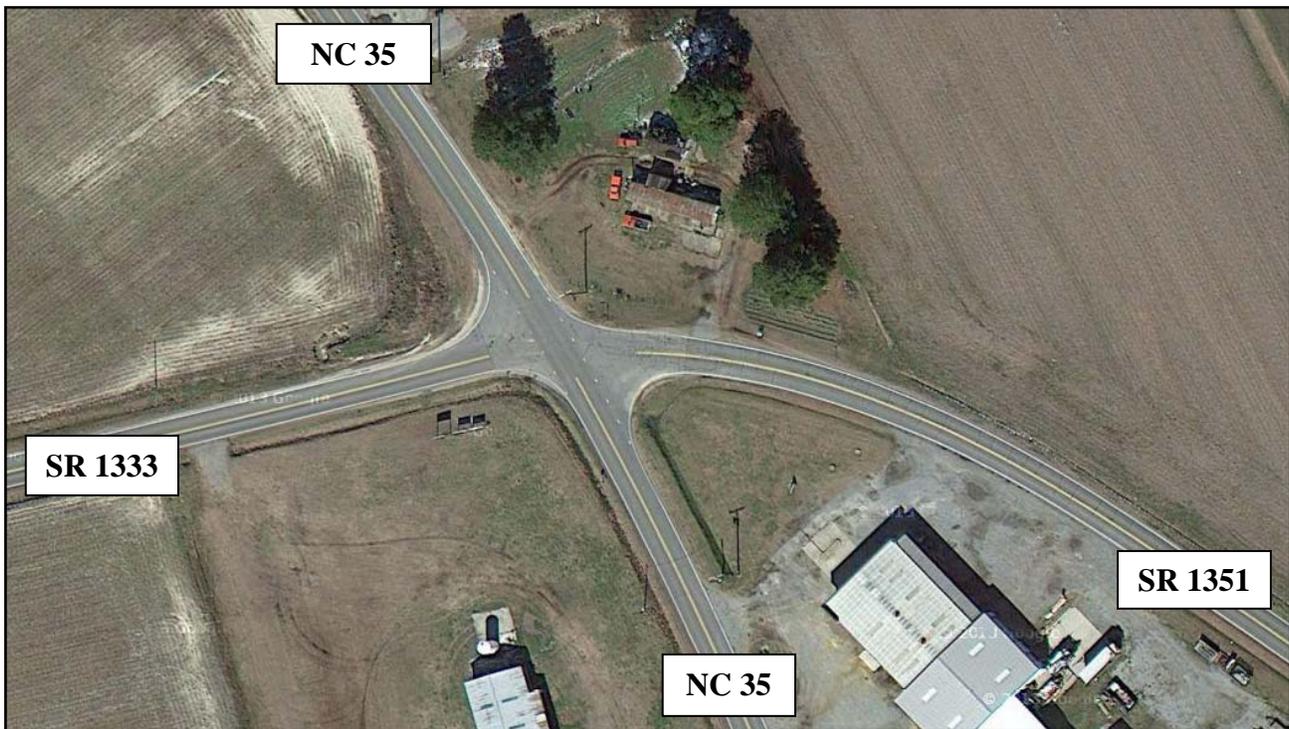
Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 01-06-204 located at the Intersection of NC 35 at SR 1333/1351 (Severn Road/Vaughan Creek Road) in Northampton County.

The intersection is unsignalized in the Before and After periods.





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 improve sight distance by cutting the slope of the ditch in the northwest quadrant of the intersection.

NC 35 and SR 1333/1351 (Severn Road/Vaughan Creek Road) are both 2-lane facilities. Speed limits around the intersection are 55 mph. The subject location is a four-leg crossroads intersection, which is stop controlled on the eastbound and westbound approaches.

The original statement of problem was the elevation of the field in the northwest quadrant was approximately four feet higher than the intersection and restricts sight distance. The intersection also has skewed approaches on all sides. The initial crash analysis was completed from February 1, 2001 to January 31, 2006 with nine (9) reported crashes. The final completion date for the improvement at the subject intersection was on January 7, 2008 with a total cost of \$11,000.00.

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 January 2008. The before period consisted of reported crashes

from July 1, 2002 through November 30, 2007 (5 years, 5 months); and the after period consisted of reported crashes from February 1, 2008 through June 30, 2013 (5 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. *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 non-yielding vehicles traveling eastbound on SR 1333/1351 (Severn Road/Vaughan Creek Road) and vehicles traveling southbound on NC 35 are the target crashes for the applied countermeasure. The target crashes are only from the eastbound and southbound approaches because the countermeasure directly affects the sight distance for the eastbound and southbound approaches.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	8	4	- 50.0 %
Total Severity Index	5.6	4.7	- 16.4 %
Target Crashes	0	1	N/A
Target Crash Severity Index	N/A	8.4	N/A
Volume (2005, 2010)	2,500	2,200	- 12 %

<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	3	0	-100.0 %
Class C Injury Crashes	2	2	0.00 %
Property Damage Only	3	2	33.3 %

The naive before and after analysis at the treatment location resulted in a 50 percent reduction in Total Crashes, and a 16.4 percent reduction in the Total Severity Index. The analysis also resulted in an increase in target crashes from 0 to 1 crash. 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>	Before	After	Percent Reduction (-) Percent Increase (+)
Eastbound SR 1333 with Northbound NC 35 Frontal Impacts	6	3	- 50.0 %

Results and Discussion

Referencing the *Collision Diagrams*, the target crashes experienced an increase from 0 to 1 crash. Benefit of the countermeasure was not noticed with the analysis of the target crashes.

From the additional information chart above, the eastbound SR 1333 and northbound NC 35 frontal impact crashes experienced a 50% decrease.

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 (April 2009) – Looking East on SR 1333



Google Maps (April 2009) – Looking West on SR 1351



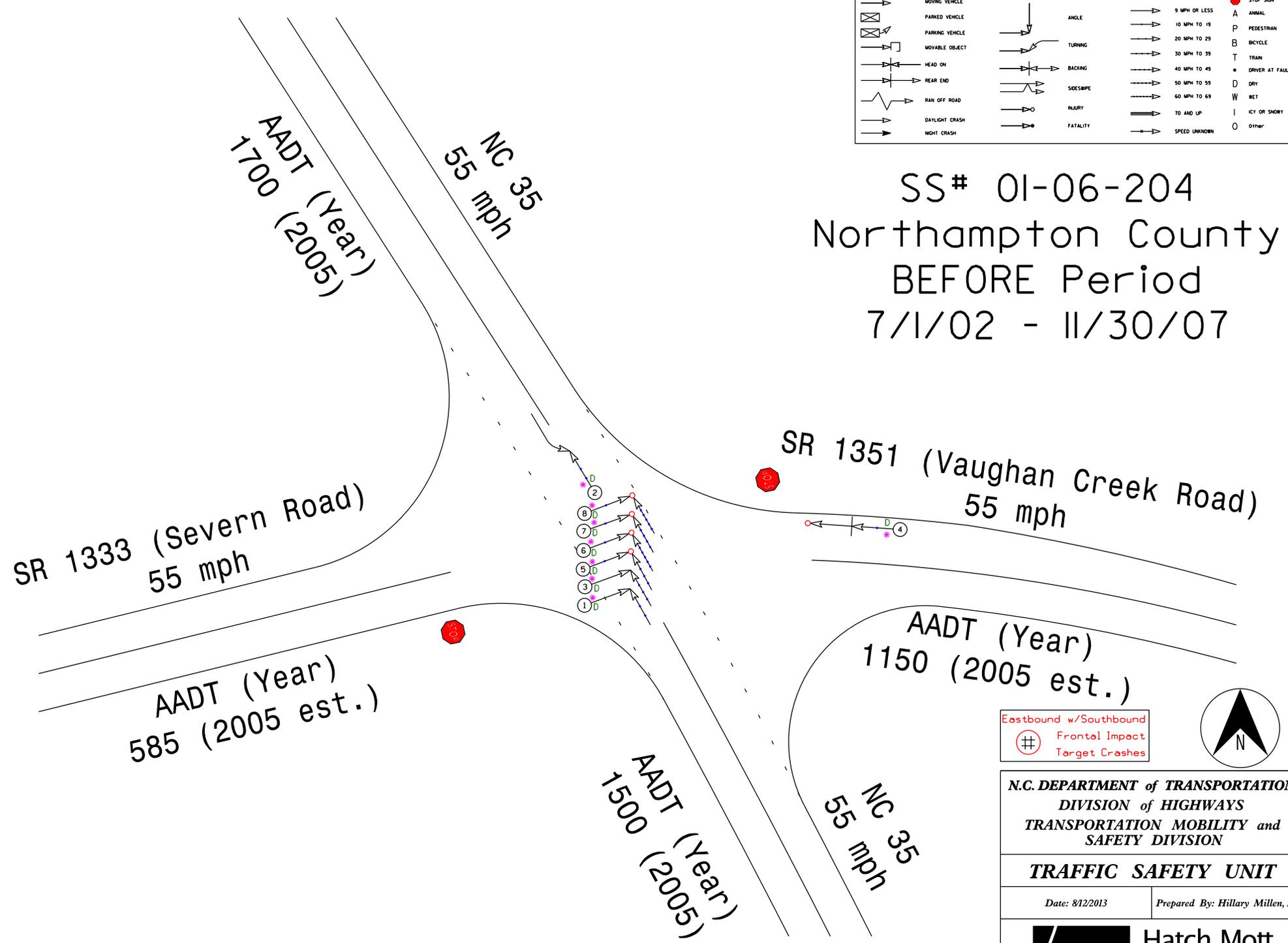
Google Maps (April 2009) – Looking North on NC 35



Google Maps (April 2009) – Looking South on NC 35

LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		STOP SIGN
	PARKED VEHICLE		TURNING		10 MPH TO 19		ANIMAL
	PARKING VEHICLE		BACKING		20 MPH TO 29		PEDESTRIAN
	MOVABLE OBJECT				30 MPH TO 39		BICYCLE
	HEAD ON				40 MPH TO 49		TRAIN
	REAR END				50 MPH TO 59		DRIVER AT FAULT
	RAN OFF ROAD				60 MPH TO 69		DRY
	DAYLIGHT CRASH		INJURY		SPEED UNKNOWN		WET
	NIGHT CRASH		FATALITY				ICY OR SNOWY
							Other

SS# 01-06-204
 Northampton County
 BEFORE Period
 7/1/02 - 11/30/07



Eastbound w/Southbound
 (#) Frontal Impact
 Target Crashes



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 TRANSPORTATION MOBILITY and SAFETY DIVISION

TRAFFIC SAFETY UNIT

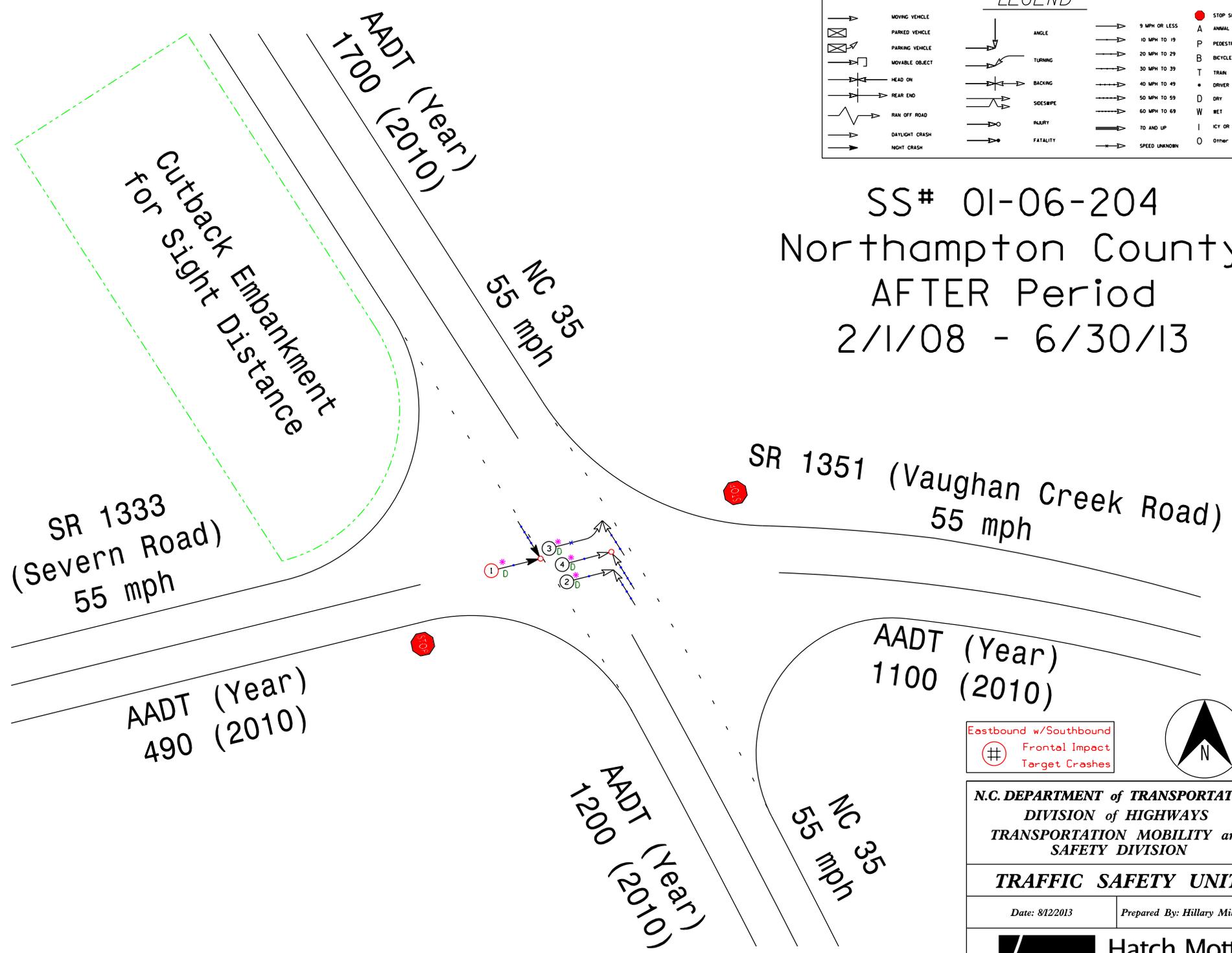
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LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		STOP SIGN
	PARKED VEHICLE		TURNING		10 MPH TO 19		ANIMAL
	PARKING VEHICLE		BACKING		20 MPH TO 29		PEDESTRIAN
	MOVABLE OBJECT		SIDESWIPE		30 MPH TO 39		BICYCLE
	HEAD ON		INJURY		40 MPH TO 49		TRAIN
	REAR END		FATALITY		50 MPH TO 59		DRIVER AT FAULT
	RAN OFF ROAD		TO AND UP		60 MPH TO 69		DRY
	DAYLIGHT CRASH		SPEED UNKNOWN		70 MPH TO 79		WET
	NIGHT CRASH				80 MPH TO 89		ICY OR SNOWY
					90 MPH TO 99		Other

SS# 01-06-204
 Northampton County
 AFTER Period
 2/1/08 - 6/30/13



Eastbound w/Southbound
 (#) Frontal Impact
 Target Crashes



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