

Spot Safety Project Evaluation

Spot Safety Project # 09-07-202

Spot Safety Project Evaluation for Installation Left-Turn Lanes on the Northbound and Southbound Approaches of NC 109

NC 109 at SR 2266 (Clarksbury Church Road/Hannerville Road)
Davidson 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

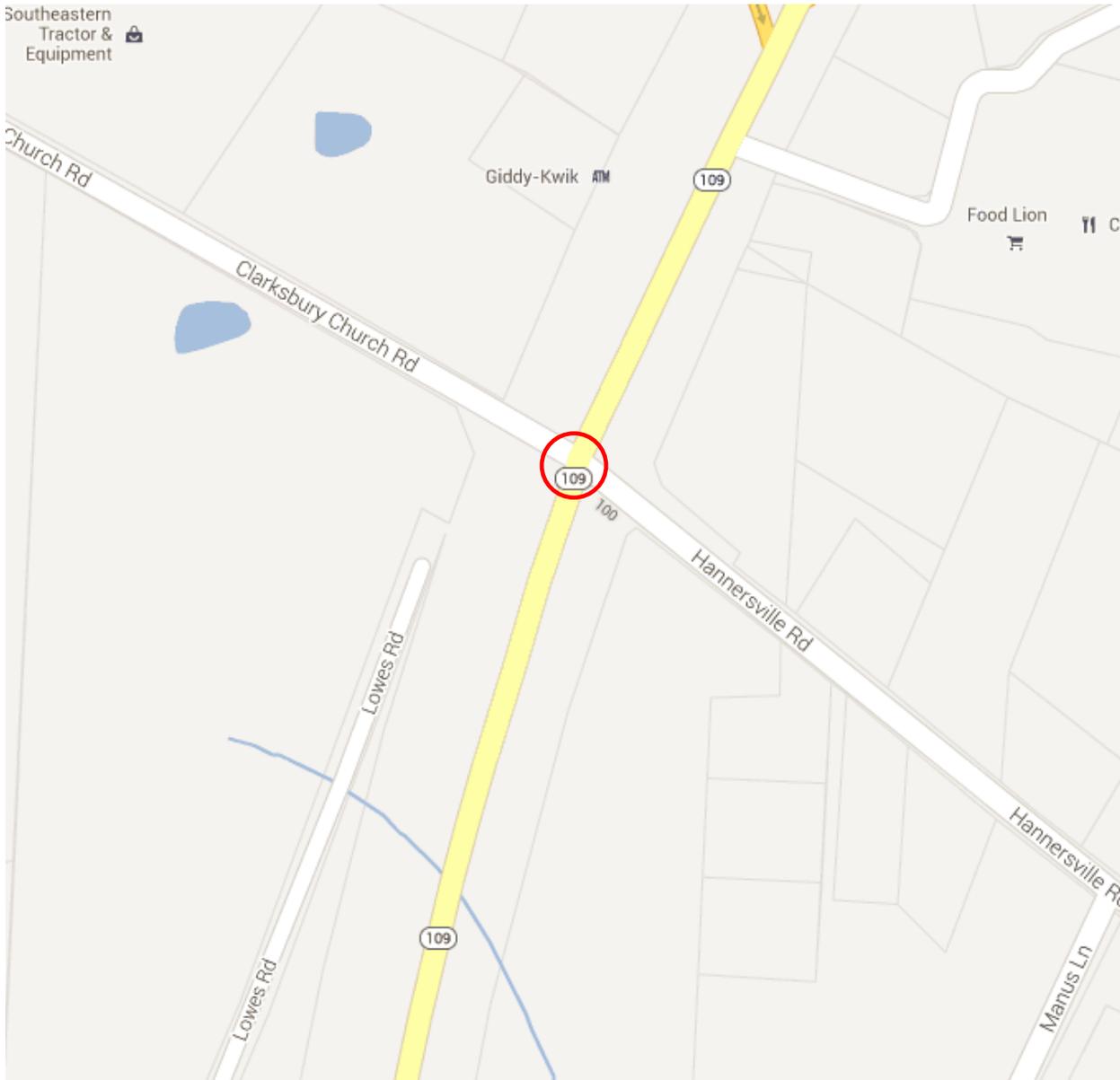
Heath Gore, PE
Heath Gore, PE
AECOM

7-12-2013
Date

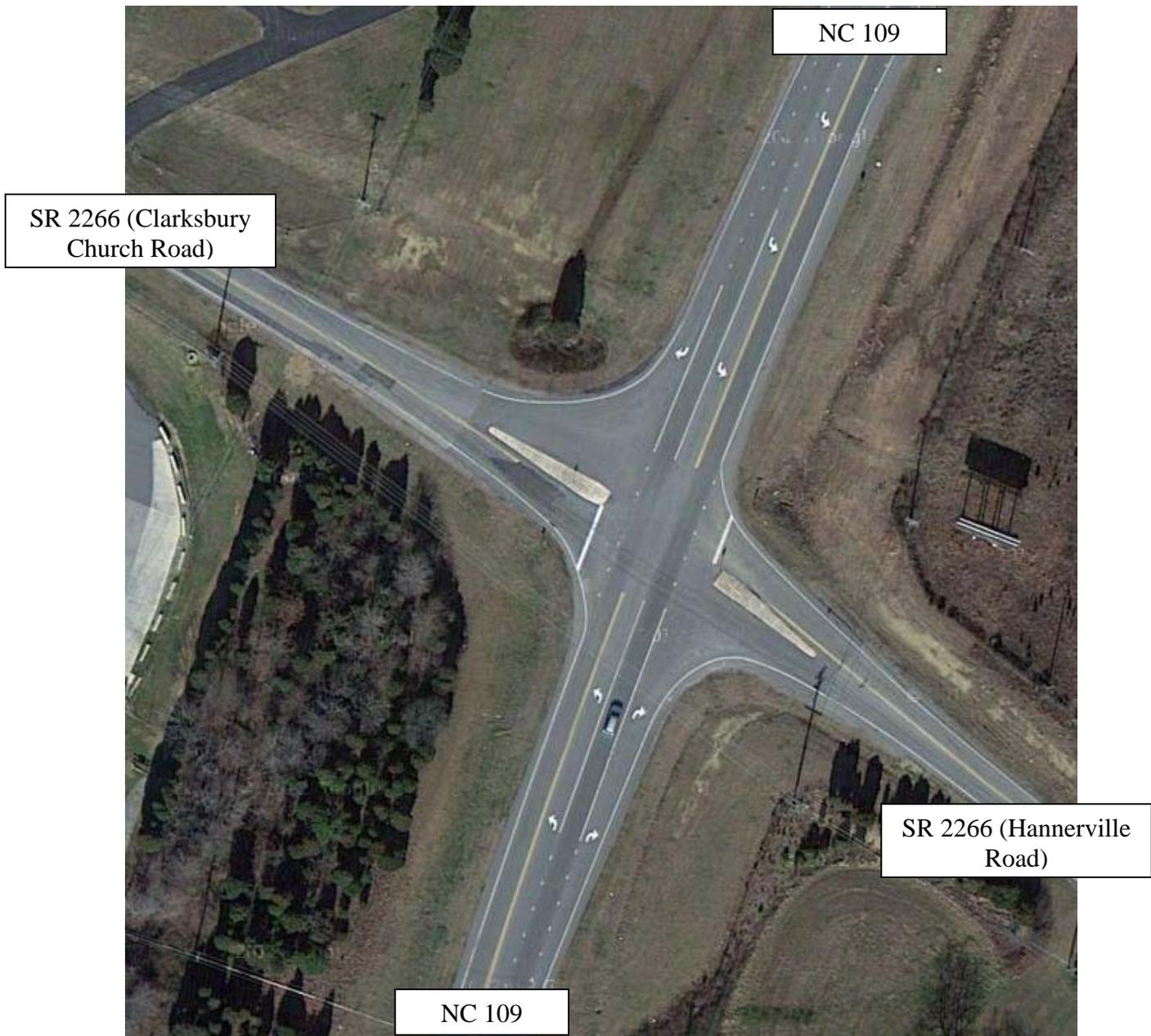
Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 09-07-202 located at the unsignalized intersection of NC 109 and SR 2266 (Clarksbury Church Road/Hannerville Road) near Thomasville in Davidson County.



Location Map Provided from Google Maps



Aerial Map 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 installation of left-turn lanes on the northbound and southbound approaches of NC 109.

NC 109 is a two-lane roadway with turn lanes on both approaches and a speed limit of 55 mph. SR 2266 (Clarksbury Church Road/Hannerville Road) is a two-lane roadway with a speed limit of 55 mph.

The original statement of problem was that vehicles on NC 109 are being rear ended because of traffic stopping to wait for a gap to turn left onto SR 2266 (Clarksbury Church Road/Hannerville Road). There are also left-turn, same roadway crashes that may be caused by motorist feeling pressured to make the left-turn on to SR 2266 (Clarksbury Church Road/Hannerville Road) because of traffic queuing behind them. The initial crash analysis was completed from November 1, 2001 to October 31, 2006 with twenty-one (21) total reported crashes, of which there were ten (10) rear ends, two (2) left-turn, same roadway, and one (1) ran off road right. The final completion date for the improvement at the subject intersection was on January 23, 2008 with a total cost of \$201,000.00.

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 February 2008. The before period consisted of reported crashes from September 1, 2002 through November 30, 2007 (5 years 3 months); and the after period consisted of reported crashes from March 1, 2008 through May 31, 2013 (5 years 3 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 NC 109 and SR 2266 (Clarksbury Church Road/Hannerville Road) 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 the northbound and southbound Rear End Crashes were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	21	9	- 57.1 %
Total Severity Index	9.19	3.47	- 63.9 %
Target Crashes	7	0	- 100.0 %
Target Crash Severity Index	17.11	0	N/A
Volume (2005, 2010)	12,500	11,500	- 8.0 %

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	1	0	- 100.0 %
Class B injury Crashes	6	2	- 66.7 %
Class C Injury Crashes	7	1	- 85.7 %
Property Damage Only	7	6	- 14.3 %

The naive before and after analysis at the treatment location resulted in a 57 percent reduction in Total Crashes, a 100 percent reduction in Target Rear End Crashes and a 64 percent reduction in the Total 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>	Before	After	Percent Reduction (-) Percent Increase (+)
Angle	4	3	- 25.0 %
Left-Turn, Same Roadway	2	0	- 100.0 %

Results and Discussion

Referencing the *Collision Diagrams*, target crashes (Northbound and Southbound Rear End Crashes) experienced a reduction from 7 crashes in the before period to 0 crashes in the after period. The installation of the left-turn lanes on both approaches was beneficial in reducing the target crashes at this location during the after period.

Angle crashes decreased from 4 crashes in the before period to 3 crashes in the after period. Also, left-turn, same roadway decreased from 2 crashes in the before period to 0 in the after period.

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: 11/07) - Looking North on NC 109 Approach



Google Maps (Image Date: 11/07) - Looking South on NC 109 Approach



Google Maps (Image Date: 11/07) - Looking East on SR 2266 (Clarksbury Church Rd)



Google Maps (Image Date: 11/07) - Looking West on SR 2266 (Hannerville Rd)

SS# 09-07-202
 Davidson County
 BEFORE Period
 9/1/02 - 11/30/07

SR 2266 (Clarksbury Church Road)
 55 MPH
 2005 ADT-1,900

LEGEND

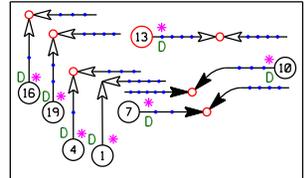
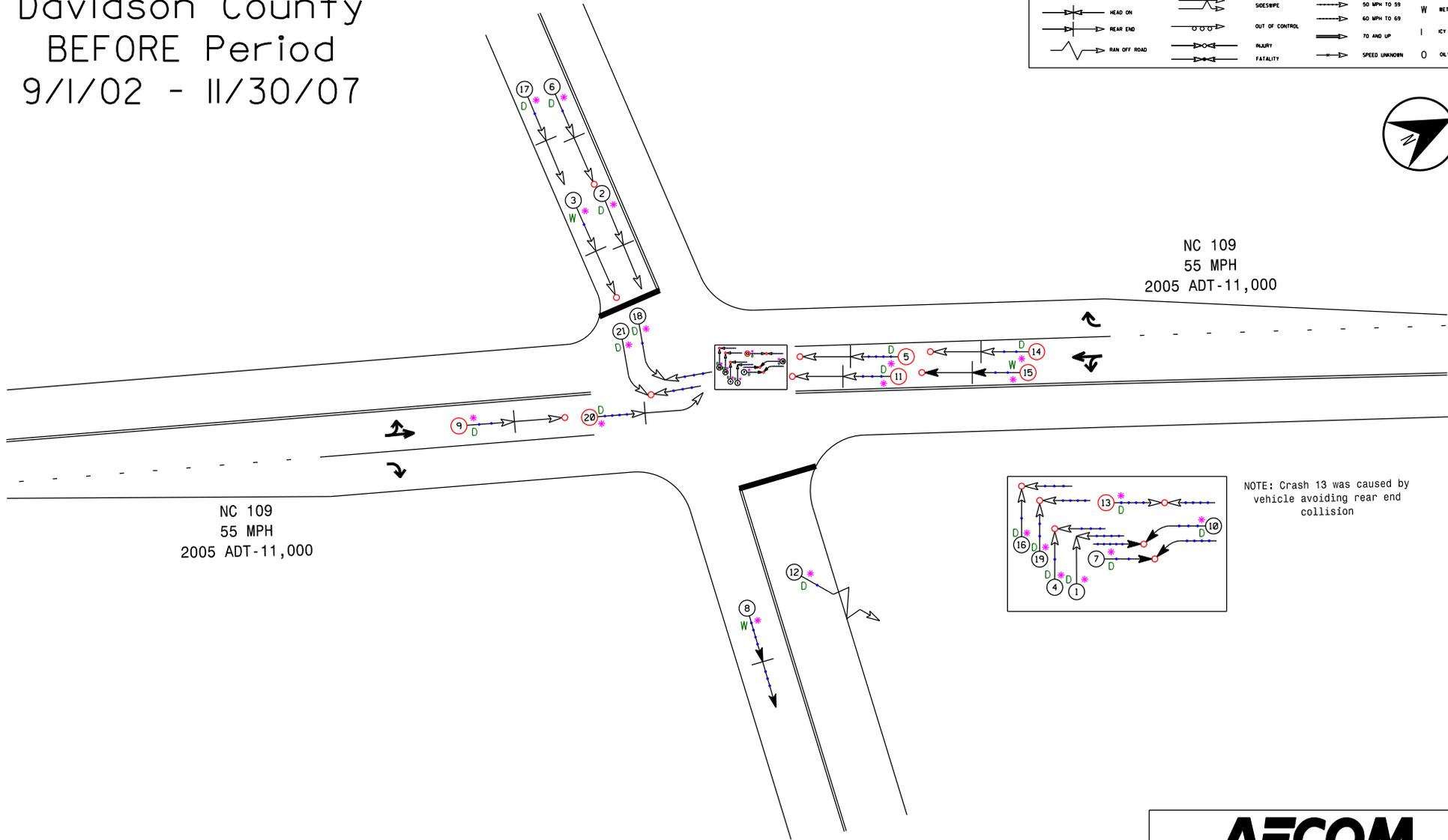
	MOVING VEHICLE		ANGLE		1 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PAKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PAKED VEHICLE		SLOESRPE		30 MPH TO 39		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		HURRY		50 MPH TO 59		ICY OR SNOW
	REAR END		FATALITY		60 MPH TO 69		ONLY
	RAN OFF ROAD				70 AND UP		
					SPEED UNKNOWN		



NC 109
 55 MPH
 2005 ADT-11,000

NC 109
 55 MPH
 2005 ADT-11,000

SR 2266 (Hannerville Road)
 55 MPH
 2005 ADT-1,100



NOTE: Crash 13 was caused by vehicle avoiding rear end collision

NB and SB Rear End Crashes

AECOM

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

TRAFFIC SAFETY UNIT

Date: 7-12-2013
 Prepared By: Heath Gore, PE

SS# 09-07-202
 Davidson County
 AFTER Period
 3/1/08 - 5/31/13

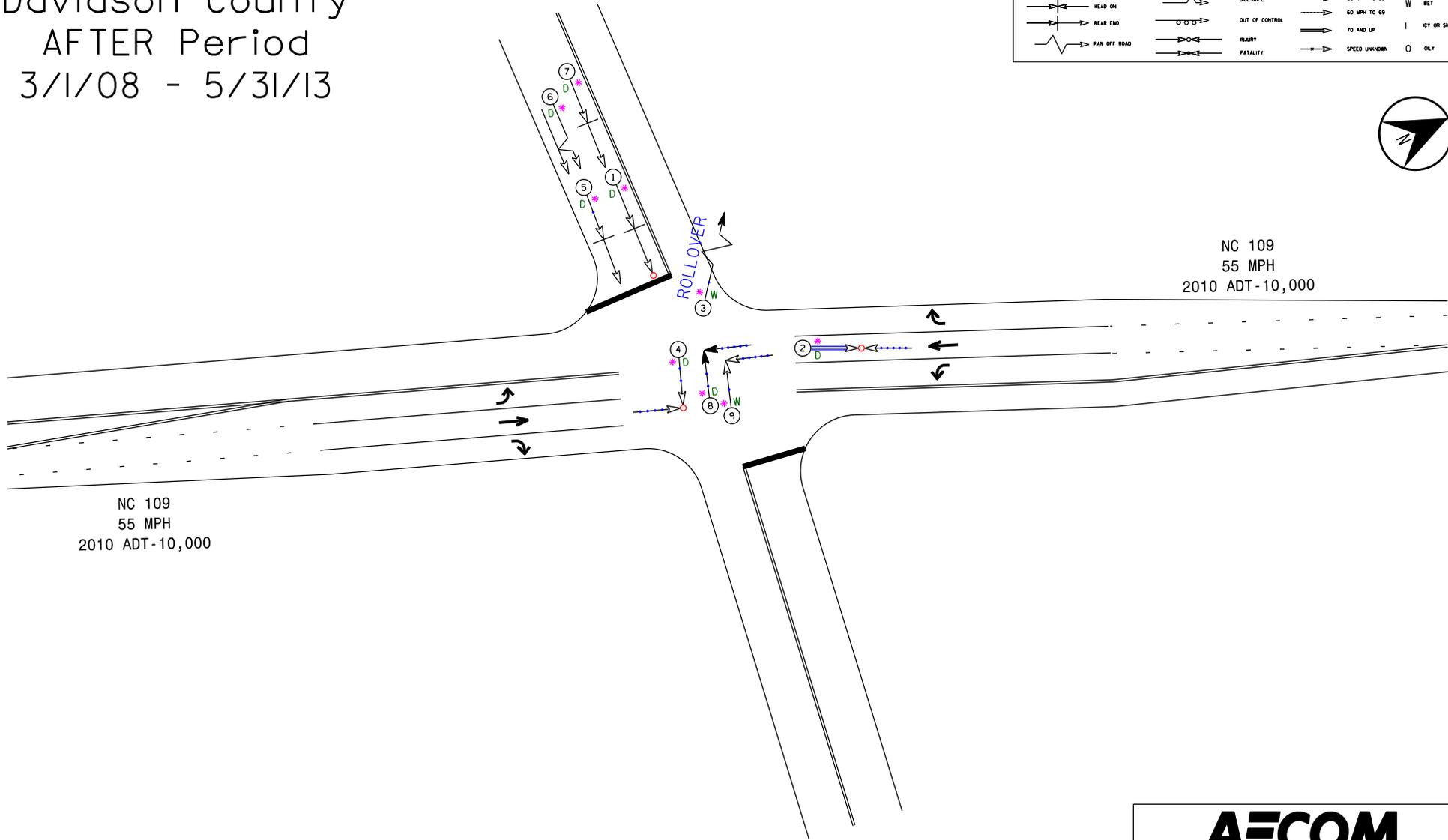
SR 2266 (Clarksbury Church Road)
 55 MPH
 2010 ADT-1,800

LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	PARKED VEHICLE		SLOESLOPE		30 MPH TO 39		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		WET
	HEAD ON		HURRY		50 MPH TO 59		ICY OR SNOW
	REAR END		FATALITY		60 MPH TO 69		TO AND UP
	RAN OFF ROAD		SPEED UNKNOWN		70 AND UP		ONLY



NC 109
 55 MPH
 2010 ADT-10,000



NC 109
 55 MPH
 2010 ADT-10,000

SR 2266 (Hannerville Road)
 55 MPH
 2010 ADT-1,200

NB and SB Rear End Crashes

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