

Spot Safety Project Evaluation

Spot Safety Project # 12-08-201

Spot Safety Project Evaluation for Installation of Traffic Signal

**SR 1303 (Perth Road) at SR 1428 (Normandy Road)/SR 1479 (Lakeshore School Road)
Iredell 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



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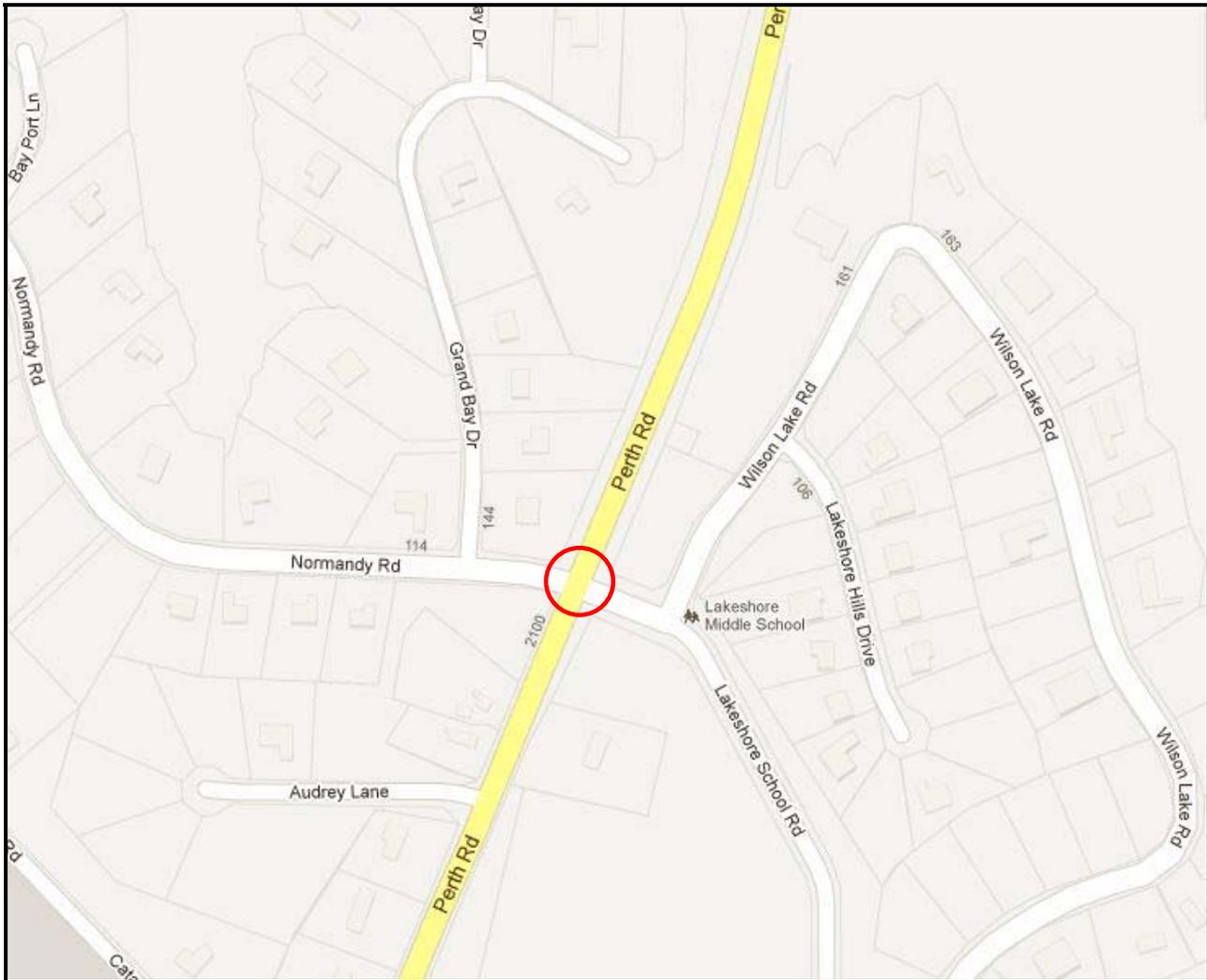
3-26-2013
Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 12-08-201 located at the intersection of SR 1303 (Perth Road) at SR 1428 (Normandy Road)/SR 1479 (Lakeshore School Road) near Mooresville in Iredell County.

The Sig ID is 12-1764 for this 3-Phase Actuated Traffic Signal.



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 the installation of a traffic signal.

SR 1303 (Perth Road) is a two-lane facility with turn lanes on both approaches of the intersection and a speed limit of 45 mph. SR 1428 (Normandy Road) is a two-lane roadway that serves a large neighborhood with a speed limit of 35 mph. SR 1479 (Lakeshore School Road) is a two-lane roadway that serves an elementary school with a speed limit of 35 mph.

The original statement of problem was excessive delays for traffic turning onto and out of the side streets. The initial crash analysis was completed from January 1, 2003 to December 31, 2007 with five (5) total reported crashes, of which there were three (3) left-turn different roadway crashes. The final completion date for the improvement at the subject intersection was on October 29, 2008 with a total cost of \$60,000.00.

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 September through November 2008. The before period consisted of reported crashes from July 1, 2004 through August 31, 2008 (4 years 2 months); and the after period consisted of reported crashes from December 1, 2008 through January 31, 2013 (4 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 1303 (Perth Road) and SR 1428 (Normandy Road)/SR 1479 (Lakeshore School Road) 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 Left-turn, different roadway were the target crashes for the applied countermeasure.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	6	2	- 66.7 %
Total Severity Index	16.10	4.70	- 70.8 %
Target Crashes	4	0	-100.0 %
Target Crash Severity Index	23.65	0	-100.0 %
Volume (2006, 2011)	8,600	11,200	30.2 %

<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	1	0	-100.0 %
Class C Injury Crashes	1	1	0.0 %
Property Damage Only	3	1	- 66.7 %

The naive before and after analysis at the treatment location resulted in a 67 percent reduction in Total Crashes, a 100 percent reduction in Target Left-Turn, Different Roadway Crashes, and a 71 percent reduction 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, Different Roadways Crashes (Target)	4	0	- 100.0 %
Rear End Slow or Stop	1	2	+ 100.0 %

Results and Discussion

Referencing the *Collision Diagrams*, the overall target crashes (Left-Turn, Different Roadways) experienced a reduction from four (4) crashes in the before period to zero (0) crashes in the after period. The installation of the signal was beneficial in eliminating the target crashes at this location during the after period.

Although the target crashes were reduced, the number of rear end crashes at the intersection increased. Rear end crashes increased from one (1) crash in the before period to two (2) crashes 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: 7/11) – Looking North on SR 1303 (Perth Rd) Approach



Google Maps (Image Date: 9/11) – Looking South on SR 1303 (Perth Rd) Approach



Google Maps (Image Date: 7/11) – Looking East on SR 1428 (Normandy Road) Approach



Google Maps (Image Date: 10/11) – Looking West on SR 1479 (Lakeshore School Rd) Approach

SS# 12-08-201
 Iredell County
 BEFORE Period
 7/1/04 - 8/31/08

SR 1428 (Normandy Road)
 35 MPH
 2006 ADT (estimated)-2,000

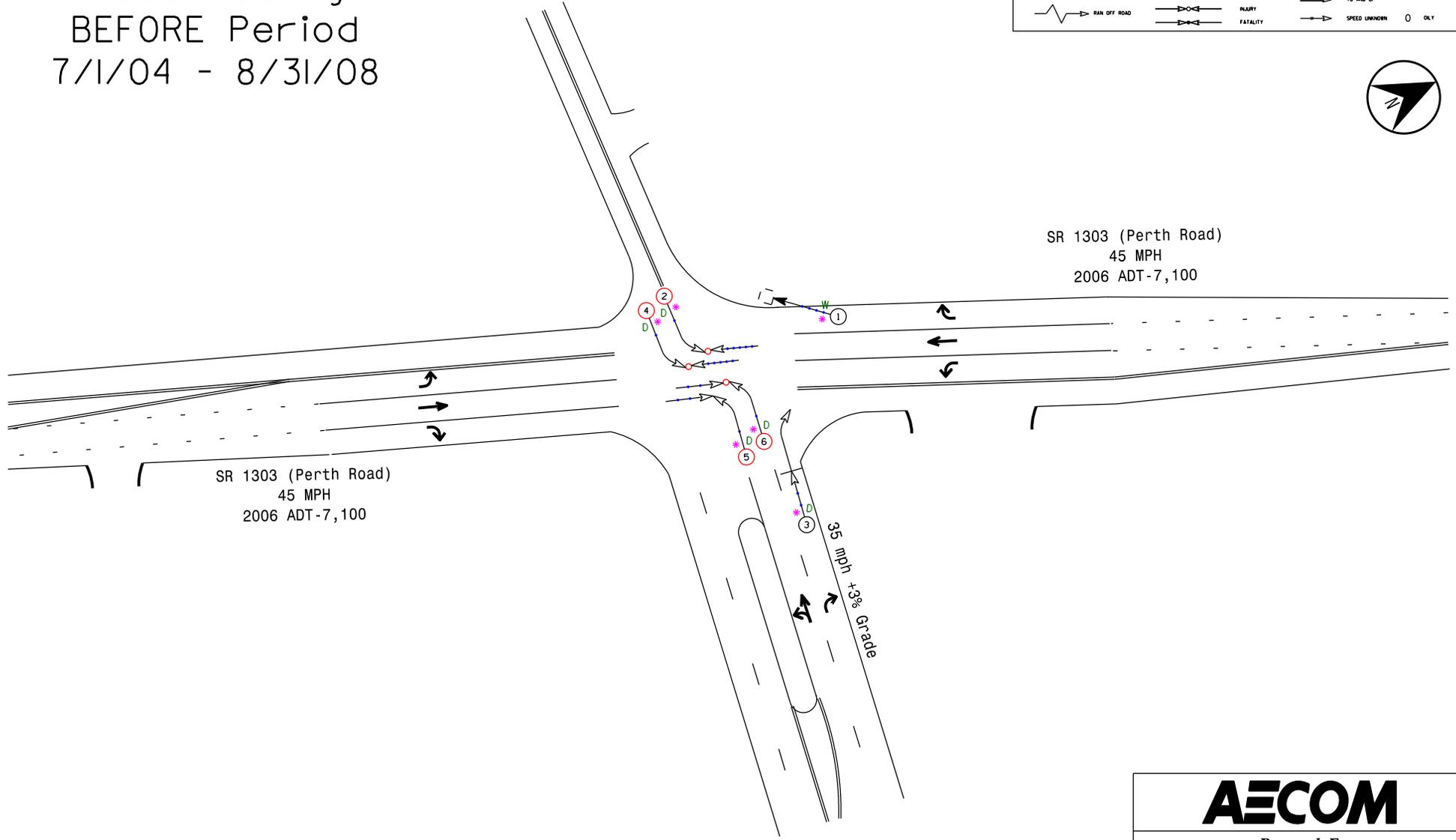
SR 1303 (Perth Road)
 45 MPH
 2006 ADT-7,100

SR 1303 (Perth Road)
 45 MPH
 2006 ADT-7,100

SR 1479 (Lakeshore School Road)
 35 MPH
 2006 ADT (estimated)-1,000

LEGEND

	MOVING VEHICLE		ANGLE		1 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		ICE OR SNOW
	NEAR END		FATALITY		60 MPH TO 69		SPEED UNKNOWN
	RAN OFF ROAD				70 AND UP		ONLY



Left Turn
 Different Roadway

AECOM

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

TRAFFIC SAFETY UNIT

Date: 3-28-2013	Prepared By: Andrew Covington
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SS# 12-08-201
 Iredell County
 AFTER Period
 12/1/08 - 1/31/13

SR 1428 (Normandy Road)
 35 MPH
 2011 ADT (estimated)-2,000

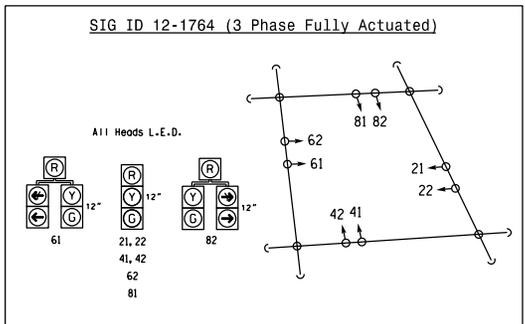
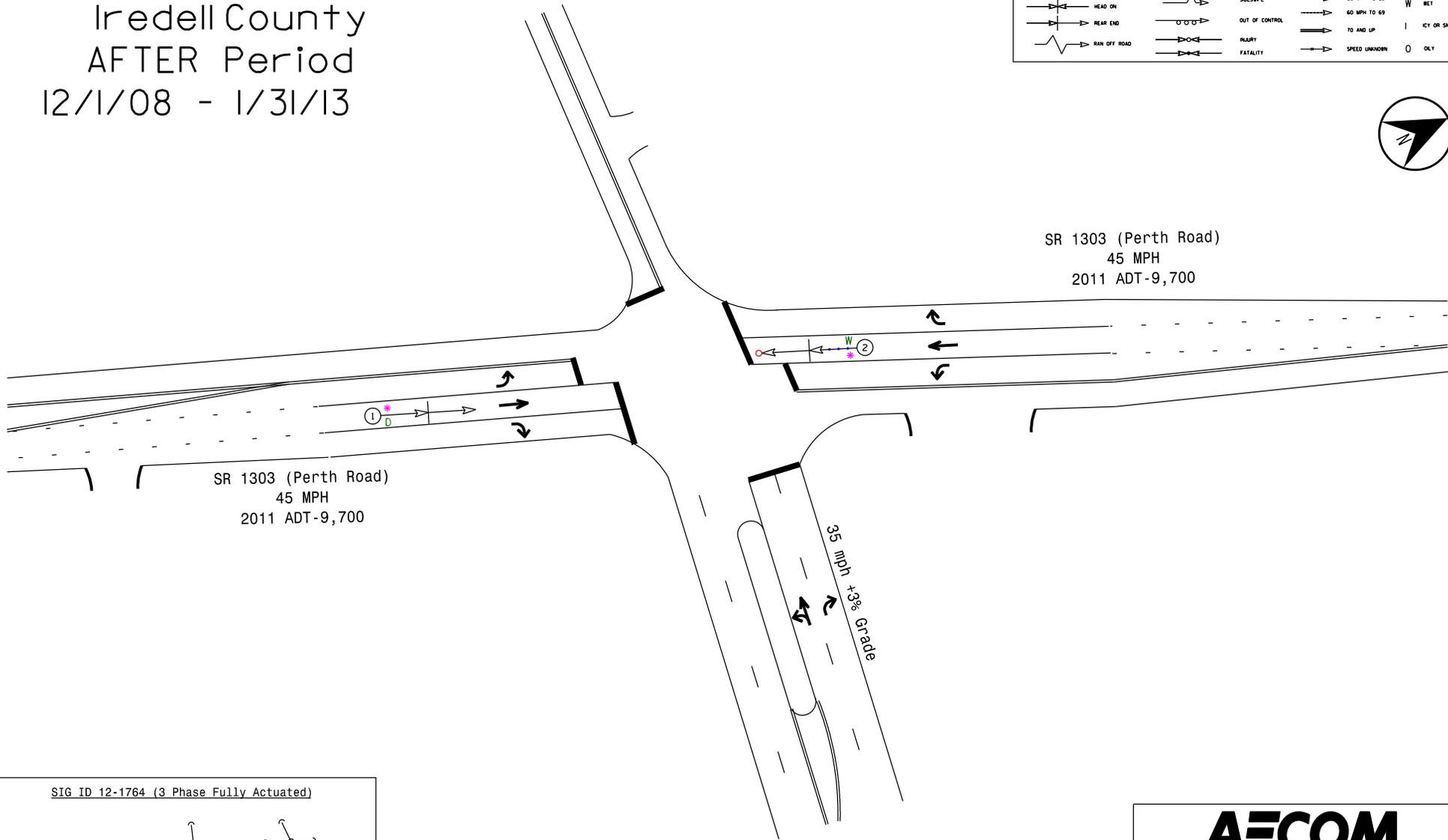
SR 1303 (Perth Road)
 45 MPH
 2011 ADT-9,700

SR 1303 (Perth Road)
 45 MPH
 2011 ADT-9,700

SR 1479 (Lakeshore School Road)
 35 MPH
 2011 ADT (estimated)-1,000

LEGEND

	MOVING VEHICLE		ANGLE		1 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
	NEAR END		FATALITY		60 MPH TO 69		SPEED UNKNOWN
	RAN OFF ROAD				70 AND UP		ONLY



Left Turn
 Different Roadway

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