

Spot Safety Project Evaluation

Project Information

Order ID: 41000029836

Project ID: 05-07-205

Location: US 1 (Capital) at Paragon Park Rd and SR 3046 (Homestead)

County: Wake

City: Raleigh

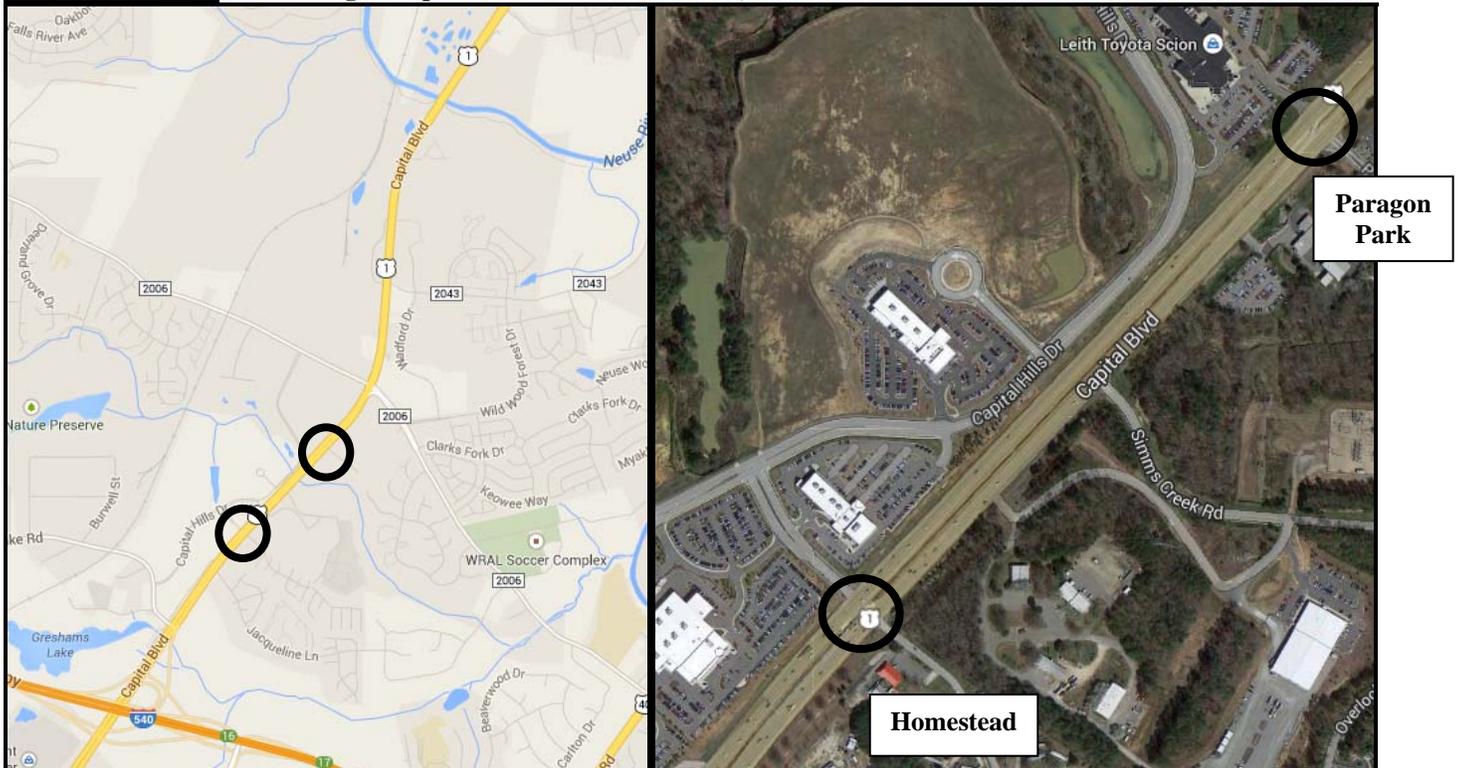
Division: 5

Signal ID: 05-2385 (US 1 at Homestead)

Countermeasure: Close the southbound left turn movement and lengthen the northbound left storage on US 1 at Paragon Park Rd. Construct a directional crossover on US 1 at SR 3046 (Homestead), allowing for northbound U-Turns only.

Project Completion: December 2007 - July 2008 Project Cost: \$180,000

Map and Aerial (from Google Maps – Coordinates: 35.887624, -78.565057)



Naive Before and After Analysis

US 1 at Paragon Park – *Before Period Limited by the construction of the crossover*

Before Period: October 1, 2004 through July 31, 2007 (2.83 years)

Const. Period: August 1, 2007 through March 31, 2008

After Period: April 1, 2008 through April 30, 2014 (6.08 years)

Analysis Criteria: Treatment data consists of all crashes within 150 feet of the intersection.

Target Crashes: Left-turn same roadway crashes involving vehicles turning left onto Paragon Park Rd.

<u>Treatment Information</u>	Before 2.83 Years	After 6.08 Years	Percent Reduction (-) Percent Increase (+)
Total Crashes	52	41	n/a
Total Crashes per year	18.4	6.7	-63.6
Total Severity Index	4.13	2.62	-36.6
Target Crashes	35	0	n/a
Target Crashes per year	12.4	0	-100
Target Crash Severity Index	4.81	0	-100
Volume (2006, 2011)	56,000	57,500	2.7

<u>Injury Crash Summary (Per Year)</u>	Before 2.83 Years	After 6.08 Years	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	n/a
Class A injury Crashes	0	0	n/a
Class B injury Crashes	3.53	0.33	-90.7
Class C Injury Crashes	4.24	1.15	-72.9
Property Damage Only	10.6	5.26	-50.4

US 1 at SR 3046 (Homestead) – *In 2010 a 4th leg was constructed at the intersection. In addition, a second left turn lane was installed for northbound vehicles, a new southbound thru-lane was constructed, and a signal was installed for the southbound lanes. For your information, we included a crash analysis for this time period also.*

Before Period: October 1, 2004 through November 30, 2007 (3.16 years)

Const. Period: December 1, 2007 through March 31, 2008

After Period 1: April 1, 2008 through February 28, 2010 (1.91 years)

Const. Period 2: March 1, 2010 through May 31, 2010

After Period 2: June 1, 2010 through April 30, 2014 (3.92 years)

Analysis Criteria: Treatment data consists of all crashes within 150 feet of the intersection.

Target Crashes: Left-turn same roadway crashes involving vehicles turning left into or out of Homestead Dr.

<u>Treatment Information</u>	Before 3.16 Years	After Period 1 1.91 Years	Percent Reduction (-) Percent Increase (+)	After Period 2 3.92 Years
Total Crashes	49	13	n/a	43
Total Crashes per year	15.5	6.8	-56.1	11.0
Total Severity Index	3.57	1.57	-56.0	2.89
Target Crashes	18	0	n/a	0
Target Crashes per year	5.7	0	-100.0	0
Target Crash Severity Index	5.52	0	-100.0	0
Volume (2006, 2009, 2012)	56,000	58,500	4.5	58,500

<u>Injury Crash Summary Per Year</u>	Before 3.16 Years	After 1 1.91 Years	Percent Reduction (-) Percent Increase (+)	After 2 3.92 Years
Fatal injury Crashes	0	0	n/a	0
Class A injury Crashes	0	0	n/a	0
Class B injury Crashes	2.53	0.52	-79.3	1.02
Class C Injury Crashes	2.85	0.00	-100.0	1.79
Property Damage Only	10.13	6.28	-38.0	8.16

Overall Summary Results**At Paragon Park****At SR 3046 (Homestead)
From Before to After 1**

Total Crashes per year:	- 64 %	(reduction)	- 56 %	(reduction)
Total Crash Severity:	- 37 %	(reduction)	- 56 %	(reduction)
Target Crashes per yer:	- 100 %	(reduction)	- 100 %	(reduction)
Target Crash Severity:	- 100 %	(reduction)	- 100 %	(reduction)
Volume:	+ 3 %	(increase)	+ 5 %	(increase)

Items for Discussion/Concerns

There were large decreases in total crashes and an elimination of target crashes at the two intersections from the before to the after period.

Due to possibility of crashes migrating due to the restricting of movements, a quick crash analysis was conducted on the next median crossings both north and south of the two crossovers. The before and after period time frames for the Paragon Park analysis were used. The intersection to the south of the crossovers (SR 2013 – Gresham Lake) experienced a 16% reduction in crashes per year. The intersection to the north of the crossovers (SR 2006 – Durant) experienced a 32 percent reduction in crashes per year.

Data Prepared For

The Traffic Safety Unit *of the*
Transportation Mobility and Safety Division *of the*
Division of Highways *of the*
North Carolina Department of Transportation

Data Prepared By

Principal Investigator: Brad Robinson, PE
Work Group/Consultant: NCDOT - Safety Evaluation Group
Date: December 4, 2014

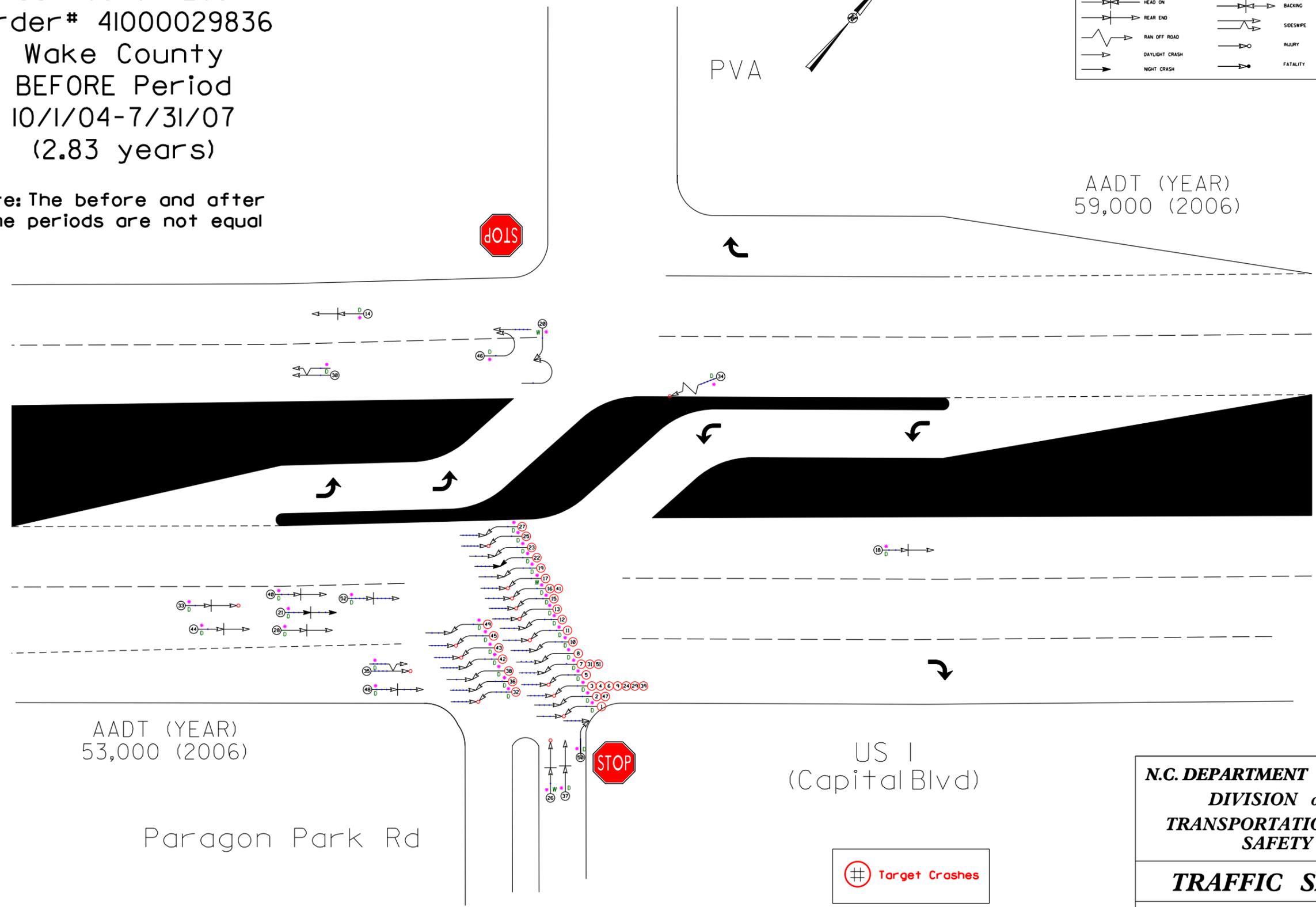
SS# 05-07-205
 Order# 41000029836
 Wake County
 BEFORE Period
 10/1/04-7/31/07
 (2.83 years)

Note: The before and after time periods are not equal

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

PVA

AADT (YEAR)
59,000 (2006)



AADT (YEAR)
53,000 (2006)

Paragon Park Rd

US I
(Capital Blvd)

Target Crashes

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

TRAFFIC SAFETY UNIT

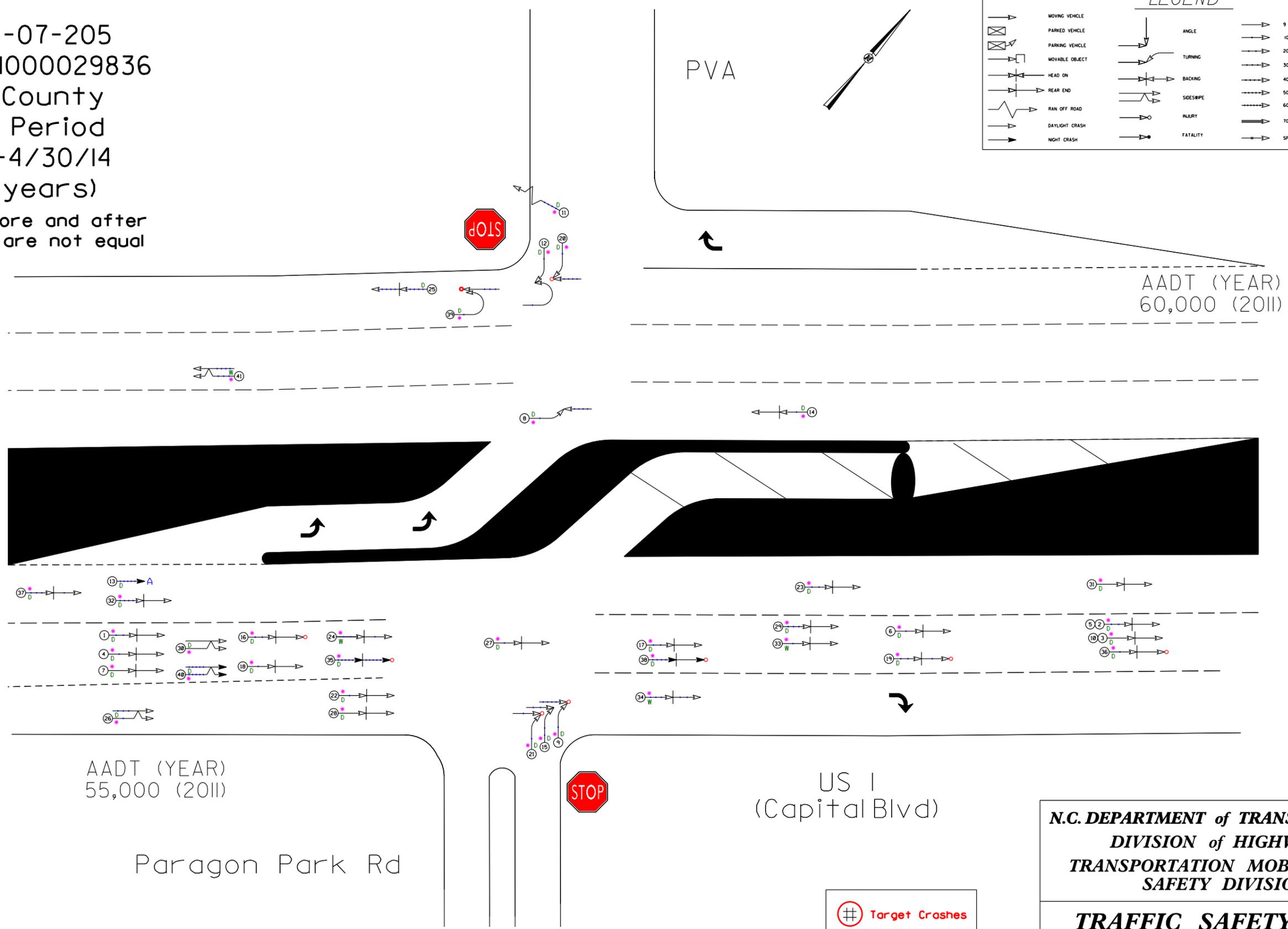
Date: July 2008

Prepared By: BDR

SS# 05-07-205
 Order# 41000029836
 Wake County
 AFTER Period
 4/1/08-4/30/14
 (6.08 years)

Note: The before and after time periods are not equal

LEGEND			
	MOVING VEHICLE		ANGLE
	PARKED VEHICLE		TURNING
	PARKING VEHICLE		BACKING
	MOVABLE OBJECT		SIDESWIPE
	HEAD ON		INJURY
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			P PEDESTRIAN
			B BICYCLE
			T TRAIN
			* DRIVER AT FAULT
			D DRY
			W WET
			I ICY OR SNOWY
			O Other



AAADT (YEAR)
55,000 (2011)

Paragon Park Rd

US 1
(Capital Blvd)

Target Crashes

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

TRAFFIC SAFETY UNIT

Date: October 2014

Prepared By: ITP



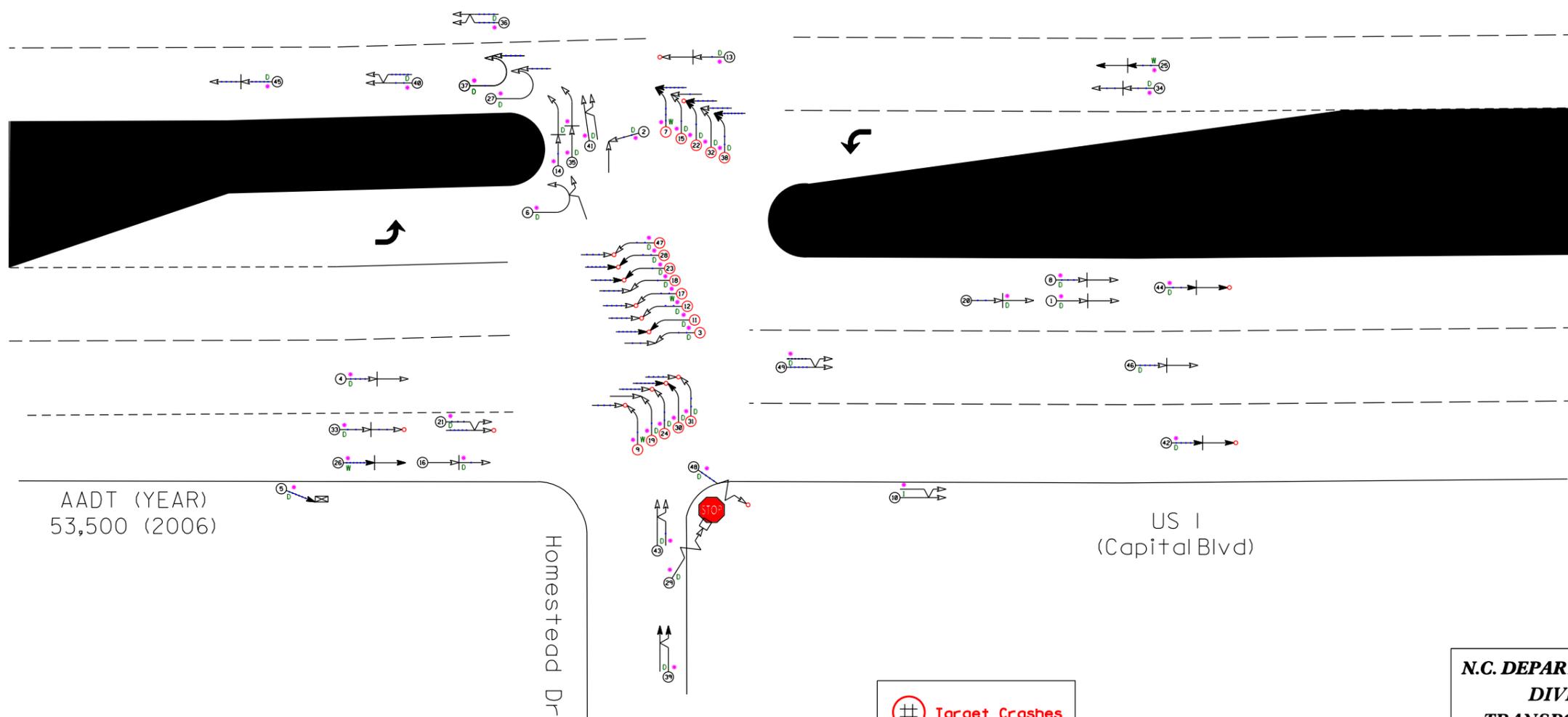
SS# 05-07-205
 Order# 41000029836
 Wake County
 BEFORE Period
 10/1/2004-11/30/2007
 (3.16 years)

Note: The before and after
 time periods are not equal

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

US 1
 (Capital Blvd)

AADT (YEAR)
 61,000 (2006)



AADT (YEAR)
 53,500 (2006)

Homestead Dr

US 1
 (Capital Blvd)

Target Crashes

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

TRAFFIC SAFETY UNIT

Date: July 2008

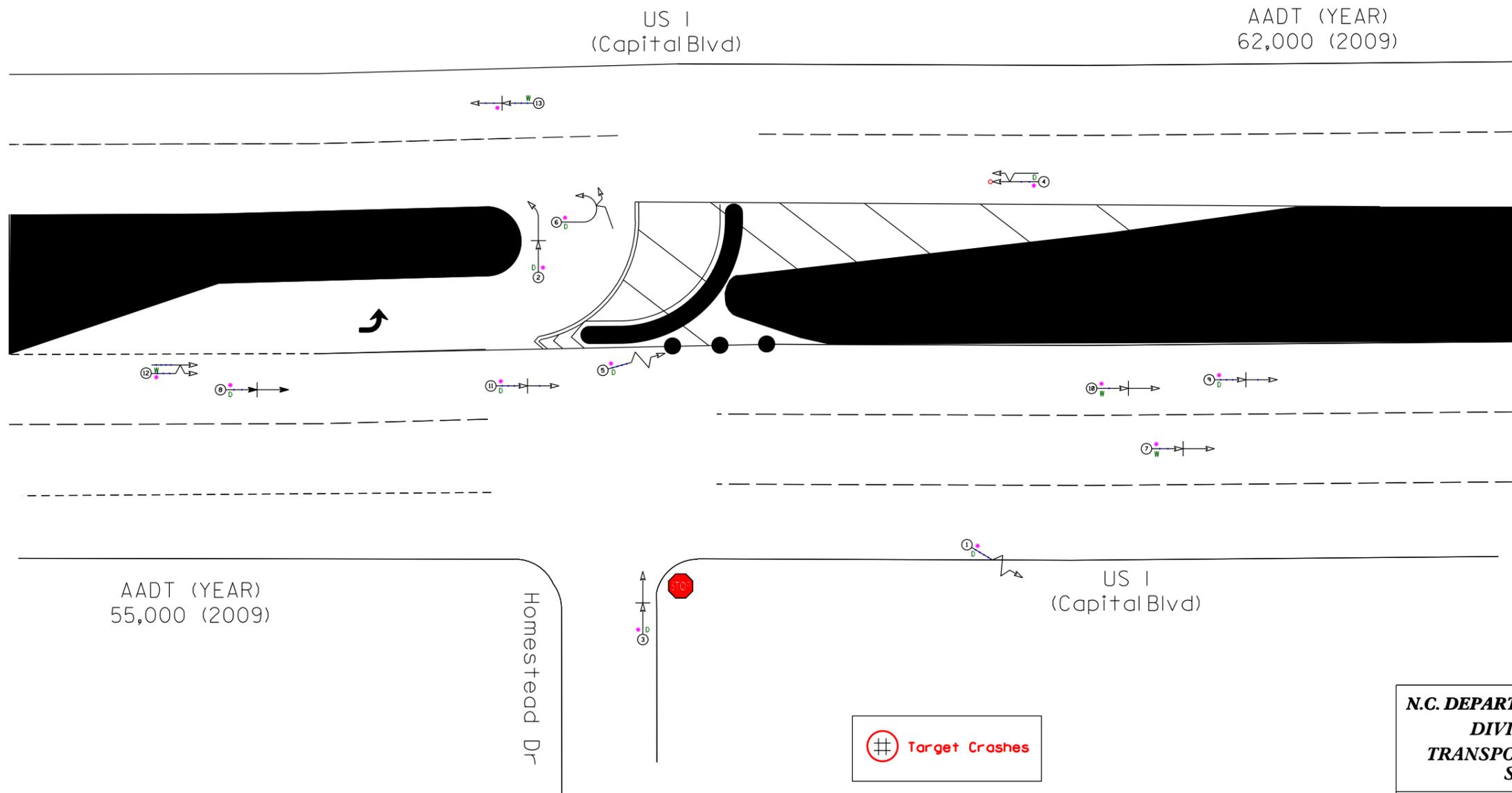
Prepared By: BDR



SS# 05-07-205
 Order# 41000029836
 Wake County
 AFTER Period I
 4/1/08-2/28/10
 (1.91 years)

Note: The before and after
 time periods are not equal

LEGEND			
	MOVING VEHICLE		ANGLE
	PARKED VEHICLE		TURNING
	PARKING VEHICLE		BACKING
	MOVABLE OBJECT		SIDESWIPE
	HEAD ON		INJURY
	REAR END		FATALITY
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			I ICY OR SNOWY
			O OTHER



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DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and
SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: October 2014

Prepared By: ITP

SS# 05-07-205
 Order# 41000029836
 Wake County
 AFTER Period 2
 6/1/10-4/30/14
 (3.92 years)

Note: The before and after
 time periods are not equal

US 1 (Capital
 Boulevard)

Capital
 Connection
 Drive

AADT (YEAR)
 61,000 (2012)

AADT (YEAR)
 56,000 (2012)

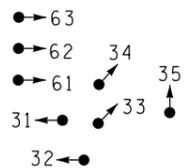
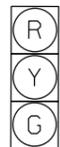
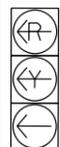
US 1 (Capital
 Boulevard)

Homestead
 Drive

LEGEND			
	MOVING VEHICLE		ANGLE
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			W WET
			I ICY OR SNOWY
			O OTHER

SIGNAL FACE I.D.

All Heads L.E.D.



31, 32 61, 62, 63 33, 34, 35

SignalID 05-2385

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TRANSPORTATION MOBILITY and
SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: October 2014

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