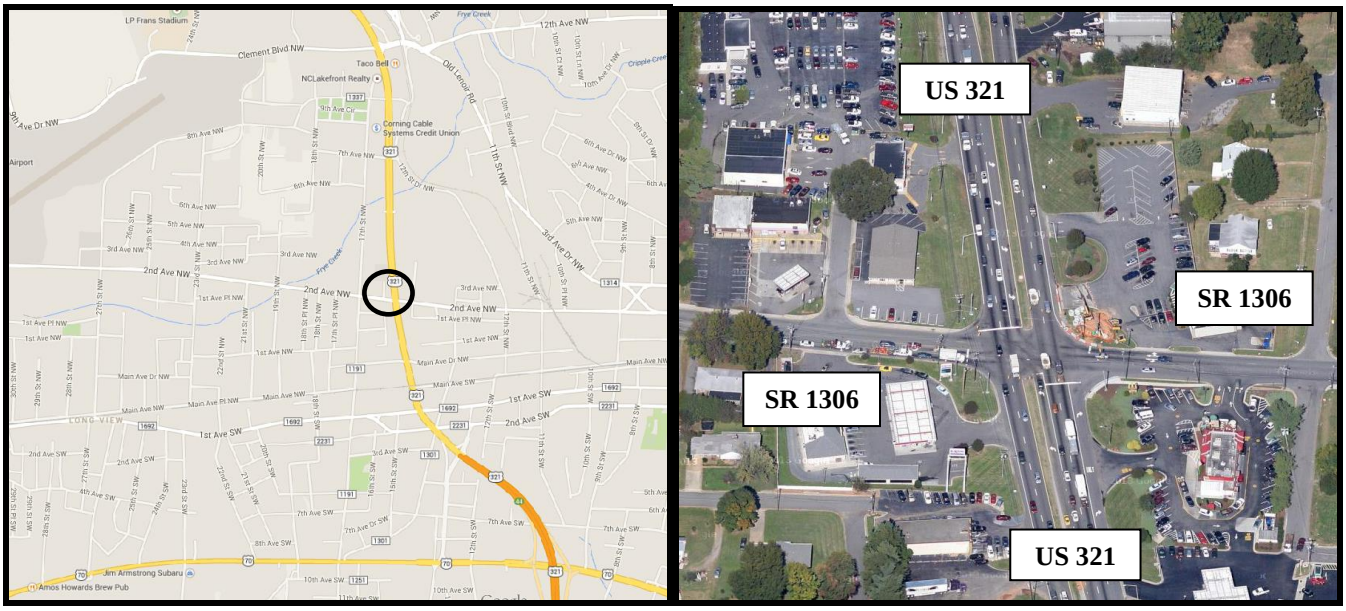
Spot Safety Project Evaluation

Project Information

Order ID:	41000030275
Project ID:	12-02-210
Location:	US 321 and SR 1306 (2nd Avenue NW)
County:	Catawba
City:	Hickory
Division:	12
Signal ID:	12-0694
Countermeasure:	Revise signal to split side street phasing in order to provide protected left-turns for the SR 1306 approaches.
Project Completion:	January 11, 2010
Project Cost:	$83,300.00

Map and Aerial (from Google Maps – Coordinates are 35.735143,-81.365602)



Naive Before and After Analysis

Before Period: July 1, 2005 through November 30, 2009 (4 years, 5 months)

Const. Period: December 1, 2009 through January 31, 2010 (2 months)

After Period: February 1, 2010 through June 30, 2014 (4 years, 5 months)

Analysis Criteria: Treatment data consisted of all crashes within 150 feet of the subject intersection for the US 321 and SR 1306 approaches.

Target Crashes: Frontal Impact Crashes on the eastbound and westbound approaches.

Treatment Information	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	120	118	-1.7%
Total Severity Index	3.54	2.44	-31.1%
Target Crashes	29	22	-24.1%
Target Crash Severity Index	3.30	2.68	-18.6%
Volume (2007, 2012)	45,500	43,700	-4.0%

Injury Crash Summary	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	1	0	-100.0%
Class A injury Crashes	0	0	N/A
Class B injury Crashes	11	5	-54.5%
Class C Injury Crashes	20	18	-10.0%
Property Damage Only	88	95	8.0%

Additional Information	Before	After	Percent Reduction (-) Percent Increase (+)
All Rear End Crashes	60	71	18.3%
All Frontal Impact Crashes	42	34	-19.0%
Frontal Impact Crashes (Angles only)	25	13	-48.0%
Frontal Impact Crashes (Driveways only)	35	20	-42.9%
Driveway crashes on west leg	28	18	-35.7%
Driveway crashes on east leg	8	6	-25.0%
Eastbound Frontal Impacts (Target)	25	16	-36.0%
Westbound Frontal Impacts (Target)	4	6	50.0%
Eastbound Rear-End Crashes	8	5	-37.5%
Westbound Rear-End Crashes	5	5	0.0%
Northbound Rear-End Crashes	19	36	89.5%
Southbound Rear-End Crashes	21	23	9.5%

Overall Summary Results

Total Crashes:	-1.7 %	(reduction)
Total Crash Severity:	-31.1 %	(reduction)
Target Crashes:	-24.1 %	(reduction)
Target Crash Severity:	-18.6 %	(reduction)
Volume:	-4.0 %	(reduction)

Additional Summary Results

All Rear End Crashes:	+18.3 %	(increase)
All Frontal Impact Crashes:	-19.0 %	(reduction)
Frontal Impact Crashes (Angles only)	-48.0 %	(reduction)
Frontal Impact Crashes (Driveways only)	-42.9 %	(reduction)
Driveway crashes on west leg (all crashes)	-35.7 %	(reduction)
Driveway crashes on east leg (all crashes)	-25.0 %	(reduction)
Eastbound Frontal Impacts (Target Crash)	-36.0 %	(reduction)
Westbound Frontal Impacts (Target Crash)	+50.0 %	(increase)
Eastbound Rear End Crashes	-37.5 %	(reduction)
Westbound Rear End Crashes	0.0 %	(no change)
Northbound Rear End Crashes	+89.5 %	(increase)
Southbound Rear End Crashes	+9.5 %	(increase)

Items for Discussion/Concerns

The total crashes experienced a slight reduction of 1.7% (120 to 118 crashes) between the before and after periods while the target crashes experienced a larger reduction of 24.1% (29 to 22 crashes). Both the total crash severity and the target crash severity experienced reductions of 31.1% and 18.6%, respectively, between the before and after periods.

Frontal impact crashes for the entire intersection experienced a reduction of 19% (42 to 34 crashes) while frontal impact crashes at driveways experienced a reduction of 42.9% (35 to 20 crashes) between the before and after periods. The majority of the frontal impact driveway crashes occurred on the

eastbound and westbound approaches. Frontal impact crashes on the eastbound approach experienced a reduction of 36% (25 to 16 crashes), while the westbound approach experienced an increase of 50% (4 to 6 crashes) between the before and after periods.

An additional item to note is that while rear end crashes for the entire intersection experienced an increase of 18.3%, rear end crashes on the eastbound approach experienced a reduction of 37.5% and rear end crashes on the westbound approach experienced no change between the before and after periods. The northbound and southbound approaches experienced increases of 89.5% and 9.5%, respectively, between the before and after periods.

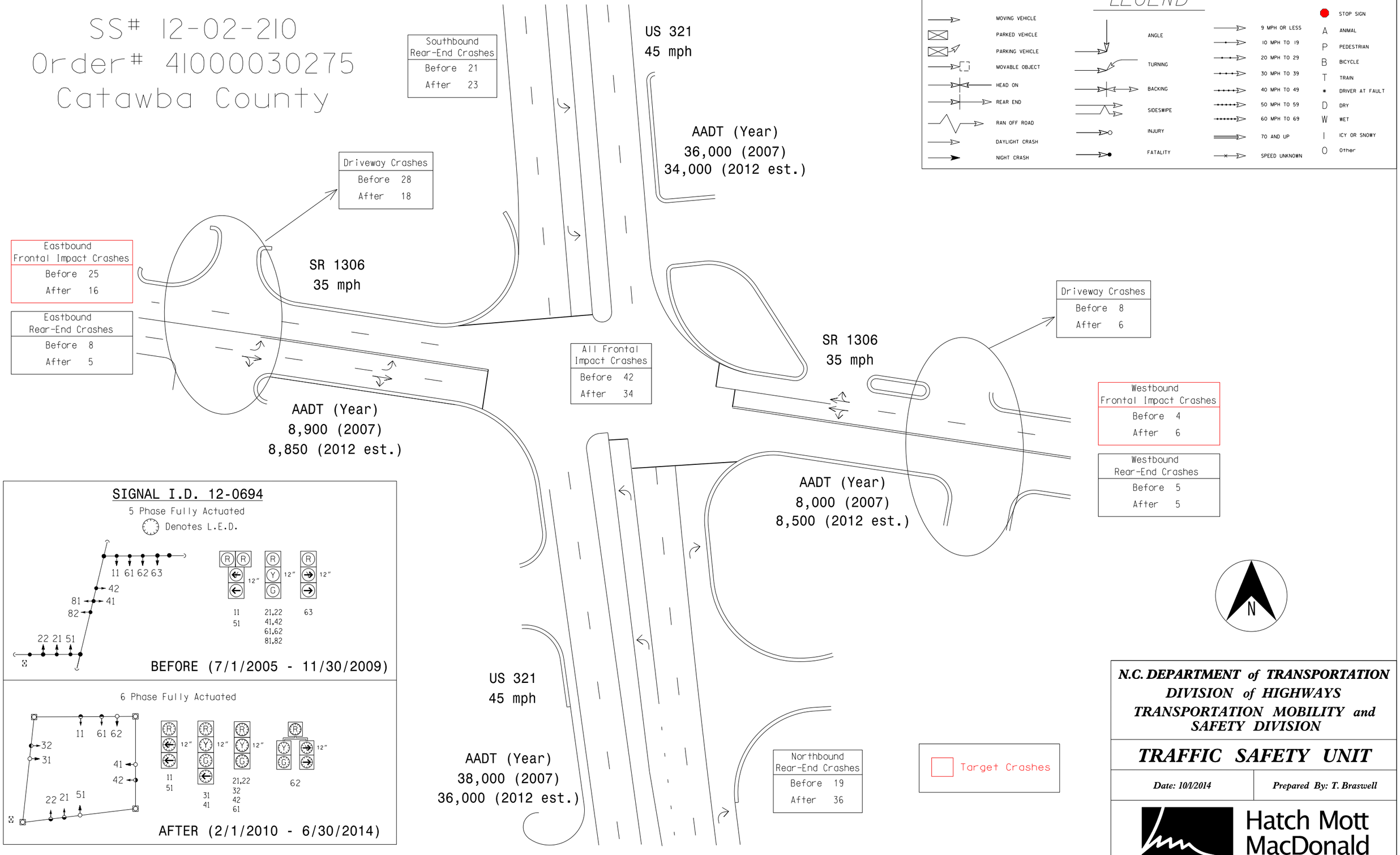
Data Prepared For

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:	R. Travis Braswell, PE, PTOE
Work Group/Consultant:	Hatch Mott MacDonald
Date:	October 3, 2014

SS# 12-02-210
Order# 4100030275
Catawba County



LEGEND

- MOVING VEHICLE
- PARKED VEHICLE
- PARKING VEHICLE
- MOVABLE OBJECT
- HEAD ON
- REAR END
- RAN OFF ROAD
- DAYLIGHT CRASH
- NIGHT CRASH
- ANGLE
- TURNING
- BACKING
- SIDESWIPE
- INJURY
- FATALITY
- 9 MPH OR LESS
- 10 MPH TO 19
- 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
- STOP SIGN
- A ANIMAL
- P PEDESTRIAN
- B BICYCLE
- T TRAIN
- * DRIVER AT FAULT
- D DRY
- W WET
- I ICY OR SNOWY
- O Other

SIGNAL I.D. 12-0694

5 Phase Fully Actuated

Denotes L.E.D.

BEFORE (7/1/2005 - 11/30/2009)

6 Phase Fully Actuated

AFTER (2/1/2010 - 6/30/2014)

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

TRAFFIC SAFETY UNIT

Date: 10/1/2014 | *Prepared By: T. Braswell*

Hatch Mott MacDonald