

# Spot Safety Project Evaluation

## Project Information

Order ID: 41000029678

Project ID: 02-07-202

Location: US 70 at SR 1124-Grantham Rd, Bouy St, and Trent Auto Crossovers

County: Craven

City: Near New Bern

Division: 2

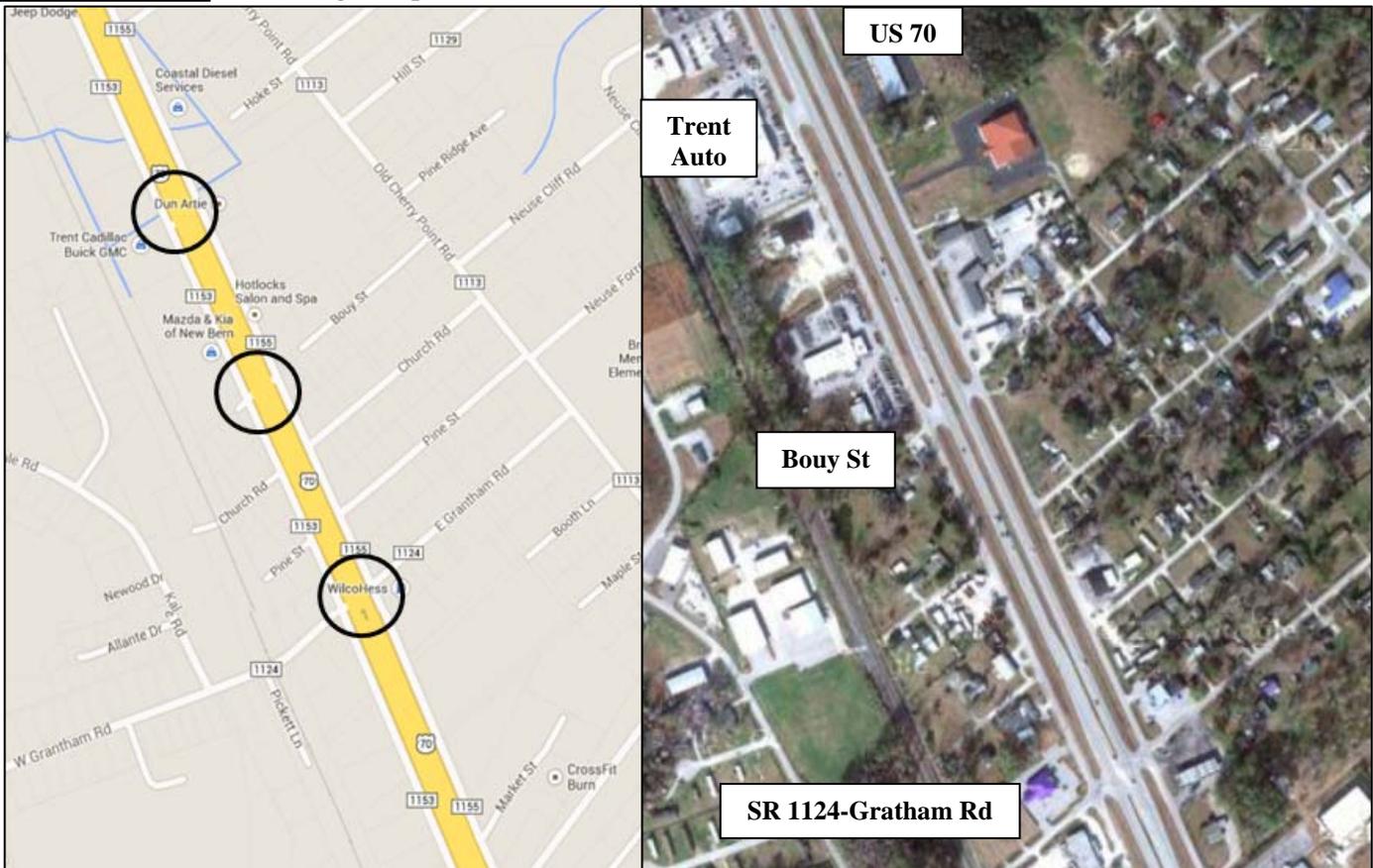
Signal ID: N/A

Countermeasure: Construct a directional crossover at Grantham Rd and close the other two median openings

Project Completion: January 22, 2008

Project Cost: \$167,500

## Map and Aerial (from Google Maps – Coordinates: 35.06506,-77.022572)



## Naive Before and After Analysis

Before Period: October 1, 2001 through November 30, 2007 (6 years, 2 Months)

Const. Period: December 1, 2007 through February 28, 2008

After Period: March 1, 2008 through April 30, 2014 (6 years, 2 Months)

Analysis Criteria: Treatment data consists of all crashes within 150 feet of the subject intersections. Note that crashes on the service roads running parallel to US 70 (SR 1153 and SR 1155) are included if they occurred within 150' of the crossovers.

Target Crashes: For the directional crossover, target crashes include Left Turn and Angle Crashes from Grantham Rd (these movements restricted in the after period). For the median closings, target crashes include Left Turn and Angle Crashes from all approaches (these movements restricted in the after period).

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	67	32	- 52.2%
Total Severity Index	8.59	2.39	- 72.2%
Target Crashes	37	0	- 100.0 %
Target Crash Severity Index	7.65	0	- 100.0 %
Volume (2004, 2011)	34,000	36,000	+ 5.9%

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	1	0	N/A
Class A injury Crashes	2	0	N/A
Class B injury Crashes	8	2	- 75.0%
Class C Injury Crashes	30	4	- 86.7%
Property Damage Only	26	26	0.0%

<u>Additional Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
US 70 at SR 1124-Grantham Rd – Total Crashes	56	27	- 51.8%
US 70 at SR 1124-Grantham Rd – Target Crashes	28	0	- 100.0%
US 70 at Bouy St – Total Crashes	7	5	- 28.6%
US 70 at Bouy St – Target Crashes	6	0	- 100.0%
US 70 at Trent Auto Sales – Total Crashes	4	0	- 100.0%
US 70 at Trent Auto Sales – Target Crashes	3	0	- 100.0%

<u>Additional Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Area of Influence - North			
US 70 at SR 1131-Airport Rd – Total Crashes	77	110	+ 42.9%
US 70 at SR 1131-Airport Rd – Total Severity Index	3.40	3.77	+ 10.9%
Area of Influence - South			
US 70 at SR 1121-Garner Rd – Total Crashes	11	30	+ 172.7%
US 70 at SR 1121-Garner Rd – Total Severity Index	4.36	3.96	- 9.2%

### Overall Summary Results

Total Crashes:	- 52 %	(reduction)
Total Crash Severity:	- 72 %	(reduction)
Target Crashes:	- 100 %	(reduction)
Target Crash Severity:	- 100 %	(reduction)
Volume:	+ 6.0 %	(increase)

### Items for Discussion/Concerns

- There were substantial decreases in total crashes and an elimination of target crashes at the treatment intersections.
- When we evaluate median crossovers, we typically analyze a potential area of influence due to the changes in traffic flow caused by the restricted movements. U-turn locations were not installed with this particular treatment. Therefore, vehicles wanting to turn left and through from the side streets may now make these maneuvers via the parallel service road to the nearest full movement intersection north (SR 1131-Airport Rd) or south (SR 1121-Garner Rd) of the treatment crossovers. Crash data at these two intersections were evaluated to check for potential crash migration.
- Overall crashes at the two nearest full movement intersections increased by 59%, with an additional 52 crashes in the after period. There were increases in multiple crash types at both intersections and it is not clear which crashes might be influenced by potentially redirected traffic. See the attached collision diagrams for more detail.
  - Total crashes at the signalized intersection with SR 1131-Airport Rd increased by 43%.  
*Note that left turn phasing changes were made to this signal early in the after period.*
  - Total crashes at the intersection with SR 1121-Garner Rd increased by 173%.

### 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: Carrie L. Simpson, PE

Work Group/Consultant: NCDOT - Safety Evaluation Group

Date: September 12, 2014

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 Before Period  
 10/1/2001 - 11/30/2007

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

SR 1155  
 35 mph  
 ADT Unavailable

SR 1153  
 35 mph  
 ADT Unavailable

SR 1124-Grantham  
 35 mph  
 ADT (Year)  
 1,400 (2004)

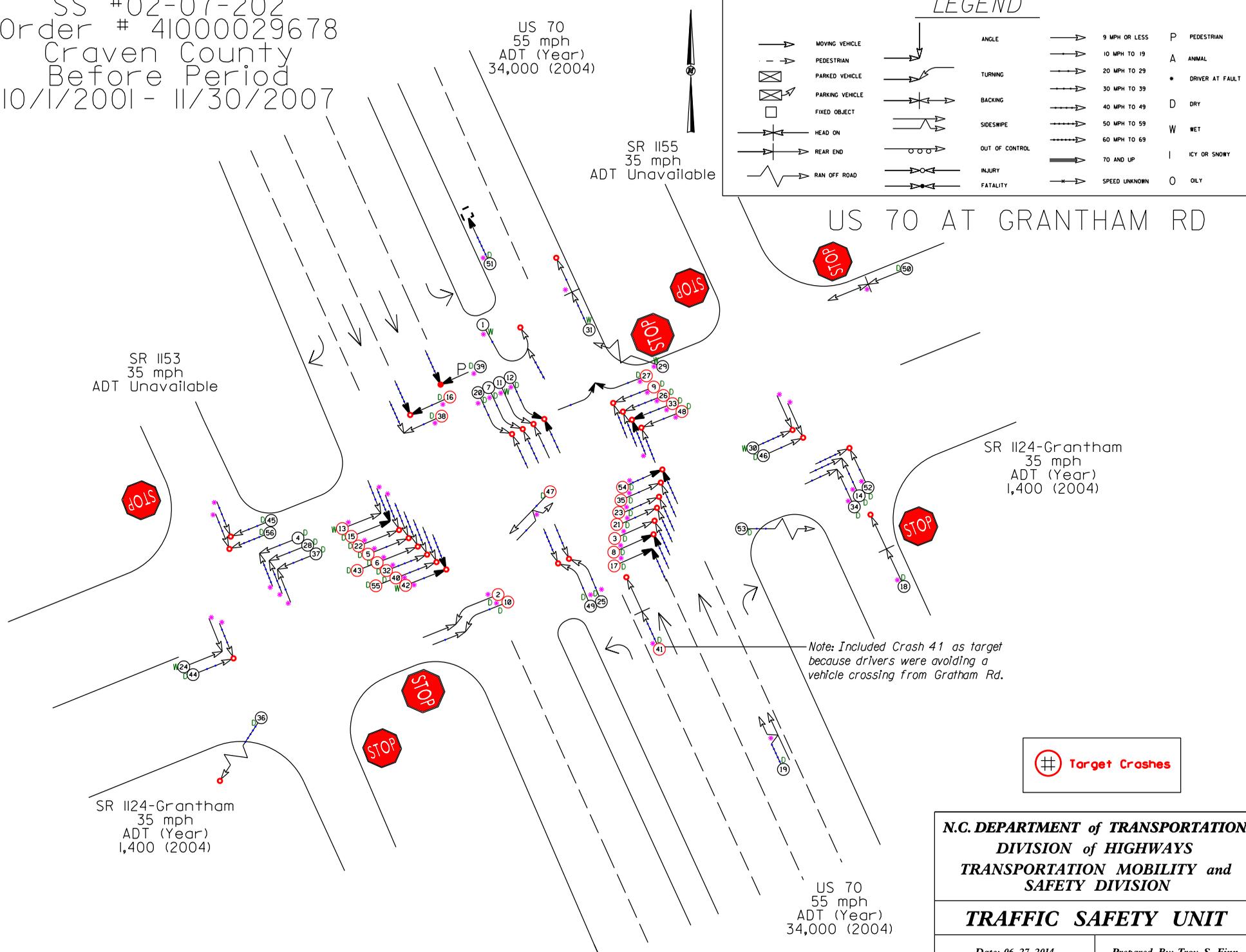
SR 1124-Grantham  
 35 mph  
 ADT (Year)  
 1,400 (2004)

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

LEGEND

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

US 70 AT GRANTHAM RD



Note: Included Crash 41 as target because drivers were avoiding a vehicle crossing from Grantham Rd.

Target Crashes

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

TRAFFIC SAFETY UNIT

Date: 06-27-2014

Prepared By: Troy S Finn

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 AFTER Period  
 3/1/2008 - 4/30/2014

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

SR 1155  
 35 mph  
 ADT Unavailable

SR 1153  
 35 mph  
 ADT Unavailable

SR 1124-Grantham  
 35 mph  
 ADT (Year)  
 1,600 (2011)

SR 1124-Grantham  
 35 mph  
 ADT (Year)  
 1,600 (2011)

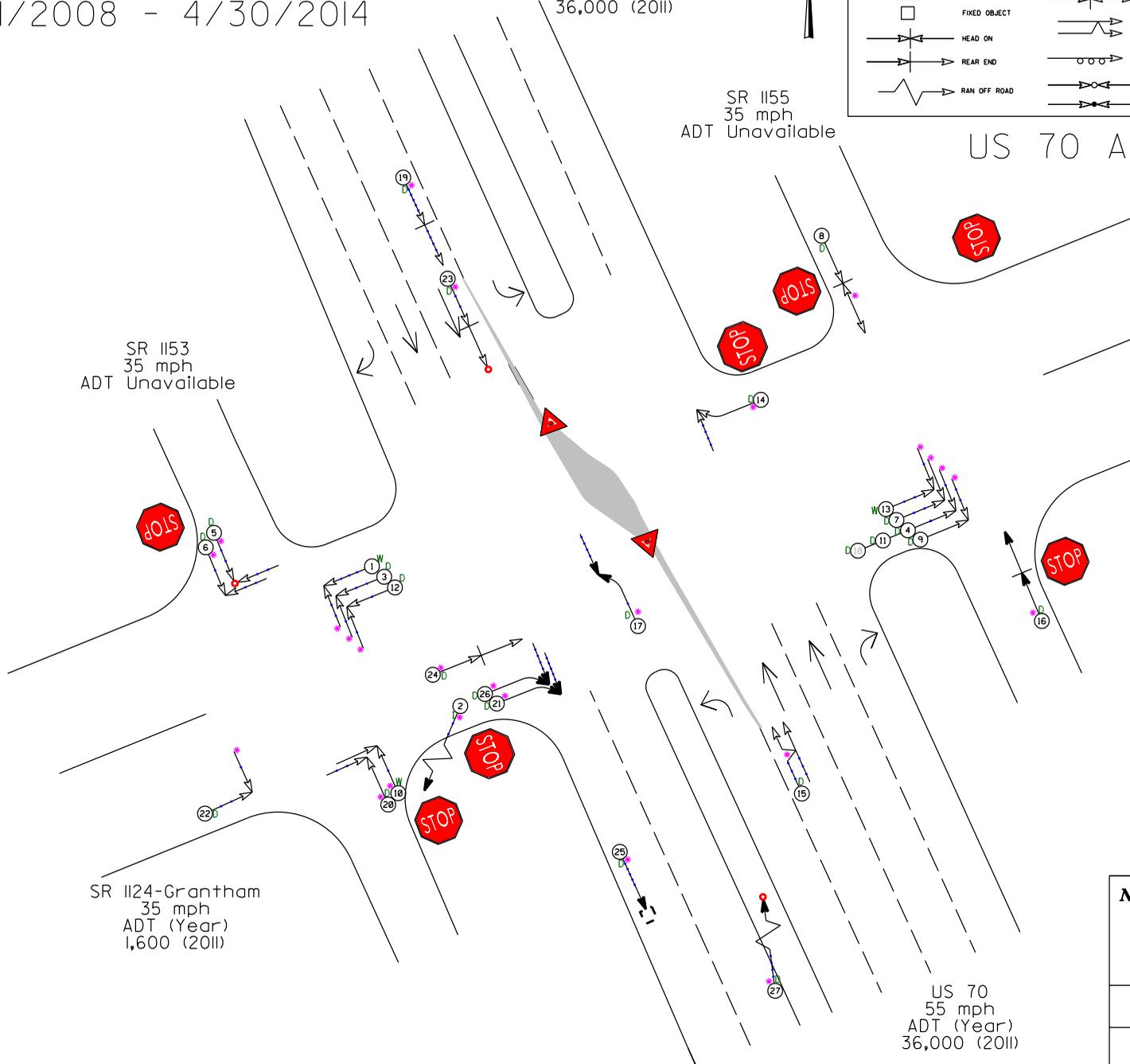
US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		P PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		A ANIMAL
	PARKED VEHICLE		BACKING		20 MPH TO 29		* DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		D DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		W WET
	HEAD ON		INJURY		50 MPH TO 59		I ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69		O OILY
	RAN OFF ROAD				70 AND UP		
					SPEED UNKNOWN		



US 70 AT GRANTHAM RD



Target Crashes

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

**TRAFFIC SAFETY UNIT**

Date: 06-27-2014

Prepared By: Troy S Finn

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 Before Period  
 10/1/2001 - 11/30/2007

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

SR 1155  
 35 mph  
 ADT Unavailable

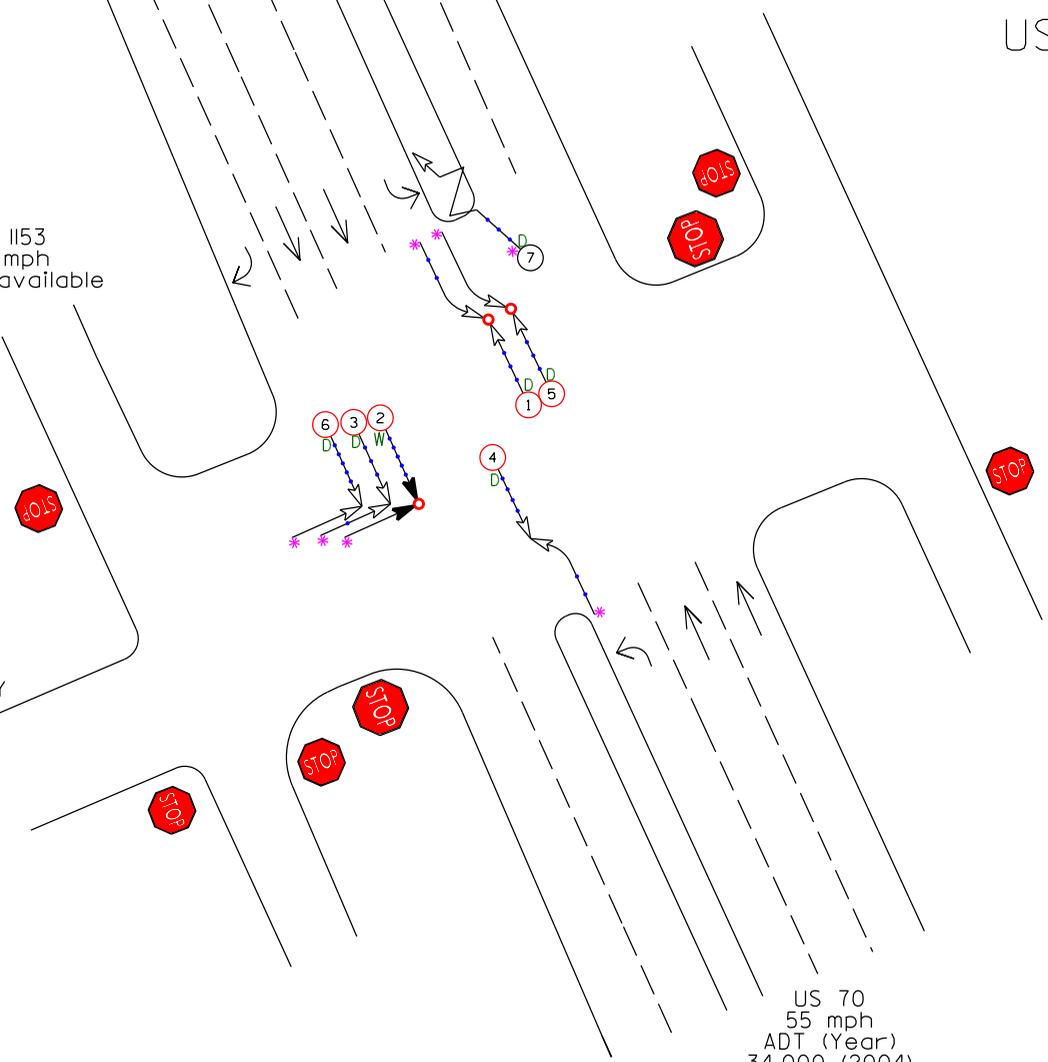
SR 1153  
 35 mph  
 ADT Unavailable

BOUY

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

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

US 70 AT BOUY ST



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

**TRAFFIC SAFETY UNIT**

Date: 06-27-2014

Prepared By: Troy S Finn

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 AFTER Period  
 3/1/2008 - 4/30/2014

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

SR 1155  
 35 mph  
 ADT Unavailable

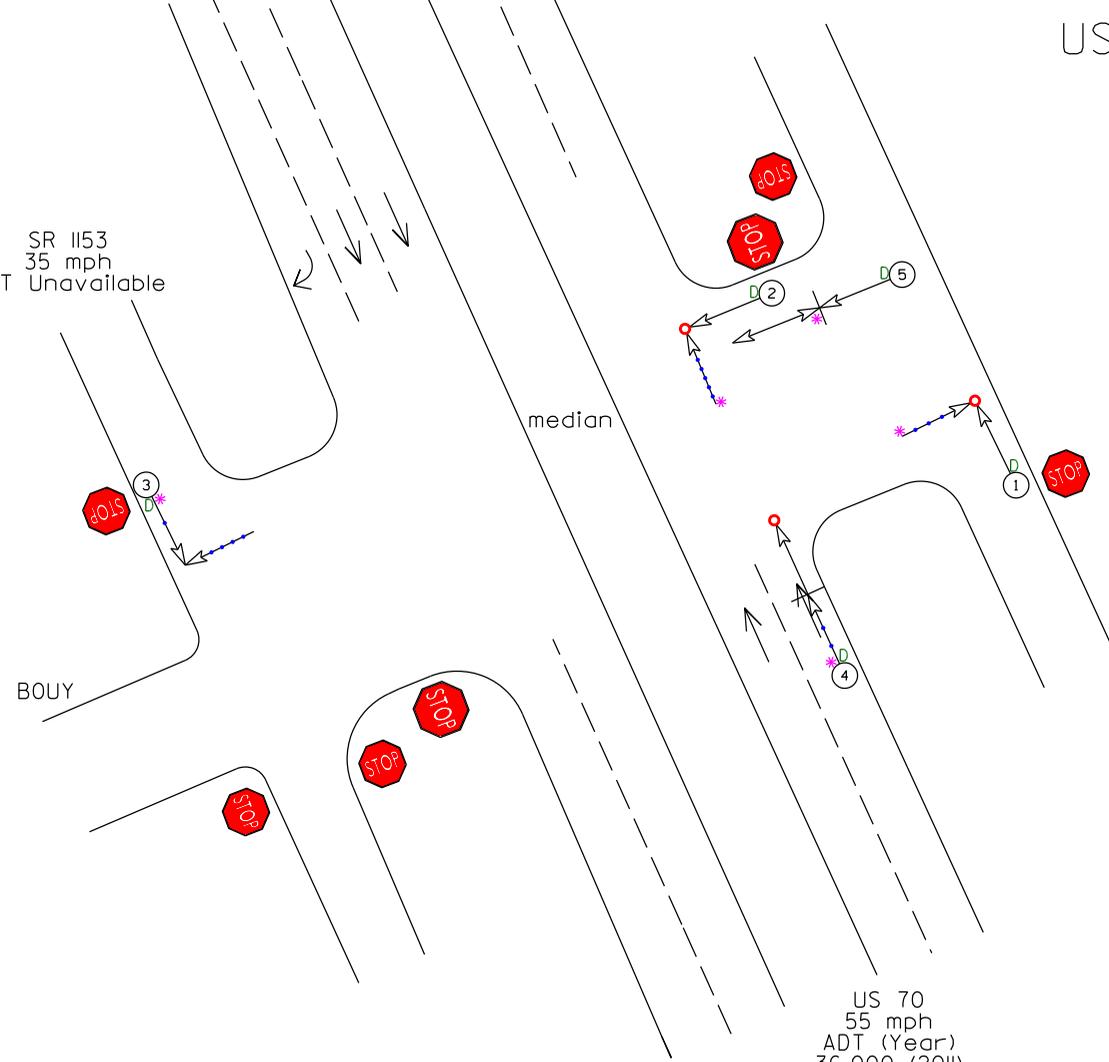
SR 1153  
 35 mph  
 ADT Unavailable

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

**LEGEND**

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		P PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		A ANIMAL
	PARKED VEHICLE		BACKING		20 MPH TO 29		* DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		D DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		W WET
	HEAD ON		INJURY		50 MPH TO 59		I ICY OR SNOWY
	REAR END		FATALITY			* SPEED UNKNOWN	
	RAN OFF ROAD				0		

US 70 AT BOUY ST



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

**TRAFFIC SAFETY UNIT**

Date: 06-27-2014

Prepared By: Troy S Finn

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 Before Period  
 10/1/2001 - 11/30/2007

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

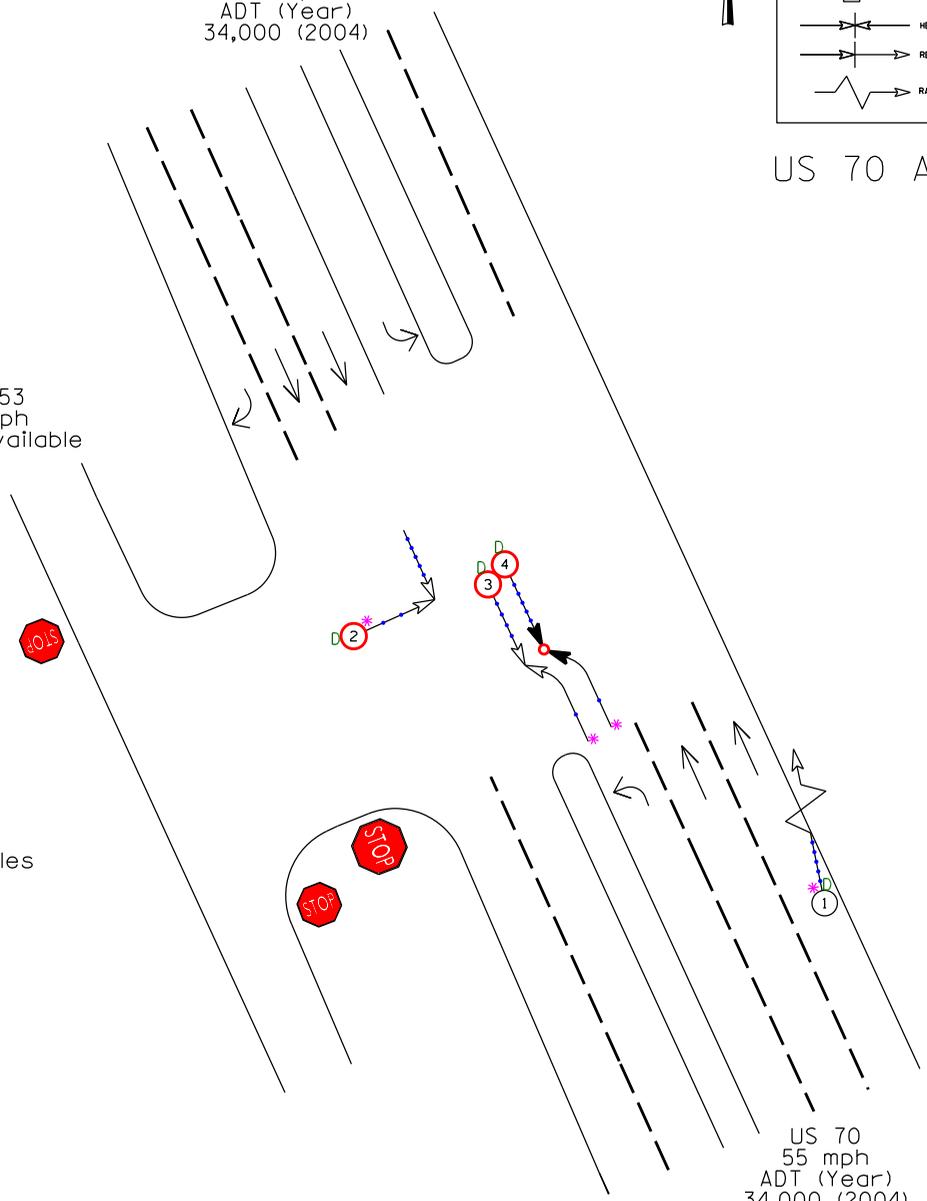
SR 1153  
 35 mph  
 ADT Unavailable

Trent Auto Sales



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

US 70 AT TRENT AUTO SALES CROSSOVER



US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)



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

**TRAFFIC SAFETY UNIT**

Date: 06-27-2014

Prepared By: Troy S Fim

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 AFTER Period  
 3/1/2008 - 4/30/2014

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

SR 1153  
 35 mph  
 ADT Unavailable

Trent Auto Sales

median

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)



**LEGEND**

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

US 70 AT TRENT AUTO SALES CROSSOVER



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

**TRAFFIC SAFETY UNIT**

Date: 06-27-2014

Prepared By: Troy S Fimm

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 Before Period  
 10/1/2001 - 11/30/2007

US 70  
 50 mph  
 ADT (Year)  
 34,000 (2004)

SR 1155  
 35 mph  
 ADT Unavailable

US 70 AT AIRPORT RD

SR 1131-Airport  
 45 mph  
 ADT (Year)  
 2,000 (2004)

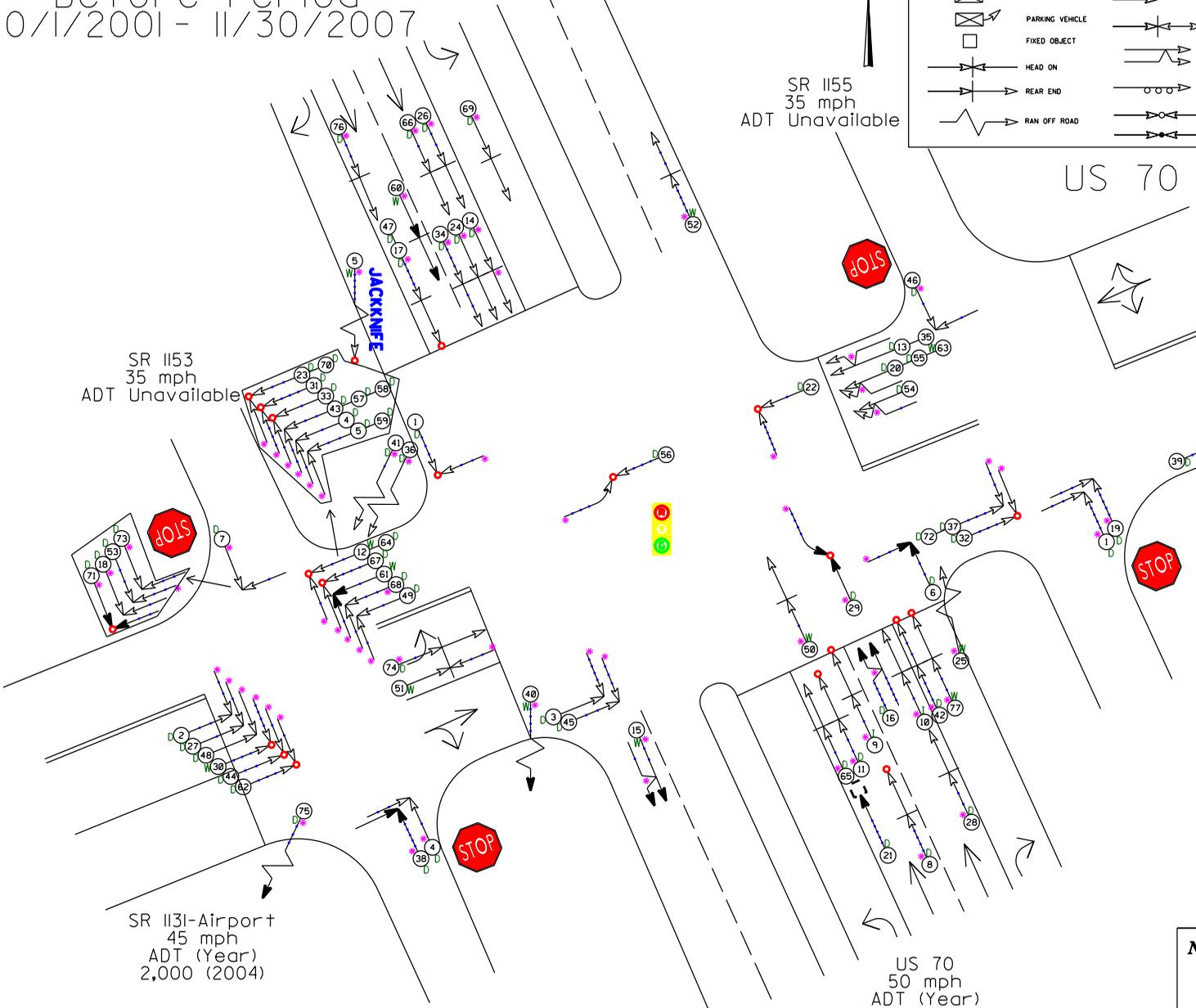
SR 1153  
 35 mph  
 ADT Unavailable

SR 1131-Airport  
 45 mph  
 ADT (Year)  
 2,000 (2004)

US 70  
 50 mph  
 ADT (Year)  
 34,000 (2004)

LEGEND

	MOVING VEHICLE		ANGLE		MPH OR LESS		PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 1		ANIMAL
	PARKED VEHICLE		BACKING		20 MPH TO 2		DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 3		DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 4		WET
	HEAD ON		INJURY		60 MPH TO 6		ICY OR SNOWY
	REAR END		FATALITY		70 AND UP		ONLY
	RAN OFF ROAD				SPEED UNKNOWN		



02-0197  
 SIGNAL FACE I.D.  
 Denotes L.E.D.

	11		21, 22
	51		41, 42
			61, 62
			81, 82

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

TRAFFIC SAFETY UNIT

Date: 09-03-2014

Prepared By: Troy S Fimm

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 AFTER Period  
 3/1/2008 - 4/30/2014

US  
 50 mph  
 ADT (Year)  
 36,000 (2011)

SR 1155  
 35 mph  
 ADT Unavailable

SR 1153  
 35 mph  
 ADT Unavailable

SR 1131-Airport  
 45 mph  
 ADT (Year)  
 2,700 (2011)

SR 1131-Airport  
 45 mph  
 ADT (Year)  
 2,700 (2011)

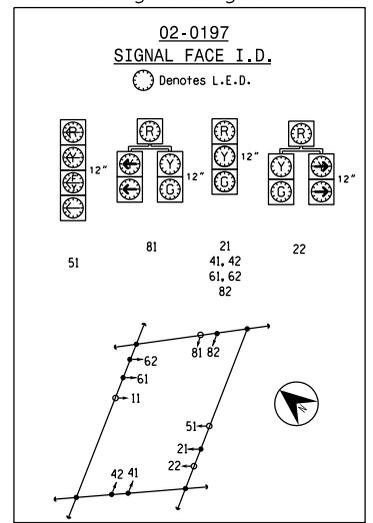
US 70  
 50 mph  
 ADT (Year)  
 36,000 (2011)

**LEGEND**

	MOVING VEHICLE		ANGLE		MPH OR LESS		P PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 1		A ANIMAL
	PARKED VEHICLE		BACKING		20 MPH TO 2		* DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 3		D DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 4		W WET
	HEAD ON		INJURY		50 MPH TO 5		I AND UP
	REAR END		FATALITY		60 MPH TO 6		ICY OR SNOWY
	RAN OFF ROAD		SPEED UNKNOWN		SPEED UNKNOWN		O OILY

**US 70 AT AIRPORT RD**

NOTE: Phasing changes in 5/2008



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

**TRAFFIC SAFETY UNIT**

Date: 09-03-2014

Prepared By: Troy S Fimm

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 Before Period  
 10/1/2001 - 11/30/2007

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

SR 1155  
 35 mph  
 ADT Unavailable

US 70 AT SR 1121 - Garner Rd

SR 1153  
 35 mph  
 ADT Unavailable

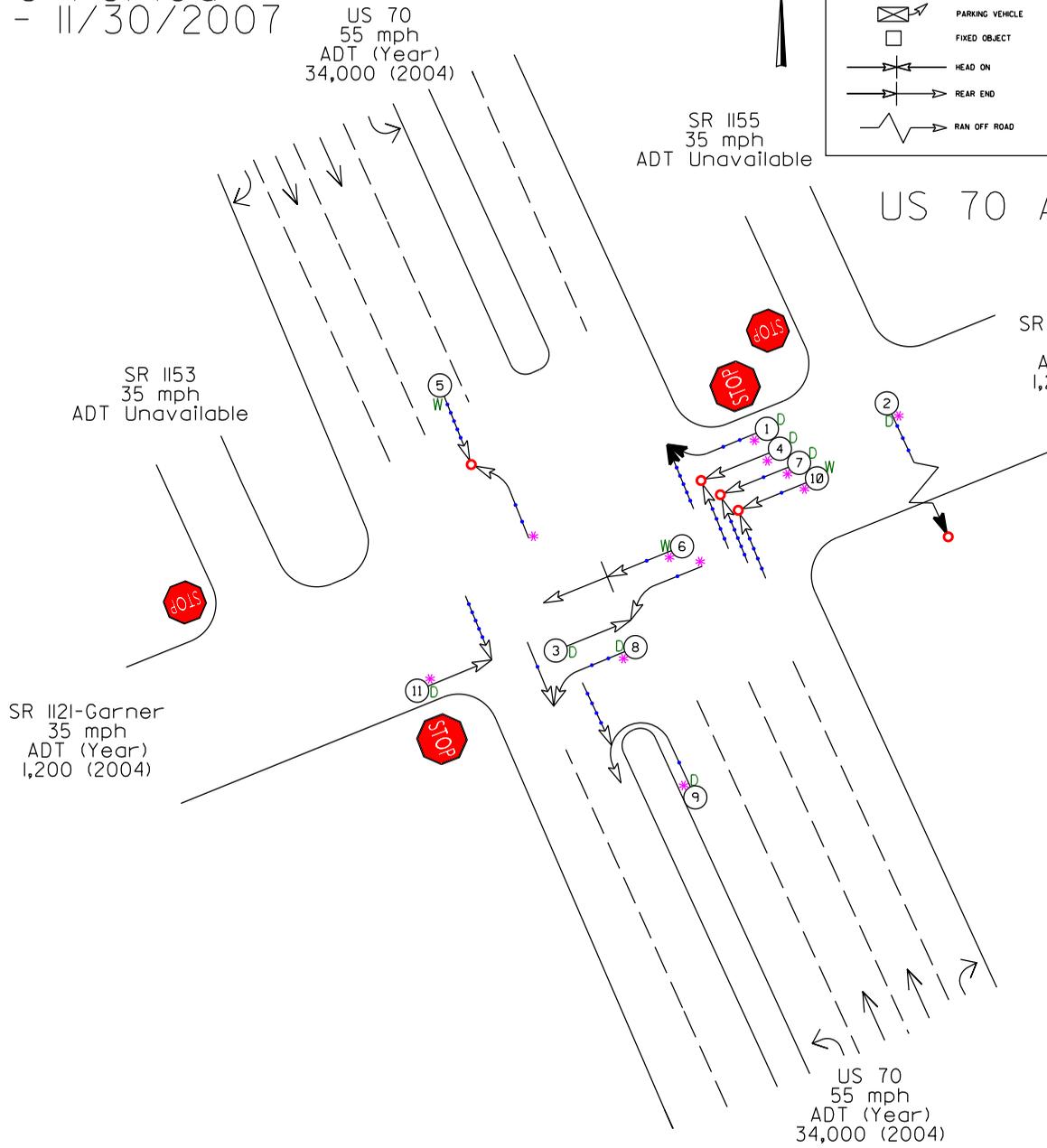
SR 1121-Garner  
 35 mph  
 ADT (Year)  
 1,200 (2004)

SR 1121-Garner  
 35 mph  
 ADT (Year)  
 1,200 (2004)

US 70  
 55 mph  
 ADT (Year)  
 34,000 (2004)

**LEGEND**

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



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

---

**TRAFFIC SAFETY UNIT**

---

Date: 09-03-2014      Prepared By: Troy S Finn

SS #02-07-202  
 Order # 41000029678  
 Craven County  
 AFTER Period  
 3/1/2008 - 4/30/2014

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

SR 1155  
 35 mph  
 ADT Unavailable

US 70 AT SR 1121 - Garner Rd

SR 1153  
 35 mph  
 ADT Unavailable

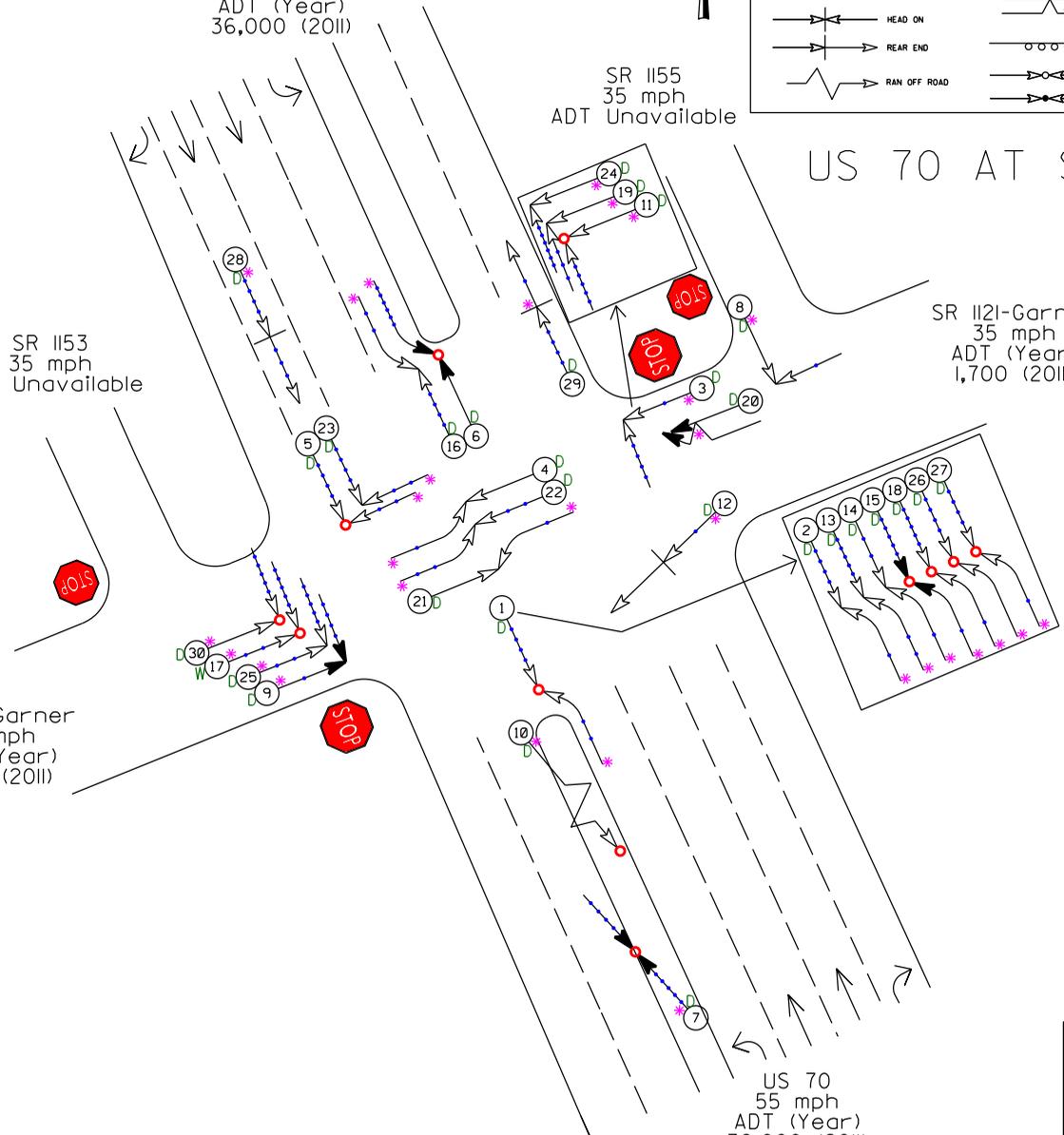
SR 1121-Garner  
 35 mph  
 ADT (Year)  
 1,700 (2011)

SR 1121-Garner  
 35 mph  
 ADT (Year)  
 1,700 (2011)

US 70  
 55 mph  
 ADT (Year)  
 36,000 (2011)

**LEGEND**

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		P PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		A ANIMAL
	PARKED VEHICLE		BACKING		20 MPH TO 29		* DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39		D DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49		W WET
	HEAD ON		INJURY		50 MPH TO 59		I ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69		O OILY
	RAN OFF ROAD				70 AND UP		
					SPEED UNKNOWN		



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

---

**TRAFFIC SAFETY UNIT**

---

Date: 09-03-2014      Prepared By: Troy S Finn