Spot Safety Project Evaluation

Project Log # 200611079

Spot Safety Project # 09-01-213

Spot Safety Project Evaluation of the Installation of
Left Turn Lanes on all approaches at the intersection of
SR 2643 (Union Cross Rd) and SR 2640 (Whicker Rd / Shields Rd)
Near Kernersville, Forsyth County

Documents Prepared By:

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Principal Investigator

_____ _2-1-2007_
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Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 09-01-213 – SR 2643 (Union Cross Rd) and SR 2640 (Whicker Rd / Shields Rd) in Forsyth County.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was the installation of left turn lanes on all approaches of the intersection at SR 2643 (Union Cross Rd) and SR 2640 (Whicker Rd / Shields Rd). Union Cross Rd and SR 2640 are both two-lane facilities at the subject location with speed limits of 45 and 55 mph, respectively.

The initial statement of problem was that accidents were due to congestion related high volume left turning motorists.

The initial crash analysis was conducted from October 1, 1998 to October 1, 2001, which included 16 Crashes. Of these total crashes, 1 rear-end left turn crash was deemed correctable and 3 "possibly correctable" left-turn same roadway crashes.

The final completion date for the improvement at the subject intersection was on August 1, 2002 with a total cost of $150,000.00.

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 was from June 1, 2002 through September 30, 2002. The before period consisted of reported crashes July 1, 1998 through May 31, 2002 (3 years, 11 months) and the after period consisted of reported crashes from October 1, 2002 through August 31, 2006 (3 years, 11 months). The ending date of this analysis is determined by the crash data available at the time of the study.

The treatment data consisted of all crashes within 150 feet of the intersection in all four-approach directions. *Please see attached location map and photos for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that Rear-End Crashes and Left-Turn Same Roadway Crashes related to the intersection were the target crashes for the applied countermeasure.

The before period ADT year was 2000 and the after period ADT year was 2004.

Treatment Information			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	23	14	- 39.13
Total Severity Index	4.54	5.63	24.01
Target Crashes	11	5	- 54.55
Target Crashes Severity Index	3.02	5.44	80.13
Volume	16,500	18,000	10.9

Injury Crash Summary		
	Before	After
Fatal Injury Crashes	0	0
Class A Injury Crashes	0	0
Class B Injury Crashes	2	2
Class C Injury Crashes	9	6
Total Injury Crashes	11	8

The naive before and after analysis at the treatment location resulted in a 39 percent decrease in Total Crashes; a 55 percent decrease in Target Crashes, but resulted in a 24 percent increase in the Total Severity Index.

Results and Discussion

The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 39 percent decrease in Total Crashes and a 55 percent decrease in Target Crashes. The total severity index increased 24 although the target severity index increased by 80 percent. The summary results above demonstrate that the treatment location appears to have had a significant decrease in both Total Crashes and Target Crashes from the before to the after period.

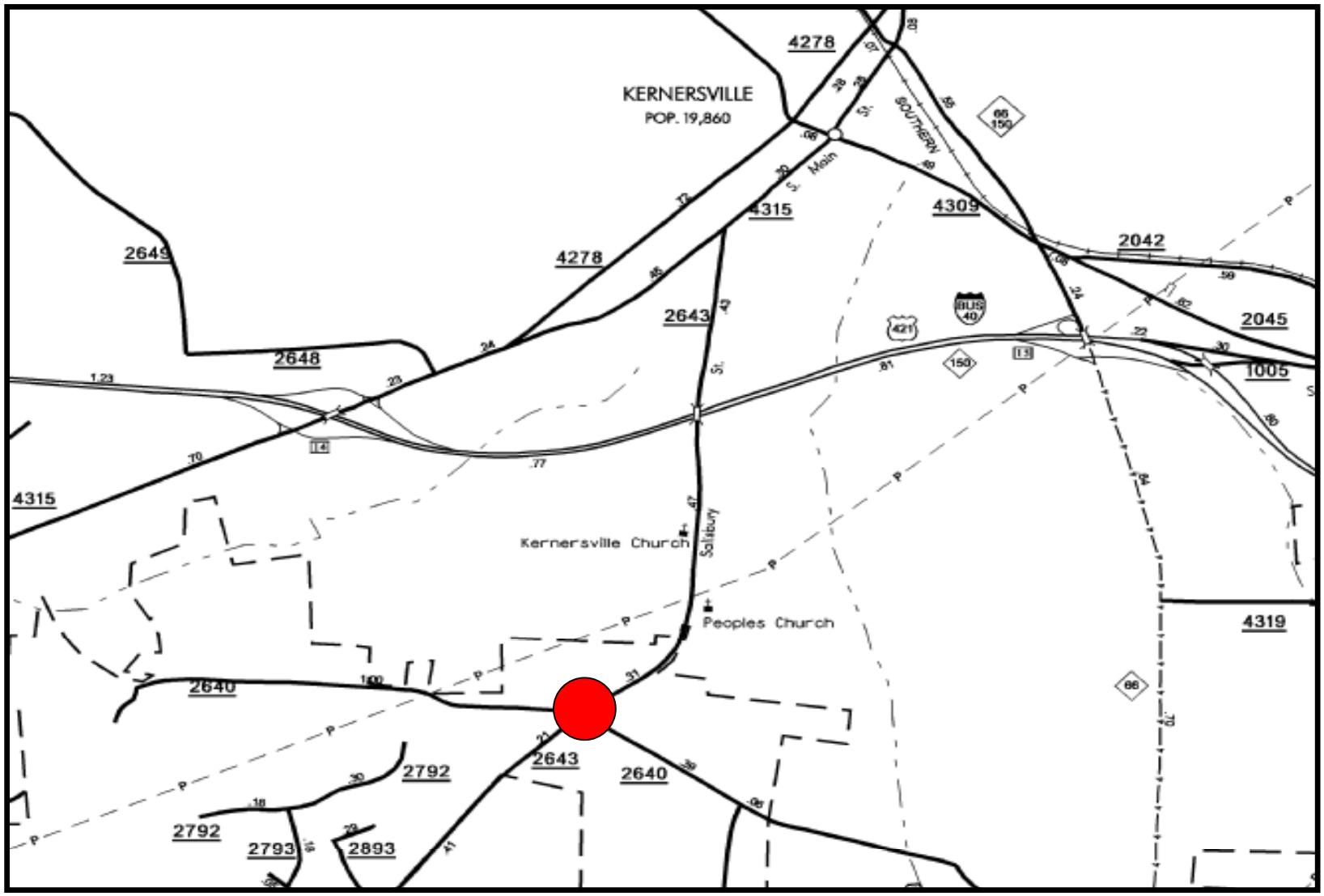
Referencing the *Collision Diagrams* and the previous table, it is apparent that the installation of the left turn lanes helped to decrease rear-end and left-turn same roadway crashes. The left-turn same roadway crash reduction is present due to reduced pressure on drivers making left turns. On approaches without left turn lanes, the driver feels pressure to turn left on small gaps due to the traffic collecting behind them.

Again referencing the *Collision Diagrams*, the non-target crashes near the intersection do not appear to follow any pattern in either the before or after period. The chosen countermeasure at this location appears to have alleviated the crashes effectively without developing a new crash pattern.

Please see the attached *Treatment Site Photos*. Photos are provided for all four approaches to the subject location.

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.

Location Map
Forsyth County
Evaluation of Spot Safety Project SS# 09-01-213



Treatment Location: SR 2643 (Union Cross Rd) and SR 2640 (Whicker Road / Shields Road)

TREATMENT SITE PHOTO TAKEN 12/19/2006

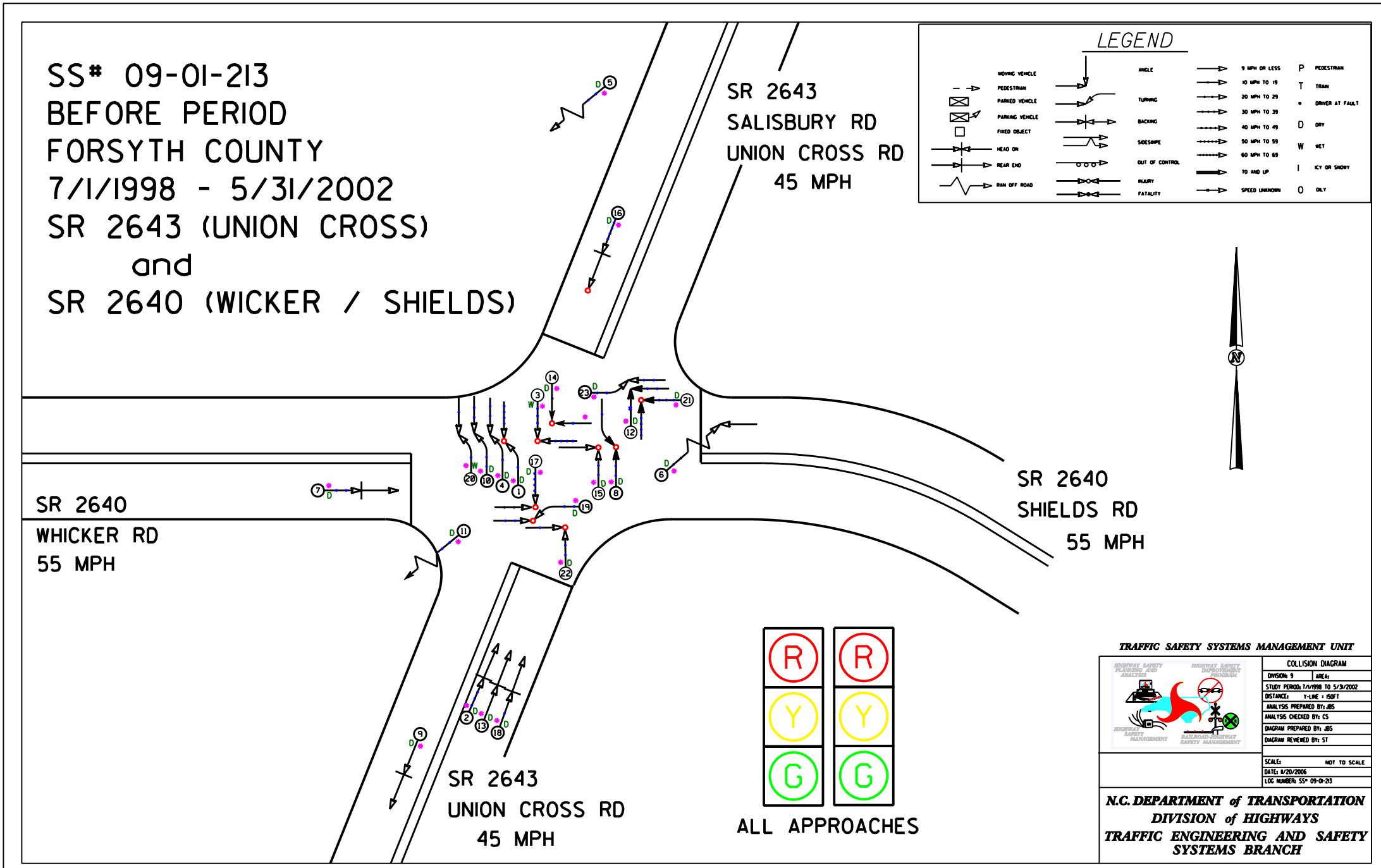
Traveling East on SR 2640 (Whicker Rd)

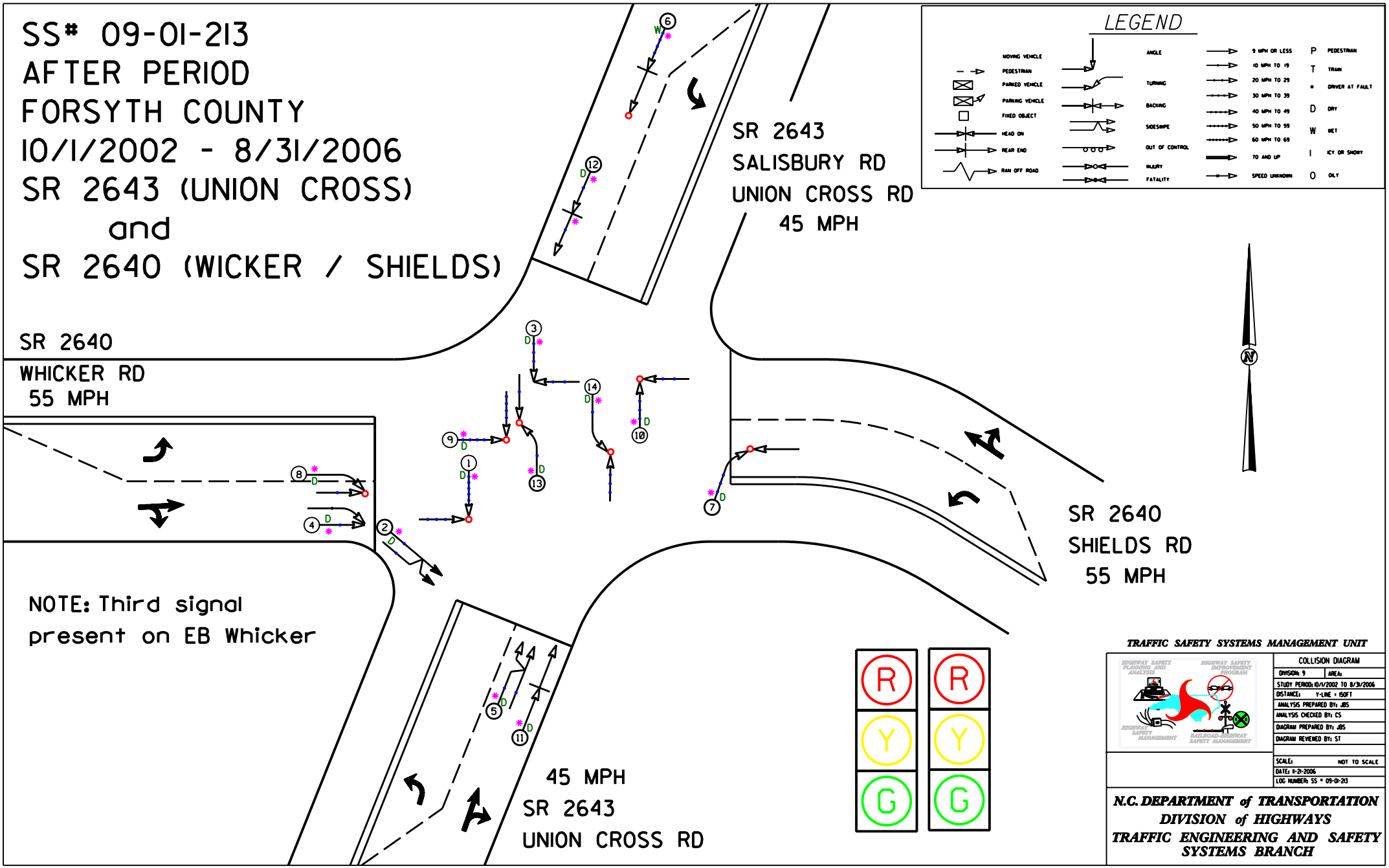
Traveling North on SR 2643 (Union Cross Rd)

Traveling North on SR 2643

Traveling South on SR 2643 (Union Cross Rd)

Traveling West on SR 2640 (Shields Rd)


SS# 09-01-213
BEFORE PERIOD
FORSYTH COUNTY
7/1/1998 - 5/31/2002
SR 2643 (UNION CROSS)
and
SR 2640 (WICKER / SHIELDS)
SR 2643
SALISBURY RD
UNION CROSS RD
45 MPH
LEGEND
MOVING VEHICLE
PEDESTRIAN
PARKED VEHICLE
PARKING VEHICLE
FIXED OBJECT
HEAD ON
REAR END
RAN OFF ROAD
ANGLE
TURNING
BACKING
SIDESWIPE
OUT OF CONTROL
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
P PEDESTRIAN
T TRAIN
• DRIVER AT FAULT
D DRY
W WET
I ICY OR SNOWY
O OILY
N
SR 2640
WHICKER RD
55 MPH
SR 2640
SHIELDS RD
55 MPH
SR 2643
UNION CROSS RD
45 MPH
R
Y
G
R
Y
G
ALL APPROACHES
TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT
COLLISION DIAGRAM
DIVISION: 9
AREA:
STUDY PERIOD: 7/1/1998 TO 5/31/2002
DISTANCE: Y-LINE : 150FT
ANALYSIS PREPARED BY: JBS
ANALYSIS CHECKED BY: CS
DIAGRAM PREPARED BY: JBS
DIAGRAM REVIEWED BY: ST
SCALE: NOT TO SCALE
DATE: 8/20/2006
LOG NUMBER: SS# 09-01-213
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH



09-01-213 after collision diagram. 02/06/2007 09:50:38 AM