

# Spot Safety Project Evaluation

## Project Information

Order ID: 41000032448

Project ID: 13-07-203

Location: US-74 Eastbound from Broad River Bridge east for 0.5 mile

County: Rutherford

City: Near Forest City / Spindale

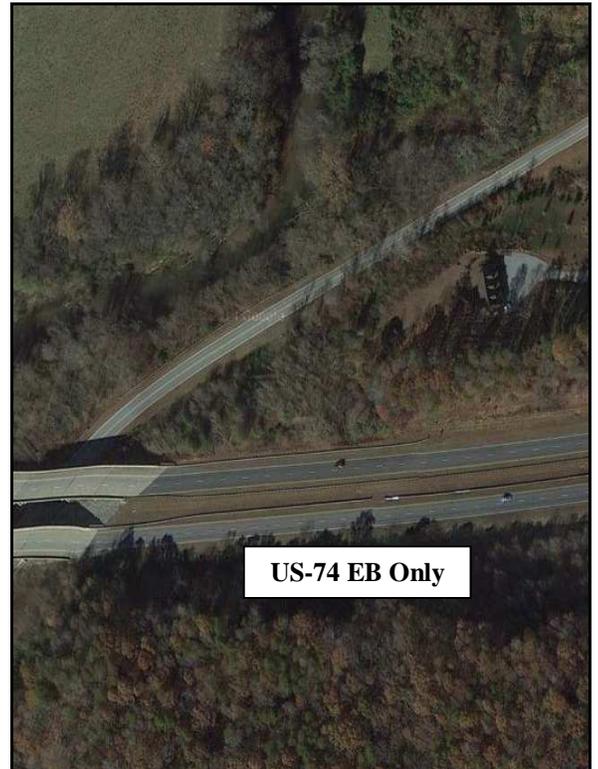
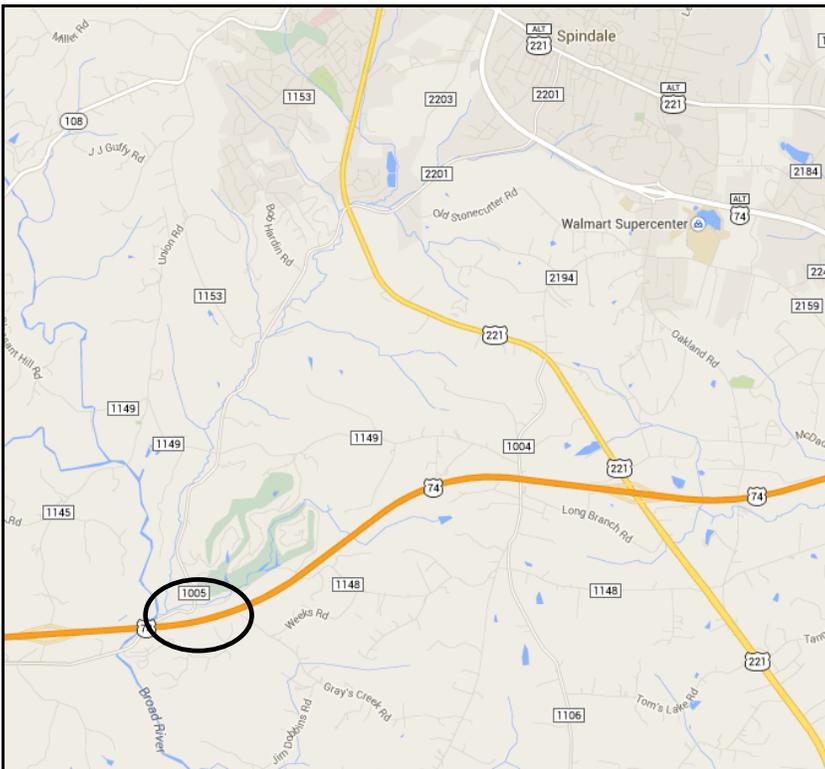
Division: 13

Signal ID: N/A

Countermeasure: Resurface 0.5-Mile Segment with Open-Grade Asphalt Friction Course

Project Completion: February 5, 2009                      Project Cost: \$103,000

## Map and Aerial (from Google Maps) – Coordinates: 35.29229,-81.989175



## Naive Before and After Analysis

- Before Period: January 1, 2003 through October 31, 2008 (5 years, 10 months)
- Const. Period: November 1, 2008 through February 28, 2009
- After Period: March 1, 2009 through December 31, 2014 (5 years, 10 months)
- Analysis Criteria: Treatment data consisted of all crashes within the subject milepost range (US-74 Milepost 1.22 to 1.72) with a 0-foot y-line – no bridge crashes were included.
- Target Crashes: Lane Departure (LD) Crashes on the segment were the selected Target Crash, which includes the following: Ran-Off Road (Left, Right, Straight); Fixed Object; and Sideswipe (Same Direction) – each target crash was independently verified. Additionally, LD-Wet and LD-Winter crashes are highlighted below.

<u>Treatment Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	25	7	- 72.0 %
Total Severity Index	3.96	3.11	- 21.5 %
Lane Departure - Target Crashes	25	3	- 88.0 %
Lane Departure Severity Index	3.96	3.47	- 12.4 %
LD-Wet Crashes (Codes 2-3)	23	2	- 91.3 %
Lane Departure Wet Severity Index	3.90	1.00	- 74.4 %
LD-Winter Crashes (Codes 4-6)	0	0	N/A
Lane Departure Winter Severity Index	0.00	0.00	N/A
Volume (2005, 2012)	6,500	7,500	15.4 %

<u>Injury Crash Summary</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	0	0	N/A
Class B injury Crashes	1	0	- 100.0 %
Class C Injury Crashes	9	2	- 77.8 %
Property Damage Only	15	5	- 66.7 %

<u>Additional Information</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Night Crashes	3	0	- 100.0 %
Wet Roadway Crashes (Codes 2-3)	23	2	- 91.3 %
Alcohol / Drugs Involvement Crashes	0	0	N/A
Animal Crashes	0	2	200.0 %

### Overall Summary Results

Total Crashes:	- 72 %	(reduction)
Total Crash Severity:	- 22 %	(reduction)
LD Target Crashes:	- 88 %	(reduction)
LD Target Crash Severity:	- 12 %	(reduction)
Volume:	15 %	(increase)

### Additional Summary Results

Lane Departure Wet Crashes:	- 91 %	(reduction)
Night Crashes:	- 100 %	(reduction)

### Items for Discussion/Concerns

None – Countermeasure effective at reducing the frequency and severity of segment crashes.

Weather Data was also examined to compare natural rainfall/winter weather events during the analysis that affect roadway conditions. Historical weather data was obtained from the State Climate Office of North Carolina at the closest collection point (Forest City: 313152). The date ranges match the study periods and “Total Days of Rain/Snow” must have precipitation that is greater than 0.01 inches of recorded measurement.

<b><u>Weather Information (313356)</u></b>	<b>Before 5.83 Yrs</b>	<b>After 5.83 Yrs</b>	<b>Percent Reduction (-) Percent Increase (+)</b>
Total Days of Rain/Snow	627	658	4.9 %
Avg Days of Wet Conditions per Year	107.5	112.9	5.0 %
Precipitation Totals (inches)	318.07 in	326.07 in	2.5 %
Average Precipitation Total per Year (in)	54.6 in	55.9 in	2.4 %
Avg Precip per Day of Wet Conditions	0.51 in	0.50 in	- 2.0 %

From the provided weather data, the after period experienced a five (5) percent increase in the number of days with wet roadway conditions and a 2.5 percent increase in the total precipitation furthermore indicating a benefit from the roadway countermeasure.

**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: Jason B. Schronce, P.E.  
Work Group/Consultant: NCDOT - Safety Evaluation Group  
Date: February 25, 2015

SS# 13-07-203  
 Order# 41000032448  
 Rutherford County  
 BEFORE Period  
 1/1/2003 - 10/31/2008

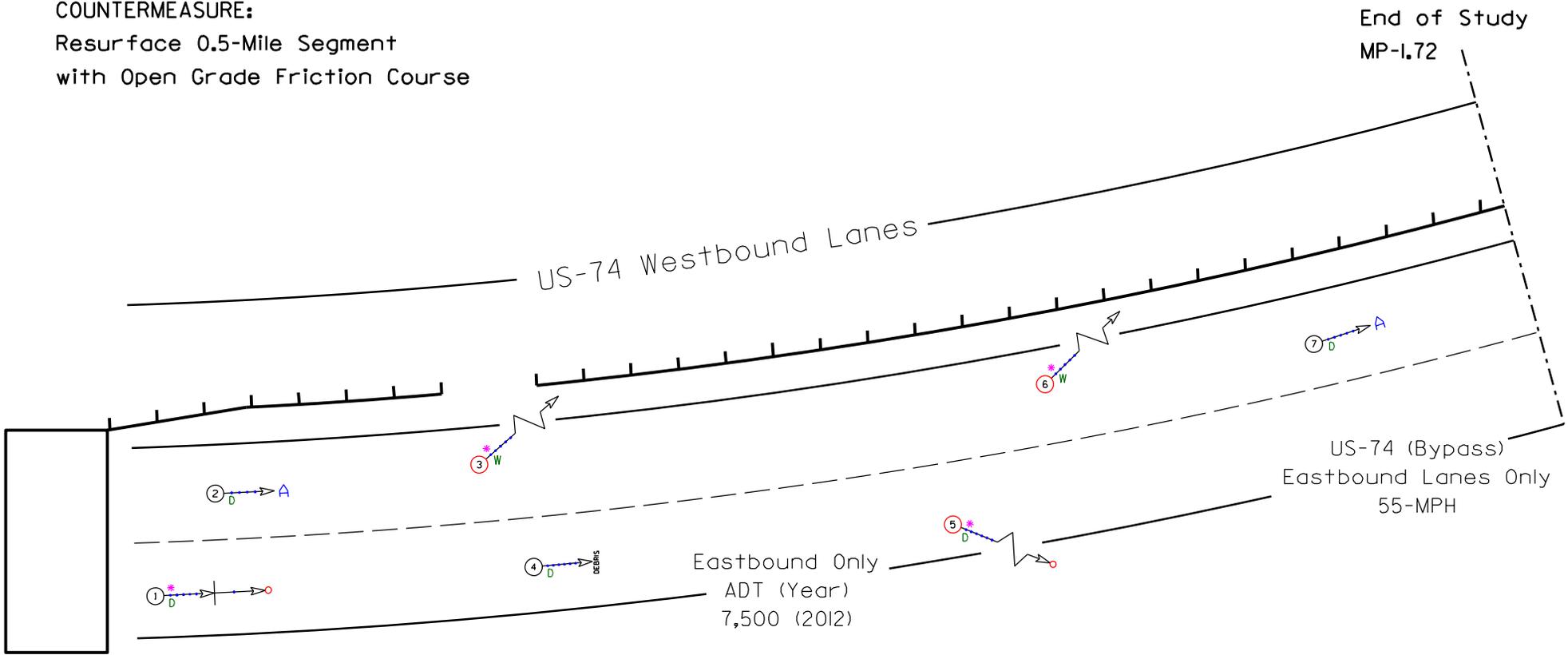
LEGEND							
	MOVING VEHICLE		ANGLE		9 MPH OR LESS		PEDESTRIAN
	PARKED VEHICLE		TURNING		10 MPH TO 19		TRAIN
	PARKING VEHICLE		BACKING		20 MPH TO 29		DRIVER AT FAULT
	FIXED OBJECT		30 MPH TO 39		40 MPH TO 49		DRY
	HEAD ON		50 MPH TO 59		60 MPH TO 69		WET
	HEAD ON		70 AND UP		ICY OR SNOWY		OTHER
	HEAD ON		90 MPH		100 MPH		
	HEAD ON		110 MPH		120 MPH		
	HEAD ON		140 MPH		150 MPH		
	HEAD ON		170 MPH		180 MPH		
	HEAD ON		200 MPH		210 MPH		
	HEAD ON		230 MPH		240 MPH		
	HEAD ON		260 MPH		270 MPH		
	HEAD ON		290 MPH		300 MPH		
	HEAD ON		320 MPH		330 MPH		
	HEAD ON		350 MPH		360 MPH		
	HEAD ON		380 MPH		390 MPH		
	HEAD ON		410 MPH		420 MPH		
	HEAD ON		440 MPH		450 MPH		
	HEAD ON		470 MPH		480 MPH		
	HEAD ON		500 MPH		510 MPH		
	HEAD ON		530 MPH		540 MPH		
	HEAD ON		560 MPH		570 MPH		
	HEAD ON		590 MPH		600 MPH		
	HEAD ON		620 MPH		630 MPH		
	HEAD ON		650 MPH		660 MPH		
	HEAD ON		680 MPH		690 MPH		
	HEAD ON		710 MPH		720 MPH		
	HEAD ON		740 MPH		750 MPH		
	HEAD ON		770 MPH		780 MPH		
	HEAD ON		800 MPH		810 MPH		
	HEAD ON		830 MPH		840 MPH		
	HEAD ON		860 MPH		870 MPH		
	HEAD ON		890 MPH		900 MPH		
	HEAD ON		920 MPH		930 MPH		
	HEAD ON		950 MPH		960 MPH		
	HEAD ON		980 MPH		990 MPH		
	HEAD ON		1010 MPH		1020 MPH		
	HEAD ON		1040 MPH		1050 MPH		
	HEAD ON		1070 MPH		1080 MPH		
	HEAD ON		1100 MPH		1110 MPH		
	HEAD ON		1130 MPH		1140 MPH		
	HEAD ON		1160 MPH		1170 MPH		
	HEAD ON		1190 MPH		1200 MPH		
	HEAD ON		1220 MPH		1230 MPH		
	HEAD ON		1250 MPH		1260 MPH		
	HEAD ON		1280 MPH		1290 MPH		
	HEAD ON		1310 MPH		1320 MPH		
	HEAD ON		1340 MPH		1350 MPH		
	HEAD ON		1370 MPH		1380 MPH		
	HEAD ON		1400 MPH		1410 MPH		
	HEAD ON		1430 MPH		1440 MPH		
	HEAD ON		1460 MPH		1470 MPH		
	HEAD ON		1490 MPH		1500 MPH		
	HEAD ON		1520 MPH		1530 MPH		
	HEAD ON		1550 MPH		1560 MPH		
	HEAD ON		1580 MPH		1590 MPH		
	HEAD ON		1610 MPH		1620 MPH		
	HEAD ON		1640 MPH		1650 MPH		
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	HEAD ON		1820 MPH		1830 MPH		
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	HEAD ON		1880 MPH		1890 MPH		
	HEAD ON		1910 MPH		1920 MPH		
	HEAD ON		1940 MPH		1950 MPH		
	HEAD ON		1970 MPH		1980 MPH		
	HEAD ON		2000 MPH		2010 MPH		
	HEAD ON		2030 MPH		2040 MPH		
	HEAD ON		2060 MPH		2070 MPH		
	HEAD ON		2090 MPH		2100 MPH		
	HEAD ON		2120 MPH		2130 MPH		
	HEAD ON		2150 MPH		2160 MPH		
	HEAD ON		2180 MPH		2190 MPH		
	HEAD ON		2210 MPH		2220 MPH		
	HEAD ON		2240 MPH		2250 MPH		
	HEAD ON		2270 MPH		2280 MPH		
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	HEAD ON						

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	RAN OFF ROAD		FATALITY		70 AND UP		
			SPEED UNKNOWN				

COUNTERMEASURE:  
 Resurface 0.5-Mile Segment  
 with Open Grade Friction Course



Lane Departure  
 Target Crashes

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

**TRAFFIC SAFETY UNIT**

Date: 2-10-2015

Prepared By: J. Schronce