

Hazard Elimination Project Evaluation

Project Information

Order ID: 41000037903

Project ID: W-5212E

Location: Site-1: US 74 at SR 2090
Site-2: US 74 at SR 2325
Site-3: US 74 at SR 2089

County: Cleveland

City: Shelby

Division: 12

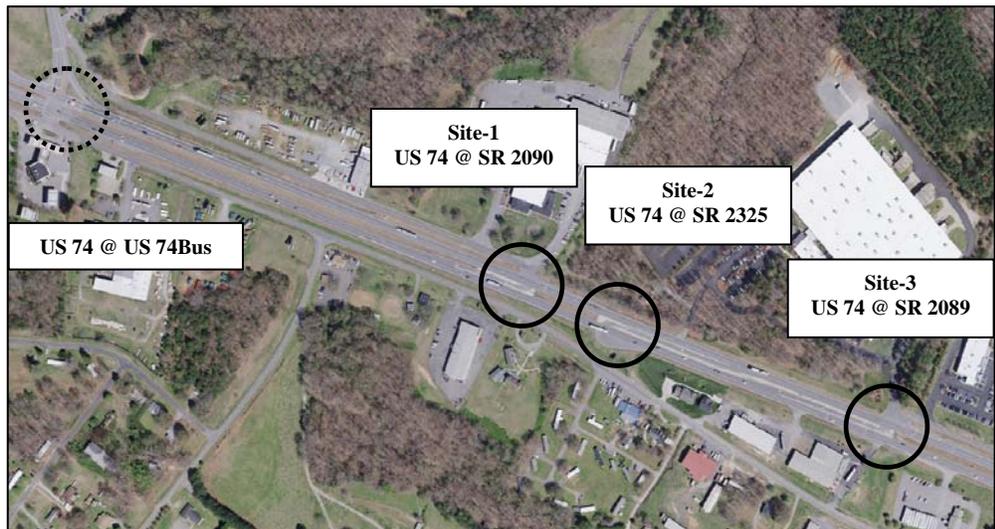
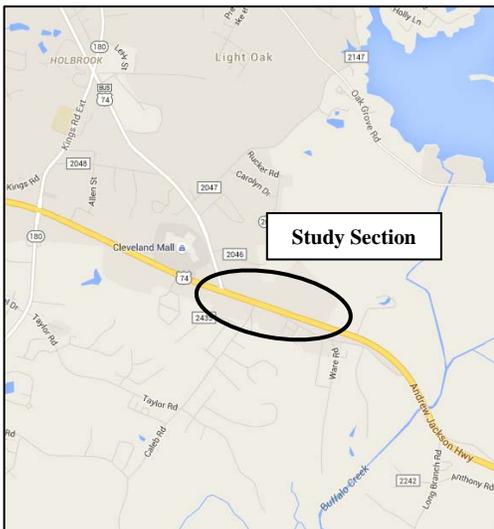
Signal ID: N/A

Countermeasure: Site-1 and Site-3: Construct limited movement crossovers to eliminate the left and thru movement from the side street.
Site-2: Remove the intersecting leg of SR 2325 and create a U-turn median opening with bulb-out for WB US 74 traffic.

Project Completion: December 14, 2011

Project Cost: \$755,000

Map and Aerial (Map from Google Maps; Aerial from Cleveland County GIS) – Coordinates 35.263780, -81.472099



Naive Before and After Analysis

Before Period: September 1, 2007 through May 31, 2011 (3 years, 9 months)

Const. Period: June 1, 2011 through December 31, 2011

After Period: January 1, 2012 through September 30, 2015 (3 years, 9 months)

Analysis Criteria: Treatment data consists of all crashes on US 74 from 150 feet west of Site-1 to 150 feet east of Site-3, Milepost 15.329 to 15.646, with a 150 foot y-line.

Treatment data was further broken down by site, and includes crashes within 150 feet of each subject intersection with US 74.

The intersection of US 74 at US 74Business was not part of the treatment but was analyzed separately (see the Additional Information table) to account for potential crash migration caused by the restricted movements at the directional crossovers.

Target Crashes: For Site-1 and Site-3, target crashes include Left Turn and Angle Crashes from the side streets (these movements restricted in the after period).
For Site-2, target crashes include all Crashes involving vehicles going to/from SR 2325.

<u>Treatment Information - Section</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	8	7	- 13 %
Total Severity Index	14.18	3.11	- 78 %
Target Crashes	4	0	- 100 %
Target Crash Severity Index	21.80	0.00	- 100 %
Volume (2009, 2013)	30,000	34,500	+ 15 %
Fatal injury Crashes	1	0	- 100 %
Class A injury Crashes	0	0	0 %
Class B injury Crashes	0	1	+ 100 %
Class C Injury Crashes	4	1	- 75 %
Property Damage Only	3	5	+ 67 %

<u>Site-1: US 74 at SR 2090</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	0	1	+100 %
Total Severity Index	0.00	1.00	+100 %
Target Crashes	0	0	0 %
Target Crash Severity Index	0.00	0.00	0 %
Volume (2009, 2013)	31,000	35,500	+ 15 %
Fatal injury Crashes	0	0	0 %
Class A injury Crashes	0	0	0 %
Class B injury Crashes	0	0	0 %
Class C Injury Crashes	0	0	0 %
Property Damage Only	0	1	+100 %

<u>Site-2: US 74 at SR 2325</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	2	1	- 50 %
Total Severity Index	1.00	1.00	0 %
Target Crashes	2	0	- 100 %
Target Crash Severity Index	1.00	0.00	- 100 %
Volume (2009, 2013)	30,000	34,500	+ 15 %
Fatal injury Crashes	0	0	0 %
Class A injury Crashes	0	0	0 %
Class B injury Crashes	0	0	0 %
Class C Injury Crashes	0	0	0 %
Property Damage Only	2	1	- 50 %

<u>Site-3: US 74 at SR 2089</u>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	4	1	- 75 %
Total Severity Index	25.50	1.00	- 96 %
Target Crashes	2	0	- 100 %
Target Crash Severity Index	42.60	0.00	- 100 %
Volume (2009, 2013)	31,000	35,500	+ 15 %
Fatal injury Crashes	1	0	- 100 %
Class A injury Crashes	0	0	0 %
Class B injury Crashes	0	0	0 %
Class C Injury Crashes	3	0	- 100 %
Property Damage Only	0	1	+100 %

Additional Information <i>US 74 at US 74Bus (Area of Influence)</i>	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	32	36	+ 13 %
WB US 74 U-Turn Crashes	0	0	0 %
SB US 74Bus Left Turn Crashes	4	7	+ 75 %
WB SR 2090 Left Turn Crashes	0	0	0 %
Volume (2009, 2013)	32,400	36,000	+ 11 %

Items for Discussion/Concerns

- When evaluating limited movement crossovers, we typically analyze a potential area of influence due to the changes in traffic flow caused by the restricted movements.
 - Left-turn and thru movements from SR 2089 (Site-3) are accommodated by a U-turn median opening (Site-2), which was constructed and evaluated as part of the project.
 - Left-turn movements from SR 2090 (Site-1) are accommodated via the nearest intersection to the west, US 74 at US 74Bus. Crash data at this intersection was evaluated separately to check for potential crash migration. SR 2090 runs parallel to US 74 and intersects US 74Bus approximately 150' north of the US 74 at US 74Bus intersection. Therefore, highlighted crash types include westbound US 74 U-turn crashes, as well as southbound US 74Bus left turn crashes and westbound SR 2090 left turn crashes. There was a slight increase in crashes at US 74 at US 74 Bus, but it does not appear the restricted movements at Site-1 created substantial changes in crashes at this location.

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

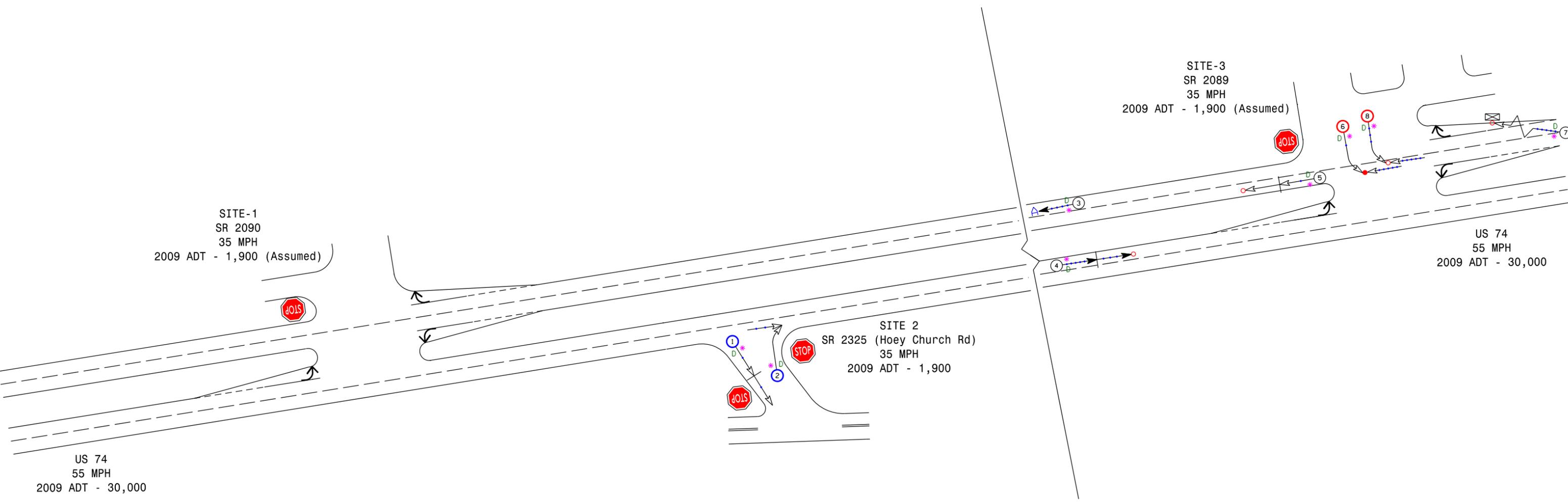
Data Prepared By

Principal Investigator: Carrie L. Simpson, PE
Work Group/Consultant: NCDOT - Safety Evaluation Group
Date: February 25, 2016

Project# W-5212E
 Order# 41000037903
 Cleveland County
 BEFORE Period
 9/1/2007 - 5/31/2011



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



- Crossover Target Crashes
- SR 2325 Intersection Crashes

Prepared For:
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRANSPORTATION MOBILITY and SAFETY DIVISION

TRAFFIC SAFETY UNIT

Date: 2-25-2016 Prepared By: Carrie Simpson

Project# W-5212E
 Order# 41000037903
 Cleveland County
 AFTER Period
 1/1/2012 - 9/30/2015

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
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			O Other



SITE-1
 SR 2090
 35 MPH
 2013 ADT - 2,000 (Assumed)

SITE-3
 SR 2089
 35 MPH
 2013 ADT - 2,000 (Assumed)

US 74
 55 MPH
 2013 ADT - 34,000

US 74
 55 MPH
 2013 ADT - 35,000

SITE 2
 Median U-Turn
 (Old SR 2325 Intersection)

Crossover Target Crashes

SR 2325 Intersection Crashes

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