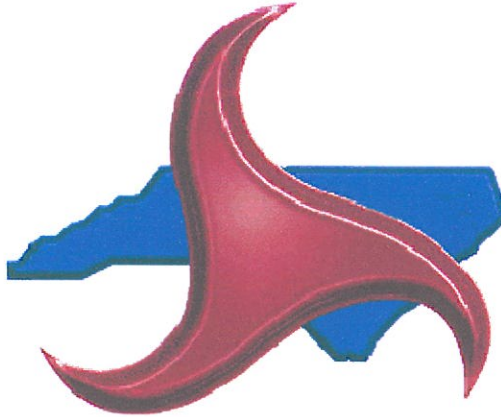


17BP.9.R.61 Bridge Design Speed Study

Bridge # 790251 on SR 1549 (Bradshaw Rd) south of Mt. Ulla

Rowan County



Document Prepared By:

Regional Traffic Office – Triad Region
Traffic Safety Unit
Transportation Mobility and Safety Division
North Carolina Department of Transportation

December 9, 2014

Principal Investigator:



John C. Button, PE, PLS
Triad Regional Traffic Safety Engineer



Bridge and Approach Investigation Checklist

Project 17BP.9.R.61
Description Bridge #790251 over Kerr Creek
Route SR 1549 (Bradshaw Road)
Division 9
County Rowan

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable 50 mph on eastbound approach,
Passenger Car Speed 45 mph on westbound approach.

Speed Data Two speed data points collected; 54 mph and 51 mph.

Ball Bank Speed Study 12 degrees at 45 mph for curve located west of bridge.
Note there is a bump on west side of bridge in westbound lane.
Operating speeds may increase once bump is removed.

Warning Signs at Bridge (4) W10-23 signs delineating bridge ends
(2) 13 ton SV/16 ton TTST weight limit signs, one on each approach.

Roadside Development Residential/Rural

ADT History 2000 AADT = 280 vpd per NCDOT Traffic Map.
2012 AADT = 320 vpd per NCDOT Traffic Map.

Pedestrian/Bicycle Traffic Minimal bicycle and pedestrian usage is expected.
SR 1549 is not listed as a bicycle route or pedestrian route on the
Cabarrus-Rowan MPO 2011 CTP Bicycle and Pedestrian Maps.

Bridge and Approach See attached photos.
Digital Photos

Approach Lane Width 19'-5" overall pavement width; 8'-5"/8'-6" lane widths.

Approach Shoulder Width: 5' to 9' +/-
Shoulder Type Grass

Lane Width (existing bridge) 24'-10" overall pavement width; 8'-2"/8'-4" lane widths.

Shoulder width (existing bridge) 37"/37"

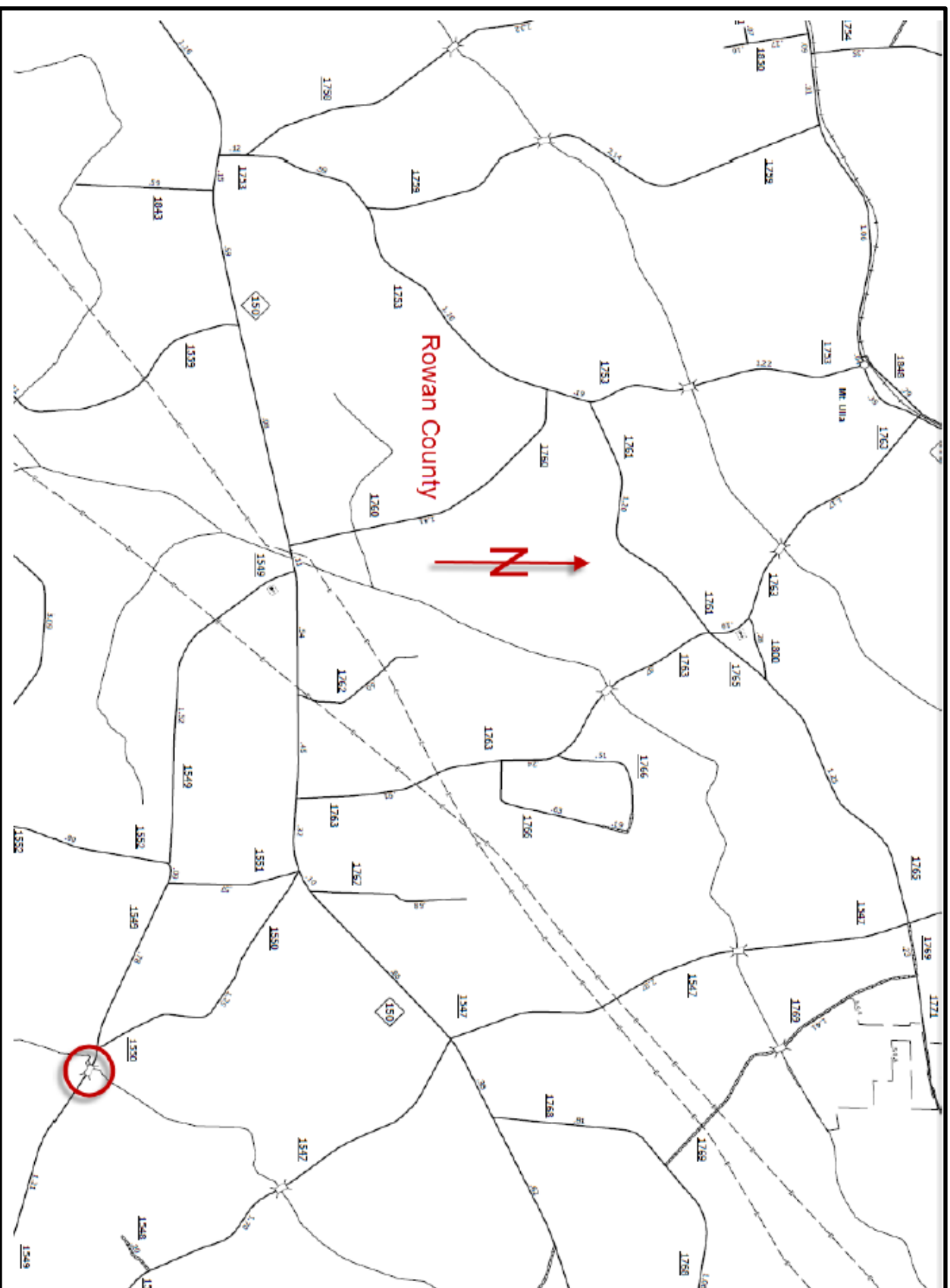
Strategic Corridor / Thoroughfare According to NCDOT Functional Class Map, SR 1549 is a local roadway.
Designation and Recommended Recommend the 3R Guideline of 10' lane widths and 3' shoulder widths
Cross Section (6' shoulder widths where guardrail is installed) as a minimum cross section.

Crash History and Two crashes reported in the vicinity of the bridge from 10/01/2004 to 9/30/2014.
Safety Considerations These crashes were not related to the bridge or the bridge approaches.

Comments _____

Reasonable Bridge Speed 55 mph

Bridge #790251 Location Map















**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Study Criteria Summary

County: ROWAN **City:** All and Rural
Date: 10/01/2004 **to** 09/30/2014 **Study:** MW41000032407
Location: Bridge #251 over Kerr Creek on SR 1549 (Bradshaw Rd), 500 feet on each side.

Report Details

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	101273253	2.404	10/02/2004 02:18	FIXED OBJECT	\$ 7500	0	0	0	0	1	5	5	3	0	1	1
Unit 1 : 1		Alchl/Drugs:	0	Speed: 55 MPH	Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:			58		
2	103865053	2.420	10/04/2013 20:17	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	5	1	3	0	13	1
Unit 1 : 4		Alchl/Drugs:	0	Speed: 10 MPH	Dir: W	Veh Mnvr/Ped Actn:				11	Obj Strk:					
Unit 2 : 20		Alchl/Drugs:	7	Speed: 55 MPH	Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:					

**Legend for
Report
Details:**

Acc No - Accident Number
Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
Condition: R - Road Surface, L - Ambient Light, W - Weather
Rd Ch - Road Character
Rd Ci - Roadway Contributing Circumstances
Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
Alchl/Drugs - Alcohol Drugs Suspected
Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
Obj Strk - Object Struck

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	2	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	0	0.00
Total Injury Crashes	0	0.00
Property Damage Only Crashes	2	100.00
Night Crashes	2	100.00
Wet Crashes	0	0.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	2	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	0	0.00
Property Damage Only Crashes	2	100.00

Vehicle Exposure Statistics

Annual ADT = 400

Total Length = 0.196 (Miles) 0.315 (Kilometers)

Total Vehicle Exposure = 0.29 (MVMT) 0.46 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	698.53	434.04
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	0.00	0.00
Night Crash Rate	698.53	434.04
Wet Crash Rate	0.00	0.00
EPDO Rate	698.53	434.04

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Miscellaneous Statistics

Severity Index =	1.00
EPDO Crash Index =	2.00
Estimated Property Damage Total = \$	9000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	1	50.00
REAR END, SLOW OR STOP	1	50.00

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	0	0.00
Class C Injuries	0	0.00
Total Non-Fatal Injuries	0	0.00
Total Injuries	0	0.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	0	0.00
Mar	0	0.00
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	0	0.00
Sep	0	0.00
Oct	2	100.00
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	0	0.00
Tue	0	0.00
Wed	0	0.00
Thu	0	0.00
Fri	1	50.00
Sat	1	50.00
Sun	0	0.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	1	50.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	0	0.00
0800-0859	0	0.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	0	0.00
1500-1559	0	0.00
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	0	0.00
1900-1959	0	0.00
2000-2059	1	50.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	0	0	0	0
Dark	2	0	0	2
Other	0	0	0	0
Total	2	0	0	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
DITCH	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
MOTORCYCLE	1	33.33
PASSENGER CAR	1	33.33
SPORT UTILITY	1	33.33

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2004	1	0	0	1
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	1	0	0	1
2014	0	0	0	0
Total	2	0	0	2

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2004	0	0
2005	0	0
2006	0	0
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
Total	0	0

Miscellaneous Totals

Year	Property Damage	EPDO Index
2004	\$ 7500	1.00
2005	\$ 0	0.00
2006	\$ 0	0.00

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Year	Property Damage	EPDO Index
2007	\$ 0	0.00
2008	\$ 0	0.00
2009	\$ 0	0.00
2010	\$ 0	0.00
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 1500	1.00
2014	\$ 0	0.00
Total	\$ 9000	2.00

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2004	0	0	0	1	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0
2013	0	0	1	0	0	0	0
2014	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	0

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Strip Diagram

Features	Milepost	Crash IDs
SR 1550	2.38	
	2.39	
	2.40	101273253
	2.41	
	2.42	103865053
	2.43	
	2.44	
	2.45	
	2.46	
	2.47	
Structure:790251	2.48	
	2.49	
	2.50	
	2.51	
	2.52	
	2.53	
	2.54	
	2.55	
	2.56	
	2.57	
	2.58	

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Study Criteria

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
MW41000032407	41000032407			76.8	8.4	400	40001549

Request Date	Courier Service	Phone No.	Ext.	Fax No.
10/31/2014		919 707 6609		919 212 5711

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
ROWAN	79	9	All and Rural		0	10/01/2004	09/30/2014	10.00

Location Text	Requestor
Bridge #251 over Kerr Creek on SR 1549 (Bradshaw Rd), 500 feet on each side.	Rachel C. Evans NCDOT TPMU Priority Projects Office

Included Accidents	Old MP	New MP	Type
103865053	2.69	2.42	I

Fiche Roads

Name	Code
SR 1549	40001549
BRADSHAW	50003447

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1549	40001549	2.382	2.578	0.196	0.315