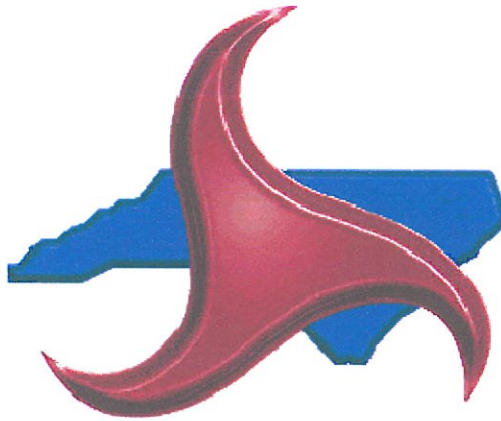


17BP.9.R.61 Bridge Design Speed Study

Bridge # 790301 on SR 2312 (Barringer St) northwest of Granite Quarry

Rowan County

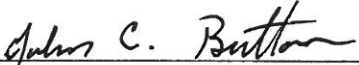


Document Prepared By:

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 #790301 over Crane Creek
Route SR 2312 (Barringer Street)
Division 9
County Rowan

Existing Speed Limit 45 ☒ Posted ☐ Statutory

Reasonable & Comfortable
Passenger Car Speed 30 mph

Speed Data No speed data collected because of sparseness of traffic

Ball Bank Speed Study 20 degrees at 30 mph southbound for curve located south of bridge.
16 degrees at 30 mph northbound for curve located south of bridge.

Warning Signs at Bridge (4) W10-23 signs delineating bridge ends
(2) 24 ton SV/29 ton TTST weight limit signs, one on each approach.
(2) W1-1 Turn Warning Signs with 25 mph Advisory Plaques. One on each approach.
(2) W1-6 Large Arrow signs for curve located south of bridge.

Roadside Development Rural/Residential

ADT History 2012 AADT = 340 vpd per NCDOT Traffic Map.
2002 AADT = 380 vpd per NCDOT Traffic Map.

Pedestrian/Bicycle Traffic Some bicycle and pedestrian usage may be expected because of close proximity of residences. SR 2312 is not listed as a bicycle route or pedestrian route on the Cabarrus-Rowan MPO 2011 CTP Bicycle and Pedestrian Maps.

Bridge and Approach
Digital Photos See attached photos.

Approach Lane Width 20'-6" overall pavement width; 8'-11"/8'-11" lane widths.

Approach Shoulder Width: 5'-6" to 8'-6" +/-
Shoulder Type Grass

Lane Width (existing bridge) 24'-4" overall pavement width; 9'-3"/9'-0" lane widths.

Shoulder width (existing bridge) 23"/24"

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section According to NCDOT Functional Class Map, SR 2312 is a local roadway.
Recommend the 3R Guideline of 10' lane widths and 3' shoulder widths
(6' shoulder widths where guardrail is installed) as a minimum cross section.

Crash History and
Safety Considerations Two crashes reported in the vicinity of the bridge from 10/01/2004 to 9/30/2014.
Both crashes involved either the bridge or the bridge approach.

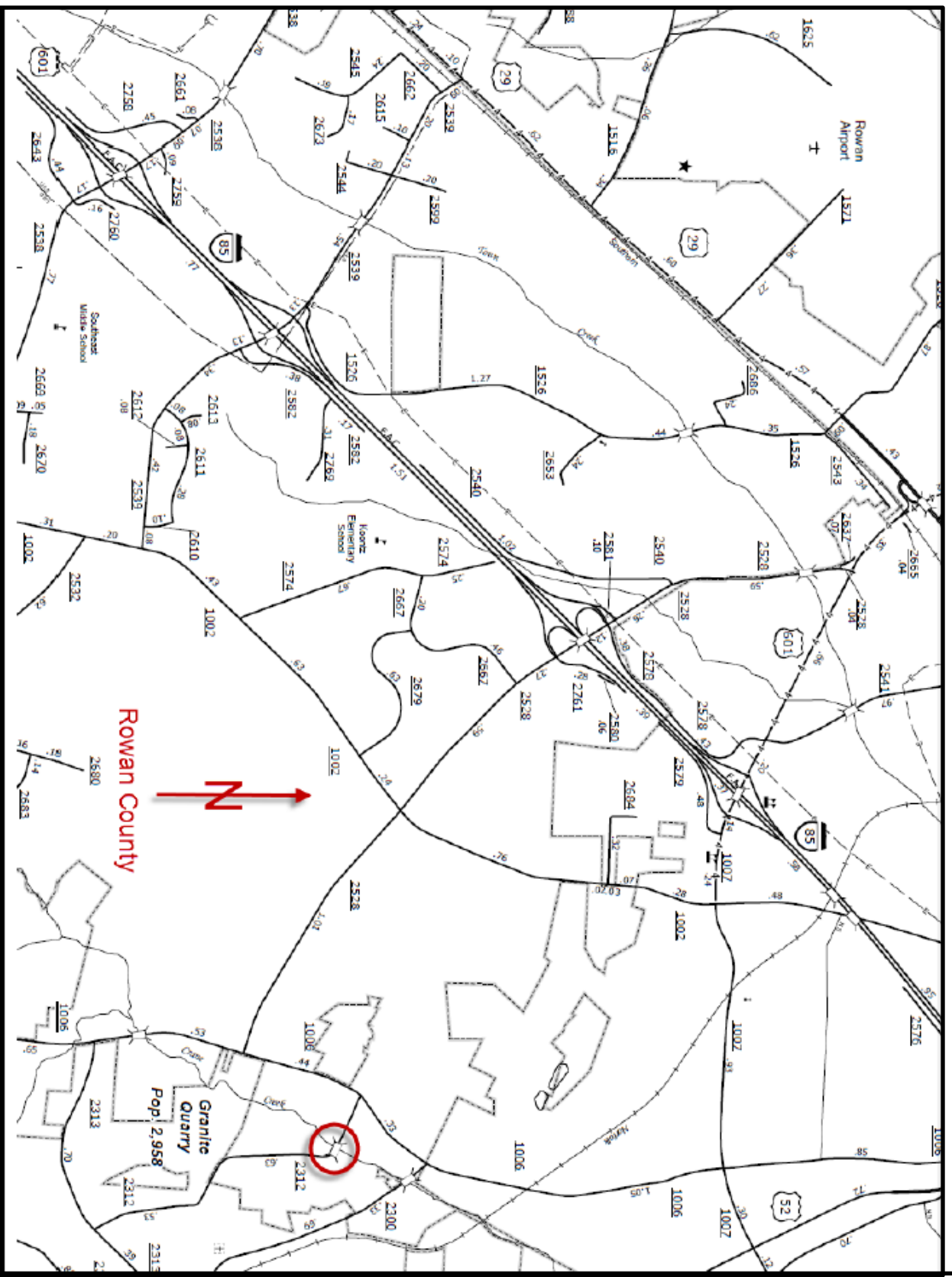
Comments _____

Reasonable Bridge Speed 30 mph

Investigated by: John Button 11/06/2014

Reviewed by: _____

Bridge # 790301 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:** MW41000032432B
Location: Bridge # 300 over Crane Creek on SR 2312 (Barringer 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	103710430	0.193	03/25/2013 14:53	FIXED OBJECT	\$ 1000	0	0	0	0	1	1	1	3	0	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	30 MPH Dir: W	Veh Mnvr/Ped Actn:				4	Obj Strk:			50		
2	101820944	0.231	08/31/2006 14:09	SIDESWIPE, OPPOSITE DIRECTION	\$ 9500	0	0	1	1	2	1	3	7	0	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	45 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/Drgs - 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	1	50.00
Total Injury Crashes	1	50.00
Property Damage Only Crashes	1	50.00
Night Crashes	0	0.00
Wet Crashes	1	50.00
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	1	50.00
Class C Crashes	0	0.00
Property Damage Only Crashes	1	50.00

Vehicle Exposure Statistics

Annual ADT = 500

Total Length = 0.198 (Miles) 0.319 (Kilometers)

Total Vehicle Exposure = 0.36 (MVMT) 0.58 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	553.18	343.73
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	276.59	171.86
Night Crash Rate	0.00	0.00
Wet Crash Rate	276.59	171.86
EPDO Rate	2599.93	1615.52

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

Miscellaneous Statistics

Severity Index =	4.70
EPDO Crash Index =	9.40
Estimated Property Damage Total = \$	10500.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	1	50.00
SIDESWIPE, OPPOSITE DIRECTION	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	1	50.00
Class C Injuries	1	50.00
Total Non-Fatal Injuries	2	100.00
Total Injuries	2	100.00

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	1	50.00
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	1	50.00
Sep	0	0.00
Oct	0	0.00
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	50.00
Tue	0	0.00
Wed	0	0.00
Thu	1	50.00
Fri	0	0.00
Sat	0	0.00
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	0	0.00
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	2	100.00
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	0	0.00
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
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Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	1	1	0	2
Dark	0	0	0	0
Other	0	0	0	0
Total	1	1	0	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
BRIDGE RAIL FACE	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	3	100.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
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Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2004	0	0	0	0
2005	0	0	0	0
2006	1	0	1	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	1	1

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2004	0	0
2005	0	0
2006	0	2
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	2

Miscellaneous Totals

Year	Property Damage	EPDO Index
2004	\$ 0	0.00
2005	\$ 0	0.00
2006	\$ 9500	8.40

**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	\$ 1000	1.00
2014	\$ 0	0.00
Total	\$ 10500	9.40

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	1	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	0	1	0	0	0
2014	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0

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

Strip Diagram

Features	Milepost	Crash IDs
Structure:790301	0.09	
	0.10	
	0.11	
	0.12	
	0.13	
	0.14	
	0.15	
	0.16	
	0.17	
	0.18	
	0.19	103710430
	0.20	
	0.21	
	0.22	
	0.23	101820944
	0.24	
	0.25	
	0.26	
	0.27	
	0.28	
	0.29	

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
MW41000032432B	41000032432			76.8	8.4	500	40002312

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 # 300 over Crane Creek on SR 2312 (Barringer Rd), 500 feet on each side.	Rachel C. Evans NCDOT TPMU Priority Projects Office

Included Accidents	Old MP	New MP	Type
103710430	0.3	0.193	I

Fiche Roads

Name	Code
SR 2312	40002312
BARRINGER	50001750

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 2312	40002312	0.094	0.292	0.198	0.319