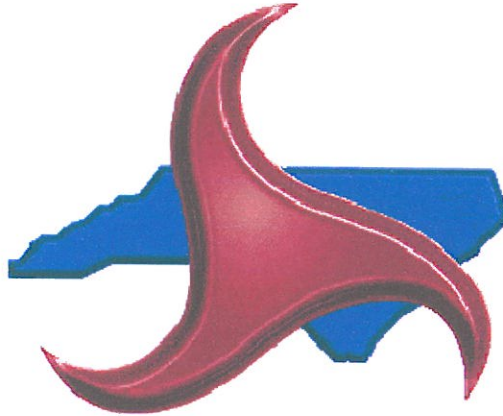


17BP.7.R.87 Bridge Design Speed Study

Bridge #670073 on SR 1115 (Bradshaw Quarry Road)

Orange County

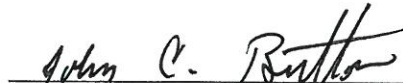


Document Prepared By:

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

September 30, 2014

Principal Investigator:



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



Bridge and Approach Investigation Checklist

Project 17BP.7.R.87
Description Bridge # 670073 over Cane Creek
Route SR 1115 (Bradshaw Quarry Road)
Division 7
County Orange

Existing Speed Limit 55 mph ☐ Posted ☒ Statutory

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

Speed Data 12 Speed Data Points Obtained.
Range from 29 mph to 58 mph.
Mean = 45 mph.
85th percentile = 53 mph
Mode = 42.46 mph

Ball Bank Speed Study 12 degrees at 40 mph for curve located east of bridge.

Warning Signs at Bridge W23-10 object markers, one at each corner of bridge.
Regulatory 19/28 ton weight limit sign on each approach.
Curve Warning Signs with 40 mph speed plaques on each approach to bridge.

Roadside Development Rural

ADT History 2001 AADT = 1300 vpd per NCDOT Traffic Map.
2013 AADT = 920 vpd per NCDOT Traffic Map.

Pedestrian/Bicycle Traffic Signed as Bicycle Route 1. Also shown on the Orange County Bicycle Map
as Route 1 also known as the Perimeter Route.

Bridge and Approach Digital Photos See attached photos.

Approach Lane Width 19'-0" overall pavement width with 8'-7"/8'-6" lane widths.

Approach Shoulder Width: Varies from 4'-6" to 6'-6".
Shoulder Type Grass

Lane Width (existing bridge) 25'-4" overall pavement width with 8'-7"/8'-9" lane widths.

Shoulder width (existing bridge) 34"/39"

Strategic Corridor / Thoroughfare Designation and Recommended Cross Section This section of SR 1115 is designated as a Minor Collector Route
on the NCDOT Functional Classification Route Map.
The NCDOT "R-R-R Guide" recommends a minimum of 11 foot lane
widths and 3 foot shoulder widths (6 foot shoulder widths where
guardrail is to be installed) on collector routes.

Crash History and Safety Considerations 3 crashes occurred in vicinity of bridge from 07/01/2004 to 06/30/2014.
Recommend providing bicycle rail on new bridge.

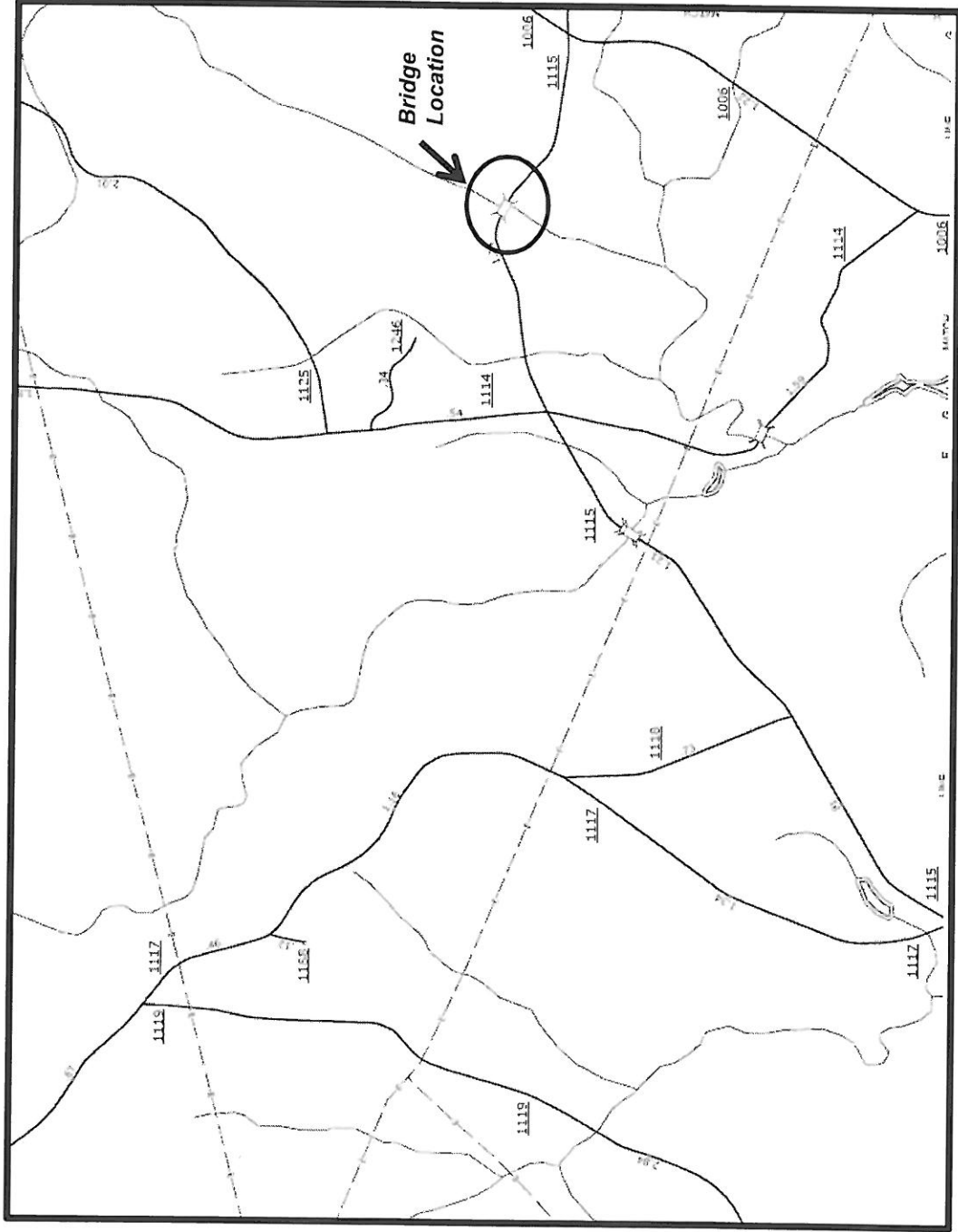
Comments _____

Reasonable Bridge Speed 55 mph

Investigated by:

John Button, P.E. 9/29/2014

Bridge # 670073 on SR 1115 (Bradshaw Quarry Road) in Orange County



Orange County



SR 1115 (Bradshaw Quarry Road) eastbound $\pm$ 0 feet west of bridge # 670073

Orange County



SR 1115 (Bradshaw Quarry Road) eastbound $\pm$ 50 feet west of bridge# 670073

Orange County



SR 1115 (Bradshaw Quarry Road) eastbound ± 100 feet west of bridge# 670073

Orange County



SR 1115 (Bradshaw Quarry Road) eastbound $\pm$ 150 feet west of bridge# 670073

Orange County



SR 1115 (Bradshaw Quarry Road) eastbound $\pm$ 200 feet west of bridge# 670073

Orange County



SR 1115 (Bradshaw Quarry Road) eastbound $\pm$ 250 feet west of bridge # 670073

Orange County



SR 1115 (Bradshaw Quarry Road) westbound $\pm$ 0 feet east of bridge# 670073

Orange County



SR 1115 (Bradshaw Quarry Road) westbound $\pm$ 50 feet east of bridge # 670073

Orange County



SR 1115 (Bradshaw Quarry Road) westbound $\pm$ 100 feet east of bridge # 670073

Orange County



SR 1115 (Bradshaw Quarry Road) westbound $\pm$ 150 feet east of bridge # 670073

Orange County



SR 1115 (Bradshaw Quarry Road) westbound $\pm$ 200 feet east of bridge # 670073

Orange County



SR 1115 (Bradshaw Quarry Road) westbound $\pm$ 250 feet east of bridge # 670073

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

Study Criteria Summary

County: ORANGE City: All and Rural
Date: 07/01/2004 to 06/30/2014 Study: ORANGEBRIDGE670073
Location: 500 feet on either side of bridge 670073 on SR 1115 (Bradshaw Quarry Rd)

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	101366137	3.357	12/19/2004 11:45	FIXED OBJECT	\$ 2000	0	0	0	0	1	1	2	7	0	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	50 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:		59			
2	102543611	3.397	03/16/2009 02:50	FIXED OBJECT	\$ 8000	0	0	1	0	2	5	2	6	0	0	2
Unit	1 : 2	Alchl/Drgs:	7	Speed:	75 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:		34			
Unit	2 : 1	Alchl/Drgs:	0	Speed:	65 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:		18			
3	101940415	3.495	01/18/2007 07:47	FIXED OBJECT	\$ 2000	0	0	0	0	5	1	2	5	1	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:		59			

**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	3	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	1	33.33
Total Injury Crashes	1	33.33
Property Damage Only Crashes	2	66.67
Night Crashes	1	33.33
Wet Crashes	1	33.33
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	3	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	1	33.33
Class C Crashes	0	0.00
Property Damage Only Crashes	2	66.67

Vehicle Exposure Statistics

Annual ADT = 1000

Total Length = 0.196 (Miles) 0.315 (Kilometers)

Total Vehicle Exposure = 0.72 (MVMT) 1.15 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	419.12	260.43
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	139.71	86.81
Night Crash Rate	139.71	86.81
Wet Crash Rate	139.71	86.81
EPDO Rate	1452.94	902.81

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

Miscellaneous Statistics

Severity Index =	3.47
EPDO Crash Index =	10.40
Estimated Property Damage Total = \$	12000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	3	100.00

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	100.00
Class C Injuries	0	0.00
Total Non-Fatal Injuries	1	100.00
Total Injuries	1	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	1	33.33
Feb	0	0.00
Mar	1	33.33
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	0	0.00
Nov	0	0.00
Dec	1	33.33

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	33.33
Tue	0	0.00
Wed	0	0.00
Thu	1	33.33
Fri	0	0.00
Sat	0	0.00
Sun	1	33.33

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	33.33
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	1	33.33
0800-0859	0	0.00
0900-0959	0	0.00
1000-1059	0	0.00
1100-1159	1	33.33
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	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

09/10/2014

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

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	1	0	1	2
Dark	0	1	0	1
Other	0	0	0	0
Total	1	1	1	3

Object Struck Summary

Object Type	Times Struck	Percent of Total
EMBANKMENT	2	50.00
MOVABLE OBJECT	1	25.00
UTILITY POLE	1	25.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	3	75.00
PICKUP	1	25.00

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	1	0	0	1
2008	0	0	0	0
2009	1	0	1	0
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0
Total	3	0	1	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	1
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
Total	0	1

Miscellaneous Totals

Year	Property Damage	EPDO Index
2004	\$ 2000	1.00
2005	\$ 0	0.00

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

Year	Property Damage	EPDO Index
2006	\$ 0	0.00
2007	\$ 2000	1.00
2008	\$ 0	0.00
2009	\$ 8000	8.40
2010	\$ 0	0.00
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 0	0.00
2014	\$ 0	0.00
Total	\$ 12000	10.40

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2004	0	0	0	1	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	1	0	0	0
2008	0	0	0	0	0	0	0
2009	0	0	0	1	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	0	0	0	0
2014	0	0	0	0	0	0	0
Total	0	0	0	3	0	0	0

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
ORANGEBRIDGE670073				76.8	8.4	1000	40001115

Request Date	Courier Service	Phone No.	Ext.	Fax No.
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County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
ORANGE	67	7	All and Rural		0	07/01/2004	06/30/2014	10.00

Location Text	Requestor
500 feet on either side of bridge 670073 on SR 1115 (Bradshaw Quarry Rd)	

Included Accidents	Old MP	New MP	Type
101366137		3.357	I
101940415		3.495	I
102543611		3.397	I

Fiche Roads

Name	Code
SR 1115	40001115
BRADSHAW QUARRY	50003448
ARTHUR MINNUS	50038074

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1115	40001115	3.348	3.544	0.196	0.315

09/10/2014

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