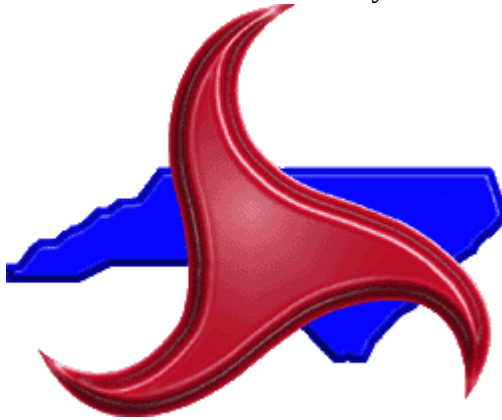

Bridge Design Speed Investigation

250052

Structure #52 on SR 1006 (Maxwell Rd) over South River

Cumberland County



Document Prepared By:

Ramey Kemp & Associates, Inc.
8307 University Execution Park Drive, Suite 260
Charlotte, NC 28262

April 13, 2016

Project Manager

A handwritten signature in black ink, reading "Jacob D. Carpenter".

Jacob D. Carpenter, PE
Regional Manager

Principal Investigator

A handwritten signature in black ink, reading "J. Andrew Eagle".

J. Andrew Eagle, PE, PTOE
Senior Transportation Engineer



Bridge and Approach Investigation Checklist

Project B-5691

Description Replace Bridge #52 over South River

Route SR 1006 (Maxwell Rd)

Division 6

County Cumberland

Existing Speed Limit 55 mph ☒ Posted ☐ Statutory

Reasonable & Comfortable
Passenger Car Speed 60 mph

Speed Data Estimated 45-60 mph

Ball Bank Speed Study Curve East of bridge:
50 mph: EB Departure - 4, WB Approach - 3
55 mph: EB Departure - 4, WB Approach - 4
60 mph: EB Departure - 7, WB Approach - 5
Curve West of bridge:
45 mph: EB Approach - 10, WB Departure - 10
50 mph: EB Approach - 12, WB Departure - 13
55 mph: EB Approach - 15, WB Departure - 16

Warning Signs at Bridge 4x Bridge End Delineators

Roadside Development Residential

ADT History 2400 vpd (From NCDOT TEAAS)
2600 vpd (From NCDOT Traffic Volume Map-2014)

Pedestrian/Bicycle Traffic Minimal Expected

Bridge and Approach
Digital Photos Attached

Approach Lane Width 11 ft

Approach Shoulder Width 1 ft paved, 6 ft grass (24 ft EOP to EOP)
Shoulder Type

Lane Width (existing bridge) 11 ft

Shoulder width (existing bridge) 3 ft (28 ft total width)

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section SR 1006 is classified a major collector facility in the Statewide Functional
Classification System. 2-lane cross-section recommended.

Crash History and
Safety Considerations Crash Analysis completed for 01/01/2011 to 12/31/2015. Two accidents
reported. One accident involved an animal and one involved a fixed object.

Comments _____

Reasonable Bridge Speed 55 mph

Investigated by: J. Andrew Eagle, PE, PTOE

Reviewed by: 

County: Cumberland

Route: SR 1006 (Maxwell Rd)

Date: 04/13/16

Eastbound



Eastbound



Westbound



Westbound



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

Study Criteria Summary

County: CUMBERLAND **City:** All and Rural
Date: 01/01/2011 to 12/31/2015 **Study:** CUMBERLANDBRIDGE52
Location: 500 feet either side of Bridge No. 52 on SR 1006 (Maxwell Road) over South River in Cumberland/Sampson County

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	103552212	0.023	09/22/2012 10:40	ANIMAL	\$ 1500	0	0	0	0	1	1	1	1	0	0	
Unit 1 : 1 Alchl/Drgs: 0 Speed: 55 MPH Dir: SW Veh Mnvr/Ped Actn: 4 Obj Strk: 17																
2	104538187	0.031	10/27/2015 21:51	FIXED OBJECT	\$ 3000	0	0	0	0	1	5	3	6	0	13	1
Unit 1 : 1 Alchl/Drgs: 7 Speed: 55 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: 33																

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	0	0.00
Total Injury Crashes	0	0.00
Property Damage Only Crashes	2	100.00
Night Crashes	1	50.00
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 = 2400

Total Length = 0.23 (Miles)

0.37 (Kilometers)

Total Vehicle Exposure = 1.01 (MVMT)

1.62 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	198.42	123.29
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	0.00	0.00
Night Crash Rate	99.21	61.65
Wet Crash Rate	0.00	0.00
EPDO Rate	198.42	123.29

**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 = \$	4500.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANIMAL	1	50.00
FIXED OBJECT	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	1	50.00
Oct	1	50.00
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	0	0.00
Tue	1	50.00
Wed	0	0.00
Thu	0	0.00
Fri	0	0.00
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	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	1	50.00
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	0	0.00
2100-2159	1	50.00
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	1	0	0	1
Dark	1	0	0	1
Other	0	0	0	0
Total	2	0	0	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
ANIMAL	1	50.00
TREE	1	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	2	100.00

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
2011	0	0	0	0
2012	1	0	0	1
2013	0	0	0	0
2014	0	0	0	0
2015	1	0	0	1
Total	2	0	0	2

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
Total	0	0

Miscellaneous Totals

Year	Property Damage	EPDO Index
2011	\$ 0	0.00
2012	\$ 1500	1.00
2013	\$ 0	0.00
2014	\$ 0	0.00
2015	\$ 3000	1.00
Total	\$ 4500	2.00

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2011	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	1
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	1	0	0	0

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

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

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

Strip Diagram

Features	Milepost	Crash IDs
BEGIN STUDY	0.00	
	0.01	
	0.02	103552212
	0.03	104538187
	0.04	
	0.05	
	0.06	
	0.07	
	0.08	
	0.09	
	0.10	
	0.11	
BRIDGE NO. 52 CUMBERLAND CL SAMPSON CL	0.12	
	0.13	
	0.14	
	0.15	
	0.16	
	0.17	
	0.18	
	0.19	
	0.20	
	0.21	
	0.22	
END OF STUDY	0.23	

**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
CUMBERLANDBRIDGE52				76.8	8.4	2400	

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
CUMBERLAND	26	6	All and Rural		150	01/01/2011	12/31/2015	5.00

Location Text	Requestor
500 feet either side of Bridge No. 52 on SR 1006 (Maxwell Road) over South River in Cumberland/Sampson County	

Included Accidents	Old MP	New MP	Type
103552212		0.023	I
104538187		0.031	I

Fiche Roads

Name	Code
I 1	10000001
MAXWELL	50019253
CLINTON	50006340
SR 1006	40001006
HIGH HOUSE	50013942

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
I 1	10000001	0.000	0.230	0.230	0.370