
Bridge Design Speed Investigation

B-5657

Structure #14 on SR 1001 (Justice Branch Road) over Beaverdam Swamp

Halifax County



Document Prepared By:

Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609

April 28, 2016

Project Manager

A handwritten signature in black ink, appearing to read "Jacob D. Carpenter".

Jacob D. Carpenter, PE
Regional Manager

Principal Investigator

A handwritten signature in black ink, appearing to read "Joshua T. Reinke".

Joshua T. Reinke, PE
Transportation Engineer



Bridge and Approach Investigation Checklist

Project B-5657

Description Bridge #14 over Beaverdam Swamp

Route SR 1001 (Justice Branch Road)

Division 4

County Halifax

Existing Speed Limit 55 mph ☐ Posted ☒ Statutory

Reasonable & Comfortable Passenger Car Speed 50 mph

Speed Data Estimated 50-55 mph

Ball Bank Speed Study Curve South of Bridge:
50 mph: NB Approach - 10, SB Approach - 12
55 mph: NB Approach - 11, SB Approach - 13
No curve north of bridge

Warning Signs at Bridge South Bridge: 4x Bridge End Delineators, 2x Weight Limit (19 ton SV, 28 ton TTST)
North Bridge: 4x Bridge End Delineators, 2x Weight Limit (19 ton SV, 27 ton TTST)

Roadside Development Wooded/Agricultural

ADT History 490 vpd (From NCDOT TEAAS)
460 vpd (From NCDOT Traffic Volume Map - 2013)

Pedestrian/Bicycle Traffic Minimal Expected

Bridge and Approach Digital Photos Attached

Approach Lane Width North of Bridges - 18.5 ft, South of Bridges - 20 ft (total width)

Approach Shoulder Width North of Bridges - <1 ft paved, >8 ft grass then water
Shoulder Type South of Bridges - <1 ft paved, >8 ft grass then water

Lane Width (existing bridge) North Bridge - 18.5 ft, South Bridge - 19 ft (total width)

Shoulder width (existing bridge) North Bridge - 1.5 ft, South Bridge - 3 ft on east side, 1 ft on west side

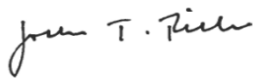
Strategic Corridor / Thoroughfare Designation and Recommended Cross Section SR 1001 is classified as a minor collector facility in the Statewide Functional Classification System. 2-lane cross-section is recommended.

Crash History and Safety Considerations Crash Analysis completed 01/01/06 to 12/31/15. Three collisions were reported. Two collisions involved an animal. One collision involved a fixed object.

Comments The design of the bridge and approaches should consider accommodating up to a 25 ft wide farm machine.

Reasonable Bridge Speed 50 mph

Investigated by: Joshua T. Reinke, PE

Reviewed by: 

County: Halifax

Route: SR 1001 (Justice Branch Road) – North Bridge

Date: 03/16/16

Northbound

Northbound



Southbound

Southbound



County: Halifax

Route: SR 1001 (Justice Branch Road) – South Bridge

Date: 03/16/16

Northbound

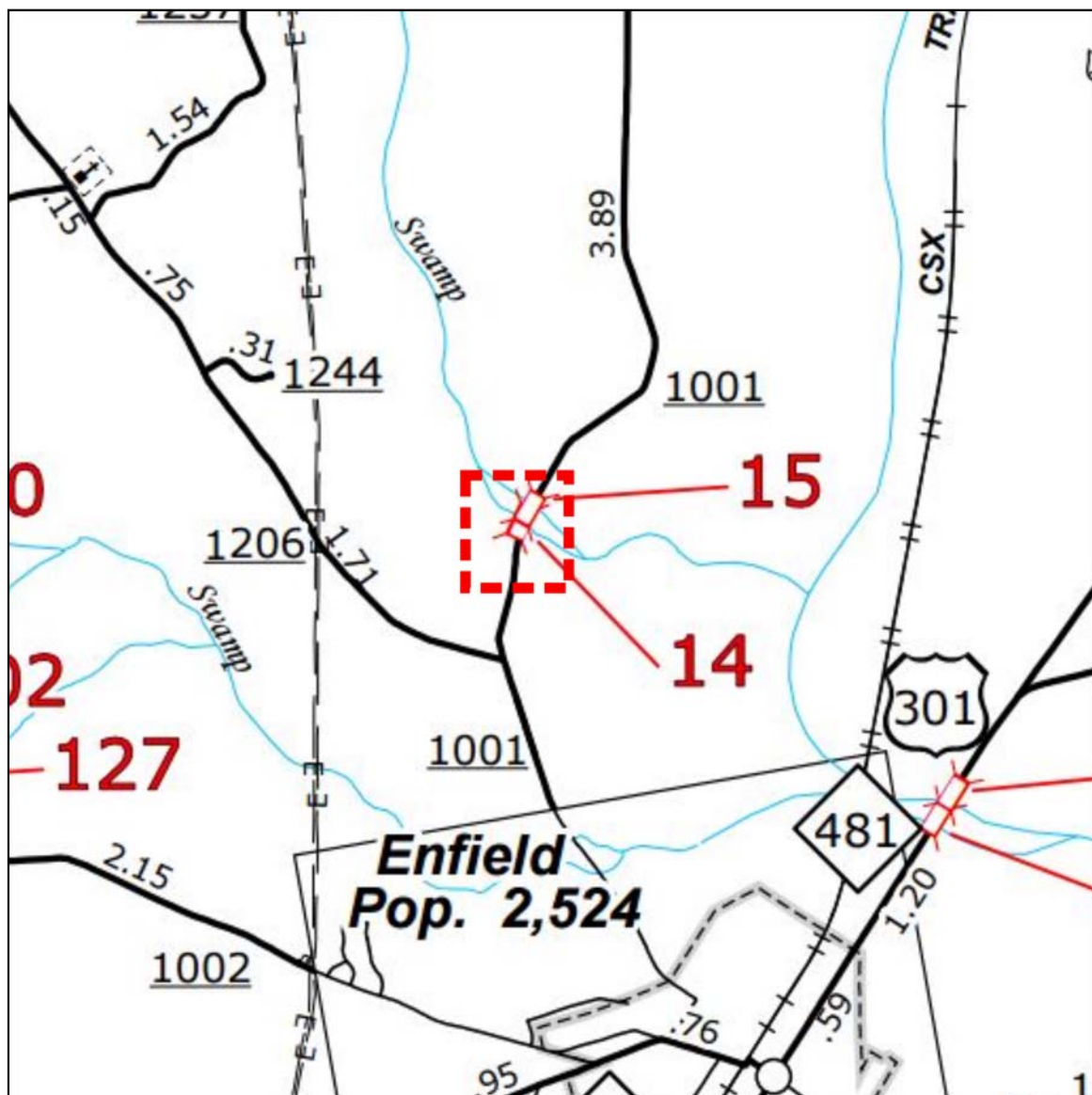
Northbound



Southbound

Southbound





Bridge Location Map-Bridge #410014

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

Study Criteria Summary

County: HALIFAX **City:** All and Rural
Date: 1/1/2006 **to** 12/31/2015 **Study:** HALIFAXBRIDGE15
Location: 500 ft. either side of Bridge No. 15 on SR 1001 (Justice Branch Rd) over Beaverdam Creek

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	101941996	24.281	01/20/2007 21:01	ANIMAL	\$ 1000	0	0	0	0	1	5	1		0		
Unit 1 : 1 Alchl/Drugs: 0 Speed: 0 MPH Dir: E Veh Mnvr/Ped Actn: 4 Obj Strk: 17																
2	102188270	24.281	11/10/2007 18:45	ANIMAL	\$ 1500	0	0	0	0	1	5	1		0		
Unit 1 : 1 Alchl/Drugs: 0 Speed: 0 MPH Dir: E Veh Mnvr/Ped Actn: 4 Obj Strk: 17																
3	103743360	24.290	05/01/2013 15:30	FIXED OBJECT	\$ 1700	0	0	0	0	1	1	2	1	0	0	
Unit 1 : 4 Alchl/Drugs: 0 Speed: 55 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: 50																

**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	3	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	0	0.00
Total Injury Crashes	0	0.00
Property Damage Only Crashes	3	100.00
Night Crashes	2	66.67
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	3	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	3	100.00

Vehicle Exposure Statistics

Annual ADT = 490

Total Length = 0.2 (Miles) 0.322 (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	838.24	520.86
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	0.00	0.00
Night Crash Rate	558.82	347.24
Wet Crash Rate	0.00	0.00
EPDO Rate	838.24	520.86

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

Miscellaneous Statistics

Severity Index =	1.00
EPDO Crash Index =	3.00
Estimated Property Damage Total = \$	4200.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANIMAL	2	66.67
FIXED OBJECT	1	33.33

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	1	33.33
Feb	0	0.00
Mar	0	0.00
Apr	0	0.00
May	1	33.33
Jun	0	0.00
Jul	0	0.00
Aug	0	0.00
Sep	0	0.00
Oct	0	0.00
Nov	1	33.33
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	0	0.00
Tue	0	0.00
Wed	1	33.33
Thu	0	0.00
Fri	0	0.00
Sat	2	66.67
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	0	0.00
1500-1559	1	33.33
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	1	33.33
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	1	33.33
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	2	0	0	2
Other	0	0	0	0
Total	3	0	0	3

Object Struck Summary

Object Type	Times Struck	Percent of Total
ANIMAL	2	66.67
BRIDGE RAIL FACE	1	33.33

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	2	66.67
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
2006	0	0	0	0
2007	2	0	0	2
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
2015	0	0	0	0
Total	3	0	0	3

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
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
2015	0	0
Total	0	0

Miscellaneous Totals

Year	Property Damage	EPDO Index
2006	\$ 0	0.00
2007	\$ 2500	2.00
2008	\$ 0	0.00
2009	\$ 0	0.00
2010	\$ 0	0.00

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

Year	Property Damage	EPDO Index
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 1700	1.00
2014	\$ 0	0.00
2015	\$ 0	0.00
Total	\$ 4200	3.00

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	2
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
2015	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	2

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

Strip Diagram

Features	Milepost	Crash IDs
Structure:410015	24.19	
	24.20	
	24.21	
	24.22	
	24.23	
	24.24	
	24.25	
	24.26	
	24.27	
	24.28	101941996 102188270
	24.29	103743360
	24.30	
	24.31	
	24.32	
	24.33	
	24.34	
	24.35	
	24.36	
	24.37	
	24.38	
	24.39	

**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
HALIFAXBRIDGE15				76.8	8.4	490	

Request Date	Courier Service	Phone No.	Ext.	Fax No.
--------------	-----------------	-----------	------	---------

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
HALIFAX	42	4	All and Rural		0	1/1/2006	12/31/2015	10.00

Location Text	Requestor
500 ft. either side of Bridge No. 15 on SR 1001 (Justice Branch Rd) over Beaverdam Creek	

Included Accidents	Old MP	New MP	Type
102188270	24.781	24.281	I
103743360	24.181	24.29	I

Fiche Roads

Name	Code
SR 1001	40001001
CHURCH	50006074

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1001	40001001	24.190	24.390	0.200	0.322