
Bridge Design Speed Investigation

B-5672

Structure #134 on SR 1310 (Airlie Road) over Bear Swamp

Halifax County



Document Prepared By:

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March 16, 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 "Joshua T. Reinke".

Joshua T. Reinke, PE
Transportation Engineer



Bridge and Approach Investigation Checklist

Project B-5672

Description Bridge #134 over Bear Swamp

Route SR 1310 (Airlie Road)

Division 4

County Halifax

Existing Speed Limit 55 mph ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 55 mph

Speed Data Estimated 55 mph

Ball Bank Speed Study Both approaches straight at bridge.

Warning Signs at Bridge 4x Bridge End Delineators, 2x Weight Limit (20 ton SV, 29 ton TTST)

Roadside Development Wooded

ADT History 630 vpd (From NCDOT TEAAS)

540 vpd (From NCDOT Traffic Volume Map - 2013)

Pedestrian/Bicycle Traffic Minimal Expected

Bridge and Approach
Digital Photos Attached

Approach Lane Width Southwest of Bridge - 18 ft, Northeast of Bridge - 17.75 ft (total width)

Approach Shoulder Width Southwest of Bridge - <1 ft paved, >8 ft grass then water

Shoulder Type Northeast of Bridge - <1 ft paved, >8 ft grass then water

Lane Width (existing bridge) 17.75 ft (total width)

Shoulder width (existing bridge) South side of Bridge - 1.5 ft, North side of Bridge - <1 ft (~20 ft total width)

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section SR 1310 is classified as a rural local facility in the Statewide Functional

Classification System. 2-Lane cross-section is recommended.

Crash History and
Safety Considerations Crash Analysis completed for 01/01/2006 to 12/31/2015. One collision

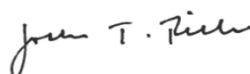
was reported. One collision involved a fixed object.

Comments Area 500 ft east and west of bridge primarily swamp with some wooded

area.

Reasonable Bridge Speed 55 mph

Investigated by: Joshua T. Reinke, PE

Reviewed by: 

County: Halifax

Route: SR 1310 (Airlie Road)

Date: 03/16/16

Northeast-bound



Northeast-bound

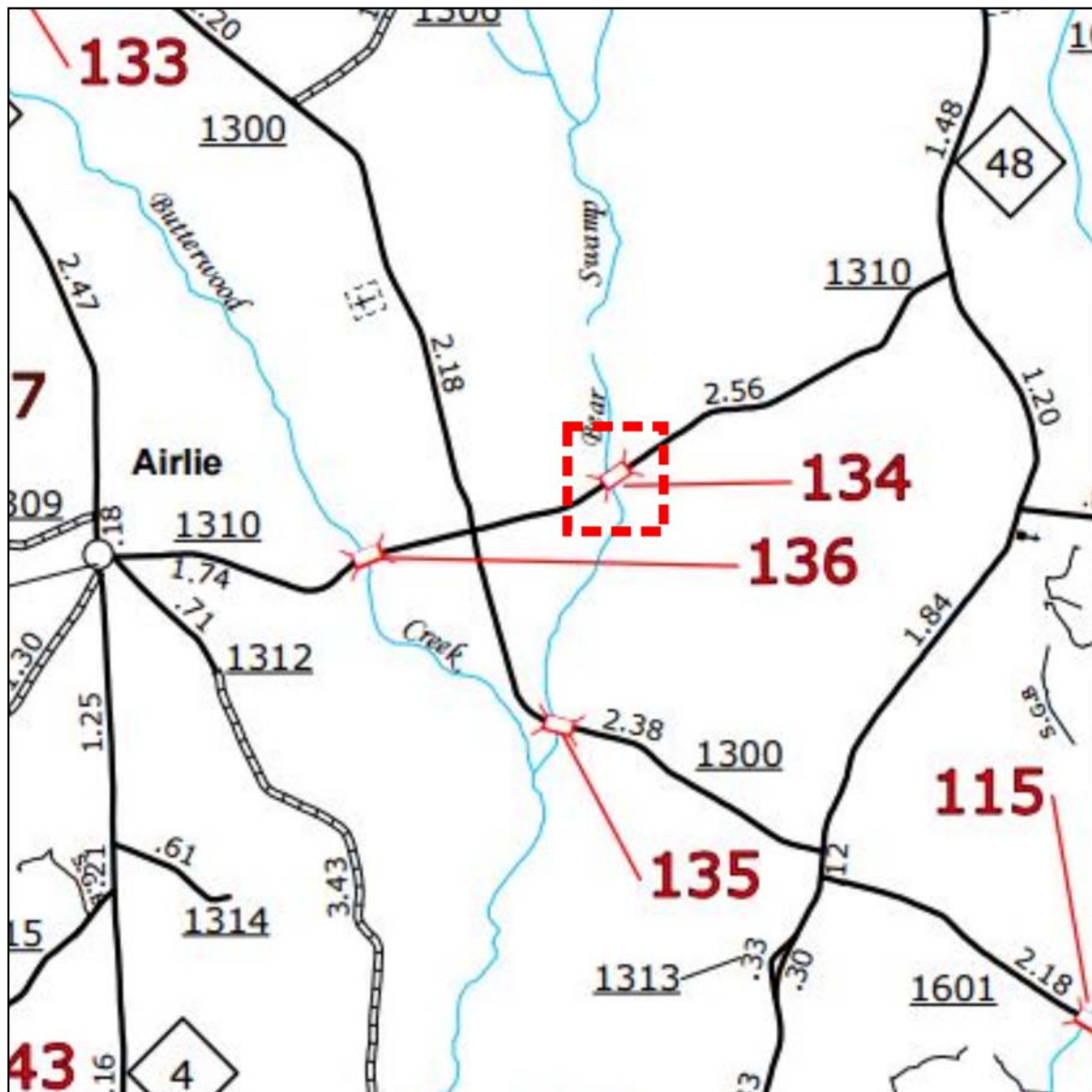


Southwest-bound



Southwest-bound





Bridge Location Map-Bridge #410134

**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:** HALIFAXBRIDGE134
Location: 500 ft. either side of Bridge No. 134 on SR 1310 (Airlie Rd) over Bear 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	104099527	2.476	07/06/2014 02:50	FIXED OBJECT	\$ 8000	0	0	0	1	1	5	1	1	0	0	
Unit 1 : 1 Alchl/Drgs: 1 Speed: 55 MPH Dir: W Veh Mnvr/Ped Actn: 4 Obj Strk: 41																

**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

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Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	1	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	1	100.00
Total Injury Crashes	1	100.00
Property Damage Only Crashes	0	0.00
Night Crashes	1	100.00
Wet Crashes	0	0.00
Alcohol/Drugs Involvement Crashes	1	100.00

Crash Severity Summary

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

Vehicle Exposure Statistics

Annual ADT = 630

Total Length = 0.206 (Miles) 0.332 (Kilometers)

Total Vehicle Exposure = 0.47 (MVMT) 0.76 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	210.99	131.10
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	210.99	131.10
Night Crash Rate	210.99	131.10
Wet Crash Rate	0.00	0.00
EPDO Rate	1772.31	1101.26

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Miscellaneous Statistics

Severity Index =	8.40
EPDO Crash Index =	8.40
Estimated Property Damage Total = \$	8000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	1	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	0	0.00
Class C Injuries	1	100.00
Total Non-Fatal Injuries	1	100.00
Total Injuries	1	100.00

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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	1	100.00
Aug	0	0.00
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	0	0.00
Tue	0	0.00
Wed	0	0.00
Thu	0	0.00
Fri	0	0.00
Sat	0	0.00
Sun	1	100.00

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Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	1	100.00
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	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

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Light and Road Conditions Summary

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

Object Struck Summary

Object Type	Times Struck	Percent of Total
GUARDRAIL END ON SHOULDER	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	1	100.00

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Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
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	0	0	0	0
2014	1	0	1	0
2015	0	0	0	0
Total	1	0	1	0

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	1
2015	0	0
Total	0	1

Miscellaneous Totals

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

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Year	Property Damage	EPDO Index
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 0	0.00
2014	\$ 8000	8.40
2015	\$ 0	0.00
Total	\$ 8000	8.40

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	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	0	0	0	0
2014	0	0	0	1	0	0	0
2015	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0

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Strip Analysis Report

Strip Diagram

Features	Milepost	Crash IDs
Structure:410134	2.37	
	2.38	
	2.39	
	2.40	
	2.41	
	2.42	
	2.43	
	2.44	
	2.45	
	2.46	
	2.47	
	2.48	104099527
	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
HALIFAXBRIDGE134				76.8	8.4	630	

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
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. 134 on SR 1310 (Airlie Rd) over Bear Creek	

Included Accidents	Old MP	New MP	Type
104099527		2.476	I

Fiche Roads	
Name	Code
SR 1310	40001310
AIRLIE	50000274
LILES	50017652

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1310	40001310	2.373	2.579	0.206	0.332