
Bridge Design Speed Investigation

B-5664

Structure #145 on SR 1555 (Barber Mill Road) over Swift Creek

Johnston County



Document Prepared By:

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Principal Investigator

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Transportation Engineer



Bridge and Approach Investigation Checklist

Project B-5664

Description Bridge #145 over Swift Creek

Route SR 1555 (Barber Mill Road)

Division 4

County Johnston

Existing Speed Limit 45 mph ☒ Posted ☐ Statutory

Reasonable & Comfortable Passenger Car Speed 35 mph

Speed Data Estimated 30-45 mph

Ball Bank Speed Study Curve North of Bridge:
30 mph: NB Approach - 7, SB Approach - 9
35 mph: NB Approach - 10, SB Approach - 12
40 mph: NB Approach - 12, SB Approach - 15
45 mph: NB Approach - 15, SB Approach - 20

Warning Signs at Bridge 4x Solid Yellow Guard Rail End Delineators, 2x Weight Limit (19 ton SV, 25 ton TTST), 6x Chevron (3 in each direction north of bridge), 5x 25 mph Cautionary Signs at Curve (4 north of bridge, 1 south of bridge), 2x speed limit signs south of bridge (45 mph and 55 mph),

Roadside Development Wooded/Residential

ADT History 4600 vpd (From NCDOT TEAAS)
4200 vpd (From NCDOT Traffic Volume Map - 2011)

Pedestrian/Bicycle Traffic Minimal Expected

Bridge and Approach Digital Photos Attached

Approach Lane Width South of Bridge - 20.5 ft, North of Bridge - 20.25 ft

Approach Shoulder Width South of Bridge - 1 ft paved, 8 ft grass
Shoulder Type North of Bridge - 1.5 ft paved, 2 ft grass

Lane Width (existing bridge) 19.75 ft (total width)

Shoulder width (existing bridge) <1 ft (~20 ft total width)

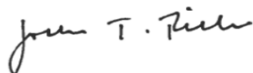
Strategic Corridor / Thoroughfare Designation and Recommended Cross Section SR 1555 is classified as a major collector facility in the Statewide Functional Classification System. 2-lane cross-section is recommended.

Crash History and Safety Considerations Crash data completed from 01/01/11 to 12/31/15. Five collisions were reported. One collision reported involved a fixed object. Two collisions involve a sideswipe from the opposite direction. One collision was a rear end collision. One collision involved a vehicle running off road traveling southbound.

Comments Government Road is located approximately 250 ft north of the bridge.

Reasonable Bridge Speed 35 mph

Investigated by: Joshua T. Reinke, PE

Reviewed by: 

County: Johnston

Route: SR 1555 (Barber Mill Road)

Date: 03/16/16

Northbound



Northbound

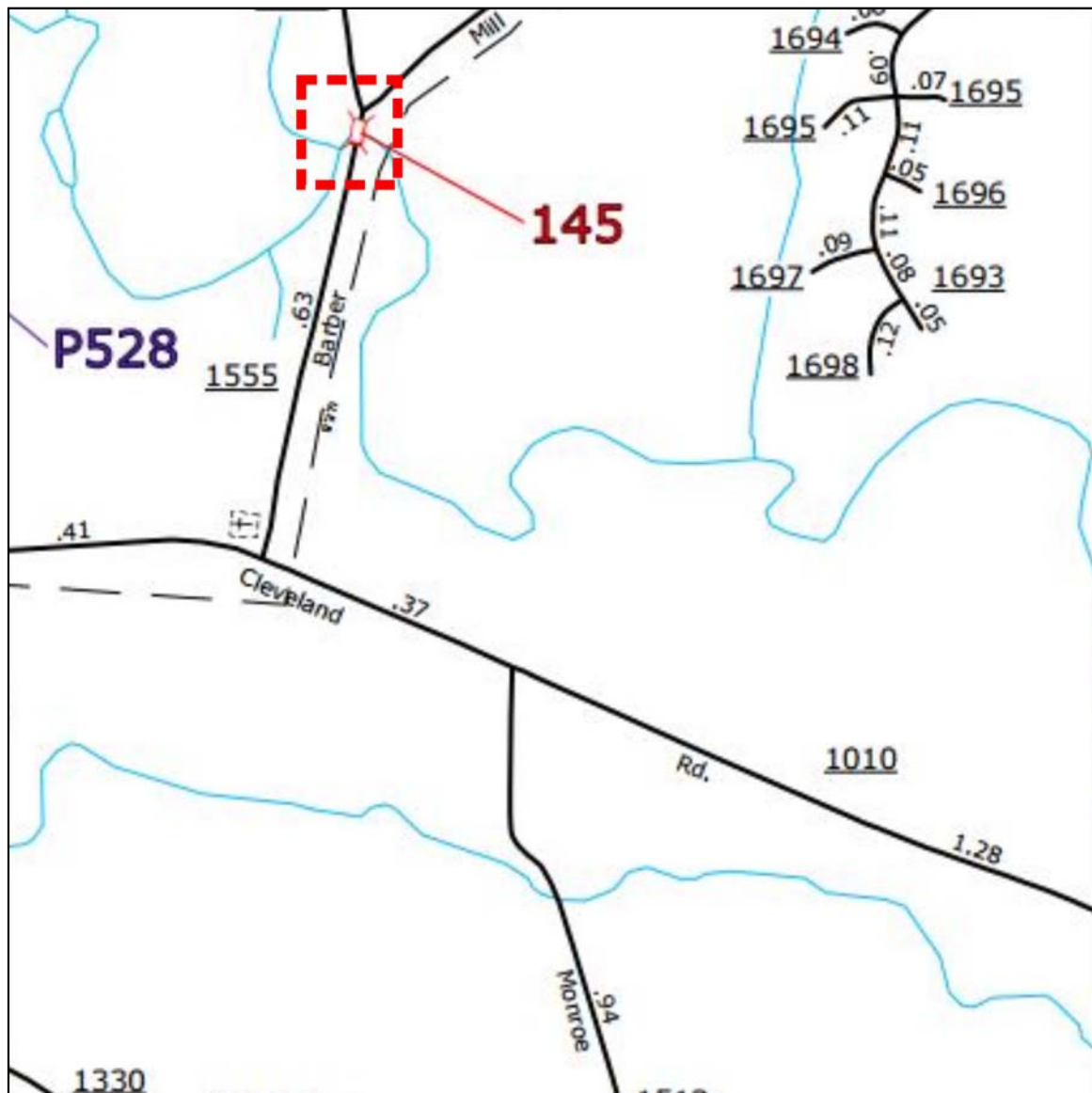


Southbound



Southbound





Bridge Location Map-Bridge #500145

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

Study Criteria Summary

County: JOHNSTON **City:** All and Rural
Date: 1/1/2011 **to** 12/31/2015 **Study:** JOHNSTONBRIDGE145
Location: 500 feet either side of Bridge 145 on SR 1555 (Barber Mill Road) over Swift 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	103996969	0.590	03/08/2014 06:09	RAN OFF ROAD - LEFT	\$ 3000	0	0	0	0	4	3	1	1	0	0	
Unit 1 : 4 Alchl/Drgs: 0 Speed: 45 MPH Dir: S Veh Mnvr/Ped Actn: 4 Obj Strk: 59																
2	104300108	0.590	02/20/2015 15:17	SIDESWIPE, OPPOSITE DIRECTION	\$ 300	0	0	0	0	1	1	1	1	0	13	1
Unit 1 : 5 Alchl/Drgs: 0 Speed: 15 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: Unit 2 : 2 Alchl/Drgs: 0 Speed: 28 MPH Dir: S Veh Mnvr/Ped Actn: 4 Obj Strk:																
3	103264045	0.616	09/22/2011 01:32	FIXED OBJECT	\$ 42000	1	0	0	0	1	5	1	7	0	0	
Unit 1 : 5 Alchl/Drgs: 1 Speed: 65 MPH Dir: SW Veh Mnvr/Ped Actn: 4 Obj Strk: 42																
4	103437047	0.630	04/06/2012 16:53	REAR END, SLOW OR STOP	\$ 1600	0	0	0	0	1	1	1	7	0	13	1
Unit 1 : 1 Alchl/Drgs: 0 Speed: 40 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: Unit 2 : 1 Alchl/Drgs: 0 Speed: 45 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk:																
5	104495607	0.649	09/21/2015 18:10	SIDESWIPE, OPPOSITE DIRECTION	\$ 10500	0	0	0	3	1	1	1	7	0	13	1
Unit 1 : 1 Alchl/Drgs: 3 Speed: 60 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: Unit 2 : 2 Alchl/Drgs: 0 Speed: 45 MPH Dir: S 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

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Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	5	100.00
Fatal Crashes	1	20.00
Non-Fatal Injury Crashes	1	20.00
Total Injury Crashes	2	40.00
Property Damage Only Crashes	3	60.00
Night Crashes	1	20.00
Wet Crashes	0	0.00
Alcohol/Drugs Involvement Crashes	1	20.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	5	100.00
Fatal Crashes	1	20.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	1	20.00
Property Damage Only Crashes	3	60.00

Vehicle Exposure Statistics

Annual ADT = 4600

Total Length = 0.22 (Miles) 0.354 (Kilometers)

Total Vehicle Exposure = 1.85 (MVMT) 2.97 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	270.58	168.13
Fatal Crash Rate	54.12	33.63
Non Fatal Crash Rate	54.12	33.63
Night Crash Rate	54.12	33.63
Wet Crash Rate	0.00	0.00
EPDO Rate	4772.96	2965.78

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Traffic Engineering Accident Analysis System
Strip Analysis Report**

Miscellaneous Statistics

Severity Index =	17.64
EPDO Crash Index =	88.20
Estimated Property Damage Total = \$	57400.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	1	20.00
RAN OFF ROAD - LEFT	1	20.00
REAR END, SLOW OR STOP	1	20.00
SIDESWIPE, OPPOSITE DIRECTION	2	40.00

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	1	25.00
Class A Injuries	0	0.00
Class B Injuries	0	0.00
Class C Injuries	3	75.00
Total Non-Fatal Injuries	3	75.00
Total Injuries	4	100.00

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Strip Analysis Report**

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	0	0.00
Feb	1	20.00
Mar	1	20.00
Apr	1	20.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	0	0.00
Sep	2	40.00
Oct	0	0.00
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	20.00
Tue	0	0.00
Wed	0	0.00
Thu	1	20.00
Fri	2	40.00
Sat	1	20.00
Sun	0	0.00

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Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	1	20.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	1	20.00
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	20.00
1600-1659	1	20.00
1700-1759	0	0.00
1800-1859	1	20.00
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	3	0	0	3
Dark	1	0	0	1
Other	0	0	1	1
Total	4	0	1	5

Object Struck Summary

Object Type	Times Struck	Percent of Total
EMBANKMENT	1	50.00
GUARDRAIL FACE ON SHOULDER	1	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	3	37.50
PICKUP	2	25.00
SPORT UTILITY	1	12.50
VAN	2	25.00

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Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2011	1	1	0	0
2012	1	0	0	1
2013	0	0	0	0
2014	1	0	0	1
2015	2	0	1	1
Total	5	1	1	3

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2011	1	0
2012	0	0
2013	0	0
2014	0	0
2015	0	3
Total	1	3

Miscellaneous Totals

Year	Property Damage	EPDO Index
2011	\$ 42000	76.80
2012	\$ 1600	1.00
2013	\$ 0	0.00
2014	\$ 3000	1.00
2015	\$ 10800	9.40
Total	\$ 57400	88.20

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2011	0	0	0	1	0	0	0
2012	0	0	1	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	2	0

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

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Strip Analysis Report

Strip Diagram

Features	Milepost	Crash IDs
Structure:500145	0.48	
	0.49	
	0.50	
	0.51	
	0.52	
	0.53	
	0.54	
	0.55	
	0.56	
	0.57	
	0.58	
SR 1556 GOVERNMENT	0.59	103996969 104300108
	0.60	
	0.61	
	0.62	103264045
	0.63	103437047
	0.64	
	0.65	104495607
	0.66	
	0.67	
	0.68	
	0.69	
	0.70	

**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
JOHNSTONBRIDGE145				76.8	8.4	4600	40001555

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
JOHNSTON	51	4	All and Rural		0	1/1/2011	12/31/2015	5.00

Location Text	Requestor
500 feet either side of Bridge 145 on SR 1555 (Barber Mill Road) over Swift Creek	

Included Accidents	Old MP	New MP	Type
104300108		0.59	I
103996969		0.59	I

Excluded Accidents
103066077
104299825
104366571

Fiche Roads	
Name	Code
SR 1555	40001555

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1555	40001555	0.480	0.700	0.220	0.354