
Bridge Design Speed Investigation

B-5661

Structure #243 on SR 2123 (Old Dam Road) over Little River

Johnston County



Document Prepared By:

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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-5661

Description Bridge #243 over Little River

Route SR 2123 (Old Dam Road)

Division 4

County Johnston

Existing Speed Limit 55 mph ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 50 mph

Speed Data Estimated 45-55 mph

Ball Bank Speed Study Curve East/West of Bridge:
45 mph: EB Approach - 9, WB Approach - 11
50 mph: EB Approach - 10, WB Approach - 12
55 mph: EB Approach - 12, WB Approach - 14

Warning Signs at Bridge 4x Bridge End Delineators, 4x Solid Yellow Guard Rail End Delineators
2x 35 mph Cautionary Signs at Curve, 2x Weight Limit (31 ton SV,
36 ton TTST)

Roadside Development Wooded/Residential/Agricultural

ADT History 500 vpd (From NCDOT TEAAS)
No posted ADT on NCDOT Traffic Volume Map

Pedestrian/Bicycle Traffic Minimal Expected

Bridge and Approach
Digital Photos Attached

Approach Lane Width West of Bridge - 19.25 ft, East of Bridge - 18.75 ft

Approach Shoulder Width
Shoulder Type West of Bridge: <1 ft paved, >8 ft grass
East of Bridge: 0 - <1 ft paved, 6 - >8

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

Shoulder width (existing bridge) 1 ft on north side, 2.5 ft on sound side (~23.25 ft total width)

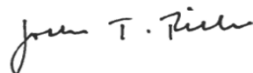
Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section SR 2123 is classified as a rural local facility in the Statewide Functional
Classification System. 2-lane cross-section is recommended.

Crash History and
Safety Considerations Crash data completed from 01/01/06 to 12/31/15. Six collisions were
reported. One collision reported involved a sideswipe from the opposite
direction. Five collisions 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: Johnston

Route: SR 2123 (Old Dam Road)

Date: 03/16/16

Eastbound



Eastbound

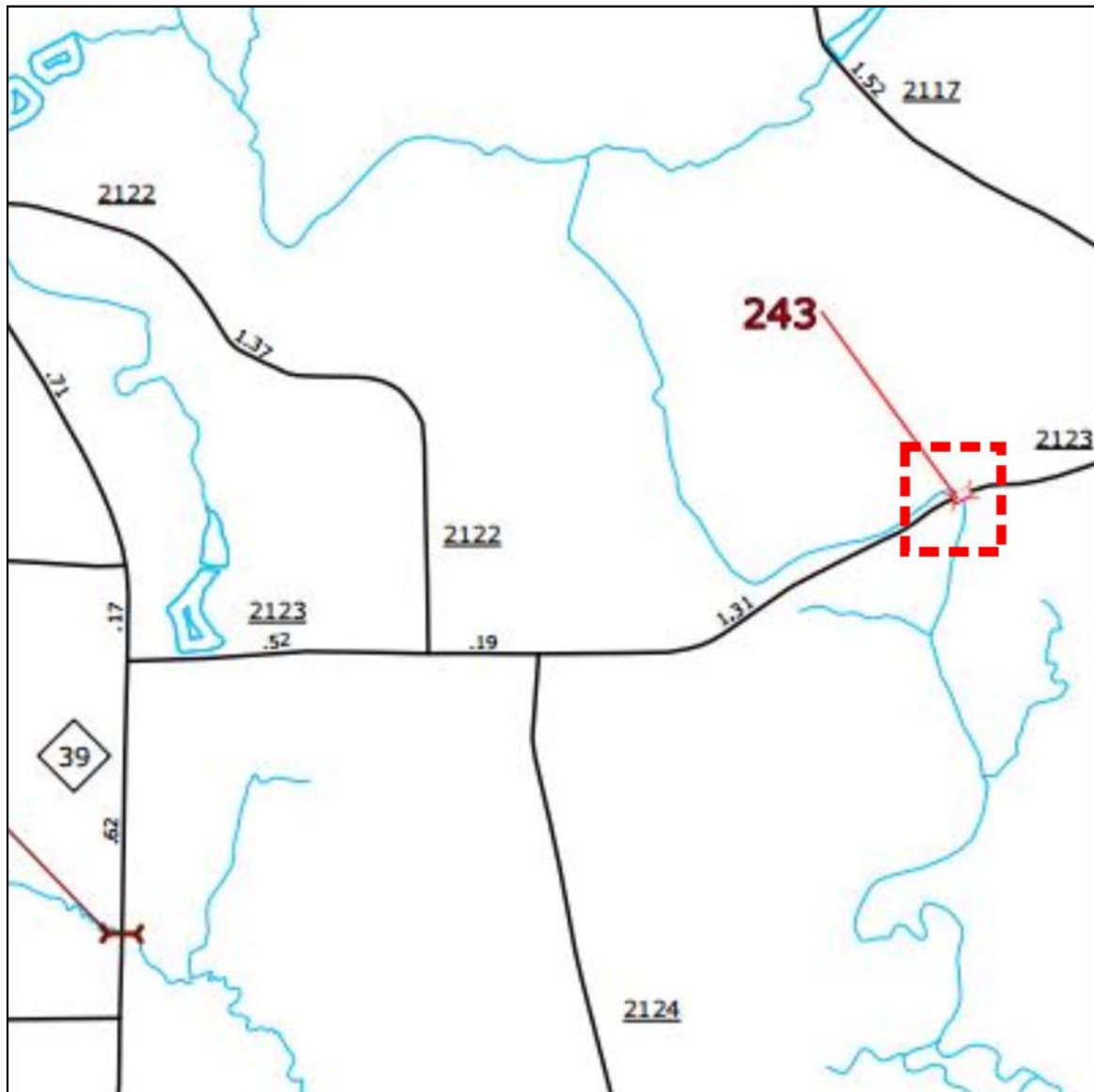


Westbound



Westbound





Bridge Location Map-Bridge #500243

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

Study Criteria Summary

County: JOHNSTON **City:** All and Rural
Date: 1/1/2006 **to** 12/31/2015 **Study:** JOHNSTONBRIDGE243
Location: 700 feet west and 500 feet east of Bridge 243 on SR 2123 (Old Dam Road) over Little River

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	102087945	1.410	07/13/2007 18:20	SIDESWIPE, OPPOSITE DIRECTION	\$ 6000	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drugs:	0	Speed: 55 MPH Dir: E		Veh Mnvr/Ped Actn:				6	Obj Strk:					
Unit	2 : 1	Alchl/Drugs:	0	Speed: 45 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
2	102263777	1.506	02/16/2008 15:30	FIXED OBJECT	\$ 24000	0	0	1	0	1	1	1	5	0	13	1
Unit	1 : 2	Alchl/Drugs:	0	Speed: 55 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk: 37					
3	103507305	1.506	07/24/2012 16:35	FIXED OBJECT	\$ 40000	0	0	4	0	3	1	3	5	0	13	1
Unit	1 : 4	Alchl/Drugs:	0	Speed: 55 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk: 49					
4	103564033	1.506	10/06/2012 22:24	FIXED OBJECT	\$ 1500	0	0	0	0	1	5	1	5	0	13	1
Unit	1 : 2	Alchl/Drugs:	7	Speed: 70 MPH Dir: E		Veh Mnvr/Ped Actn:				4	Obj Strk: 41					
5	103955847	1.506	01/10/2014 23:22	FIXED OBJECT	\$ 11000	0	0	0	0	3	5	3	1	0	13	1
Unit	1 : 1	Alchl/Drugs:	0	Speed: 55 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk: 41					
6	101793082	1.544	07/25/2006 07:22	FIXED OBJECT	\$ 1500	0	0	0	0	2	1	3	1	0	13	1
Unit	1 : 2	Alchl/Drugs:	0	Speed: 55 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk: 58					

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

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Strip Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	6	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	2	33.33
Total Injury Crashes	2	33.33
Property Damage Only Crashes	4	66.67
Night Crashes	2	33.33
Wet Crashes	3	50.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	6	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	2	33.33
Class C Crashes	0	0.00
Property Damage Only Crashes	4	66.67

Vehicle Exposure Statistics

Annual ADT = 500

Total Length = 0.242 (Miles) 0.389 (Kilometers)

Total Vehicle Exposure = 0.44 (MVMT) 0.71 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	1357.80	843.70
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	452.60	281.23
Night Crash Rate	452.60	281.23
Wet Crash Rate	678.90	421.85
EPDO Rate	4707.03	2924.81

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Traffic Engineering Accident Analysis System
Strip Analysis Report**

Miscellaneous Statistics

Severity Index =	3.47
EPDO Crash Index =	20.80
Estimated Property Damage Total = \$	84000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	5	83.33
SIDESWIPE, OPPOSITE DIRECTION	1	16.67

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	5	100.00
Class C Injuries	0	0.00
Total Non-Fatal Injuries	5	100.00
Total Injuries	5	100.00

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Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	1	16.67
Feb	1	16.67
Mar	0	0.00
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	3	50.00
Aug	0	0.00
Sep	0	0.00
Oct	1	16.67
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	0	0.00
Tue	2	33.33
Wed	0	0.00
Thu	0	0.00
Fri	2	33.33
Sat	2	33.33
Sun	0	0.00

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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	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	1	16.67
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	16.67
1600-1659	1	16.67
1700-1759	0	0.00
1800-1859	1	16.67
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	0	0.00
2200-2259	1	16.67
2300-2359	1	16.67

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Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	2	2	0	4
Dark	1	1	0	2
Other	0	0	0	0
Total	3	3	0	6

Object Struck Summary

Object Type	Times Struck	Percent of Total
BRIDGE RAIL END	1	20.00
DITCH	1	20.00
GUARDRAIL END ON SHOULDER	2	40.00
OFFICIAL HIGHWAY SIGN NON-BREAKAWAY	1	20.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	3	42.86
PICKUP	3	42.86
SPORT UTILITY	1	14.29

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Strip Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2006	1	0	0	1
2007	1	0	0	1
2008	1	0	1	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
2012	2	0	1	1
2013	0	0	0	0
2014	1	0	0	1
2015	0	0	0	0
Total	6	0	2	4

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2006	0	0
2007	0	0
2008	0	1
2009	0	0
2010	0	0
2011	0	0
2012	0	4
2013	0	0
2014	0	0
2015	0	0
Total	0	5

Miscellaneous Totals

Year	Property Damage	EPDO Index
2006	\$ 1500	1.00
2007	\$ 6000	1.00
2008	\$ 24000	8.40
2009	\$ 0	0.00
2010	\$ 0	0.00

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Year	Property Damage	EPDO Index
2011	\$ 0	0.00
2012	\$ 41500	9.40
2013	\$ 0	0.00
2014	\$ 11000	1.00
2015	\$ 0	0.00
Total	\$ 84000	20.80

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2006	0	0	0	1	0	0	0
2007	0	0	0	0	0	1	0
2008	0	0	0	1	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	2	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	5	0	1	0

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Strip Analysis Report

Strip Diagram

Features	Milepost	Crash IDs
Structure:500243	1.37	
	1.38	
	1.39	
	1.40	
	1.41	102087945
	1.42	
	1.43	
	1.44	
	1.45	
	1.46	
	1.47	
	1.48	
	1.49	
	1.50	
	1.51	102263777 103507305 103564033 103955847
	1.52	
	1.53	
	1.54	101793082
	1.55	
	1.56	
	1.57	
	1.58	
	1.59	
	1.60	
	1.61	

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Study Criteria

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
JOHNSTONBRIDGE243				76.8	8.4	500	40002123

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	1/1/2006	12/31/2015	10.00

Location Text	Requestor
700 feet west and 500 feet east of Bridge 243 on SR 2123 (Old Dam Road) over Little River	

Included Accidents	Old MP	New MP	Type
102263777		1.506	I
103564033		1.506	I
103955847		1.506	I
103507305		1.506	I
101793082		1.544	I

Fiche Roads

Name	Code
SR 2123	40002123

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 2123	40002123	1.366	1.608	0.242	0.389