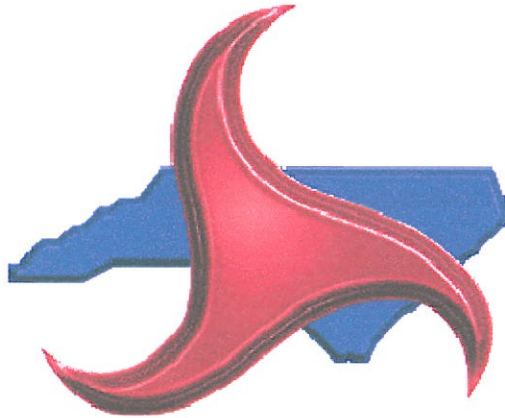


Bridge Design Speed Investigation

17BP.6.R.52

Bridge 175 over Dunn Swamp on SR 1504
Columbus County

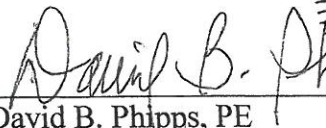


Document Prepared By:

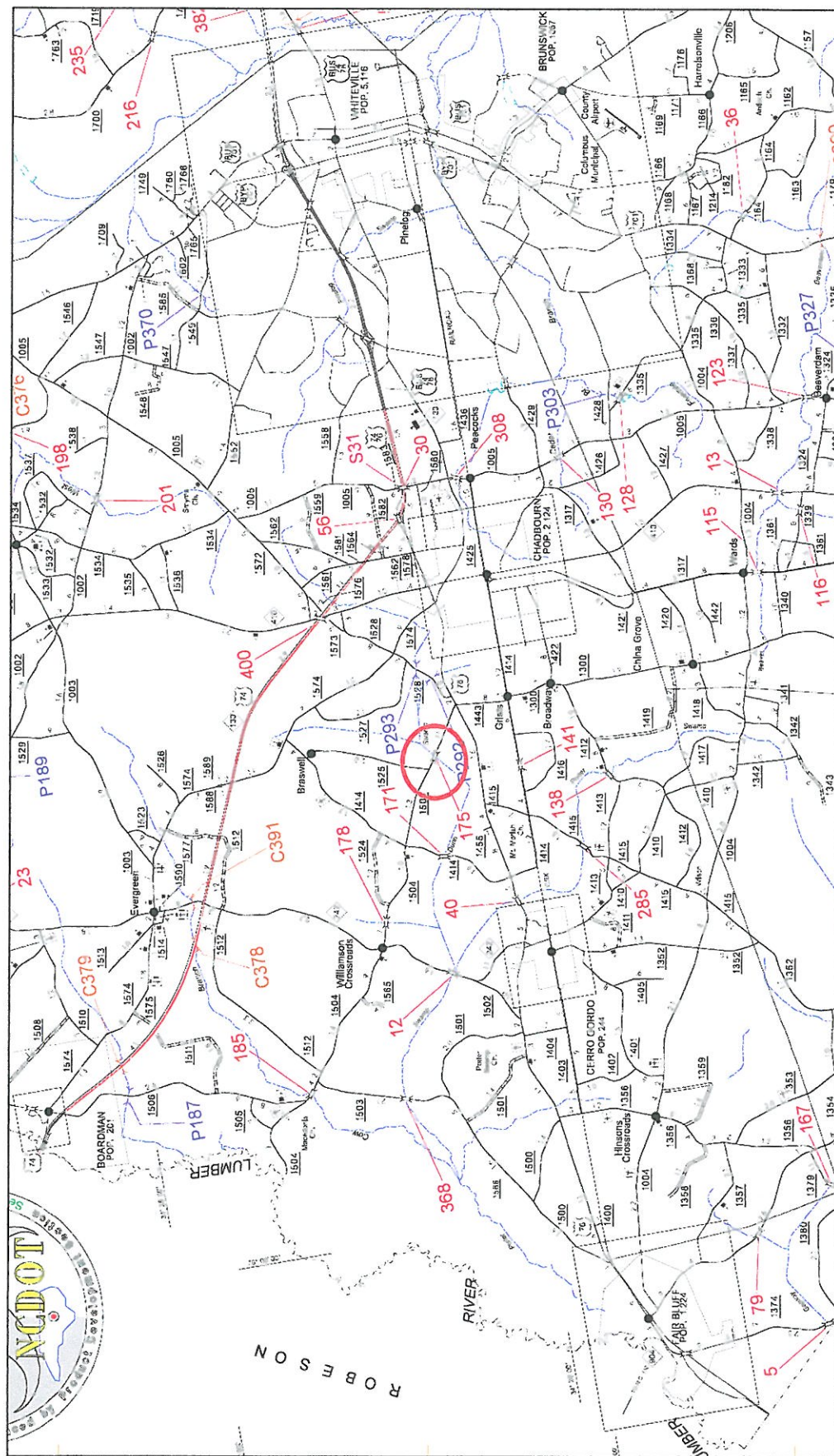
Regional Traffic Office – Sand hills Region
Transportation Mobility and Safety Division
North Carolina Department of Transportation

September 29, 2014

Principal Investigator & Project Manager:


David B. Phipps, PE
Regional Traffic Engineer





Bridge 175 over Dunn Swamp on SR 1504

Columbus County

Bridge and Approach Investigation Checklist

Project 17BP.6.R.52
Description Bridge 175 over Dunn Swamp
Route SR 1504
Division 6
County Columbus

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 55

Speed Data _____

Ball Bank Speed Study Curves along SR 1504 including the bridge approaches are mild and comfortable at the 55 mph statutory speed limit.

Warning Signs at Bridge Type 3 Object Markers (OM-3L and OM-3R) - 2 each.

Roadside Development Swamp land near bridge. This is a rural area with farm land, pastures and homes along the roadway.

ADT History 2008: 900, 2010: 930, 2012: 930.

Pedestrian/Bicycle Traffic Minimal expected.

Bridge and Approach
Digital Photos Attached.

Approach Lane Width 9 feet

Approach Shoulder Width: 5 feet
Shoulder Type Soil and Grass.

Lane Width (existing bridge) 9 feet

Shoulder width (existing bridge) 3 feet

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section N/A

Crash History and
Safety Considerations Three collisions in analysis, including one fatal. One crash involved a vehicle striking the bridge rail. One ROR on approach.

Comments New structure with approach and trailing guardrail should reduce the severity of collisions in the vicinity of bridge 175.

Reasonable Bridge Speed 55

Investigated by: David B. Phipps, PE Reviewed by: David B. Phipps, PE

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

Study Criteria Summary

County: COLUMBUS City: All and Rural
Date: 07/01/2004 to 06/30/2014 Study: COLUMBUSBRIDGE230175
Location: 500 feet on either side of bridge 230175 on SR 1504 (Princess Ann Road)

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	103099157	7.254	02/27/2011 00:55	FIXED OBJECT	\$ 8500	0	0	0	0	1	5	1	3	0	13	1
Unit	1 : 5	Alchl/Drugs: 1	Speed: 50 MPH Dir: N	Veh Mnvr/Ped Actn: 4				Obj Strk: 49								
2	102877884	7.344	05/17/2010 20:30	SIDESWIPE, OPPOSITE DIRECTION	\$ 10365	0	0	0	0	1	2	1	1	0	13	1
Unit	1 : 2	Alchl/Drugs: 0	Speed: 50 MPH Dir: W	Veh Mnvr/Ped Actn: 4				Obj Strk: 58								
Unit	2 : 32	Alchl/Drugs: 7	Speed: 55 MPH Dir: E	Veh Mnvr/Ped Actn: 4				Obj Strk:								
3	103873023	7.354	10/12/2013 21:38	FIXED OBJECT	\$ 7500	1	0	0	0	1	5	1	1	0	13	1
Unit	1 : 2	Alchl/Drugs: 1	Speed: 55 MPH Dir: N	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

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	1	33.33
Non-Fatal Injury Crashes	0	0.00
Total Injury Crashes	1	33.33
Property Damage Only Crashes	2	66.67
Night Crashes	2	66.67
Wet Crashes	0	0.00
Alcohol/Drugs Involvement Crashes	2	66.67

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	3	100.00
Fatal Crashes	1	33.33
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	0	0.00
Property Damage Only Crashes	2	66.67

Vehicle Exposure Statistics

Annual ADT = 900

Total Length = 0.202 (Miles) 0.325 (Kilometers)

Total Vehicle Exposure = 0.66 (MVMT) 1.07 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	451.85	280.77
Fatal Crash Rate	150.62	93.59
Non Fatal Crash Rate	0.00	0.00
Night Crash Rate	301.23	187.18
Wet Crash Rate	0.00	0.00
EPDO Rate	11868.65	7374.84

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

Miscellaneous Statistics

Severity Index =	26.27
EPDO Crash Index =	78.80
Estimated Property Damage Total = \$	26365.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	2	66.67
SIDESWIPE, OPPOSITE DIRECTION	1	33.33

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	1	100.00
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	1	100.00

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	1	33.33
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	1	33.33
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	33.33
Tue	0	0.00
Wed	0	0.00
Thu	0	0.00
Fri	0	0.00
Sat	1	33.33
Sun	1	33.33

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

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	1	33.33
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	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	1	33.33
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	0	0	0	0
Dark	2	0	0	2
Other	1	0	0	1
Total	3	0	0	3

Object Struck Summary

Object Type	Times Struck	Percent of Total
BRIDGE RAIL END	1	33.33
DITCH	2	66.67

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PICKUP	2	50.00
UNKNOWN	1	25.00
VAN	1	25.00

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
2004	0	0	0	0
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	1	0	0	1
2011	1	0	0	1
2012	0	0	0	0
2013	1	1	0	0
2014	0	0	0	0
Total	3	1	0	2

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2004	0	0
2005	0	0
2006	0	0
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	1	0
2014	0	0
Total	1	0

Miscellaneous Totals

Year	Property Damage	EPDO Index
2004	\$ 0	0.00
2005	\$ 0	0.00

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

Year	Property Damage	EPDO Index
2006	\$ 0	0.00
2007	\$ 0	0.00
2008	\$ 0	0.00
2009	\$ 0	0.00
2010	\$ 10365	1.00
2011	\$ 8500	1.00
2012	\$ 0	0.00
2013	\$ 7500	76.80
2014	\$ 0	0.00
Total	\$ 26365	78.80

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &		Angle	Side Swipe	Other
				Fixed Object				
2004	0	0	0	0		0	0	0
2005	0	0	0	0		0	0	0
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	1	0
2011	0	0	0	1		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
Total	0	0	0	2		0	1	0

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

Strip Diagram

Features	Milepost	Crash IDs
Structure:230175	7.17	
	7.18	
	7.19	
	7.20	
	7.21	
	7.22	
	7.23	
	7.24	
	7.25	103099157
	7.26	
	7.27	
	7.28	
	7.29	
	7.30	
	7.31	
	7.32	
	7.33	
	7.34	102877884
	7.35	103873023
	7.36	
	7.37	

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
COLUMBUSBRIDGE230175				76.8	8.4	900	40001504

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

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
COLUMBUS	23	6	All and Rural		0	07/01/2004	06/30/2014	10.00

Location Text	Requestor
500 feet on either side of bridge 230175 on SR 1504 (Princess Ann Road)	

Fiche Roads	
Name	Code
SR 1504	40001504
PRINCESS ANN	50024824
WILLIAMSONS XRD	50033093

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1504	40001504	7.171	7.373	0.202	0.325

County: Columbus

Description: Bridge 175

Route:SR 1504

Looking east



Looking East



Looking West



Looking west

