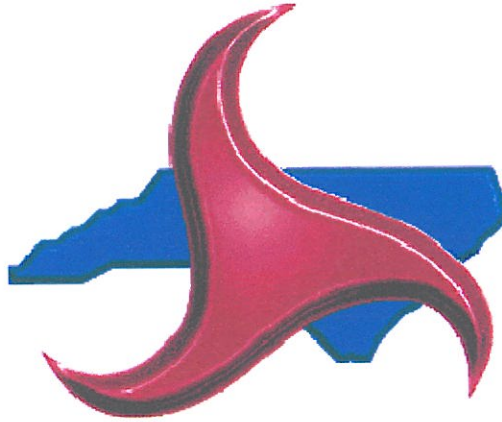


Bridge Design Speed Investigation

17BP.6.R.44
Bridge 13 over Beaver Dam Swamp on NC 410
Columbus County



Document Prepared By:

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

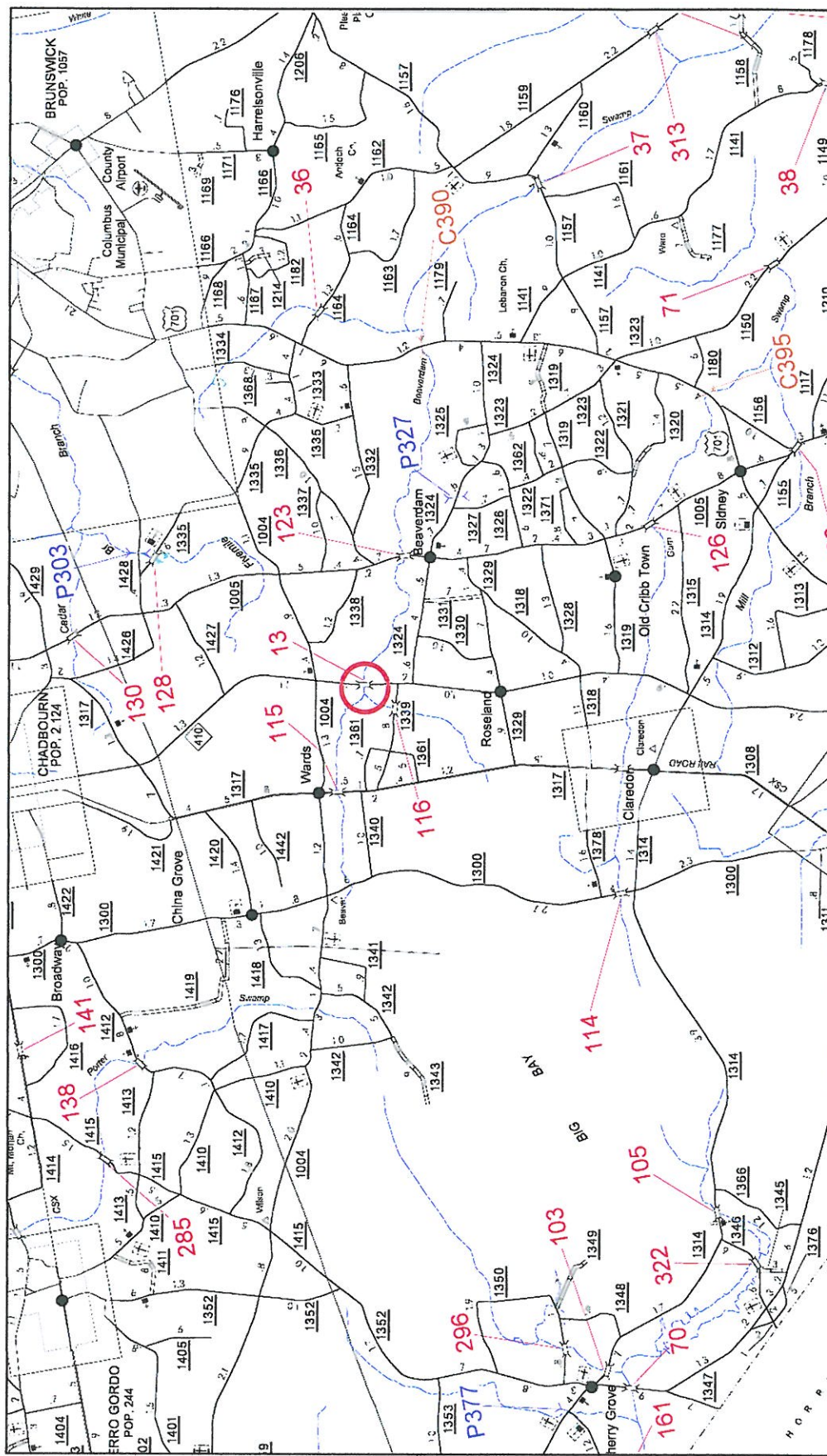
August 29, 2014

Principal Investigator & Project Manager

A handwritten signature in black ink, appearing to read "David B. Phipps".

David B. Phipps, PE
Regional Traffic Engineer





Bridge 13 over Beaver Dam Swamp on NC 410 in Columbus County

Bridge and Approach Investigation Checklist

Project 17BP.6.R.44
Description Bridge 13 over Beaver Dam Swamp
Route NC 410
Division 6
County Columbus

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 55

Speed Data None.

Ball Bank Speed Study Readings indicate this section of NC 410 is safe and reasonable at 55 mph.

Warning Signs at Bridge Retroreflective sheeting on guardrail end units (4)

Roadside Development Farm land, some rural residential development and wooded areas along roadway.

ADT History 2009: 3800, 2010: 4400, 2011: 3900, 2012: 4000, 2013-4400.

Pedestrian/Bicycle Traffic Minimal expected.

Bridge and Approach
Digital Photos Attached

Approach Lane Width 11 ft.

Approach Shoulder Width: 3 ft., 5 ft.
Shoulder Type Paved, Soil/Grass.

Lane Width (existing bridge) 10 ft.

Shoulder width (existing bridge) 2 ft.

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section n/a

Crash History and
Safety Considerations Two collisions in crash analysis unrelated to the bridge.

Comments This is a primary route with 4400 vehicles per day in the most recent adt year.

Reasonable Bridge Speed 55 mph

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: 06/01/2009 to 05/31/2014 Study: MW41000030105
Location: Bridge # 13 over Beaver Dam Swamp on NC 410 (Joe Brown Hwy S), 500 feet on each side.

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	103270039	9.334	10/06/2011 21:42	HEAD ON	\$ 30800	0	0	0	1	1	5	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	1	Speed: 65 MPH Dir: N		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 55 MPH Dir: S		Veh Mnvr/Ped Actn:				4	Obj Strk:					
2	102665036	9.434	08/31/2009 18:08	MOVABLE OBJECT	\$ 1000	0	0	0	0	1	1	2	3	0	0	
Unit	1 : 2	Alchl/Drgs:	0	Speed: 55 MPH Dir: N		Veh Mnvr/Ped Actn:				4	Obj Strk: 18					

**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

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	2	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	1	50.00
Total Injury Crashes	1	50.00
Property Damage Only Crashes	1	50.00
Night Crashes	1	50.00
Wet Crashes	0	0.00
Alcohol/Drugs Involvement Crashes	1	50.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	2	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	1	50.00
Property Damage Only Crashes	1	50.00

Vehicle Exposure Statistics

Annual ADT = 4400

Total Length = 0.198 (Miles) 0.319 (Kilometers)

Total Vehicle Exposure = 1.59 (MVMT) 2.56 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	125.72	78.12
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	62.86	39.06
Night Crash Rate	62.86	39.06
Wet Crash Rate	0.00	0.00
EPDO Rate	590.89	367.16

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

Miscellaneous Statistics

Severity Index =	4.70
EPDO Crash Index =	9.40
Estimated Property Damage Total = \$	31800.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
HEAD ON	1	50.00
MOVABLE OBJECT	1	50.00

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

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	0	0.00
Mar	0	0.00
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	1	50.00
Sep	0	0.00
Oct	1	50.00
Nov	0	0.00
Dec	0	0.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	50.00
Tue	0	0.00
Wed	0	0.00
Thu	1	50.00
Fri	0	0.00
Sat	0	0.00
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	0	0.00
1600-1659	0	0.00
1700-1759	0	0.00
1800-1859	1	50.00
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	1	50.00
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	1	0	0	1
Other	0	0	0	0
Total	2	0	0	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
MOVABLE OBJECT	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	1	33.33
PICKUP	1	33.33
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
2009	1	0	0	1
2010	0	0	0	0
2011	1	0	1	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0
Total	2	0	1	1

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2009	0	0
2010	0	0
2011	0	1
2012	0	0
2013	0	0
2014	0	0
Total	0	1

Miscellaneous Totals

Year	Property Damage	EPDO Index
2009	\$ 1000	1.00
2010	\$ 0	0.00
2011	\$ 30800	8.40
2012	\$ 0	0.00
2013	\$ 0	0.00
2014	\$ 0	0.00
Total	\$ 31800	9.40

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2009	0	0	0	0	0	0	1
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	1

North Carolina Department of Transportation
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Strip Analysis Report

Run Off Road &							
Year	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	Other
2012	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	2

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

Strip Diagram

Features	Milepost	Crash IDs
Structure:230013	9.31	
	9.32	
	9.33	103270039
	9.34	
	9.35	
	9.36	
	9.37	
	9.38	
	9.39	
	9.40	
	9.41	
	9.42	
	9.43	102665036
	9.44	
	9.45	
	9.46	
	9.47	
	9.48	
	9.49	
	9.50	

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
MW41000030105	41000030105			76.8	8.4	4400	30000410

Request Date	Courier Service	Phone No.	Ext.	Fax No.
07/16/2014		910 437 2614		910 437 0211

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
COLUMBUS	23	6	All and Rural		0	06/01/2009	05/31/2014	5.00

Location Text	Requestor
Bridge # 13 over Beaver Dam Swamp on NC 410 (Joe Brown Hwy S), 500 feet on each side.	David Phipps NCDOT Sandhills Region

Excluded Accidents
103954980

Fiche Roads	
Name	Code
NC 410	30000410
JOE BROWN	50015519

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
NC 410	30000410	9.305	9.503	0.198	0.319

County: Columbus

Description: Bridge 13

Route: NC 410

Looking south



Looking south



Looking north



Looking north

