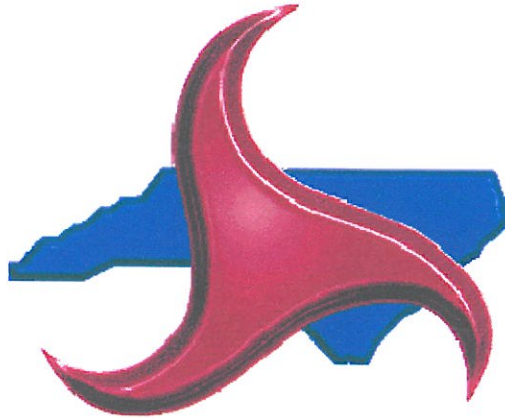


Bridge Design Speed Investigation

17BP.6.R.61

Bridge 308 over Soules Swamp on SR 1005
Columbus County



Document Prepared By:

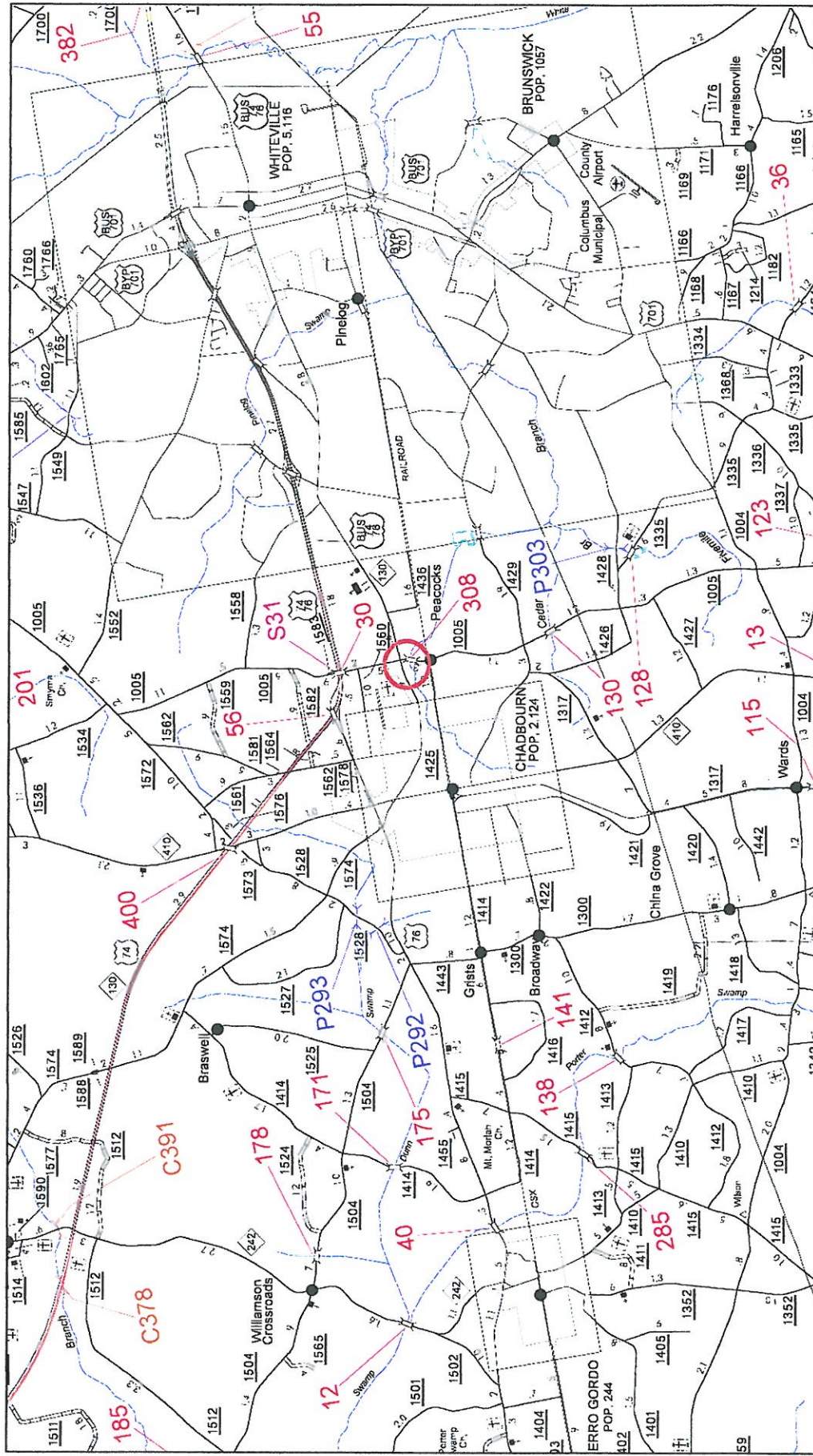
Regional Traffic Office – Sand hills Region
Transportation Mobility and Safety Division
North Carolina Department of Transportation

August 29, 2014

Principal Investigator & Project Manager

David B. Phipps, PE
Regional Traffic Engineer





Bridge 308 over Soules Swamp on SR 1005 in Columbus County

Bridge and Approach Investigation Checklist

Project 17BP.6.R.61
Description Bridge 308 over Soules Swamp
Route SR 1005
Division 6
County Columbus

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 55

Speed Data None.

Ball Bank Speed Study Stop condition just north of structure limits speed southbound. There is an at-grade railroad crossing just south of structure that limits speed somewhat for northbound traffic. Overall roadway is good at 55 mph.

Warning Signs at Bridge Type 3 Object Markers (OM-3L and OM-3R) - 2 each. Stop Ahead Warning sign (W3-1) for northbound traffic.

Roadside Development Rural area with farm land, pastures and some woodland. There is a day care and gas station on SR 1005 just to the north of the bridge.

ADT History 2007: 2000, 2009: 2000, 2011: 2200, 2013: 2500.

Pedestrian/Bicycle Traffic Minimal expected.

Bridge and Approach
Digital Photos Attached

Approach Lane Width 10 ft.

Approach Shoulder Width: 4 ft.
Shoulder Type 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 Three collisions in crash analysis. Two crashes involved a vehicle striking the bridge rail. Approach and trailing guardrail on new structure should reduce the severity of these type collisions.

Comments This section of SR 1005 is safe and reasonable at 55 mph.

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:** MW41000030315
Location: Crash analysis on SR 1005 (Peacocks Rd) for Bridge #308 over Soules Swamp, 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	103713591	16.390	03/29/2013 21:40	ANIMAL	\$ 900	0	0	0	0	1	5	1	1	0	0	
Unit 1 : 1 Alchl/Drugs: 0 Speed: 50 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: 17																
2	103714080	16.461	03/31/2013 10:34	FIXED OBJECT	\$ 7300	0	0	1	0	1	1	2	1	0	13	1
Unit 1 : 1 Alchl/Drugs: 0 Speed: 55 MPH Dir: N Veh Mnvr/Ped Actn: 4 Obj Strk: 50																
3	103669026	16.465	02/01/2013 19:09	FIXED OBJECT	\$ 900	0	0	0	0	1	5	1	1	0	0	
Unit 1 : 1 Alchl/Drugs: 0 Speed: 25 MPH Dir: S Veh Mnvr/Ped Actn: 4 Obj Strk: 49																

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	0	0.00
Non-Fatal Injury Crashes	1	33.33
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	0	0.00

Crash Severity Summary

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

Vehicle Exposure Statistics

Annual ADT = 2200

Total Length = 0.196 (Miles) 0.315 (Kilometers)

Total Vehicle Exposure = 0.79 (MVMT) 1.27 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	381.02	236.75
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	127.01	78.92
Night Crash Rate	254.01	157.84
Wet Crash Rate	0.00	0.00
EPDO Rate	1320.86	820.74

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

Miscellaneous Statistics

Severity Index =	3.47
EPDO Crash Index =	10.40
Estimated Property Damage Total = \$	9100.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANIMAL	1	33.33
FIXED OBJECT	2	66.67

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	1	100.00
Class C Injuries	0	0.00
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	1	33.33
Mar	2	66.67
Apr	0	0.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
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	2	66.67
Sat	0	0.00
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	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	1	33.33
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	1	33.33
2000-2059	0	0.00
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	1	0	0	1
Dark	2	0	0	2
Other	0	0	0	0
Total	3	0	0	3

Object Struck Summary

Object Type	Times Struck	Percent of Total
ANIMAL	1	33.33
BRIDGE RAIL END	1	33.33
BRIDGE RAIL FACE	1	33.33

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	3	100.00

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
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	3	0	1	2
2014	0	0	0	0
Total	3	0	1	2

Injury Totals

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

Miscellaneous Totals

Year	Property Damage	EPDO Index
2009	\$ 0	0.00
2010	\$ 0	0.00
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 9100	10.40
2014	\$ 0	0.00
Total	\$ 9100	10.40

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	0
2010	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
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	2	0	0	1
2014	0	0	0	0	0	0	0
Total	0	0	0	2	0	0	1

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

Strip Diagram

Features	Milepost	Crash IDs
Railroad Crossing:629282K	16.37	
	16.38	
	16.39	103713591
	16.40	
	16.41	
	16.42	
	16.43	
	16.44	
	16.45	
	16.46	103714080
Structure:230308	16.47	103669026
	16.48	
	16.49	
	16.50	
	16.51	
	16.52	
	16.53	
	16.54	
	16.55	
	16.56	

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
MW41000030315	41000030315			76.8	8.4	2200	40001005

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
Crash analysis on SR 1005 (Peacocks Rd) for Bridge #308 over Soules Swamp, 500 feet on each side.	David Phipps NCDOT Sandhills Region

Included Accidents	Old MP	New MP	Type
103669026	17.19	16.465	I
103714080	999.999	16.461	I

Fiche Roads

Name	Code
SR 1005	40001005
PEACOCK	50023637

Strip Road

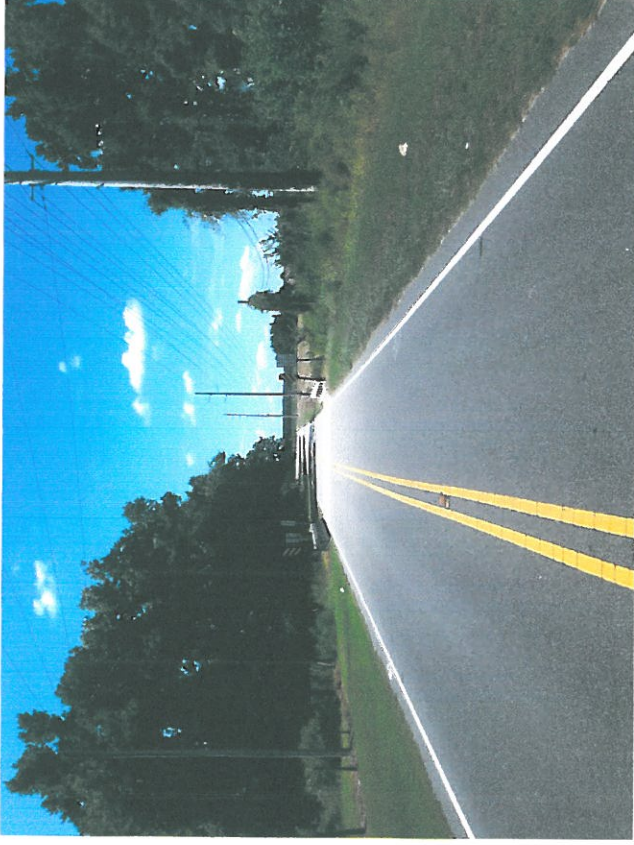
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1005	40001005	16.367	16.563	0.196	0.315

County: Columbus

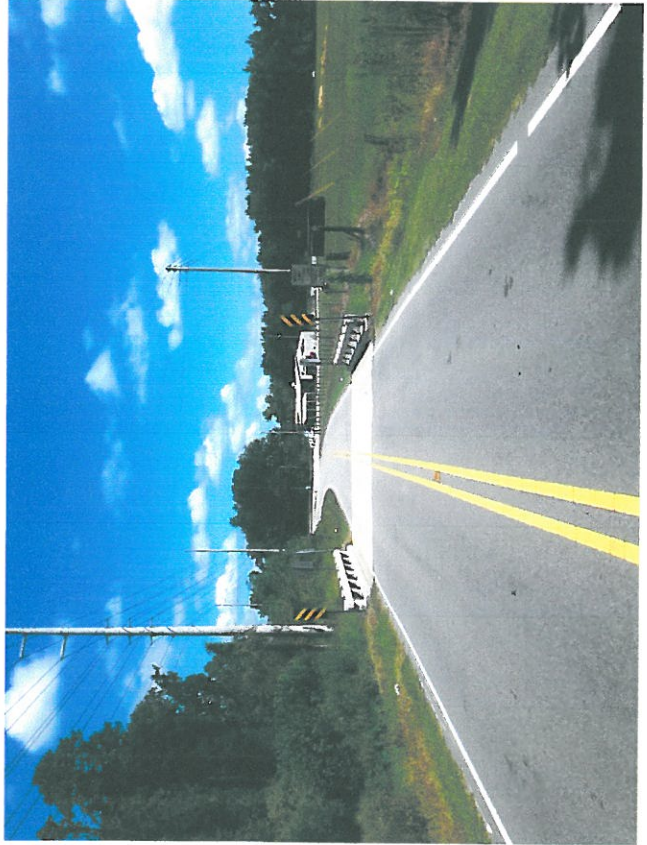
Description: Bridge 308

Route:SR 1005

Looking south



Looking north



Looking south



Looking north

