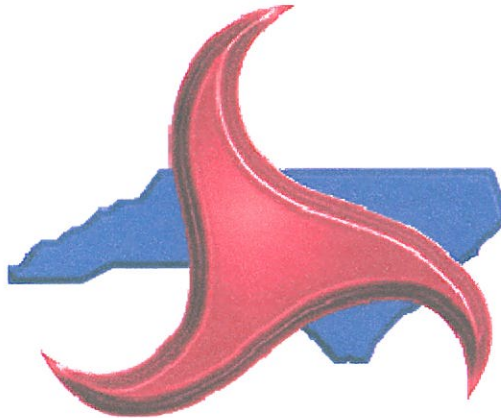


Bridge Design Speed Investigation

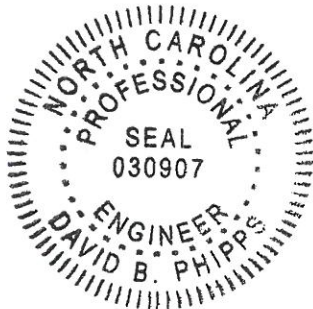
Division 6 Express Design-Build
17BP.6.R.77
Bridge 432 over Back Swamp Canal on SR 1157 (Henry Berry Road)
Robeson County



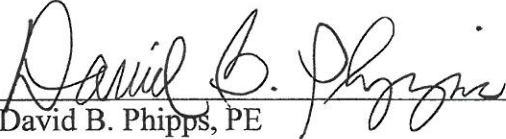
Document Prepared By:

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

July 22, 2016



Principal Investigator & Project Manager


David B. Phipps, PE
Regional Traffic Engineer

Bridge and Approach Investigation Checklist

Project 17BP.6.R.77
Description Bridge 432 over Back Swamp Canal.
Route SR 1157 (Henry Berry Road).
Division 6
County Robeson

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 50-60

Speed Data None

Ball Bank Speed Study 50-60 mph.

Warning Signs at Bridge Type 3 Object Markers (OM-3L and OM-3R) - 2 each, Curve Warning Signs (W1-2) -2.

Roadside Development Farm land, Rural Residential, Some wooded.

ADT History No ADT data available. Low volume road estimated at 500- 1000 ADT.

Pedestrian/Bicycle Traffic Minimal expected.

Bridge and Approach
Digital Photos Attached.

Approach Lane Width 9 ft.

Approach Shoulder Width: 4 ft.
Shoulder Type Soil/Grass.

Lane Width (existing bridge) 9 ft.

Shoulder width (existing bridge) 5 ft.

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section SR 1157 is classified as a local road.
Two lane cross section recommended.

Crash History and
Safety Considerations Two sideswipe type collisions in five year study. The crashes do not appear to have occurred on the existing structure.

Comments Existing structure is weight restricted 19/27 Tons.
The bridge is located within a horizontal curve and has a superelevated bridge deck.

Reasonable Bridge Speed 55 mph

Investigated by: David B. Phipps, PE

Reviewed by: David B. Phipps, PE

County: Robeson

Description:

Bridge 432

Route: SR 1157

Looking North



Looking South

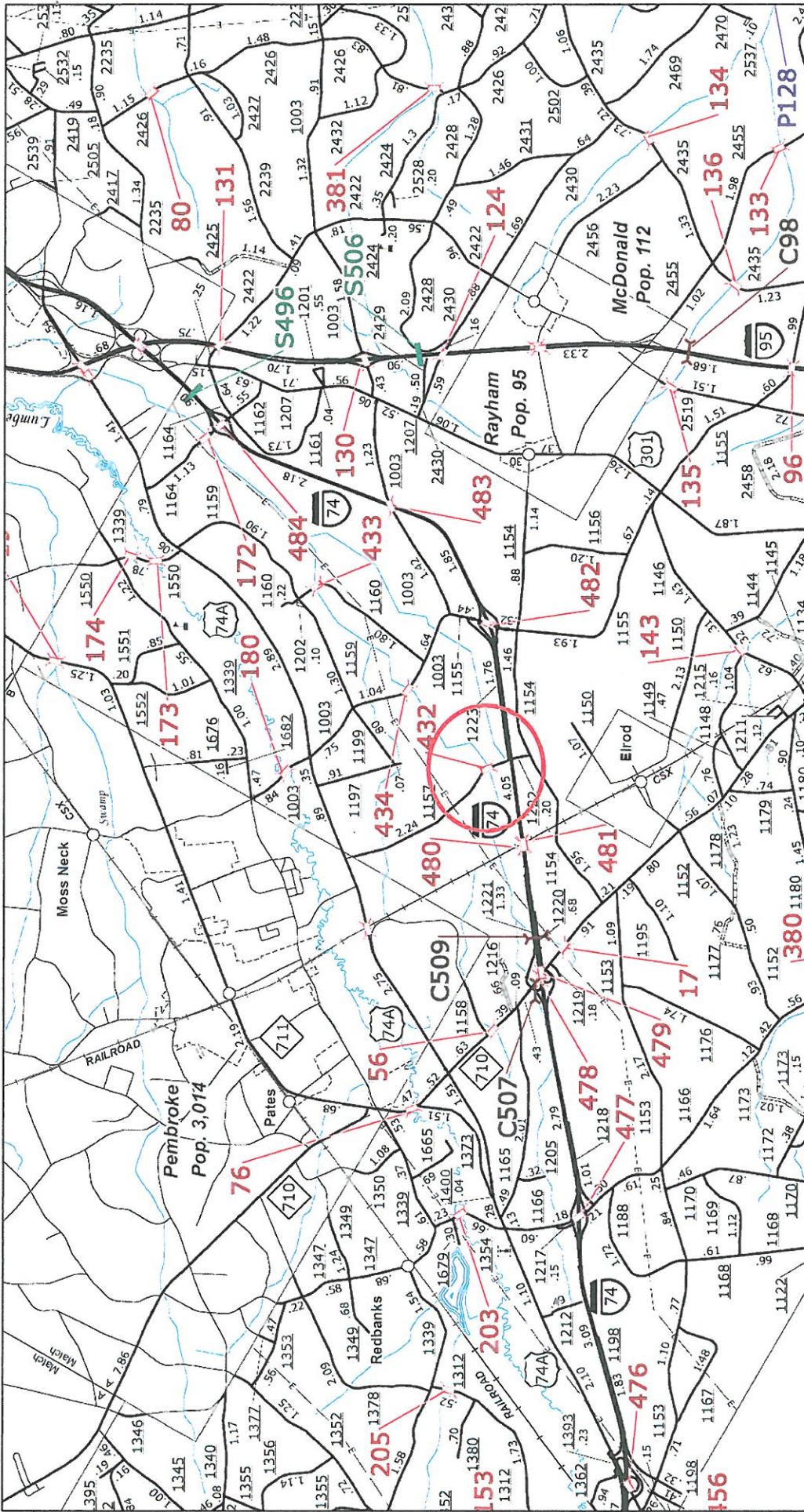


Looking North



Looking South





Bridge 432 Over Back Swamp Canal on SR 1157 (Henry Berry Road)

Robeson County

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

Study Criteria Summary

County: ROBESON City: All and Rural
Date: 06/01/2006 to 05/31/2016 Study: ROBESONBRIDGE432
Location: On SR 1157 (HENRY BERRY RD) FROM 500 NORTH OF BRIDGE TO 500 FEET SOUTH OF BRIDGE 432

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	104654416	0.235	02/21/2016 20:42	SIDESWIPE, OPPOSITE DIRECTION	\$ 100	0	0	0	0	1	5	1	1	0	0	
Unit	1 : 32	Alchl/Drugs: 7	Speed: 55 MPH Dir: S	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	2 : 2	Alchl/Drugs: 0	Speed: 55 MPH Dir: N	Veh Mnvr/Ped Actn: 4				Obj Strk:								
2	102381031	0.335	08/04/2008 20:43	SIDESWIPE, SAME DIRECTION	\$ 7000	0	0	0	1	7	5	1	1	4	10	1
Unit	1 : 32	Alchl/Drugs: 7	Speed: 55 MPH Dir: S	Veh Mnvr/Ped Actn: 6				Obj Strk:								
Unit	2 : 2	Alchl/Drugs: 0	Speed: 45 MPH Dir: S	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	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	2	100.00
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	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 = 500

Total Length = 0.202 (Miles) 0.325 (Kilometers)

Total Vehicle Exposure = 0.37 (MVMT) 0.59 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	542.07	336.83
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	271.04	168.41
Night Crash Rate	542.07	336.83
Wet Crash Rate	0.00	0.00
EPDO Rate	2547.75	1583.10

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 = \$	7100.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
SIDESWIPE, OPPOSITE DIRECTION	1	50.00
SIDESWIPE, SAME DIRECTION	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	1	50.00
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	0	0.00
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	0	0.00
Fri	0	0.00
Sat	0	0.00
Sun	1	50.00

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	0	0.00
1900-1959	0	0.00
2000-2059	2	100.00
2100-2159	0	0.00
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	0	0	0	0
Dark	1	0	1	2
Other	0	0	0	0
Total	1	0	1	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
DITCH	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PICKUP	2	50.00
UNKNOWN	2	50.00

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
2006	0	0	0	0
2007	0	0	0	0
2008	1	0	1	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0
2015	0	0	0	0
2016	1	0	0	1
Total	2	0	1	1

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	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
Total	0	1

Miscellaneous Totals

Year	Property Damage	EPDO Index
2006	\$ 0	0.00
2007	\$ 0	0.00
2008	\$ 7000	8.40

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

Year	Property Damage	EPDO Index
2009	\$ 0	0.00
2010	\$ 0	0.00
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 0	0.00
2014	\$ 0	0.00
2015	\$ 0	0.00
2016	\$ 100	1.00
Total	\$ 7100	9.40

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	0	0	1	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	0	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	1	0
Total	0	0	0	0	0	2	0

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

Strip Diagram

Features	Milepost	Crash IDs
Structure:770432	0.14	
	0.15	
	0.16	
	0.17	
	0.18	
	0.19	
	0.20	
	0.21	
	0.22	
	0.23	104654416
	0.24	
	0.25	
	0.26	
	0.27	
	0.28	
	0.29	
	0.30	
	0.31	
	0.32	
	0.33	
	0.34	102381031

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
ROBESONBRIDGE432				76.8	8.4	500	40001157

Request Date	Courier Service	Phone No.	Ext.	Fax No.
		919-707-6604		

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
ROBESON	78	6	All and Rural		0	06/01/2006	05/31/2016	10.00

Location Text	Requestor
On SR 1157 (HENRY BERRY RD) FROM 500 NORTH OF BRIDGE TO 500 FEET SOUTH OF BRIDGE 432	Virginia Mabry Manager of Priority Projects Unit

Excluded Accidents
103051121

Fiche Roads	
Name	Code
SR 1157	40001157
HENRY BERRY RD	50013703
SR 1223	40001223

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1157	40001157	0.139	0.341	0.202	0.325