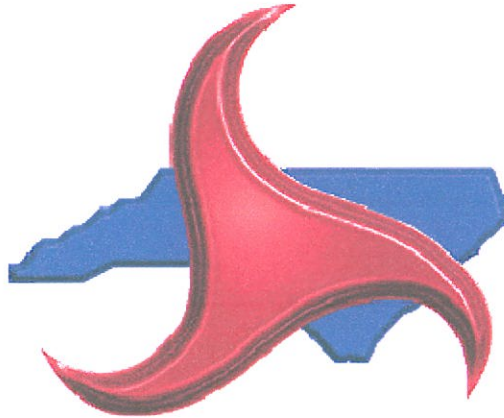


Bridge Design Speed Investigation

Division 6 Express Design-Build

17BP.6.R.77

Bridge 433 over Back Swamp on SR 1160 (Addison Tram Road)
Robeson County



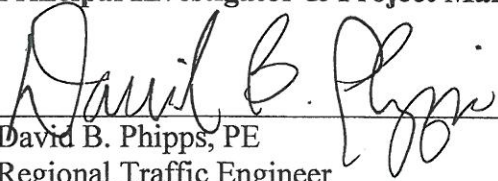
Document Prepared By:

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 433 over Back Swamp.
Route SR 1160 (Addison Tram 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.

Roadside Development Farm land, Moderate Rural Residential Development, Recently Timbered Woodland.

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: 5-10 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 1160 is classified as a local road.
Two lane cross section recommended.

Crash History and
Safety Considerations Two fixed object collisions in five year study. Crashes occurred in the horizontal curve. One vehicle struck a driveway pipe and the other struck a tree.

Comments Existing structure is weight restricted 20/29 Tons.
The bridge is located at the end of a horizontal curve just to the south.
The curve is relatively mild.

Reasonable Bridge Speed 55 mph

Investigated by: David B. Phipps, PE

Reviewed by: David B. Phipps, PE

County: Robeson

Description: Bridge 433

Route: SR 1160

Looking North



Looking South

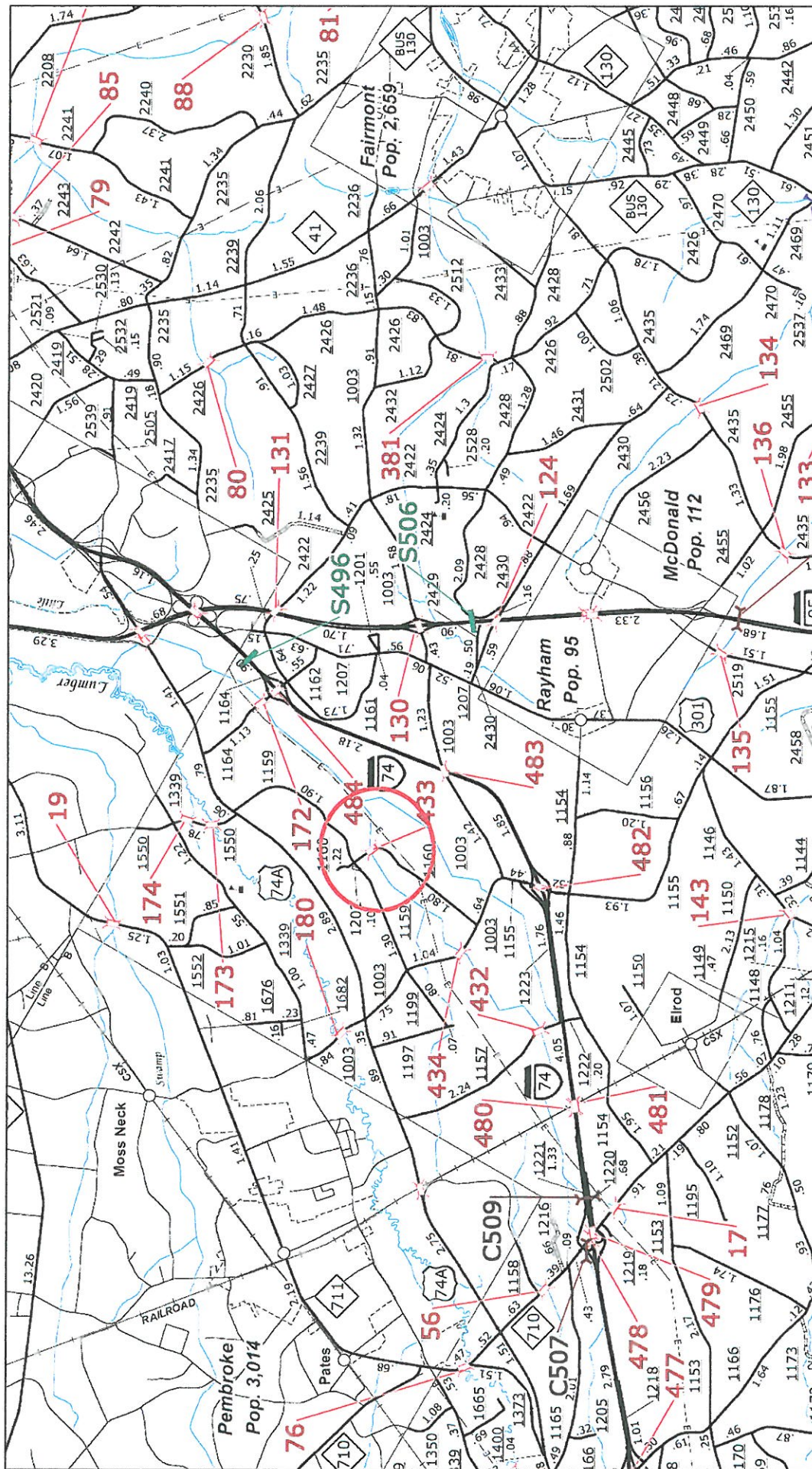


Looking North



Looking South





Bridge 433 Over Back Swamp on SR 1160 (Addison Tram 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: ROBESONBRIDGE433
Location: On SR 1160 (ADDISON TRAM RD) FROM 500 NORTH OF BRIDGE TO 500 FEET SOUTH OF BRIDGE 433

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	102397839	0.520	08/30/2008 19:39	FIXED OBJECT	\$ 5000	0	0	0	2	1	2	2	4	0	13	1
Unit	1 : 20	Alchl/Drugs:	5	Speed:	55 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:		57			
2	103782457	0.520	06/22/2013 11:02	FIXED OBJECT	\$ 5000	0	0	0	1	2	1	2	5	0	13	1
Unit	1 : 1	Alchl/Drugs:	0	Speed:	55 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:		33			

**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	2	100.00
Total Injury Crashes	2	100.00
Property Damage Only Crashes	0	0.00
Night Crashes	0	0.00
Wet Crashes	1	50.00
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	2	100.00
Property Damage Only Crashes	0	0.00

Vehicle Exposure Statistics

Annual ADT = 530

Total Length = 0.202 (Miles) 0.325 (Kilometers)

Total Vehicle Exposure = 0.39 (MVMT) 0.63 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	511.39	317.76
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	511.39	317.76
Night Crash Rate	0.00	0.00
Wet Crash Rate	255.70	158.88
EPDO Rate	4295.68	2669.21

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

Miscellaneous Statistics

Severity Index =	8.40
EPDO Crash Index =	16.80
Estimated Property Damage Total = \$	10000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	2	100.00

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	3	100.00
Total Non-Fatal Injuries	3	100.00
Total Injuries	3	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	1	50.00
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	0	0.00
Tue	0	0.00
Wed	0	0.00
Thu	0	0.00
Fri	0	0.00
Sat	2	100.00
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	1	50.00
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	50.00
2000-2059	0	0.00
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	1	0	1
Dark	0	0	0	0
Other	1	0	0	1
Total	1	1	0	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
CATCH BASIN OR CULVERT ON MEDIAN	1	50.00
TREE	1	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
MOTORCYCLE	1	50.00
PASSENGER CAR	1	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	1	0	1	0
2014	0	0	0	0
2015	0	0	0	0
2016	0	0	0	0
Total	2	0	2	0

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2006	0	0
2007	0	0
2008	0	2
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	1
2014	0	0
2015	0	0
2016	0	0
Total	0	3

Miscellaneous Totals

Year	Property Damage	EPDO Index
2006	\$ 0	0.00
2007	\$ 0	0.00
2008	\$ 5000	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	\$ 5000	8.40
2014	\$ 0	0.00
2015	\$ 0	0.00
2016	\$ 0	0.00
Total	\$ 10000	16.80

Type of Accident Totals

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

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

Strip Diagram

Features	Milepost	Crash IDs
Structure:770433	0.35	
	0.36	
	0.37	
	0.38	
	0.39	
	0.40	
	0.41	
	0.42	
	0.43	
	0.44	
	0.45	
	0.46	
	0.47	
	0.48	
	0.49	
	0.50	
	0.51	
	0.52	102397839 103782457
	0.53	
	0.54	
	0.55	

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
ROBESONBRIDGE433				76.8	8.4	530	40001160

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 1160 (ADDISON TRAM RD) FROM 500 NORTH OF BRIDGE TO 500 FEET SOUTH OF BRIDGE 433	Virginia Mabry Manager of Priority Projects Unit

Included Accidents	Old MP	New MP	Type
103782457	0	0.52	I

Fiche Roads

Name	Code
SR 1160	40001160
ADDISON TRAM	50000198

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1160	40001160	0.346	0.548	0.202	0.325