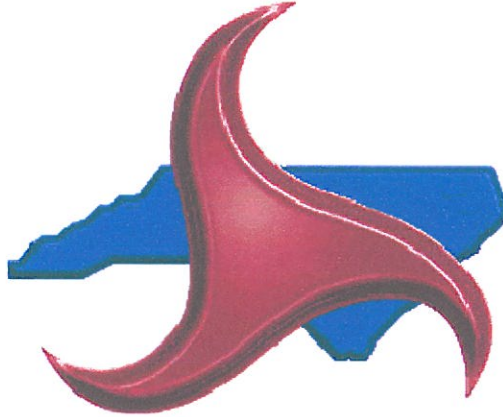


17BP.9.R.62 Bridge Design Speed Study

Bridge #840104 on SR 1695 (Dodgetown Rd)

Stokes County

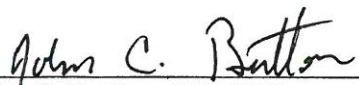


Document Prepared By:

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

December 9, 2014

Principal Investigator:



John C. Button, PE, PLS
Triad Regional Traffic Safety Engineer



Bridge and Approach Investigation Checklist

Project 17BP.9.R.62
Description Bridge #840104 over Dan River
Route SR 1695 (Dodgetown Road)
Division 9
County Stokes

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 55 mph

Speed Data Two speed data points obtained: 59 mph and 60 mph

Ball Bank Speed Study 10 degrees at 55 mph for curve located north of bridge.

Warning Signs at Bridge (4) W10-23 signs delineating bridge ends

Roadside Development Rural

ADT History 2013 AADT = 1900 vpd per NCDOT Traffic Map.
2003 AADT = 1900 vpd per NCDOT Traffic Map.

Pedestrian/Bicycle Traffic Some bike and pedestrian usage possible. Canoeist/Kayakers use bridge location as a river access point. SR 1695 is not listed as a bicycle route or pedestrian route on the Stokes County Comprehensive Plan Maps.

Bridge and Approach
Digital Photos See attached photos.

Approach Lane Width 25'-2" overall pavement width; 10'-0"/10'-1" lane widths.

Approach Shoulder Width: 15"/19" paved shoulder, Grass Shoulders varies from 3' to 6' +/-
Shoulder Type Paved/Grass

Lane Width (existing bridge) 24'-0" overall pavement width; 9'-3"/9'-3" lane widths.

Shoulder width (existing bridge) 11"/14"

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section According to NCDOT Functional Class Map, SR 1695 is a minor collector.
Recommend the 3R Guideline of 11' lane widths and 6' (2' paved + 4' grass) should
(9' shoulder widths where guardrail is installed) as a minimum cross section.

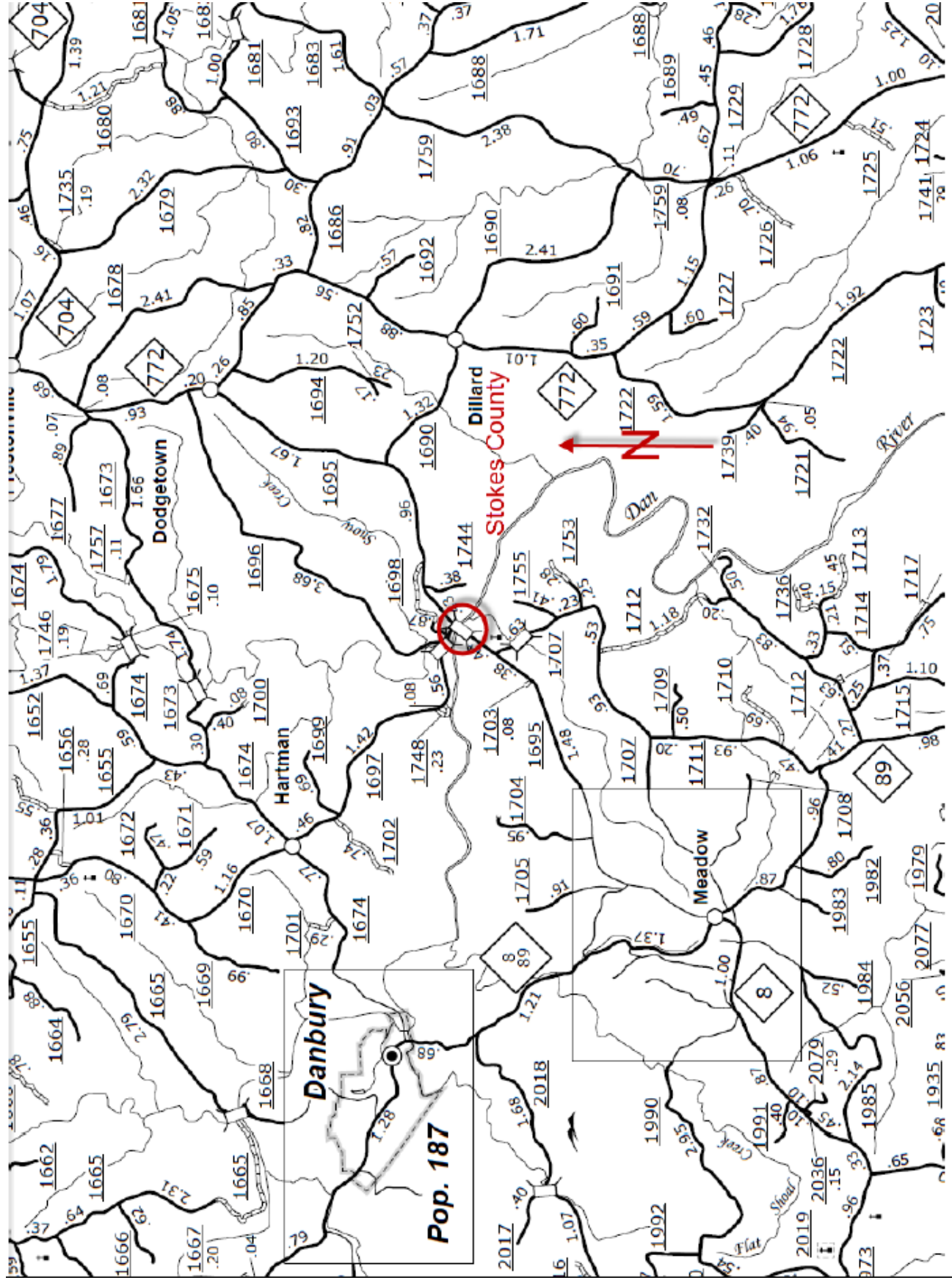
Crash History and
Safety Considerations Four crashes reported in the vicinity of the bridge from 10/01/2009 to 9/30/2014.
None of these crashes appear to be related to the bridge or bridge approaches.

Comments _____

Reasonable Bridge Speed 60 mph

Investigated by: John Button 11/26/2014 Reviewed by: _____

Bridge #840104 Location Map















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

Study Criteria Summary

County: STOKES **City:** All and Rural
Date: 10/1/2009 **to** 9/30/2014 **Study:** 41000032353
Location: 500 feet on Both Sides of Bridge Number 104 on Secondary Route 1695 (Dodgetown Road) over Dan River

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	102869748	3.280	05/21/2010 13:35	LEFT TURN, DIFFERENT ROADWAYS	\$ 1300	0	0	0	1	1	1	2	7	0	1	1
Unit	1 : 5	Alchl/Drugs:	0	Speed: 5 MPH Dir: NE		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 2	Alchl/Drugs:	0	Speed: 55 MPH Dir: SW		Veh Mnvr/Ped Actn: 4				Obj Strk: 42						
2	103540589	3.280	09/07/2012 19:00	FIXED OBJECT	\$ 2400	0	0	0	0	1	1	1	1	0	13	1
Unit	1 : 1	Alchl/Drugs:	0	Speed: 10 MPH Dir: N		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 2	Alchl/Drugs:	0	Speed: 55 MPH Dir: S		Veh Mnvr/Ped Actn: 4				Obj Strk: 42						
3	103332033	3.420	12/18/2011 19:41	ANIMAL	\$ 4000	0	0	0	0	1	5	1	3	0	13	1
Unit	1 : 4	Alchl/Drugs:	0	Speed: 45 MPH Dir: N		Veh Mnvr/Ped Actn: 4				Obj Strk: 17						
4	104167206	3.420	09/29/2014 09:19	FIXED OBJECT	\$ 2000	0	0	0	0	2	1	2	3	0	13	1
Unit	1 : 1	Alchl/Drugs:	7	Speed: 55 MPH Dir: N		Veh Mnvr/Ped Actn: 4				Obj Strk: 59						

**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	4	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	1	25.00
Total Injury Crashes	1	25.00
Property Damage Only Crashes	3	75.00
Night Crashes	1	25.00
Wet Crashes	1	25.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	4	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	0	0.00
Class C Crashes	1	25.00
Property Damage Only Crashes	3	75.00

Vehicle Exposure Statistics

Annual ADT = 1800

Total Length = 0.256 (Miles) 0.412 (Kilometers)

Total Vehicle Exposure = 0.84 (MVMT) 1.35 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	475.39	295.39
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	118.85	73.85
Night Crash Rate	118.85	73.85
Wet Crash Rate	118.85	73.85
EPDO Rate	1354.85	841.87

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

Miscellaneous Statistics

Severity Index =	2.85
EPDO Crash Index =	11.40
Estimated Property Damage Total = \$	9700.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANIMAL	1	25.00
FIXED OBJECT	2	50.00
LEFT TURN, DIFFERENT ROADWAYS	1	25.00

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	1	25.00
Jun	0	0.00
Jul	0	0.00
Aug	0	0.00
Sep	2	50.00
Oct	0	0.00
Nov	0	0.00
Dec	1	25.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	25.00
Tue	0	0.00
Wed	0	0.00
Thu	0	0.00
Fri	2	50.00
Sat	0	0.00
Sun	1	25.00

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	1	25.00
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	1	25.00
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	2	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	2	1	0	3
Dark	1	0	0	1
Other	0	0	0	0
Total	3	1	0	4

Object Struck Summary

Object Type	Times Struck	Percent of Total
ANIMAL	1	25.00
EMBANKMENT	1	25.00
GUARDRAIL FACE ON SHOULDER	2	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	2	33.33
PICKUP	2	33.33
SPORT UTILITY	1	16.67
VAN	1	16.67

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	1	0	1	0
2011	1	0	0	1
2012	1	0	0	1
2013	0	0	0	0
2014	1	0	0	1
Total	4	0	1	3

Injury Totals

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

Miscellaneous Totals

Year	Property Damage	EPDO Index
2009	\$ 0	0.00
2010	\$ 1300	8.40
2011	\$ 4000	1.00
2012	\$ 2400	1.00
2013	\$ 0	0.00
2014	\$ 2000	1.00
Total	\$ 9700	11.40

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	1	0	0	0	0	0	0
2011	0	0	0	0	0	0	1

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

Year	Run Off Road &						
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	Other
2012	0	0	0	1	0	0	0
2013	0	0	0	0	0	0	0
2014	0	0	0	1	0	0	0
Total	1	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
	3.18	
	3.19	
	3.20	
	3.21	
	3.22	
	3.23	
	3.24	
	3.25	
	3.26	
	3.27	
SR 1670 SR 1697 SR 1698	3.28	102869748 103540589
Structure:840104	3.29	
	3.30	
	3.31	
	3.32	
	3.33	
	3.34	
	3.35	
	3.36	
	3.37	
	3.38	
	3.39	
	3.40	
	3.41	
	3.42	103332033 104167206
	3.43	
	3.44	

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
41000032353	41000032353			76.8	8.4	1800	40001695

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

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
STOKES	84	9	All and Rural		0	10/1/2009	9/30/2014	5.00

Location Text	Requestor
500 feet on Both Sides of Bridge Number 104 on Secondary Route 1695 (Dodgetown Road) over Dan River	Brian C. Thomas, PE Triad Region

Excluded Accidents
102844403

Fiche Roads	
Name	Code
SR 1695	40001695
DODGETOWN	50008579

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1695	40001695	3.182	3.438	0.256	0.412