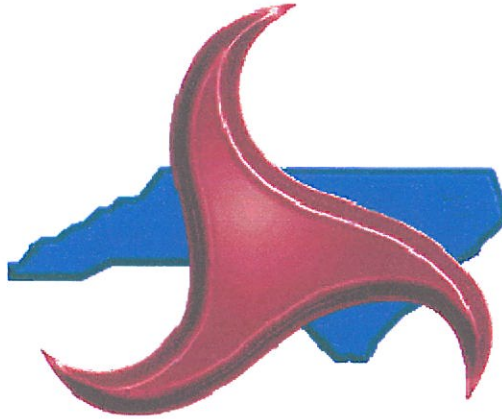


17BP.9.R.62 Bridge Design Speed Study

Bridge #280258 on SR 1272 (Jersey Church Rd) south of Linwood

Davidson County

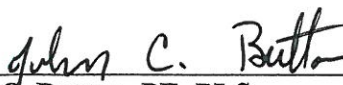


Document Prepared By:

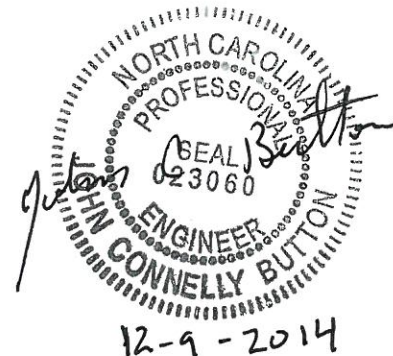
Regional Traffic Office – Triad Region
Traffic Safety Unit
Transportation Mobility and Safety Division
North Carolina Department of Transportation

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 #280258 over Swearing Creek
Route SR 1272 (Jersey Church Road)
Division 9
County Davidson

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable
Passenger Car Speed 45 to 50 mph

Speed Data 12 speed data points collected: Mean = 50 mph
Range = 40 mph to 64 mph; Mode = 48 mph, 49 mph
85th percentile speed = 56 mph

Ball Bank Speed Study 12 degrees at 45 mph for curve located west of bridge.

Warning Signs at Bridge (4) W10-23 signs delineating bridge ends
24 SV/27 TTST signs located on each approach to the bridge.

Roadside Development Rural

ADT History 2013 AADT = 1200 vpd per NCDOT Traffic Map.
2003 AADT = 1500 vpd per NCDOT Traffic Map.

Pedestrian/Bicycle Traffic SR 1272 is not listed as a bicycle route or pedestrian route on the
Davidson County Comprehensive Plan Maps.

Bridge and Approach
Digital Photos See attached photos.

Approach Lane Width 23'-1" overall pavement width; 9'-10"/9'-1" lane widths.

Approach Shoulder Width: 7'-6" to 10' +/-
Shoulder Type Grass

Lane Width (existing bridge) 28'-0" overall pavement width; 9'-6"/9'-1" lane widths.

Shoulder width (existing bridge) 40"/48"

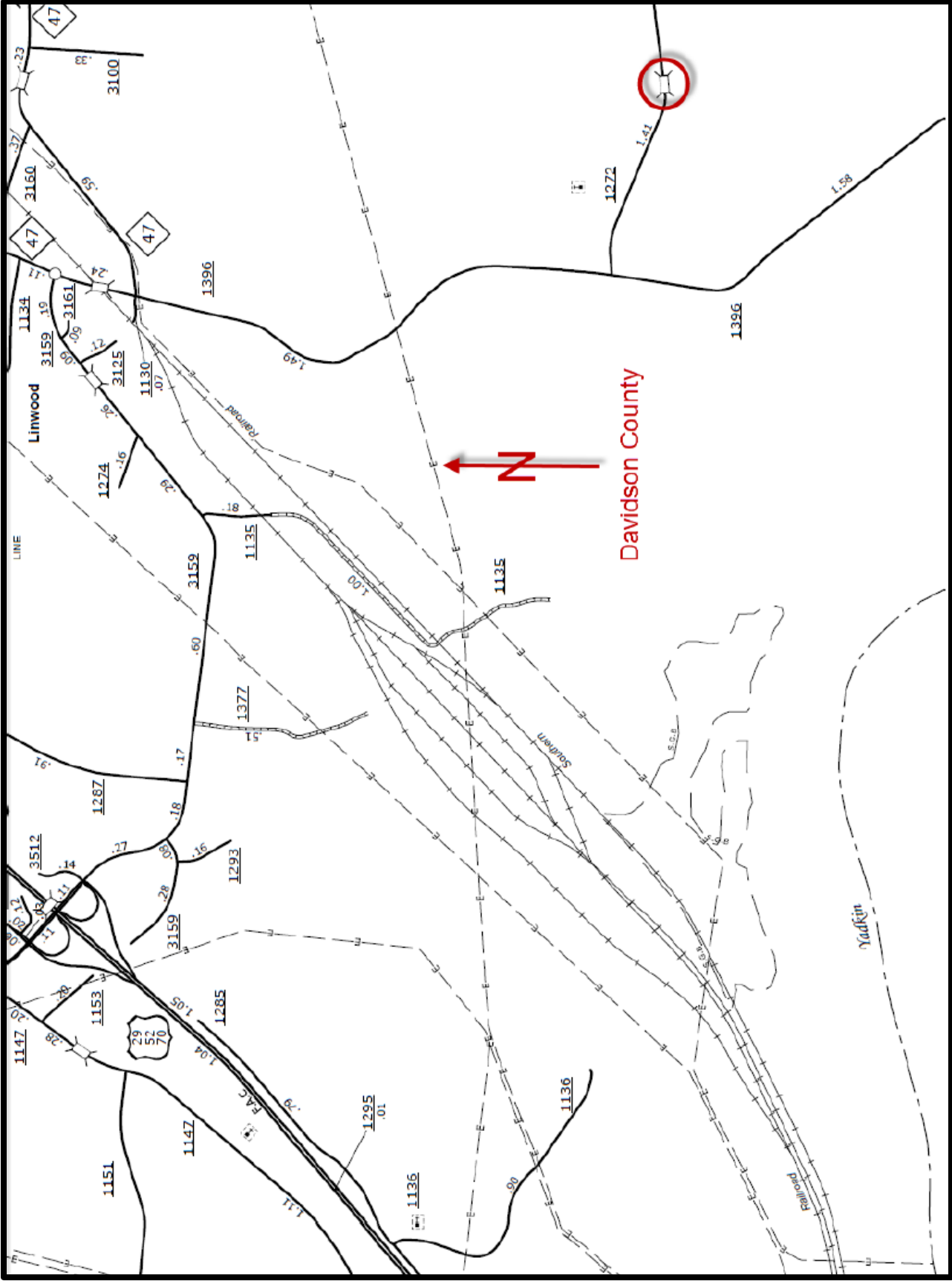
Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section According to NCDOT Functional Class Map, SR 1272 is a local road.
Recommend the 3R Guideline of 11' lane widths and 3' shoulder widths
(6' shoulder widths where guardrail is installed) as a minimum cross section.

Crash History and
Safety Considerations Three run off road type crashes reported in the vicinity of the bridge from
10/01/2004 to 9/30/2014. Two of the crashes involved the vehicle hitting the bridge
guardrail.

Comments _____

Reasonable Bridge Speed 55 mph

The map shows a section of Davidson County, Tennessee. A red circle highlights the location of the proposed bridge. A red arrow points to the bridge location, and the text "Davidson County" is written vertically. The map includes contour lines, roads, and a red circle highlighting the bridge location. A red arrow points to the bridge location, and the text "Davidson County" is written vertically.















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

Study Criteria Summary

County: DAVIDSON **City:** All and Rural
Date: 10/1/2004 **to** 9/30/2014 **Study:** 41000032332
Location: 500 feet on Both Sides of Bridge Number 258 on Secondary Route 1272 (Jersey Church Road) over Swearing Creek

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	102438975	0.561	10/24/2008 21:05	FIXED OBJECT	\$ 12500	0	0	1	0	2	5	3	4	0	13	1
Unit 1 : 1 Alchl/Drgs: 5 Speed: 55 MPH Dir: E Veh Mnvr/Ped Actn: 4 Obj Strk: 49																
2	102476479	0.574	12/16/2008 19:19	FIXED OBJECT	\$ 14500	0	0	1	0	2	5	2	5	0	13	1
Unit 1 : 1 Alchl/Drgs: 1 Speed: 45 MPH Dir: E Veh Mnvr/Ped Actn: 4 Obj Strk: 49																
Unit 2 : 1 Alchl/Drgs: 0 Speed: 45 MPH Dir: W Veh Mnvr/Ped Actn: 4 Obj Strk: 18																
3	103658301	0.610	01/22/2013 20:02	FIXED OBJECT	\$ 1500	0	0	0	1	1	5	1	1	0	13	1
Unit 1 : 1 Alchl/Drgs: 0 Speed: 55 MPH Dir: E Veh Mnvr/Ped Actn: 16 Obj Strk: 38																

**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	3	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	3	100.00
Total Injury Crashes	3	100.00
Property Damage Only Crashes	0	0.00
Night Crashes	3	100.00
Wet Crashes	2	66.67
Alcohol/Drugs Involvement Crashes	2	66.67

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	2	66.67
Class C Crashes	1	33.33
Property Damage Only Crashes	0	0.00

Vehicle Exposure Statistics

Annual ADT = 1700

Total Length = 0.216 (Miles)

0.348 (Kilometers)

Total Vehicle Exposure = 1.34 (MVMT)

2.16 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	223.71	139.01
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	223.71	139.01
Night Crash Rate	223.71	139.01
Wet Crash Rate	149.14	92.67
EPDO Rate	1879.17	1167.66

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

Miscellaneous Statistics

Severity Index =	8.40
EPDO Crash Index =	25.20
Estimated Property Damage Total = \$	28500.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
FIXED OBJECT	3	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	2	66.67
Class C Injuries	1	33.33
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	1	33.33
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	0	0.00
Sep	0	0.00
Oct	1	33.33
Nov	0	0.00
Dec	1	33.33

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	0	0.00
Tue	2	66.67
Wed	0	0.00
Thu	0	0.00
Fri	1	33.33
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	0	0.00
1900-1959	1	33.33
2000-2059	1	33.33
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	0	0	0	0
Dark	1	2	0	3
Other	0	0	0	0
Total	1	2	0	3

Object Struck Summary

Object Type	Times Struck	Percent of Total
BRIDGE RAIL END	2	50.00
MOVABLE OBJECT	1	25.00
OFFICIAL HIGHWAY SIGN BREAKAWAY	1	25.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	4	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
2004	0	0	0	0
2005	0	0	0	0
2006	0	0	0	0
2007	0	0	0	0
2008	2	0	2	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
Total	3	0	3	0

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2004	0	0
2005	0	0
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
Total	0	3

Miscellaneous Totals

Year	Property Damage	EPDO Index
2004	\$ 0	0.00
2005	\$ 0	0.00
2006	\$ 0	0.00

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

Year	Property Damage	EPDO Index
2007	\$ 0	0.00
2008	\$ 27000	16.80
2009	\$ 0	0.00
2010	\$ 0	0.00
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 1500	8.40
2014	\$ 0	0.00
Total	\$ 28500	25.20

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0
2008	0	0	0	2	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
Total	0	0	0	3	0	0	0

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

Strip Diagram

Features	Milepost	Crash IDs
	0.47	
	0.48	
	0.49	
	0.50	
	0.51	
	0.52	
	0.53	
	0.54	
	0.55	
BEGIN BRIDGE STRUCTURE	0.56	102438975
Structure:280258	0.57	102476479
END BRIDGE STRUCTURE	0.58	
	0.59	
	0.60	
	0.61	103658301
	0.62	
	0.63	
	0.64	
	0.65	
	0.66	
	0.67	
	0.68	

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
41000032332	41000032332			76.8	8.4	1700	40001272

Request Date	Courier Service	Phone No.	Ext.	Fax No.
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County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
DAVIDSON	28	9	All and Rural		0	10/1/2004	9/30/2014	10.00

Location Text	Requestor
500 feet on Both Sides of Bridge Number 258 on Secondary Route 1272 (Jersey Church Road) over Swearing Creek	Brian C. Thomas, PE Triad Region

Included Accidents	Old MP	New MP	Type
102438975	0.5	0.561	R
102476479	0.3	0.574	I

Fiche Roads

Name	Code
SR 1272	40001272
JERSEY CHURCH	50015420

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1272	40001272	0.466	0.682	0.216	0.348