

Bridge Design Speed Investigation

Bridge #231 on SR 1349 (Sprinkle Creek Road) over California Creek
Madison County



Document Prepared By:

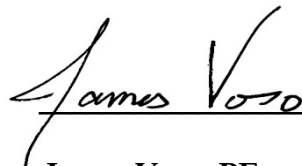
Mattern & Craig, Inc.
Consulting Engineers - Surveyors
12 Broad Street
Asheville, NC 28801
(828) 254-2201
FAX: (828) 254-4562

Commission No: 3350

July 22, 2013



Investigating Engineer


James Voso, PE

Bridge and Approach Investigation Checklist

Project 17BP.13.PE.1
Description Replace Bridge #231 on SR 1349 (Sprinkle Creek) over California Creek
Route SR 1349 (Sprinkle Creek)
Division 13
County Madison

Existing Speed Limit 35 mph ☒ Posted ☐ Statutory

Reasonable & Comfortable
Passenger Car Speed 30 mph

Speed Data N/A

Ball Bank Speed Study Curve east of Bridge #231 had a ball bank indication of 9 at 30 mph.

Warning Signs at Bridge 4 Bridge End Delineators, No Weight Limit posted, Narrow Bridge warning sign

Roadside Development Wooded in northwest quadrant of bridge. Farm land in northeast quadarant of bridge. Residences south of bridge.

ADT History 400 (2010), 380 (2008), 730 (2006), 360 (2004), 390 (2002), 360 (2001), 320 (1999)

Pedestrian/Bicycle Traffic Low

Bridge and Approach
Digital Photos (attached)

Approach Lane Width 9'

Approach Shoulder Width: 5'
Shoulder Type grass

Lane Width (existing bridge) 9'

Shoulder width (existing bridge) 3.5'

Strategic Corridor / Thoroughfare
Designation and Recommended
Cross Section Not a Strategic Corridor/Thoroughfare. Two lane cross section at 30 mph based on 3R guidelines.

Crash History and
Safety Considerations One "Other, Non Collision" crash reported near bridge (5/1/2003 - 4/30/2013, 10 years)

Comments Julia Cove Rd intersects SR 1349 at the western terminus of the bridge.
Bridge number posted on bridge. Driveways located at both end of bridge.
Stop Ahead warning sign posted east of bridge.

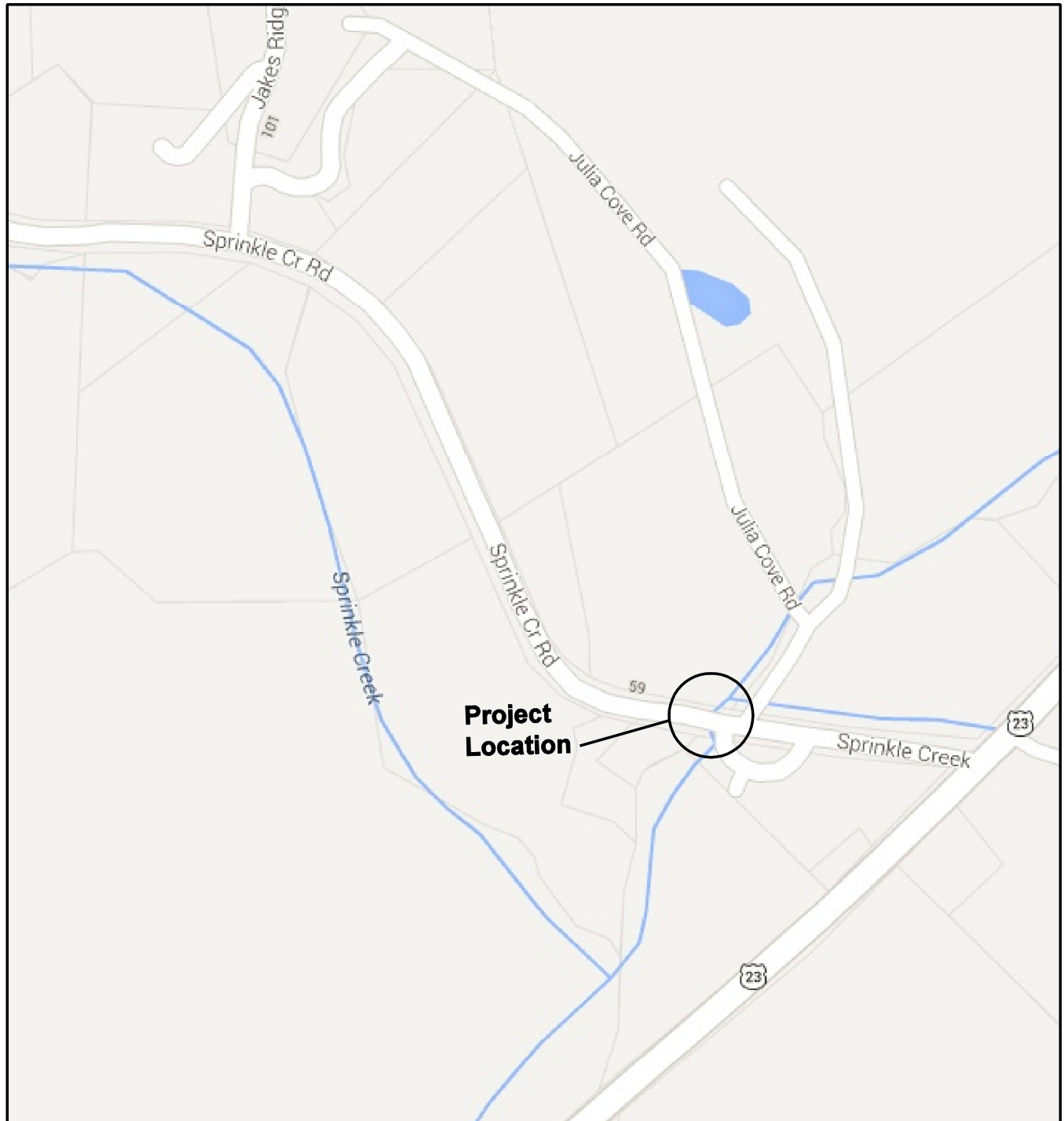
Reasonable Bridge Speed 30 mph

Investigated by: Mathew Bolden Reviewed by: James Voso

Bridge #231

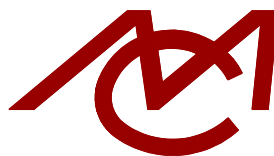
Madison County

Division 13



VICINITY MAP

Bridge #231 on SR 1349
(Sprinkle Creek Road)
over California Creek



Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS

12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562

Comm. No. 3350

Bridge #231
Madison County
Division 13

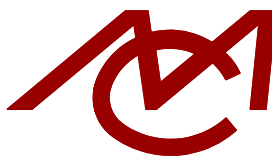


Eastbound Approach



Eastbound Approach at bridge

Bridge #231 on SR 1349
(Sprinkle Creek Road)
over California Creek



Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS

12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562

Comm. No. 3350

Bridge #231
Madison County
Division 13

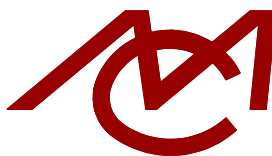


Westbound Approach



Westbound Approach at bridge

Bridge #231 on SR 1349
(Sprinkle Creek Road)
over California Creek



Mattern & Craig
CONSULTING ENGINEERS • SURVEYORS

12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562

Comm. No. 3350

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

Study Criteria Summary

County: MADISON **City:** All and Rural
Date: 5/1/2003 **to** 4/30/2013 **Study:** MADISONBRIDGE231
Location: SR 1349 (Sprinkle Creek Road) from US 23 to 500 feet West of Bridge 231

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	101821270	0.002	08/31/2006 17:30	OTHER NON-COLLISION	\$ 2300	0	0	0	0	2	1	2	1	0	1	1
Unit	1 : 4	Alchl/Drugs:	0	Speed:	15 MPH	Dir:	NE	Veh Mnvr/Ped Actn:				8	Obj Strk:			
Unit	2 : 1	Alchl/Drugs:	0	Speed:	45 MPH	Dir:	S	Veh Mnvr/Ped Actn:				4	Obj Strk:			
Unit	3 : 1	Alchl/Drugs:	0	Speed:	5 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:			

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	1	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	0	0.00
Total Injury Crashes	0	0.00
Property Damage Only Crashes	1	100.00
Night Crashes	0	0.00
Wet Crashes	1	100.00
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

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

Vehicle Exposure Statistics

Annual ADT = 380

Total Length = 0.2 (Miles) 0.322 (Kilometers)

Total Vehicle Exposure = 0.28 (MVMT) 0.45 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	360.19	223.81
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	0.00	0.00
Night Crash Rate	0.00	0.00
Wet Crash Rate	360.19	223.81
EPDO Rate	360.19	223.81

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

Miscellaneous Statistics

Severity Index =	1.00
EPDO Crash Index =	1.00
Estimated Property Damage Total = \$	2300.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
OTHER NON-COLLISION	1	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	0	0.00
Total Non-Fatal Injuries	0	0.00
Total Injuries	0	0.00

**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	0	0.00
Jul	0	0.00
Aug	1	100.00
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	1	100.00
Fri	0	0.00
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	1	100.00
1800-1859	0	0.00
1900-1959	0	0.00
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	0	0	0	0
Total	0	1	0	1

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	2	66.67
SPORT UTILITY	1	33.33

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
2003	0	0	0	0
2004	0	0	0	0
2005	0	0	0	0
2006	1	0	0	1
2007	0	0	0	0
2008	0	0	0	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
Total	1	0	0	1

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2003	0	0
2004	0	0
2005	0	0
2006	0	0
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
Total	0	0

Miscellaneous Totals

Year	Property Damage	EPDO Index
2003	\$ 0	0.00
2004	\$ 0	0.00

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

Year	Property Damage	EPDO Index
2005	\$ 0	0.00
2006	\$ 2300	1.00
2007	\$ 0	0.00
2008	\$ 0	0.00
2009	\$ 0	0.00
2010	\$ 0	0.00
2011	\$ 0	0.00
2012	\$ 0	0.00
2013	\$ 0	0.00
Total	\$ 2300	1.00

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road & Fixed Object	Angle	Side Swipe	Other
2003	0	0	0	0	0	0	0
2004	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	1
2007	0	0	0	0	0	0	0
2008	0	0	0	0	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	0	0	0	0
Total	0	0	0	0	0	0	1

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

Strip Diagram

Features	Milepost	Crash IDs
US 23 US 23ALT	0.00	101821270
	0.01	
	0.02	
	0.03	
	0.04	
	0.05	
	0.06	
	0.07	
	0.08	
	0.09	
Structure:560231	0.10	
	0.11	
	0.12	
	0.13	
	0.14	
	0.15	
	0.16	
	0.17	
	0.18	
	0.19	
	0.20	

**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
MADISONBRIDGE231				76.8	8.4	380	40001349

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

County			Municipality					
Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
MADISON	56	13	All and Rural		0	5/1/2003	4/30/2013	10.00

Location Text	Requestor
SR 1349 (Sprinkle Creek Road) from US 23 to 500 feet West of Bridge 231	

Fiche Roads	
Name	Code
SR 1349	40001349
SPRINKLE CREEK	50028892

Strip Road					
Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1349	40001349	0.000	0.200	0.200	0.322