

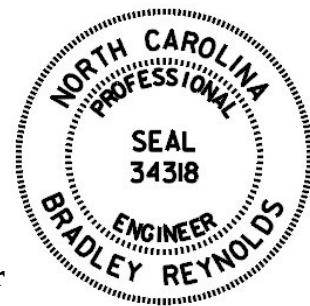
Bridge Approach Speed Investigation

Bridge # 130309 over Mulberry Creek on SR 1338 (Valley View Cir)
Caldwell County
Project Number 17BP.11.R.129



Document Prepared By:

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Principal Investigator

DocuSigned by:
Sheena Green 1/5/2017
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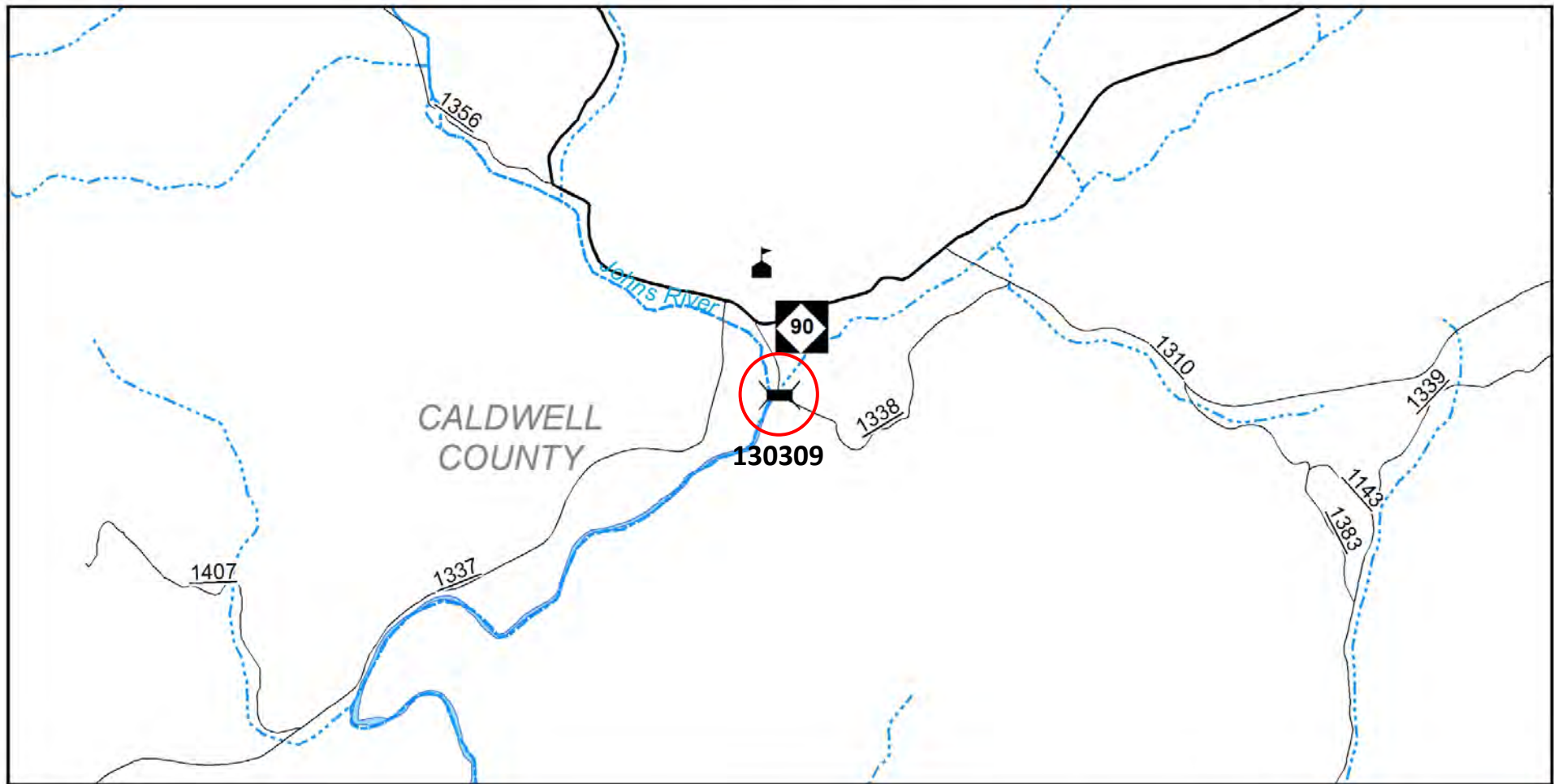
Sheena Green
Traffic Engineer

Project Manager

DocuSigned by:
Bradley Reynolds 1/5/2017
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Bradley Reynolds, PE
Project Manager

Division 11 - Caldwell County Design Build Year 6/7 Bridge Program



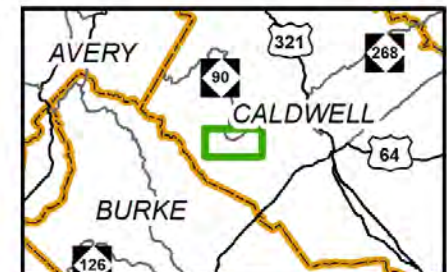
Structure Number	Division	County	Structure Description	Latitude	Longitude
130309	11	Caldwell	Bridge #130309 over Mulberry Creek	35.92163	-81.67156



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1 in = 2,500 ft
SCALE



Bridge and Approach Investigation Checklist

Project 17BP.11.R.129

Description Bridge #130309 over Mulberry Creek

Route SR 1338 (Valley View Circle)

Division 11

County Caldwell

Existing Speed Limit 55 ☐ Posted ☒ Statutory

Reasonable & Comfortable Passenger Car Speed 15 mph

Speed Data four (4) speed data points were collected: 23, 18, 19 and 21 mph

Ball Bank Speed Study Curve on NB approach ball banks: 13 @ 15 mph
Curve on SB approach ball banks: 14 @ 15 mph

Warning Signs at Bridge Object Markers (OM-3L & OM-3R) on each bridge approach
Weight Limit Signs - 1 x each approach

Roadside Development Rural/Residential/Agricultural

ADT History 700 vpd from Crash Analysis
640 vpd from 2013 AADT Map, Caldwell County

Pedestrian/Bicycle Traffic N/A

Bridge and Approach Digital Photos Attached

Approach Lane Width 21' overall pavement width with +/-10' lanes

Approach Shoulder Width: Varies from 2-6'
Shoulder Type Grass

Lane Width (existing bridge) 17' overall pavement width with one (1) 17' lane

Shoulder width (existing bridge) 0

Strategic Corridor / Thoroughfare Designation and Recommended Cross Section Local, Rural

Crash History and Safety Considerations Two (2) crashes have been reported in the vicinity of the bridge from 11/1/2006 to 10/31/2016 (10 years).
One incident involved vehicle striking bridge guardrail and other involved vehicle spinning out just north of bridge.

Comments One lane bridge. If the bridge and approaches are widened, the approach speeds may be greater than the observed speeds.
Signs on the approaches include: Sharp Curve Advisory (15 mph), One Lane Bridge Advisory
Intersection with main road +/-1200' North of Bridge
Valeigh View Nursery located South of Bridge
Consider realignment of SR 1338 to eliminate sharp curve and increase design speed to 25-35 mph.

Reasonable Bridge Speed 15 mph

Investigated by: Sheena Green, 12/07/2016 Reviewed by: Bradley Reynolds, PE

SR 1338 (Valley View Cir) Northbound $\pm$ 250' from Bridge #309



SR 1338 (Valley View Cir) Northbound $\pm$ 50' from Bridge #309



SR 1338 (Valley View Cir) Southbound $\pm$ 250' from Bridge #309



SR 1338 (Valley View Cir) Southbound $\pm$ 50' from Bridge #309



View of Bridge #309 Looking Southeast



View of Bridge #309 Looking Northwest



Advance Warning Sign Northbound



Advance Warning Sign Northbound



Advance Warning Sign Southbound



Advance Warning Sign Southbound



Drop-off Southbound lane



Advance Warning Sign Southbound



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

Study Criteria Summary

County: CALDWELL City: All and Rural
Date: 11/1/2006 to 10/31/2016 Study: CALDWELLBRIDGE309
Location: SR 1338 (Valley View Cir) from 500 feet south of Bridge 309 to 700 feet north of the bridge

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	104716528	1.079	04/21/2016 09:48	FIXED OBJECT	\$ 2500	0	0	0	0	1	1	1	7	0	0	
Unit	1 : 12	Alchl/Drgs:	0	Speed:	10 MPH Dir: E	Veh Mnvr/Ped Actn:				4	Obj Strk:			50		
2	104339118	1.130	04/01/2015 20:45	FIXED OBJECT	\$ 3500	0	0	0	1	1	5	1	7	0	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH Dir: S	Veh Mnvr/Ped Actn:				3	Obj Strk:			49		

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

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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	1	50.00
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 = 700

Total Length = 0.236 (Miles)

0.38 (Kilometers)

Total Vehicle Exposure = 0.6 (MVMT)

0.97 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	331.41	205.93
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	165.71	102.97
Night Crash Rate	165.71	102.97
Wet Crash Rate	0.00	0.00
EPDO Rate	1557.64	967.88

**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 = \$	6000.00

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	1	100.00
Total Non-Fatal Injuries	1	100.00
Total Injuries	1	100.00

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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	2	100.00
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	0	0.00
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	1	50.00
Thu	1	50.00
Fri	0	0.00
Sat	0	0.00
Sun	0	0.00

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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	50.00
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	1	50.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

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Strip Analysis Report**

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	1	0	0	1
Dark	1	0	0	1
Other	0	0	0	0
Total	2	0	0	2

Object Struck Summary

Object Type	Times Struck	Percent of Total
BRIDGE RAIL END	1	50.00
BRIDGE RAIL FACE	1	50.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	1	50.00
TRUCK/TRAILER	1	50.00

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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	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
2014	0	0	0	0
2015	1	0	1	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	0
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	1
2016	0	0
Total	0	1

Miscellaneous Totals

Year	Property Damage	EPDO Index
2006	\$ 0	0.00
2007	\$ 0	0.00

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Traffic Engineering Accident Analysis System
Strip Analysis Report**

Year	Property Damage	EPDO Index
2008	\$ 0	0.00
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	\$ 3500	8.40
2016	\$ 2500	1.00
Total	\$ 6000	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	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
2014	0	0	0	0	0	0	0
2015	0	0	0	1	0	0	0
2016	0	0	0	1	0	0	0
Total	0	0	0	2	0	0	0

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Traffic Engineering Accident Analysis System
Strip Analysis Report

Strip Diagram

Features	Milepost	Crash IDs
Structure:130309	0.98	
	0.99	
	1.00	
	1.01	
	1.02	
	1.03	
	1.04	
	1.05	
	1.06	
	1.07	
	1.08	104716528
	1.09	
	1.10	
	1.11	
	1.12	
	1.13	104339118
	1.14	
	1.15	
	1.16	
	1.17	
	1.18	
	1.19	
	1.20	
	1.21	
	1.22	

**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
CALDWELLBRIDGE309				76.8	8.4	700	40001338

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
CALDWELL	14	11	All and Rural		0	11/1/2006	10/31/2016	10.00

Location Text	Requestor
SR 1338 (Valley View Cir) from 500 feet south of Bridge 309 to 700 feet north of the bridge	

Included Accidents	Old MP	New MP	Type
104716528	1.13	1.079	R

Fiche Roads

Name	Code
SR 1338	40001338
VALLEY VIEW	50031474

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1338	40001338	0.980	1.216	0.236	0.380