

Hydraulics Unit Pre-Design Report (Pre-Scoping) for Structure #: 280082

Date: 09/29/2016

County: Davidson Stream: Lick Creek

Road #: NC 47 Road Name: NC 47

Division: 9 Location: 0.1 Mi. W. Jct. SR-2335

Latitude: 35.66370 Longitude: 80.12090 Decimal degrees, a min of 5 decimal points

Assigned to: wgc

Prepared By: ldc

Hydro Reviewer:

Project Type: DB

Existing Structure

Structure Type: RC Deck/ I Beams Yr Built: 1951

Span Arrangement: 3@35 OAL (ft): 105.0 Skew: 60 Abutment Type: Spill Through

Number of Barrels: @ Span (ft): x Rise (ft):

Bed to Crown (ft): 14.0 Clear Roadway (ft): 24.0 Water Depth (ft): 1.0 Superstructure Depth:

ADT: 1,400 Year ADT: 2013 Scour Code (item113): 8 Prior Survey Completed: No Survey Date: NA

Drainage Area: 12.5 Sq. Mi. Drainage Area Source: USGS Stream Stats Roadway Overtops at Q100: No

Discharge Method: USGS Regression Equations USGS Region: 1- Piedmont Stream Gage Number(if applicable):

Q10 (cfs): 1,900.0 Q25 (cfs): 2,500.0 Q50 (cfs): 3,000.0 Q100 (cfs): 3,500.0 QBFE (cfs): 3,695.0

Structure in Flood Hazard Zone: Yes Panel #: 6669 Panel Date: 03/16/2009 Type of FIS: LIMITED Date of FIS:

Enviromental

Quad Map: DENTON, NC River Basin: Yadkin-Pee Dee Buffer Rule: N/A

Primary Stream Classification

☐ Class B ☒ Class C ☐ SA ☐ SB

☐ SC ☐ SWL ☐ WL ☐ WS I

☐ WS II ☐ WS III ☐ WS IV ☐ WS V

Supplemental Stream Classification

☐ FWS ☐ HQW ☐ NSW ☐ ORW

☐ Sw ☐ Tr ☐ UWL ☐ w/in 0.5mi. of CA

Other Stream Classification

☐ Anadromous Fish ☐ Area of Environmental Concern

☐ CAMA County ☐ Federal Wild & Scenic Rivers

☐ HSB Required ☐ NC Natural & Scenic Rivers

☐ Impaired [303d] ☐ Primary Nursery Area

☐ TVA ☐ Designated Shellfish Harvesting Area

☐ Designated Public Mountain Trout Waters

Up/Down Stream Features

Upstream Feature: Bridge

Location: 0.2 Mi. S. Jct. SR-2320

Structure #: 280244 Route: SR-2325

Latitude: 35.66980 Longitude: -80.11240

Prior Survey Completed: Survey Date:

Bed to Crown (ft): 11.0 Year Built: 2005

Downstream Feature: Confluence w/ Stream(s)

Location:

Structure #: Route:

Latitude: Longitude:

Prior Survey Completed: Survey Date:

Bed to Crown (ft): Year Built:

Structure Type: Cored Slab

Span Arrangement: 1@51, 1@26 OAL (ft): 75.0

Number of Barrels: @ Span (ft): x Rise (ft):

Structure Type:

Span Arrangement: OAL (ft):

Number of Barrels: @ Span (ft): x Rise (ft):

Bed to Crown (ft): Year Built:

Preliminary Structure Estimate [Office Estimate]

Structure Type: Skew:

Dimensions/Spans:

Notes

100 yr. 2.0' +/- below low steel



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION: **STREAM ALIGNMENT SKETCH REVISED, PRIORITY MAINTENANCE**

Structure Safety Report

Routine Element Inspection - Contract

COUNTY: DAVIDSON STRUCTURE NUMBER: 280082 FREQUENCY: 24 MONTHS
FACILITY CARRIED: NC47 MILE POST: _____
LOCATION: 0.1 MI. W. JCT. SR2335
FEATURE INTERSECTED: LICK CREEK
LATITUDE: 35° 39' 49.43" LONGITUDE: 80° 7' 15.07"
SUPERSTRUCTURE: REINFORCED CONCRETE DECK ON I-BEAMS
SUBSTRUCTURE: END BENTS:RC CAPS ON TIMBER PILES,INT.BENTS:RC POST & BEAM
SPANS: 3@35'0
☐ FRACTURE CRITICAL ☐ TEMPORARY SHORING ☐ SCOUR CRITICAL ☐ SCOUR PLAN OF ACTION
PRESENT CONDITION: Poor INSPECTION DATE: 02/10/2016
POSTED SV: 22 POSTED TTST: 28
OTHER SIGNS PRESENT: (4) DELINEATORS



WEST APPROACH

Sign noticed issued for		Number Required
<u>NO</u>	WEIGHT LIMIT	<u>0</u>
<u>NO</u>	DELINEATORS	<u>0</u>
<u>NO</u>	NARROW BRIDGE	<u>0</u>
<u>NO</u>	ONE LANE BRIDGE	<u>0</u>
<u>NO</u>	LOW CLEARANCE	<u>0</u>

INSPECTED BY RAY D. ELLIOTT, PE	SIGNATURE <i>Roy D. Elliott</i>	ASSISTED BY BCH,JWD,MTC
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Run Date: 06/30/2016

IDENTIFICATION							
(1) STATE NAME -NORTH CAROLINA	BRIDGE	280082		SUFFICIENCY RATING =		21.88	
(8) STRUCTURE NUMBER(FEDERAL)	000000000570082			STATUS =		Structurally Deficient	
(5) INVENTORY ROUTE (ON/UNDER) - ON	31000470						
(2) STATE HIGHWAY DEPARTMENT DISTRICT	1			CLASSIFICATION		CODE	
(3) COUNTY CODE	57	(4) PLACE CODE	0	(112)NBIS BRIDGE SYSTEM -		YES	
(6) FEATURE INTERSECTED -	LICK CREEK			(104)HIGHWAY SYSTEM		Is not on NHS	
(7) FACILITY CARRIED	NC47			(26) FUNCTIONAL CLASS -		Major Collector	
(9) LOCATION	0.1 MI. W. JCT. SR2335			(100)STRAHNET HIGHWAY -		Not a STRAHNET Route	
(11)MILEPOINT	0			(101)PARALLEL STRUCTURE -		No Parallel Structure	
(16)LAT	35° 39' 49.43"	(17)LONG	80° 7' 15.07"	(102)DIRECTION OF TRAFFIC -		2-way Traffic	
(98)BORDER BRIDGE STATE CODE		PCT SHARE		(103)TEMPORARY STRUCTURE -		Temporary Structure/Conditions	
(99)BORDER BRIDGE STRUCTURE NO				(110)DESIGNATED NATIONAL NETWORK -		Not on the National Network	
STRUCTURE TYPE AND MATERIAL				(20) TOLL		On Free Road	
(43) STRUCTURE TYPE MAIN:	Steel			(31) MAINTAIN -		State Highway Agency	
TYPE -	Stringer Multibeam or Girder	CODE	302	(22) OWNER -		State Highway Agency	
(44) STRUCTURE TYPE APPR :				(37) HISTORICAL SIGNIFICANCE -		Not Eligible	
TYPE -		CODE	000	CONDITION		CODE	
(45) NUMBER OF SPANS IN MAIN UNIT	3			(58) DECK		5	
(46) NUMBER OF APPROACH SPANS				(59) SUPERSTRUCTURE		3	
(107)DECK STRUCTURE TYPE -	1	CODE		(60) SUBSTRUCTURE		6	
(108)WEARING SURFACE / PROTECTIVE SYSTEM :				(61) CHANNEL & CHANNEL PROTECTION		6	
(A) TYPE OF WEARING SURFACE -		CODE		(62) CULVERTS		N	
(B) TYPE OF MEMBRANE -		CODE		LOAD RATING AND POSTING		CODE	
(C) TYPE OF DECK PROTECTION -		CODE		(31) DESIGN LOAD		H 15	
AGE AND SERVICE				(63) OPERATING RATING METHOD -		Load Factor	
(27) YEAR BUILT	1951			(64) OPERATING RATING -		HS-18	
(106)YEAR RECONSTRUCTED				(65) INVENTORY RATING METHOD -		Load Factor	
(42) TYPE OF SERVICE : ON -	Highway			(66) INVENTORY RATING -		HS-11	
UNDER -	Waterway	CODE	15	(70) BRIDGE POSTING -		Posting Required	
(28) LANES: ON STRUCTURE	2	UNDER STRUCTURE	0	(41) STRUCTURE OPEN, POSTED ,OR CLOSED		P	
(29) AVERAGE DAILY TRAFFIC	1400			DESCRIPTION -		Posted for Load	
(30) YEAR OF ADT	2013	(109) TRUCK ADT PCT	7%	APPRAISAL		CODE	
(19) BYPASS OR DETOUR LENGTH	1 MI			(67) STRUCTURAL EVALUATION		3	
GEOMETRIC DATA				(68) DECK GEOMETRY		4	
(48) LENGTH OF MAXIMUM SPAN	34 FT			(69) UNDERCLEARANCES,VERTI & HORIZ		N	
(49) STRUCTURE LENGTH	105 FT			(71) WATERWAY ADEQUACY		7	
(50)CURB OR SIDEWALK: LEFT	1 FT	RIGHT	1 FT	(72) APPROACH ROADWAY ALIGNMENT		8	
(51) BRIDGE ROADWAY WIDTH CURB TO CURB	24 FT			(36) TRAFFIC SAFETY FEATURES		0000	
(52) DECK WIDTH OUT TO OUT	25.333 FT			(113)SCOUR CRITICAL BRIDGES		8	
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)	22 FT			PROPOSED IMPROVEMENTS			
(33) BRIDGE MEDIAN -	No Median	CODE	0	(75) TYPE OF WORK -		CODE	
(34) SKEW	30°	(35) STRUCTURE FLARED	0	(76) LENGTH OF STRUCTURE IMPROVEMENT			
(10) INVENTORY ROUTE MIN VERT CLEAR	999.9 FT			(94) BRIDGE IMPROVEMENT COST			
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR	24 FT			(95) ROADWAY IMPROVEMENT COST			
(53) MIN VERT CLEAR OVER BRIDGE RDWY	999.9 FT			(96) TOTAL PROJECT COST			
(54) MIN VERT UNDERCLEAR REF	Not a Highway or Railroad	0 FT		(97) YEAR OF IMPROVEMENT COST ESTIMATE			
(55) MIN LAT UNDERCLEAR RT REF	Not a Highway or Railroad	000 FT		(114)FUTURE ADT		2800	(115) YEAR FUTURE ADT
(56) MIN LAT UNDERCLEAR LT REF -	000 FT			(115) YEAR FUTURE ADT		2025	
NAVIGATION DATA				INSPECTIONS			
(38) NAVIGATION CONTROL -	No Navigational Control	CODE	0	(90) INSPECTION DATE		02/10/2016	
(111)PIER PROTECTION -		CODE		(92) CRITICAL FEATURE INSPECTION :		(93) CFI DATE	
(39) NAVIGATION VERTICAL CLEARANCE	0			A) FRACTURE CRIT DETAIL -		NO	
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR	FT			B) UNDERWATER INSP -		NO	
(40) NAVIGATION HORIZONTAL CLEARANCE	0 FT			C) OTHER SPECIAL INSP		NO	
				SCOUR			

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 06/30/2016

COUNTY :	DIVISION :	DISTRICT :	STRUCTURE NUMBER :	LENGTH :
DAVIDSON	9	1	280082	105 FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
NC47	LICK CREEK

LOCATED :	BRIDGE NAME :	CITY :
0.1 MI. W. JCT. SR2335		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
07	FA	NFA	1400 2013	LT 181 RT 181

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1951	SHPWC	6-156		H 15

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
			TAN	60	ON 2 UNDER 0

NAVIGATION :	HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT HC 0 FT 14 FT		1 FT

SUPERSTRUCTURE : REINFORCED CONCRETE DECK ON I-BEAMS

SUBSTRUCTURE : END BENTS:RC CAPS ON TIMBER PILES,INT.BENTS:RC POST & BEAM

SPANS : 3@35'0

BEAMS OR GIRDERS : 4 LINES OF W24X76 I-BEAMS @ 6'9 CENTERS

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
5.75 RC, 3.5" AWS		25.333 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
24 FT	26 FT	LT 1 FT RT 1 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :	TTST	DATE
HS-11	HS-18	int.bmB	SV 22	28	03/30/2010

SYSTEM :	GREEN LINE ROUTE :
Primary N.C. Route	N

UNDER ROUTES AND CLEARANCES

REMARKS :



EAST APPROACH



WEST APPROACH



LOOKING NORTH, UPSTREAM



LOOKING SOUTH, DOWNSTREAM



EAST POSTING SIGN



BRIDGE PLAQUE AT NORTHWEST CORNER



WEST POSTING SIGN



BRIDGE PLAQUE AT SOUTHEAST CORNER



TYPICAL END BENT



TYPICAL UNDERDECK



TYPICAL UNDERSIDE



TYPICAL BENT



TYPICAL EXTERIOR GIRDER REPAIR



SOUTH ELEVATION



NORTH ELEVATION



12" X 4" X 1" DEEP SPALL WITH EXPOSED REBAR ON WEST FACE AT GIRDER 4 ON BENT 1



12" X 6" X 2" DEEP CORNER SPALL WITH EXPOSED REBAR ON EAST FACE OF BENT 1 AT SOUTH END

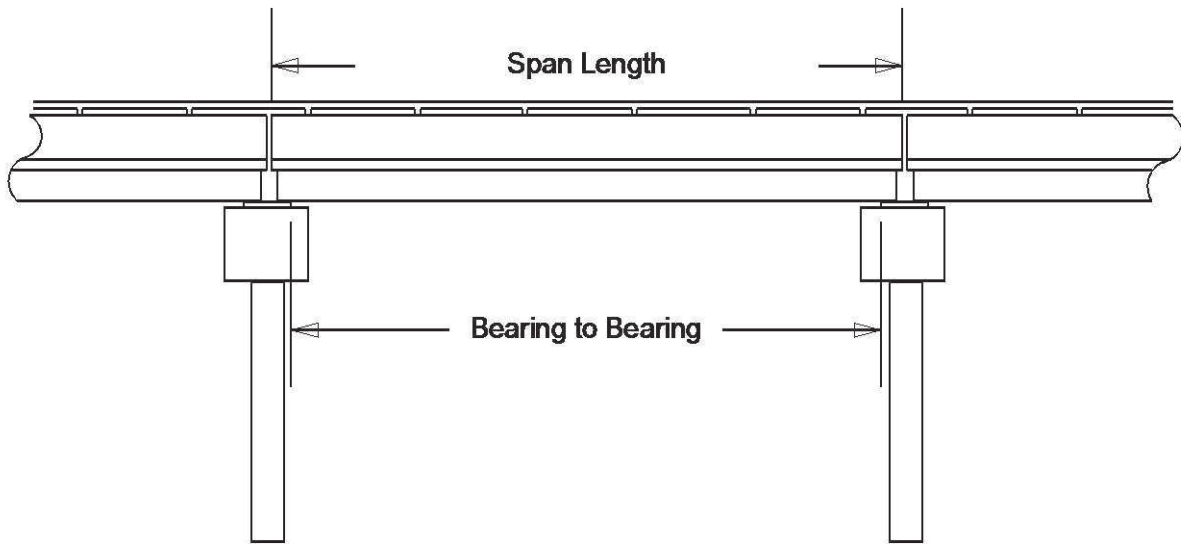


SPALLING WITH EXPOSED REBAR ON EAST FACE OF BENT 2 CAP

Structure Data Worksheet

Spans

County: DAVIDSON Structure No: 280082 Date: Inspected By: RDE



Span No	Span Length	Bearing to Bearing	Comments
1	35.0	33.25	NBIS BL: 99.833 FT.
2	35.0	34.0	
3	35.0	33.25	

Stream Bed Soundings

(See next sheet for profile sketch)

Bridge No: 280082 County: DAVIDSON Date: _____ By: RDE

Record sounding from top of rail. Other location if needed: _____

Distance from Highwater Mark to top of rail: _____ Location of Highwater Mark: _____

DOWNSTREAM			UPSTREAM		
Distance (Station) (ft)	Sounding (ft)	Description	Distance (Station) (ft)	Sounding (ft)	Description
0	2.7	TOP OF WING			
1	2.7	TOP OF WING			
1.1	4.9	Top of Cap			
2.1	4.9	Top of Cap			
2.2	6.3	FACE OF CAP	2.2	6	FACE OF CAP
6	8.4	N/G			
18	10.5	N/G			
30	12.5	N/G			
35	12.8	PIER 1	35	15.5	PIER 1
48	15	Water Surface/Water Edge (WSWE)			
53	15.8	Water Surface (WS)			
65	16.1	CL CREEK			
70	15.9	PIER 2	70	15.6	PIER 2
75	15	Water Surface/Water Edge (WSWE)			
78	14.3	N/G			
80	10.3	N/G			
90	9.7	N/G			
100	6.4	N/G			
104	6	FACE OF CAP	104	6.2	FACE OF CAP
104.1	4.9	Top of Cap			
105	4.9	Top of Cap			
105.1	2.7	TOP OF WING			
106	2.7	TOP OF WING			

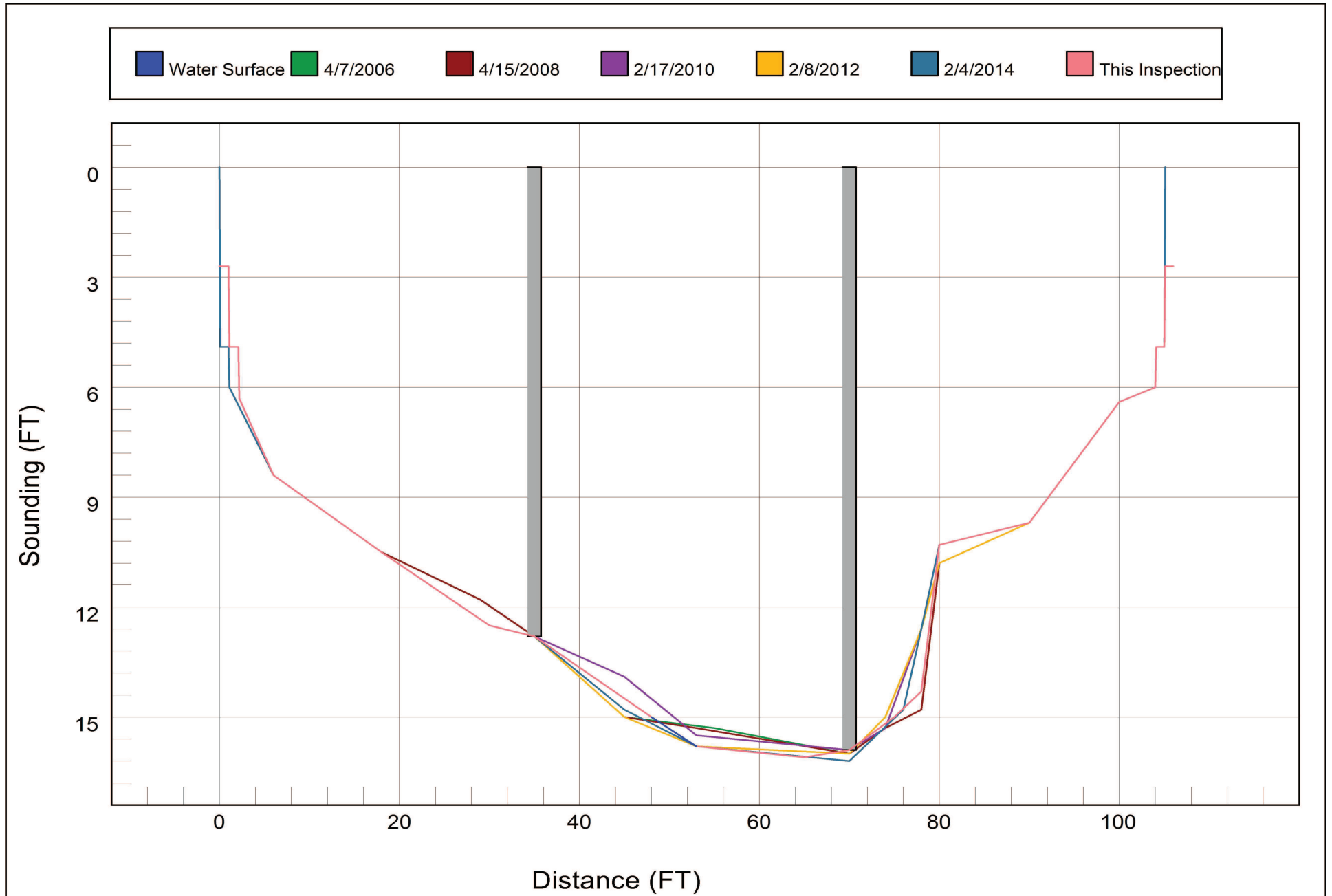
Bridge: 280082

County: DAVIDSON

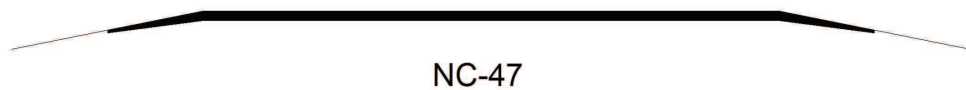
Date:

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



Bridge Inspection Field Sketch



Roadway	22ft Wide	2 Paved Lanes	Looking East
Left Shoulder	4ft Wide		4ft Unpaved
Right Shoulder	4ft Wide		4ft Unpaved
Left Guardrail			
Right Guardrail			

MEASUREMENTS VERIFIED 2-10-16 BCH
MEASUREMENTS VERIFIED 2-4-14 JER
MEASUREMENTS VERIFIED 2-8-12 BTH
MEASUREMENTS VERIFIED 2-17-10 BTH

Title

APPROACH ROADWAY

Description

SHEET 1

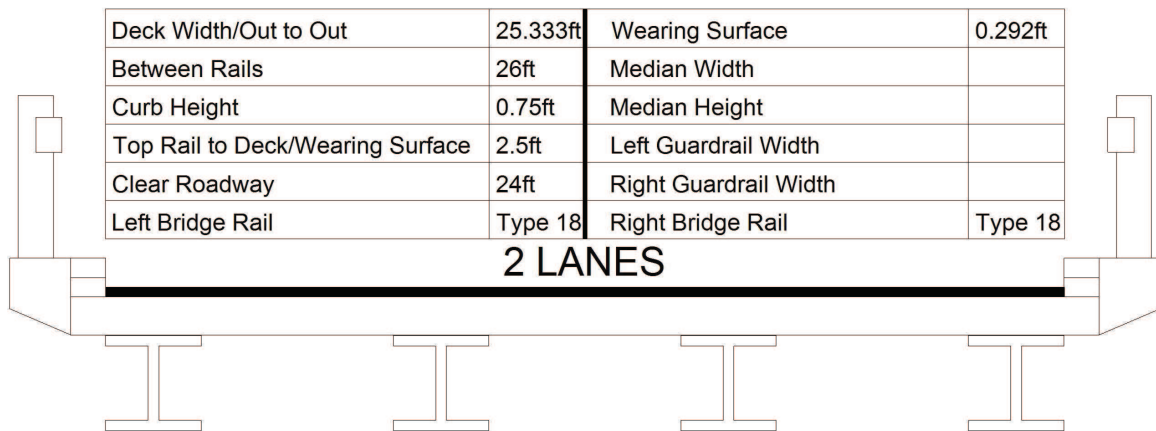
Bridge No: 280082

Drawn By: BTH

Date: 04/15/08

File Name: S0090001102

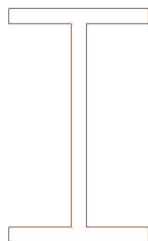
Bridge Inspection Field Sketch



Measurements for Span #	1	SPANS 2 & 3 SIMILAR	
Deck Thickness	0.48	Left Overhang	2.542
Top of Rail to Bottom of Beam	4.917	Right Overhang	2.542

Beam No	Beam Type	Spacing	Comments
1	Steel I Beam	6.75 ft.	
2	Steel I Beam	6.75 ft.	
3	Steel I Beam	6.75 ft.	
4	Steel I Beam		

ABUTS: RC CAP & TIMBER PILES. PIERS: 2 COLUMN RCP&B PIERS.



I-BEAMS	WIDTH	HEIGHT	WEB	FLANGE
ALL	.75 ft.	2.0 ft.	.042 ft.	.052 ft.

MEASUREMENTS VERIFIED 2-10-16 BCH
 MEASUREMENTS VERIFIED 2-4-14 JER
 MEASUREMENTS VERIFIED 2-8-12 BTH
 MEASUREMENTS VERIFIED 2-17-10 BTH

Title SUPERSTRUCTURE		Description SHEET 2	
Bridge No: 280082	Drawn By: BTH	Date: 04/15/08	File Name: S0090001103

Bridge Inspection Field Sketch

Cap Information			Material Cast-in-Place Concrete			
Length	Width	Height	Left Overhang	Right Overhang	Left Beam to End of Cap.	Right Beam to End of Cap.
26.500 ft.	2.500 ft.	2.500 ft.	4.25 ft.	4.25 ft.	1.563 ft.	1.563 ft.

Subcap Information			Material		
Length	Width	Height	Left Overhang	Right Overhang	Left Pile to Splice.

Sill Information			Material		
Length	Width	Height			

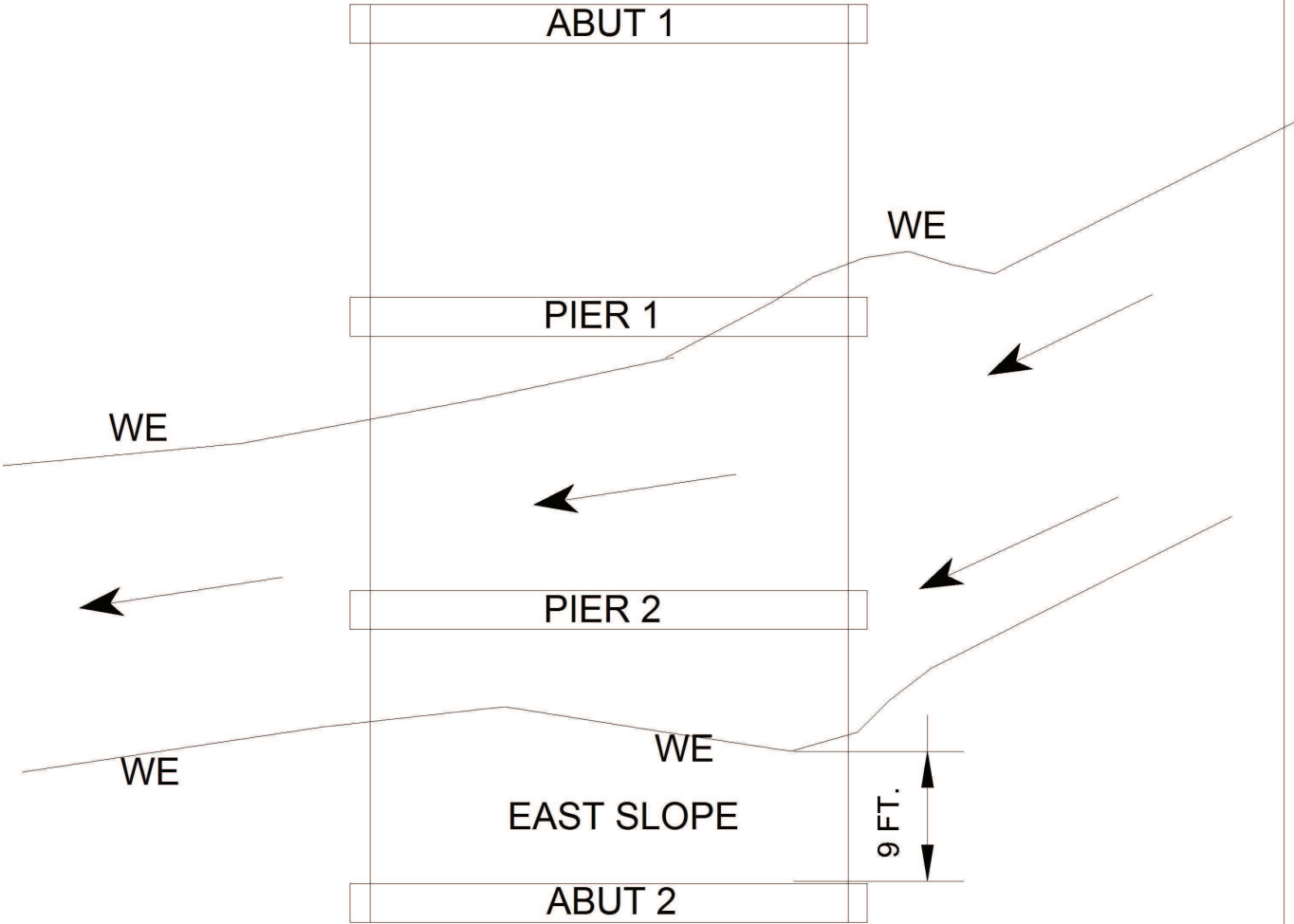
Pile #	Material	Spacing	Width/Dia.	Height	Length	Orientation	Driven?	Replacement?	Removed?	Collar?
1	Concrete	18.0 ft.	2.0 ft.	2.0 ft.		Vertical	No	No	No	No
2	Concrete		2.0 ft.	2.0 ft.		Vertical	No	No	No	No
MEASUREMENTS REVISED 2-10-16 BCH MEASUREMENTS REVISED 2-4-14 JER										

Bent/Abutment #:	1	Similar Bents:	1
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Title PIERS		Description SHEET 3	
Bridge No:	280082	Drawn By:	BTH
Date:	4/15/2008	File Name:	S0090002765

Bridge Inspection Field Sketch

STREAM ALIGNMENT



MEASUREMENTS REVISED 2-10-16 BCH

Title		Description	
STREAM ALIGNMENT		SHEET 4	
Bridge No:	280082	Drawn By:	JER
		Date:	2/5/2014
		File Name:	S0090003466

Lick Creek (Davidson Co) Limited Detail Study Plan: Floodway Run 10/5/2016
 NC HWY 47 - TORStructure ID: LDS_LC_06Approximate Survey Struc

