

OFFICE ESTIMATE: _____

PREDESIGN-SCOPING REPORT

Project# _____

TIP# _____

Let Date _____

WBS# _____

County ASHE (DIV. 11)Bridge# 040 023Road# NC 194Stream OLD FIELD BRANCH
(GRASS BRANCH)Assigned To PFF/MTS

Type Of Request: POC Force Account TIP NCMA

Date 5/4/17 Name WshChecked By MTS 5-8-17Prior Survey Date NONE (attach copy of prior survey) BRN: NONE CO: NONEStudy By Scour Section YES ATTACHED CODE: 5 PDR: NO BSR: NOFlood Zone AE Detail Study LIMITED Date 11-4-09 Panel# 2060B.M. Info N/A ESM DA = 265SM (U/S) DASS = 2.97.50MQuad Map WARRENSVILLE Drainage Area 3.12 SqM From STREAM STATSQ25 220 cfs Q50 270 cfs Q100 330 cfs Method REG. EQU.LONG: -81.511162 IA = 0.45 % REGION 2LAT: 36.499268EXISTING BRIDGE INFORMATION YEAR BUILT: 1963Location 100' S. JCT. SR 1353 CLEAR ROADWAY WIDTH: 22.5'Average Daily Traffic 3300 (2012) 7% TRKLength 33' Bed-To Crown 11 Water Depth 1'Type Structure STEEL PLATE FLR ON I BeamsType Spans 1 x 33' 5"Upstream Structure P-25 (2 LNS 96" CMP) YR. BUILT: 1978Location NC 194 / 0.1 M W JCT SR 1517 LONG: -81.507803Bed-To Crown 9' (3' DEEP) Prior Survey N/A LAT: 36.500543Downstream Structure FLWS DIRECTLY INTO BIG HORSE CREEK.Location 145' D/S YR. BUILT: N/ABed-To Crown N/A Prior Survey N/A LONG: -81.511688LAT: 36.499078

ENVIRONMENTAL

TVA: NOTrout Stream YES Anadromous Fish NO Primary Nursery Area NOHigh Quality Waters YES Nutrient Sensitive Waters NONear Water Supply Intake NO CAMA County NOStream Classification C, Tr, HQW STREAM #: 10-2-21-9DENR River Basin Info. 1, 41, 47, 93

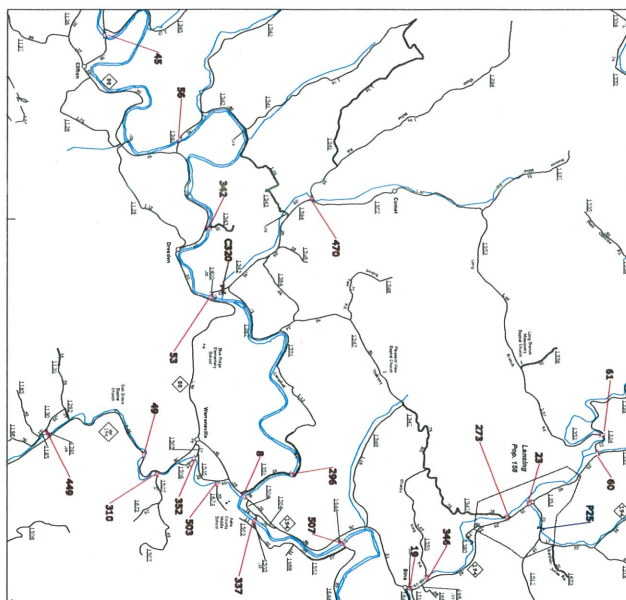
u/s 16

COPIES OF THIS MAP ARE AVAILABLE
TO THE PUBLIC AT NOMINAL COST.
ADDRESS

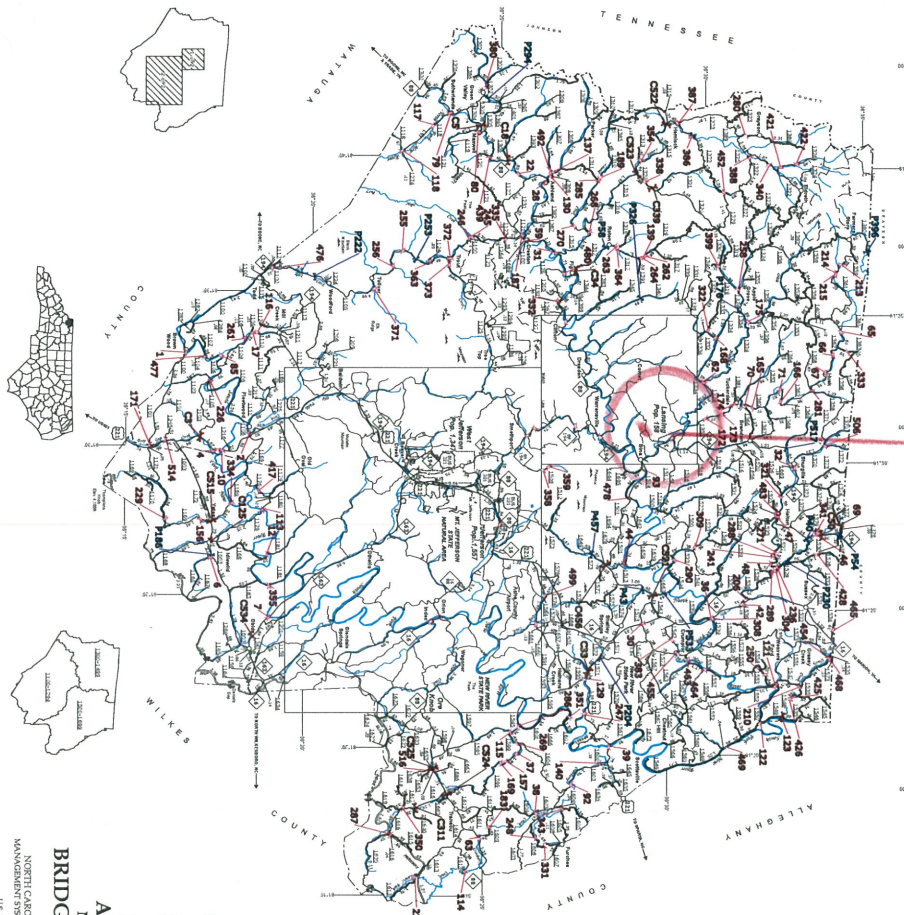
N.C. DEPARTMENT OF TRANSPORTATION
MSAU - MAPPING SECTION
4000 BERRY RD
RALEIGH NC 27608

The MTA's goal is to provide the most accurate and current information possible. Map data is compiled from numerous sources with varying dates of publication and map accuracy standards. As a result, the accuracy, currency, and completeness of the data provided will vary. Map includes state-maintained roads and important non-surface roads.

The information shown on this map was last updated on September 15, 2015. For additional information, visit <http://www.mta.info/mtaopenmap> and click on Data Partners or contact us at (888) 635-6439.



Lansing and Vicinity



#23



ASHE COUNTY
NORTH CAROLINA
BRIDGE LOCATION MAP

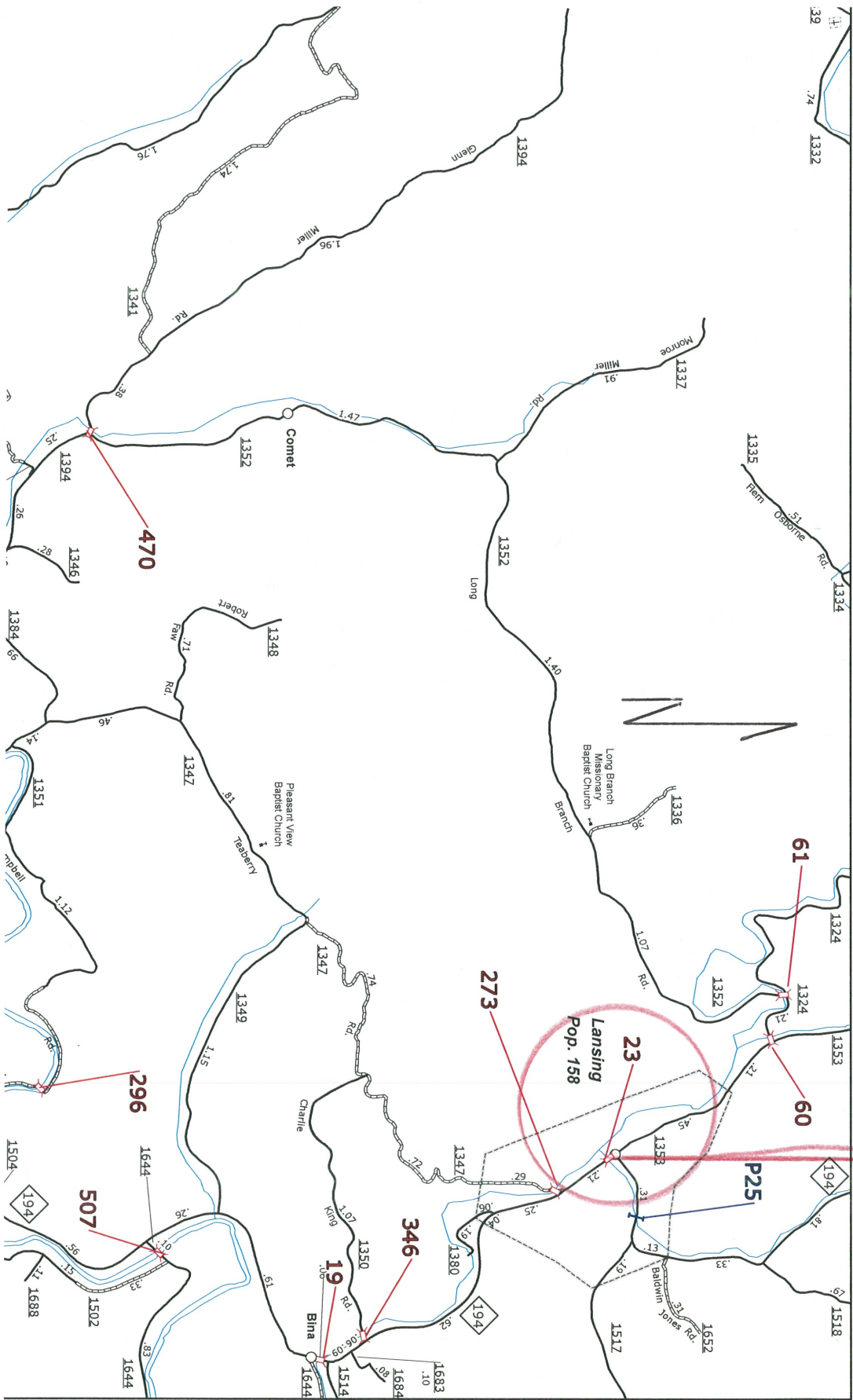
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MANAGEMENT SYSTEMS AND ASSESSMENTS UNIT - MAAPPING SECTION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

18,000 FOOT GRID BASED ON NORTH CAROLINA PLANE COORDINATE SYSTEM
LAMBERT CONFORMAL CONIC PROJECTION

DIVISION 11 DISTRICT 3 ASHE COUNTY NORTH CAROLINA 005

THE CAPSTONE 005

040337



#23

040023

StreamStats Version 3.0 : North Caro

Click on a tool on the toolbar. If the icon remains pressed, click on the map to perform the desired function.

NC Map Layers

- ☒ Streamgages
- ☒ Area of limited functionality
- ☒ North Carolina
- ☒ Stream Grid
- ☒ Study Area Bndys
- ☐ Base Layers
 - ☐ Imagery
 - ☐ Street Map
 - ☐ World Topo
 - ☐ USA Topo
 - ☐ Canadian Topo
 - ☐ TIN Topo

0 0.2 0.4 mi
Scale: 1 : 36,112
Elevation: 36,504.14
Longitude: -81.5109 55



Flow Statistics Ungaged Site Report

Date: Thurs May 4, 2017 12:45:44 PM GMT-4
Study Area: North Carolina
NAD 1983 Latitude: 36.4991 (36 29 57)
NAD 1983 Longitude: -81.5108 (-81 30 39)
Drainage Area: 3.12 mi²

Peak Flows Region Grid Basin Characteristics

100% Peak Southeast US over 1 sqmi 2009 5150 (3.12 mi ²)				
Parameter	Value	Min	Max	Regression Equation Valid Range
Drainage Area (square miles)	3.12	1	0	9000
Percent Area in Region 1 (percent)	0.000	0	0	100
Percent Area in Region 2 (percent)	100.000	0	0	100
Percent Area in Region 3 (percent)	0.000	0	0	100
Percent Area in Region 4 (percent)	0.000	0	0	100
Percent Area in Region 5 (percent)	0.000	0	0	100

Urban Flows Region Grid Basin Characteristics

Area in square miles: 3.12
Percent imperviousness of basin area 2006 NLCD: 0.44
Percentage of impervious area determined from NLCD 2011 Impervious dataset: 0.45

100% Region 2 Urban Blue Ridge F5007-00 (3.12 mi²)

Parameter	Value	Min	Max	Regression Equation Valid Range
Drainage Area (square miles)	3.12	0.04	41	
Percent impervious NLCD2011 (percent)	0.45 (below min value 2)	2	54.6	

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Peak Flows Region Grid Statistics

Statistic	Value	Unit	Prediction Error (percent)	Equivalent years of record	90 Percent Prediction Interval
PK2	766	ft3/s	35	152	467
PK5	490	ft3/s	34	281	855
PK10	666	ft3/s	35	375	1180
PK25	907	ft3/s	38	492	1670
PK50	1080	ft3/s	40	568	2070
PK100	1300	ft3/s	42	656	2560
PK200	1480	ft3/s	44	723	3020
PK500	1770	ft3/s	48	871	3810

100%



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION: PMN'S ISSUED FOR SUPERSTRUCTURE AND SLOPE
PROTECTION... TEMP. REPAIRS TO
SUBSTRUCTURE...

040023

Structure Safety Report

Routine Element Inspection

COUNTY: ASHE STRUCTURE NUMBER: 040023 FREQUENCY: 24 MONTHS

FACILITY CARRIED: NC194 MILE POST: _____

LOCATION: 100 FT.S.JCT.SR1353

FEATURE INTERSECTED: OLD FIELD BRANCH

LATITUDE: 36° 29' 56.6" LONGITUDE: 81° 30' 39.72"

SUPERSTRUCTURE: STEEL PLANK FLOOR ON I-BEAMS

SUBSTRUCTURE: REINFORCED CONCRETE ABUTMENTS

SPANS: 1@ 33'-5"

☐ FRACTURE CRITICAL ☐ TEMPORARY SHORING ☐ SCOUR CRITICAL ☐ SCOUR PLAN OF ACTION

PRESENT CONDITION: Poor INSPECTION DATE: 05/12/2016

POSTED SV: Not Posted POSTED TTST: Not Posted

OTHER SIGNS PRESENT: NONE



SOUTH TO NORTH

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

INSPECTED BY
ANDREW GLASCO

SIGNATURE

Andrew P. Elmer

ASSISTED BY MAX FORD



SOUTH TO NORTH



WEST PROFILE

040023

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 06/16/2016

COUNTY :	DIVISION :	DISTRICT :	STRUCTURE NUMBER :	LENGTH :
ASHE	11	3	040023	33 FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
NC194	OLD FIELD BRANCH

LOCATED :	BRIDGE NAME :	CITY :
100 FT.S.JCT.SR1353		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
07	FA	NFA	3300 2012	LT 253 RT 253

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1963	SHC			Unknown

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
	BMU		TAN	90	ON 2 UNDER 0

NAVIGATION :	HT. CRN. TO BED :	WATER DEPTH :
VC 0 FT HC 0 FT 11 FT		1 FT

SUPERSTRUCTURE :	STEEL PLANK FLOOR ON I-BEAMS
------------------	------------------------------

SUBSTRUCTURE :	REINFORCED CONCRETE ABUTMENTS
----------------	-------------------------------

SPANS :	1@ 33'-5
---------	----------

BEAMS OR GIRDERS :	11 LINES 21 I-BEAMS @ 2' CENTERS
--------------------	----------------------------------

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
STL.PLK/5 AWS		23 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
22.5 FT	22.5 FT	LT 0 FT RT 0 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :	TTST	30	DATE	06/16/2016
HS-12	HS-20	Ext.bms	SV 23				

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

UNDER ROUTES AND CLEARANCES

REMARKS :

040023

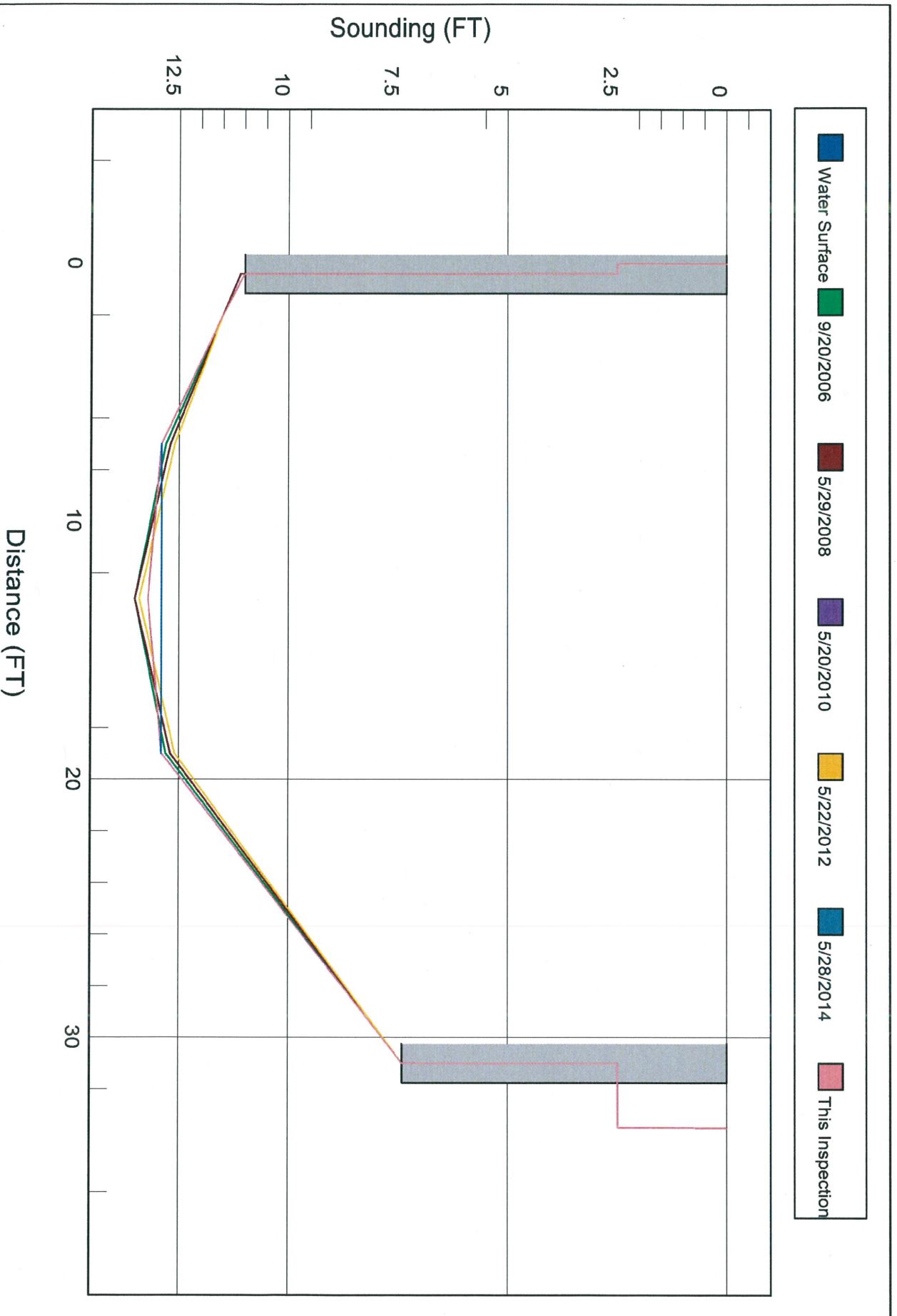
Bridge: 040023

County ASHE

Date:

Top of Rail = 0 FT (Sounding)

STREAMBED PROFILE (Downstream)



040023

U/S STR.

STR 25

Structure: 040025

County: ASHE

Date: 04/19/2016

Structure Photos



INLET



OUTLET

040023

c:\scour\forms\brsript.doc

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



NCDOT UNITS:
 BRIDGE MAINTENANCE UNIT
 HYDRAULIC DESIGN UNIT
 GEOTECHNICAL UNIT
 STRUCTURE DESIGN UNIT
 SOILS AND FOUNDATION SECTION

BRIDGE SCOUR REPORT

COUNTY: Ashe BRIDGE: 23 ROUTE: NC 194 STREAM CROSSED: Old Field Creek

ASSESSMENT yes EVALUATION BY: JJB DATE 2/18/2009

FHWA STRUCTURE INVENTORY & APPRAISAL CODES:

SUBSTRUCTURE CONDITION (ITEM 60)
 CHANNEL AND CHANNEL PROTECTION (ITEM 61)
 WATERWAY ADEQUACY (ITEM 71)
 SCOUR CRITICAL BRIDGES (ITEM 113)

FULL SCOUR R, AVAILABLE
 IN HYDRAULICS FILES

MONITORING:

PLAN REQUIRED? YES NO ☒

FLOOD MONITORING EVENT : (UPSTREAM FACE, FROM TOP OF RAIL):

REQUIRED ACTION: _____

CRITICAL MONITORING DEPTH (UPSTREAM FACE, FROM TOP OF RAIL):

REQUIRED ACTION: _____

CRITICAL HIGH WATER DEPTH (UPSTREAM FACE, FROM TOP OF RAIL):

REQUIRED ACTION: _____

SCOUR CRITICAL DEPTHS(UPSTREAM FACE, FROM TOP OF RAIL):

REQUIRED ACTION: _____

INCREASE UNDERWATER INSPECTION CYCLE? YES ☐ NO ☒ FREQUENCY _____

COUNTERMEASURES:

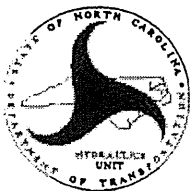
PLAN REQUIRED? YES ☐ NO ☒

SUMMARY OF PLAN:

CONSTRUCTION COMPLETED DATE _____

FINAL CODING AFTER WORK IS COMPLETED (ITEM 113) _____ DATE _____

BRIDGE MAINTENANCE COMMENTS:



BRIDGE SCOUR EVALUATION ASSESSMENT AND DATA SUMMARY REPORT

ASSESSED <u>2/18/09</u>
BY: <u>JJB</u>
CODE <u>5</u>
CLASSIFIED <u>Low Risk</u>

SITE IDENTIFICATION

COUNTY Ashe CITY/ TOWN _____ BRIDGE NO. 23
 ROUTE NC194 STREAM Field creek ROAD MILE _____
 DUAL BRIDGE NO. ____ IS US/ DS _____
 ORIG. PROJECT NO. _____ YEAR BUILT 1963
 REHAB. PROJECT NO. _____ YEAR REHAB. _____
 CURRENT ADT 6900 YEAR 2002 FUTURE ADT _____ YEAR _____

INFORMATION RESOURCES AVAILABLE:

HYDRAULIC STUDY REPORT (DATE)
 AS-BUILT CONSTRUCTION PLANS (DATE)
 FOUNDATION REPORT (DATE)
 OTHER AGENCY STUDIES (DATE)
 (FEMA, CORPS, T.V.A., SCS)
 QUAD MAPS (NAME & DATE)
 AERIAL PHOTOGRAPHY (DATE)
 GAGE DATA (TYPE, NO., DRAINAGE AREA)
 DISTANCE TO SITE (UP/ DN STREAM)
 BRIDGE INSPECTION REPORT (DATE) Nov. 2004
 UNDERWATER INSPECTION (DATE, CYCLE)
 STRUCTURE DATA FILE (DATE)

HYDRAULIC DATA:

DRAINAGE AREA _____ SQ. MI. SOURCE _____
 100 YR. WATERWAY OPENING (NORMAL TO FLOW) _____ SQ. FT.

HISTORICAL FLOODS

DATE	ELEV. (FT.)	APPROX. FREQ. (YRS.)	APPROX. DISCH.	ADJUSTED TO SITE
2004	2-3' below deck	one time in last 5 years		

SOURCE Local Resident

FLOOD FREQUENCY (YRS.)
 ELEVATION (FT.)
 DISCHARGE (CFS)
 AVG. VELOCITY (Q/A)
 SOURCE: _____

Q ____	Q ____	Q ____	Q ____

COMMENTS: _____

GEOMORPHIC DATA: (LOOKING DOWNSTREAM)

CHANNEL (NORMAL TO FLOW):

AVG. BASE WIDTH _____ AVG. TOP WIDTH ³⁴ _____ AVG. DEPTH ¹ _____AT CROSSING: STRAIGHT _____ MILD CURVE ☒ SHARP BEND _____FLOW ANGLE OF APPROACH: LOW _____ MILD _____ HIGH _____
(0°-5°) (5°-20°) (20° +)

CROSSING WIDTH COMPARED TO:

UPSTREAM: WIDER _____ SAME _____ NARROWER _____
DOWNSTREAM: WIDER _____ SAME _____ NARROWER _____

BASED ON COMPARISON OF SECTIONS TAKEN AT DATES _____

CHANNEL HAS: WIDENED _____ FT. SAME _____ NARROWED _____ FT.

AGGRADATED _____ FT. SAME _____ DEGRADATED _____ FT.

SHIFTED LT. _____ FT. SAME _____ SHIFTED RT. _____ FT.

THALWEG HAS: SHIFTED LT. _____ FT. SAME ☒ SHIFTED RT. _____ FT.

REPORTED SITE SCOUR PROBLEM:

	MINOR	MODERATE	SEVERE	UNKNOWN
LT. BANK				
RT. BANK				
LT. SPILL SLOPE				
RT. SPILL SLOPE				
PIER (S)				
DEBRIS	☒			
CHANNEL BED				
OTHER _____				

IS REPORTED PROBLEM CHANNEL FLOW ASSOCIATED? N/A

BASED ON THE AVAILABLE GEOMORPHIC DATA, THE CHANNEL STABILITY
POTENTIAL OVER THE LIFETIME OF THE EXISTING STRUCTURE CAN
BEST BE DESCRIBED AS:

1) RELATIVELY STABLE WITH LITTLE EXPECTED CHANGE. YES _____

2) POTENTIAL FOR SLOW CHANGE OVER TIME. NOT PRONE TO A MAJOR ONE-EVENT CHANGE. N/A

3) UNSTABLE. SUBJECT TO RAPID EVOLUTIONARY CHANGE. N/A

rev. 3/97

ASSESSMENT CRITERIA:

- 1) SPREAD FOOTINGS WITHIN THE POTENTIAL CHANNEL SCOUR AREA ARE INDICATED BY FIELD INVESTIGATION OR BORING LOG ANALYSIS TO BE ON SCOUR RESISTANT MATERIAL.
GEOTECHNICAL CONCURRENCE BY: John Pilipchuk
- 2) AS-BUILT PLANS INDICATE THE SPREAD FOOTINGS WITHIN THE POTENTIAL CHANNEL SCOUR AREA TO BE KEYED AT LEAST 6" INTO ROCK.
GEOTECHNICAL CONCURRENCE BY: _____
- 3) STEEL PILE BENTS WITHIN THE POTENTIAL CHANNEL SCOUR AREA HAVE
a) AVERAGE PILE TIPS THAT PENETRATE A MINIMUM OF 12 FEET BELOW STREAM BED OR b) HAVE LESS THAN 22 FEET OF TOTAL PILE LENGTH AND INDICATED BY: BORING LOGS, PILE DRIVE RECORDS, OR ROD SOUNDINGS TO BE TIPPED INTO POINT BEARING MATERIAL. a) _____
b) _____
- 4) CONCRETE OR TIMBER PILE BENTS WITHIN THE POTENTIAL CHANNEL SCOUR AREA HAVE: a) AVERAGE PILE TIPS THAT PENETRATE A MINIMUM OF 15 FEET BELOW THE STREAM BED OR b) HAVE LESS THAN 18 FEET OF TOTAL PILE LENGTH AND INDICATED BY BORING LOGS OR ROD SOUNDINGS TO BE TIPPED INTO POINT BEARING MATERIAL. a) _____
b) _____
- 5) ALL PIERS AND ABUTMENTS ARE OUTSIDE THE NORMAL CHANNEL SECTION. N/A
- 6) THE BRIDGE HAS EXPERIENCED A FLOOD OF GREATER THAN A 50-YEAR MAGNITUDE WITH NO REPORTED OR APPARENT SCOUR PROBLEM. N/A
- 7) THE BOTTOMS OF THE CHANNEL PIER SPREAD FOOTINGS ARE GREATER THAN 7 FEET BELOW THE STREAM BED. N/A
- 8) THE APPROACH ROADWAY OR BRIDGE IS OVERTOPPED DURING MINOR FLOODS (< 10-YEAR EVENT) REQUIRING CLOSURE AND INSPECTION BEFORE REOPENING. N/A

— —
THIS STRUCTURE MEETS WHICH OF THE ABOVE LISTED ITEMS FOR CLASSIFICATION AS A LOW RISK STRUCTURE?

1

BASED ON AN ENGINEERING EVALUATION OF THE AVAILABLE DATA AND REPORTS, THE LOW RISK CLASSIFICATION OF THIS STRUCTURE FOR THE REASON(S) LISTED ABOVE APPEARS REASONABLE.

YES

COMMENTS

Rods driven to refusal @ 15' EB1, & 50 blows/3" @ 17.3' EB2

DECISION:

CLASSIFIED AS:

SCOUR CRITICAL
UNKNOWN FOUNDATION
LOW RISK

✓

RECOMMENDED SCOUR CODE 5ASSESSMENT COMMENTS: EB1- Bottom of Footing 15.2' below Top of Rail on material too hard for sounding rods to penetrate.EB2-BOF 15.3' below TOR on 52 BPF (blows per foot) material. Consultant was not able to penetrate under footing with rod. Ftg. is 6.2' below mudline.

SCHEDULE FOR DETAILED STUDY

SCHEDULE FOR FURTHER IN-HOUSE STUDY

ASSESSED BY: JJBFIRM: NCDOTDATE: 2/18/09APPROVED BY: JLLDATE: 2/18/09

CHECKED BY: _____

FIRM: _____

DATE: _____

FINAL COMMENTS : The scour committee recommends code 5.EB1 & EB2 are massive concrete abutments - less likely to be moved by scour or debrisBridge has experienced floods since 1963See report by FDH dated Oct.1, 2008.



040 023

NC DOT - HYDRAULICS DEPT.
1590 MAIL SERVICE CENTER
RALEIGH, NC 27695-1590

Unknown Foundation Determination

Substructure Report

Ashe 040023
NC 194 over Old Field Creek



FDH Project # 08-06077E

Submitted by:

A handwritten signature in cursive script that reads "J. Darrin Holt".

J. Darrin Holt, Ph.D., P.E.
President

FDH Engineering, Inc.
2730 Rowland Rd., Raleigh, NC 27615
T: (919) 755-1012 F: (919) 755-1031
www.fdh-inc.com
holt@fdh-inc.com

April 2, 2009

Report Submitted to: Mr. Jerry Beard, PE
NCDOT Hydraulics Unit
1590 Mail Service Station
Raleigh, NC 27695-1590

Facility Carried: NC 194

Feature: Over Old Field Creek

Substructure Type: Reinforced Concrete Abutments

No. of Interior Bents: Zero (0)

Piles per Bent: NA

Reference Document(s): Bridge Inspection Report and Structure Data File from May 2004 found.

Comments: No noticeable scouring has occurred at abutments.

Field Work Performed:

- Sounding rods were driven next to the abutments to determine the depth to high blow count material.
- Dispersive wave propagation testing was conducted on abutment footers.

Bridge Information From November 2004 Inspection Report:

Substructure Condition: 6
Channel and Channel Protection: 8
Waterway Adequacy: 7
Bridge Length: 33.0'
Sufficiency Rating: 70.5
Number of Spans: 1 Span Lengths: 33'-5"
Underclearance: 7'-7"
List of Scour Problems and Repairs: NA
Original Construction: 1963 Year Reconstructed: 0000
Current ADT: 006900 Year: 2002
Crown to Bed: 11'-0"

Summary of Findings:**Hydraulic Data: From local resident****Maintenance Personal :**

Reference to top rail: flooded to 6.5 ft below rail.
 Date of high water: 2004
 Does bridge overtop during minor floods (<10 year event): No

Requiring closure and inspection before reopening? No

A local resident said water was 2'-3' below the deck one time in the last 5 years.

Reported of apparent scour problem? No

List any major events: Hurricanes or storms and year of event and high water (reference to TOR)
 Hurricane Hugo 1989, Hurricane Isabel 2003, Hurricane Ivan 2004.

Field Observations:

Any Scouring Noted: No
 Angle of Stream Attack: Mild Curve
 Debris: Large Trees Leaning on Bank? No
 Debris Piled up on Bents? No
 Has Thalweg Shifted? No

Field Testing Results:

TABLE 1/2" ROD DRIVES			
EB1		EB2	
DEPTH FROM TOP OF RAIL	BLOWS/FT	DEPTH (TOR)	BLOWS/FT
11.9'-12.9'	42	9.1'-10.1'	WOH
12.9'-13.9'	42	10.1'-11.1'	WOH
13.9'-14.9'	50	11.1'-12.1'	WOH
15.0'	Refuse	12.1'-13.1'	10
-	-	13.1'-14.1'	27
-	-	14.1'-15.1'	27
-	-	*15.1'-16.1'	52
-	-	16.1'-17.1'	65
-	-	17.1'-17.3'	50/3"

* indicates bottom of footer at location of blow count

Sounding Rods:

Sounding rods were driven at EB1 and EB2.

Dispersive Wave Testing

Dispersive wave propagation testing was conducted on the footers of EB1 and EB2 that had been installed during the 1963 construction. The results indicated the EB1 is 15.2 ft and EB2 is 15.3 ft from the top of rail to the bottom of the footers.

Conclusions

Foundation consists of concrete abutments and concrete footers. Top of rail to bottom of the footer of EB1 is 15.2 ft and EB2 is 15.3 ft. Sounding data indicates EB1 footing is resting on material too hard for sounding rods to penetrate at BC1 and EB2 is resting on material of 52 BPF at BC2. A local resident said water was 2'-3' below the deck one time in the last 5 years.

BOTTOM OF FOOTING			
PILE AND FOOTING LOCATION	TEST METHOD	TOP OF RAIL TO BOTTOM OF FOOTING (FT)	EMBEDMENT BELOW THALWEG (FT)
EB1	DW/ROD	15.2	1.9
EB2	DW/ROD	15.3	2.0

Sounding Rods

Sounding rods driven at a site are 1/2" in diameter and vary in segment length from 5 ft to 10 ft. Coupling devices are used for extending the rods to depths greater than the individual rod lengths. The driving head weighs 16 lbs. Determining blow counts involves dropping the 16 lb hammer with a 2 foot drop and counting the actual number of blows required to drive the rod 1 ft into the material.

Professional judgments are incorporated into this report. These are based on our evaluations of field information gathered, on our understanding of the characteristics of the project, and on our experience and capabilities with the topic of unknown foundations. We guarantee only that our work and judgments rendered meet the standard of care of our profession.



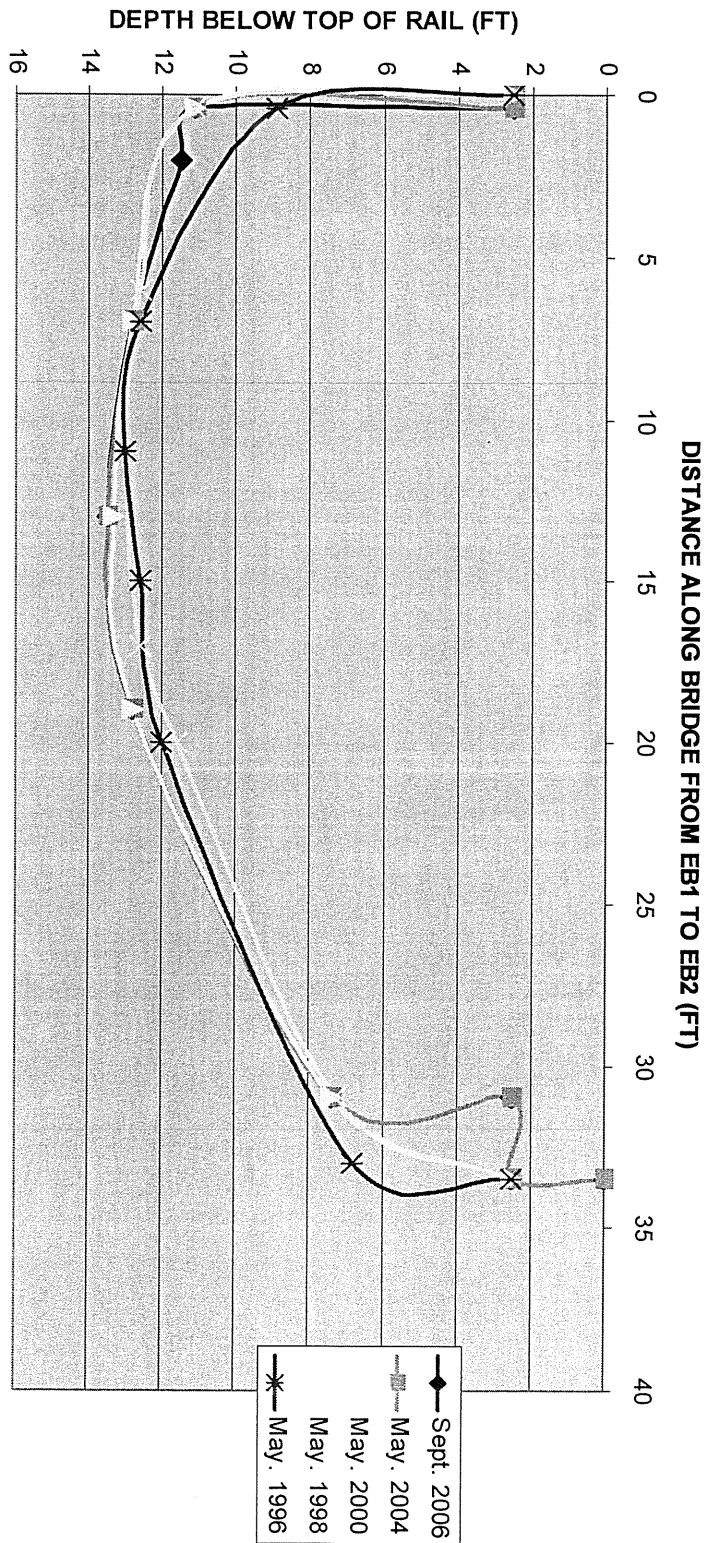
View of EB2.

04023

Ashe 040023

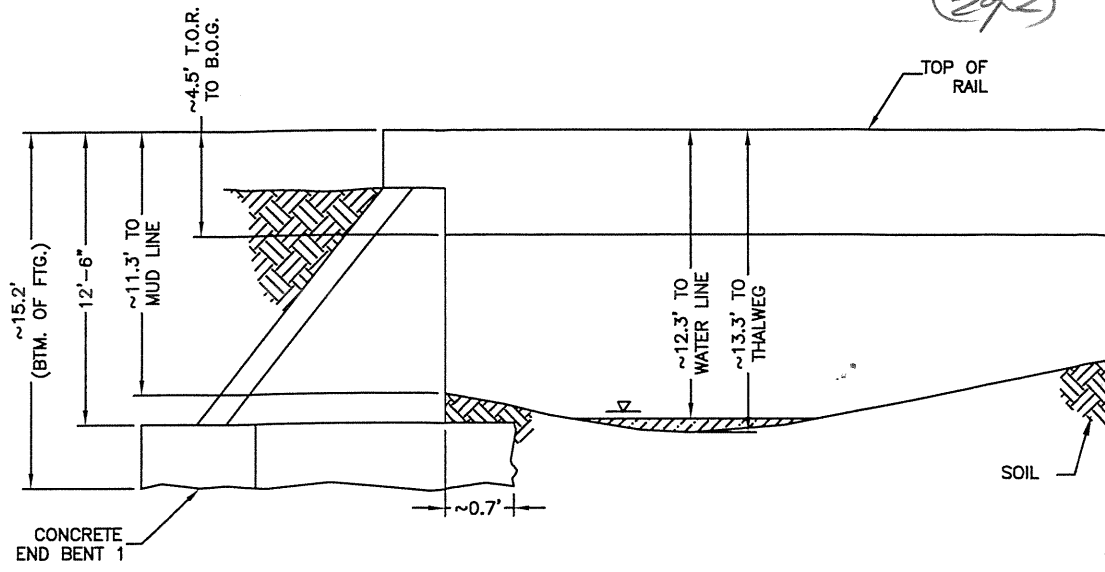
5
10/23/2008

DOWN STREAM BED SOUNDINGS

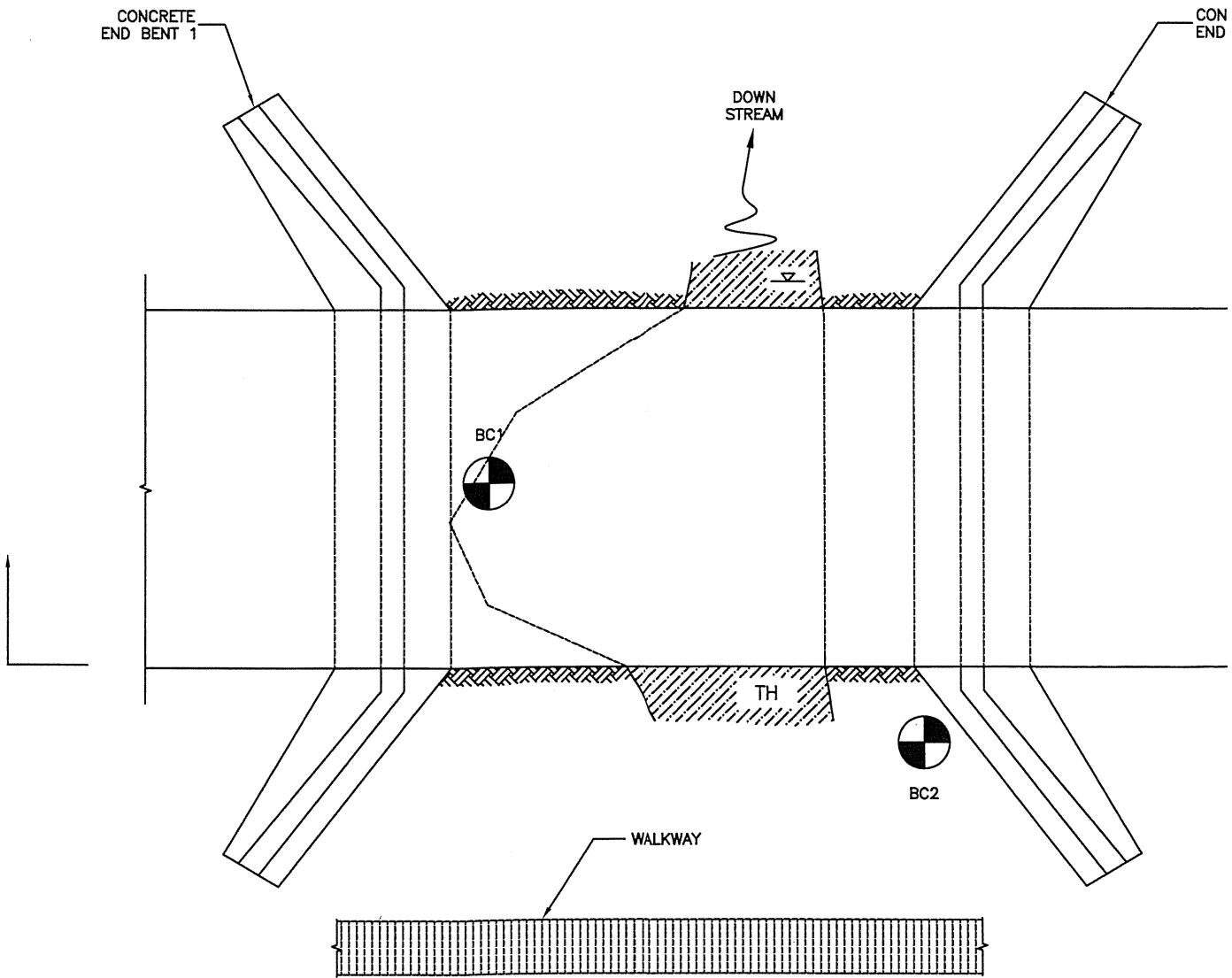


FDH Engineering, Inc. 2730 Rowland Rd., Raleigh, NC 27615

T: (919) 755-1012 F: (919) 755-1031

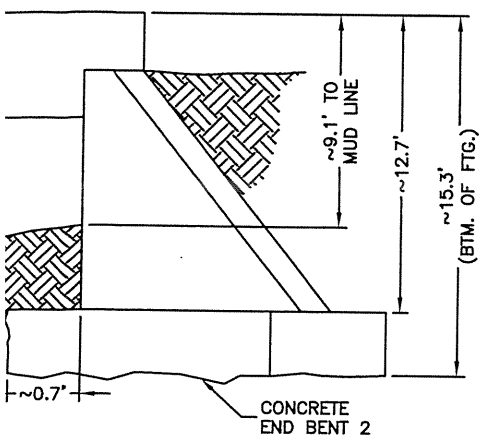


ELEVATION
NTS



FOUNDATION PLAN
NTS

040023



E
IT 2



BLOW COUNT CHART			
BC1		BC2	
DEPTH (T.O.R.)	BPF	DEPTH (T.O.R.)	BPF
11.9'-12.9'	42	9.1'-10.1'	WOH
12.9'-13.9'	42	10.1'-11.1'	WOH
13.9'-14.9'	50	11.1'-12.1'	WOH
15.0'	REF.	12.1'-13.1'	10
		13.1'-14.1'	27
		14.1'-15.1'	27
		*15.1'-16.1'	52
		16.1'-17.1'	65
		17.1'-17.3'	50/3"

* INDICATES BOTTOM OF FOOTER
AT LOCATION OF BLOW COUNT

Prepared for:

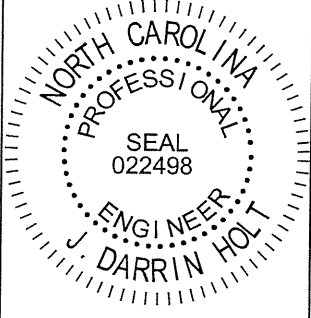


NCDOT - HYDRAULICS DEPT.
1590 MAIL SERVICE CENTER
RALEIGH, NC 27699-1590

Prepared by:



2730 ROWLAND DRIVE
SUITE 100
RALEIGH, NC 27615
PHONE (919) 755-1012
FAX (919) 755-1031



SITE ID: #040023
DRAWN BY: CDJ
CHECKED BY: JDH
JOB NO: 08-06077E

SUBMITTALS		
DATE	DESCRIPTION	REV
04/02/09		A

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SITE NAME:
ASHE

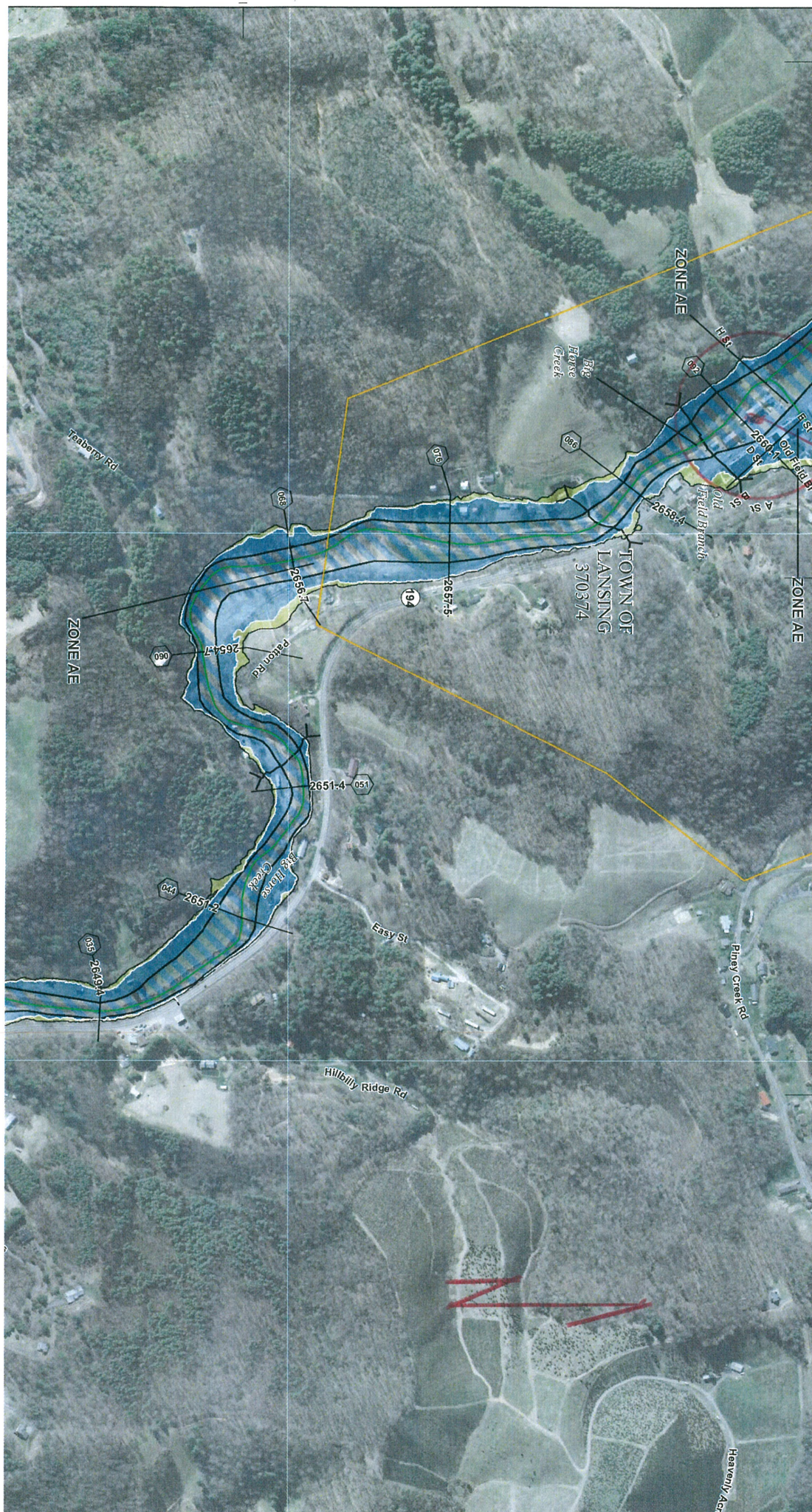
SITE NUMBER:
#040023

SITE ADDRESS:
NC 194
ASHE COUNTY

SHEET TITLE
FOUNDATION
PLANS

SHEET NUMBER
A-1

81°30'0"W



23

