

NCDOT HYDRAULICS UNIT PREDESIGN-PRESURVEY REPORT

PRE-FIELD SCOPING MEETING RECOMMENDATION:

TIP No.:	B-5507	Let Date:		WBS No.:	55007.1.1	County:	Chowan
Bridge No.:	200024	Road No.:	NC 32	Stream:	Warwick Swamp		
Bridge Length Recommendation:	2 @ 50', 36" PS Girder						

Date:	1/20/2015	Company:	Ecological Engineering	Assigned To:	R. Robol
Checked By:	F. Fleming				

EXISTING BRIDGE INFORMATION:

Location:	Located on NC 32 0.7 Mile North of NC 37						
ADT:	2100	ADT Year:	2014	Does 100 Yr. WSEL Overlap Roadway:	NO		
Length(ft):	64.0'	Ex. Structure Depth=1.5'		Bed-To-Crown(ft):	10.1'	Water Depth(ft):	3.6'
Type of Structure:	Continuous Conc. Slab on RC Abuts/Caps on timber piles						
Type of Spans:	8 @ 8.0' (including crutch bents)						
Prior Survey Date: (Attach Copy of Prior Survey)	03/1952						
Study by Scour:	11/09/2010	Code:	5				
Flood Zone:	AE	Study Type:		Date:	7/20/2009	Panel No.:	6994
BM Info:							
Quad Map:	Mintonville /Hobbsville	Drainage Area:	9.1 Sq. Mi.	From:	Quad/Streamstats		
Q25:	936 CFS	Q50:	1160 CFS	Q100:	1410 CFS	Method:	USGS SIR 2009-5158

HIGH WATER INFORMATION:

Division Bridge and County Maintenance High Water Observations:	
Local Users High Water Observations:	None available at time of survey

OTHER STRUCTURES:

Upstream Structure Description:	NA- No equivalent comparison		
Location:	NA		
Bed-To-Crown:	NA	Prior Survey Date:	NA
Downstream Structure Description:	200008- 2@45' PPC Cored Slab on Steel Piles		
Location:	Located on SR 1232 0.4 Mile North of SR 1233		
Bed-To-Crown:	9.8'	Prior Survey Date:	7/1987

ENVIRONMENTAL:

River Basin:		Primary Stream Classification:	C	Cama Cnty:	YES
Secondary Stream Classification/Other:	☐ FWS ☐ HQW ☐ ORW ☒ NSW ☐ SW ☐ TR ☐ UWL ☐ PNA ☐ Within 1/2 Mile of Critical Area ☒ Anadromous Fish				

Notes:

FEMA- No Study on Warwick Swamp-Flooding Source is Chowan River

HYDRAULICS UNIT (COMPLETED BY HYDRAULICS UNIT STAFF PRIOR TO THE FSM)

WILL THIS PROJECT REQUIRE A FEMA PERMIT? **NO**

IS THERE UNUSUAL SCOUR POTENTIAL? **NO** IS PROTECTION NEEDED? **NO**

ARE BANKS STABLE? **Yes** IS PROTECTION NEEDED? **No**

DOES STREAM CARRY APPRECIABLE AMOUNT OF LARGE DEBRIS? **No**

WILL THE PLACEMENT OF BENTS IN THE WATER BE ALLOWED **Yes** COMMENTS

WERE HYDRAULIC ALTERNATIVES BESIDES A BRIDGE CONSIDERED **No** COMMENTS

POSSIBLE SPAN LAYOUT: **Recommended: 2@50' ; 36" PS Girder**

GEOTECHNICAL UNIT (COMPLETED BY GEOTECHNICAL UNIT PRIOR TO THE FSM)

EXISTING FOUNDATION REPORTS? **NO** IF SO, ATTACH.

KNOWN GEOLOGICAL FEATURES IN AREA WHICH MAY AFFECT DESIGN **NONE**

ARE PERMITS NEEDED FOR INVESTIGATIVE WORK AT SITE **NO** COMMENTS:

ARE THERE ANY HISTORICAL AND / OR VIBRATION SENSITIVE STRUCTURES NEAR BY **NO** COMMENTS:

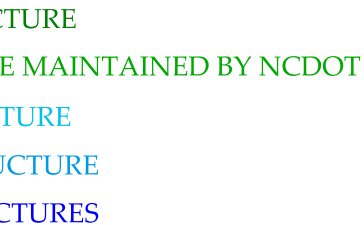
ARE THERE ANY KNOWN LANDFILLS AND / OR GEOENVIRONMENTAL HAZARD SITES AT OR WITHIN CLOSE PROXIMITY TO THE PROJECT SITE **NO** COMMENTS:

DEPTH OF WEATHERED ROCK OR ROCK BELOW STREAMBED **N/A (FT.)**

ARE ANY IMPACTS ANTICIPATED TO NATURAL SPRINGS OR ARTESIAN WELLS **NO** COMMENTS:

POSSIBLE FOUNDATION TYPE: **PILES; 3:1 or flatter side slopes needed for vegetation and erosion control.**

200024
B-5507 Chowan





NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MANAGEMENT UNIT

ATTENTION

SHORED STRUCTURE

BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY CHOWAN

BRIDGE NUMBER 200024

INSPECTION CYCLE 2 YRS

ROUTE NC32

ACROSS WARWICK SWAMP

M.P. 0

LOCATION 0.7 MI N JCT NC37

SUPERSTRUCTURE CONT.MONOLITHIC SLAB

SUBSTRUCTURE RC ABUTS;INT.BTS:RC CAPS ON TIM.PILES;STL CRUTCH BTS ADDED

SPANS 8@8'CONTINUOUS

LONGITUDE 76° 38' 17.91"

LATITUDE 36° 19' 48.25"

INSPECTION DATE 11/19/2012

PRESENT CONDITION FAIR

PRESENT POSTING N Not Posted

PROPOSED POSTING

OTHER SIGNS PRESENT 4 DELINEATORS



LOOKING NORTH

SIGN NOTICE
ISSUED FOR

NUMBERED
REQUIRED

No

WEIGHT LIMIT

No

DELINEATORS

No

NARROW BRIDGE

No

ONE LANE BRIDGE

No

LOW CLEARANCE

NATIONAL BRIDGE INVENTORY----- STRUCTURE INVENTORY AND APPRAISAL

Run Date: 02/11/2013

IDENTIFICATION					
(1) STATE NAME -NORTH CAROLINA	BRIDGE	200024	SUFFICIENCY RATING =		40.23
(8) STRUCTURE NUMBER(FEDERAL)	00000000410024	STATUS =		Functionally Obsolete	
(5) INVENTORY ROUTE (ON/UNDER) - ON	31000320				
(2) STATE HIGHWAY DEPARTMENT DISTRICT	3	CLASSIFICATION		CODE	
(3) COUNTY CODE 41 (4) PLACE CODE	0	(112)NBIS BRIDGE SYSTEM -		YES	
(6) FEATURE INTERSECTED - WARWICK SWAMP		(104)HIGHWAY SYSTEM Is not on NHS		0	
(7) FACILITY CARRIED NC32		(26) FUNCTIONAL CLASS - Minor Arterial		06	
(9) LOCATION 0.7 MI N JCT NC37		(100)STRAHNET HIGHWAY - Not a STRAHNET Route		0	
(11)MILEPOINT	0	(101)PARALLEL STRUCTURE - No Parallel Structure		N	
(16)LAT 36° 19' 48.25" (17)LONG 76° 38' 17.91"		(102)DIRECTION OF TRAFFIC - 2-way Traffic		2	
(98)BORDER BRIDGE STATE CODE	PCT SHARE	(103)TEMPORARY STRUCTURE -			
(99)BORDER BRIDGE STRUCTURE NO		(110)DESIGNATED NATIONAL NETWORK - Not on the National Network		0	
		(20) TOLL On Free Road		3	
		(31) MAINTAIN - State Highway Agency		01	
		(22) OWNER - State Highway Agency		01	
		(37) HISTORICAL SIGNIFICANCE - Not Eligible		5	
STRUCTURE TYPE AND MATERIAL					
(43) STRUCTURE TYPE MAIN: Concrete continuous					
TYPE - Slab	CODE	201			
(44) STRUCTURE TYPE APPR :					
TYPE -	CODE	000	CONDITION		CODE
(45) NUMBER OF SPANS IN MAIN UNIT	8	(58) DECK	5		
(46) NUMBER OF APPROACH SPANS		(59) SUPERSTRUCTURE	5		
(107)DECK STRUCTURE TYPE - 1	CODE	(60) SUBSTRUCTURE	5		
(108)WEARING SURFACE / PROTECTIVE SYSTEM :		(61) CHANNEL & CHANNEL PROTECTION	5		
(A) TYPE OF WEARING SURFACE -	CODE	(62) CULVERTS	N		
(B) TYPE OF MEMBRANE -	CODE				
(C) TYPE OF DECK PROTECTION -	CODE	LOAD RATING AND POSTING		CODE	
		(31) DESIGN LOAD	H 15	2	
		(63) OPERATING RATING METHOD -	Load Factor		
		(64) OPERATING RATING -	HS-16	128	
		(65) INVENTORY RATING METHOD -	Load Factor		
		(66) INVENTORY RATING -	HS-9	117	
		(70) BRIDGE POSTING -	No Posting Required	5	
		(41) STRUCTURE OPEN, POSTED ,OR CLOSED	A		
		DESCRIPTION -	Open, No Restriction		
AGE AND SERVICE				APPRAISAL	
(27) YEAR BUILT	1923	(67) STRUCTURAL EVALUATION	4		
(106)YEAR RECONSTRUCTED	1952	(68) DECK GEOMETRY	3		
(42) TYPE OF SERVICE : ON - Highway		(69) UNDERCLEARANCES,VERTI & HORIZ	N		
UNDER - Waterway	CODE 15	(71) WATERWAY ADEQUACY	7		
(28) LANES: ON STRUCTURE 2 UNDER STRUCTURE	0	(72) APPROACH ROADWAY ALIGNMENT	8		
(29) AVERAGE DAILY TRAFFIC	2800	(36) TRAFFIC SAFETY FEATURES	0000		
(30) YEAR OF ADT 2011 (109) TRUCK ADT PCT	8%	(113)SCOUR CRITICAL BRIDGES	5		
(19) BYPASS OR DETOUR LENGTH	8 MI	PROPOSED IMPROVEMENTS			
		(75) TYPE OF WORK -	CODE		
		(76) LENGTH OF STRUCTURE IMPROVEMENT			
		(94) BRIDGE IMPROVEMENT COST			
		(95) ROADWAY IMPROVEMENT COST			
		(96) TOTAL PROJECT COST			
		(97) YEAR OF IMPROVEMENT COST ESTIMATE			
		(114)FUTURE ADT 5600 (115) YEAR FUTURE ADT	2025		
GEOMETRIC DATA				INSPECTIONS	
(48) LENGTH OF MAXIMUM SPAN	8 FT	(90) INSPECTION DATE	11/19/2012		
(49) STRUCTURE LENGTH	64 FT	(92) CRITICAL FEATURE INSPECTION :	(93) CFI DATE		
(50)CURB OR SIDEWALK: LEFT 1.5415 FT RIGHT 1.5415 FT		A) FRACTURE CRIT DETAIL -	NO	A)	
(51) BRIDGE ROADWAY WIDTH CURB TO CURB	26.25 FT	B) UNDERWATER INSP -	YES 48Mo	B) 02/15/2010	
(52) DECK WIDTH OUT TO OUT	27.667 FT	C) OTHER SPECIAL INSP	NO	C)	
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)	20 FT	SCOUR			
(33) BRIDGE MEDIAN - No Median	CODE 0				
(34) SKEW 0° (35) STRUCTURE FLARED	0				
(10) INVENTORY ROUTE MIN VERT CLEAR	999.9 FT				
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR	26.25 FT				
(53) MIN VERT CLEAR OVER BRIDGE RDWY	999.9 FT				
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad	0 FT				
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad	000 FT				
(56) MIN LAT UNDERCLEAR LT REF -	000 FT				
NAVIGATION DATA					
(38) NAVIGATION CONTROL - No Navigational Control	CODE	0			
(111)PIER PROTECTION -	CODE				
(39) NAVIGATION VERTICAL CLEARANCE	0				
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR	FT				
(40) NAVIGATION HORIZONTAL CLEARANCE	0 FT				

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE

Run Date: 02/11/2013

COUNTY :	DIVISION :	DISTRICT :	STRUCTURE NUMBER :	LENGTH :	
CHOWAN	1	3	200024	64	FEET

ROUTE CARRIED :	FEATURE INTERSECTED :
NC32	WARWICK SWAMP

LOCATED :	BRIDGE NAME :	CITY :
0.7 MI N JCT NC37		

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
06	FA	NFA	2800 2011	LT 141 RT 141

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
1923	SHPWC	1143	264 (4)	H 15

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :		
1952	SHPWC		TAN	90	ON 2	UNDER	0

NAVIGATION :			HT. CRN. TO BED :		WATER DEPTH :		
VC 0 FT	HC 0 FT		9 FT		3		FT

SUPERSTRUCTURE :	CONT.MONOLITHIC SLAB
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SUBSTRUCTURE :	RC ABUTS;INT.BTS:RC CAPS ON TIM.PILES;STL CRUTCH BTS ADDED
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SPANS :	8@8'CONTINUOUS
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BEAMS OR GIRDERS :	CONT.MONOLITHIC SLAB
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FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
MON SLAB/2 AWS		27.667 FT

CLEAR ROADWAY :	BETWEEN RAILS :	SIDEWALK OR CURB :
26.25 FT	29.333 FT	LT 1.5415 FT RT 1.5415 FT

VERT.CL.OVER :
999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :		DATE
HS-9	HS-16	mono. slab	SV TTST		03/30/1995

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

UNDER ROUTES AND CLEARANCES

REMARKS :

BRIDGE INSPECTION RECORD AND SUMMARY

INSPECTION TYPE Routine Inspection
 BRIDGE NO. 200024 COUNTY CHOWAN ROUTE NC32 OVER WARWICK SWAMP
 STRUCTURE TYPE CONT.MONOLITHIC SLAB
 ROUTE ORIENTATION S - N SPANS 8@8'CONTINUOUS

EVALUATION CODES: CRITICAL (C, 0 - 3); POOR (P, 4); FAIR (F, 5, 6); GOOD (G, 7 - 9)

INSPECTION ITEM				ITEM 61			
DECK ITEMS			GRADES				
1. WEARING SURFACE			F	45. CHANNEL & CHANNEL PROT.	a. WATERWAY	F	
					b. ALIGNMENT	G	
					c. SCOUR	G	
					d. SLOPE PROT., RIP-RAP, DIKES, ETC.		
2. DECK NO. OF EA TYPE SPN GRADE RATES SI & A ITEM 58	a. CONCRETE	8	F	50. APPROACH ROADWAY CONDITION			F
	b. TIMBER			51. APPROACH SLABS			
	c. STEEL PLANK			52. PAINT SYSTEM			CODE
	d. OPEN GRID			53. UTILITIES			
3. RAILING	a. CONCRETE		G	54. RESPONSE TO LIVE LOAD			G
	b. TIMBER			55. ESTIMATED REMAINING LIFE			10
	c. ALUMINUM						
	d. STEEL						
4. CURBS, WHEELGUARDS, PARAPETS, MEDIANS			F				
5. WALKWAYS (ON OR ATTACHED TO STRUCTURE)				60. REGULATORY SIGN NOTICE ISSUED			NO
6. DECK EXP JTS. OR DEVICES. NO. OF EACH	a. STEEL PL OR FINGER			61. PROMPT-ACTION NOTICE ISSUED			NO
	b. MISC PREFAB			62. PRESENTLY POSTED			NO
	c. COMPRESSION SEAL			63. TOT. FIELD INSP TIME (INCLUDE WRITE UP)(MAN HR)			3
	d. STANDARD JOINTS	1	F	64. TOTAL SNOOPER INSP. TIME (HRS)			
	e. OPEN JOINTS			65. TOTAL TRAFFIC CONTROL TIME (MAN HRS)			
7. DECK DEBRIS (INCLUDES EXCESS SAND/GRAVEL)			F				
				70. SI&A GENERAL CONDITION RATINGS			
SUPER STR. (FM. 1 (90)B TRUSS) ITEM 59				a. DECK	ITEM 58	5	
10. LONGITUDINAL BEAMS OR GIRDERS			F	b. SUPERSTRUCTURE	ITEM 59	5	
11. LONGITUDINAL JOIST OR STRINGERS				c. SUBSTRUCTURE	ITEM 60	5	
12. INT. DIAP'S, X-FRAMES, BRACING & CONN'S				d. CHANNEL & CHANNEL PROT.	ITEM 61	5	
13. END DIAP'S, CURTAIN WALLS, & CONN'S							
14. FLOOR BEAMS AND CONNECTIONS				71. SI&A FIELD APPRAISAL RATINGS			
15. BEARING ASSEMBLIES (INCLUDING MISALIGN)			G	a. WATERWAY ADAQUACY		7	
16. DRAINAGE SYSTEM (ON STRUCTURE)			F	b. APPR. RDWY. ALIGNMENT		8	
17. MOVABLE SPAN MACHINERY							
				72. FIELD SCOUR EVALUATION			O
SUB STR. ITEMS. ITEM 60 (INCLUDE SCOUR)							
35. TIM SUB STR.	a. ABUT. & INT. BENT CAPS & RISERS			USE OF INSP. ACCESSIBILITY EQUIPMENT			
	b. PILES, POST, SILLS, & BRACING		F	SNOOPER (CODE S, 4, OR N)		HRS	NO
	c. BULKHEADS, WING'S, & TIE BACKS		F	LADDER			NO
36. CONC SUB STR.	a. ABUT. & INT. BENT CAPS		F	BUCKET TRUCK			NO
	b. ABUT. & BENT COL'S BREASTWALLS		F	BOAT			NO
	c. ABUT. & INT. BENT PILES			OTHER			NO
	d. BACKWALLS, WING'S, RETAIN. WALLS		F				
	e. ABUT. & BENT FOOTINGS & SILLS						
37. STEEL SUB STR.	a. ABUT. & INT. BENT CAPS & RISERS		F	SPECIAL INSPECTION REQUESTED FOR			
	b. PILES, BRACING, AND BULKHEADS		F				
38. FOUNDATION PILES TYPE MATERIAL				NOTE			
39. SLOPE PROT., RIP-RAP (INCLUDE DRAINAGE)							
40. FENDER SYSTEMS				80. INSPECTED BY:	<i>Bethel and D...</i>		
41. DRIFT			F	81. REVIEWED BY:			

Structure Data Worksheet

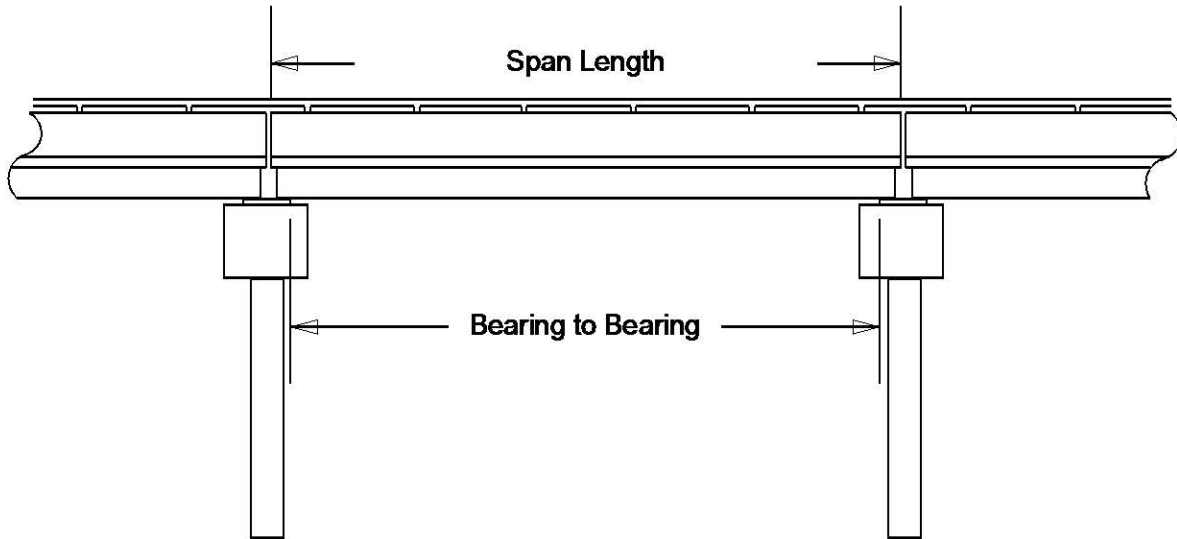
Spans

County: CHOWAN

Structure No: 200024

Date: 11/19/2012

Inspected By: ZSD



Span No	Span Length	Bearing to Bearing	Comments
1	8'	8'	
2	8'	7'	
3	8'	8'	
4	8'	7'	
5	8'	8'	
6	8'	7'	
7	8'	8'	
8	8'	7'	

Stream Bed Soundings

(See next sheet for profile sketch)

Bridge No: 200024 County: CHOWAN Date: 11/19/2012 By: ZSD

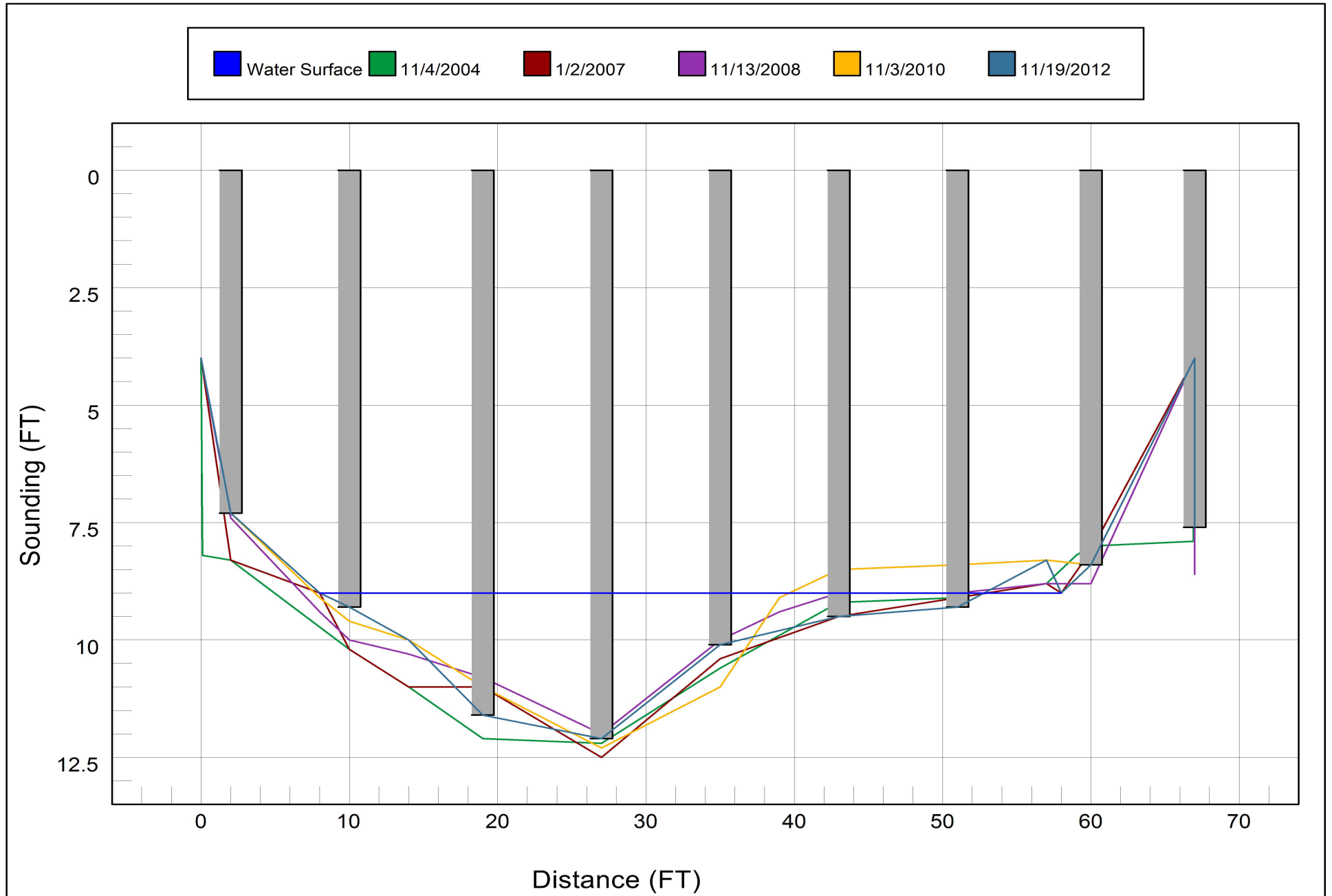
Record sounding from top of rail. Other location if needed:

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	4	TOP OF CAP			
2	7.3	ABUTMENT 1	2	10	ABUTMENT 1
8	9	WSWE			
10	9.3	BENT 1	10	10.9	BENT1
14	10	GROUND			
19	11.6	BENT2	19	10.5	BENT 2
27	12.1	BENT3	27	9.7	BENT 3
35	10.1	BENT 4	35	9.1	BENT 4
43	9.5	BENT 5	43	9	BENT 5
51	9.3	BENT6	51	9	BENT 6
57	8.3	GROUND			
58	9	WSWE			
60	8.4	BENT 7	60	8.7	BENT 7
67	4	TOP OF CAP	67	8	ABUTMENT 2
67	7.6	ABUTMENT 2			

STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



Bridge Inspection Field Sketch



Roadway	20ft Wide	2 Paved Lanes	Looking North
Left Shoulder	8ft Wide		8ft Unpaved
Right Shoulder	8ft Wide		8ft Unpaved
Left Guardrail			
Right Guardrail			

Title

APPROACH ROADWAY

Description

APPROACH ROADWAY

Bridge No: 200024

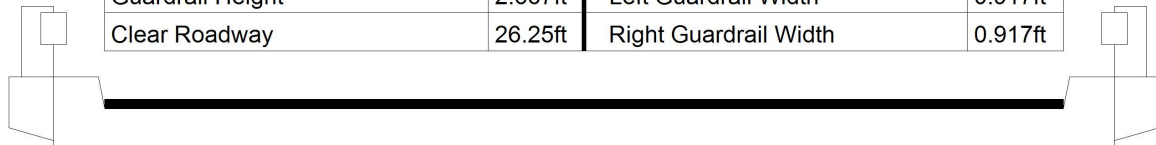
Drawn By GLH

Date: 11/19/2012

File Name: S0034000127

Bridge Inspection Field Sketch

Out to Out	27.667ft	Wearing Surface	0.167ft
Between Rails	29.333ft	Median Width	
Curb Height	0.667ft	Median Height	
Guardrail Height	2.667ft	Left Guardrail Width	0.917ft
Clear Roadway	26.25ft	Right Guardrail Width	0.917ft



Measurements for Span #	1		
Deck Thickness	1	Left Overhang	
Top of Rail to Bottom of Beam	4.583	Right Overhang	

Title

TYPICAL SECTION

Description

TYPICAL SECTION

Bridge No: 200024

Drawn By: GLH

Date: 11/19/2012

File Name: S0034000128

Bridge Inspection Field Sketch



Bent #	2	Bents 6 similar	
Cap - Pre-Cast			
Cap Size	27.833ft Long	2.25ft Wide	2.083ft High
Left Overhang	0.833ft		
Right Overhang	1.5ft		

Pile #	Material	Pile Type	Spacing	Length	Width/Diam.	Height	Orientation
1	Wood or Timber	Pile Bent	4.5 ft		1.250 ft		Vertical
2	Wood or Timber	Pile Bent	5 ft		1.250 ft		Vertical
3	Wood or Timber	Pile Bent	5 ft		1.250 ft		Vertical
4	Wood or Timber	Pile Bent	5 ft		1.250 ft		Vertical
5	Wood or Timber	Pile Bent	6 ft		1.250 ft		Vertical
6	Wood or Timber	Pile Bent			1.250 ft		Vertical

NOTE- STRUCTURE HAS RC ABUTMENTS AT EACH END.

Title

BENT 2 SUBSTRUCTURE

Description

PILE DIAGRAM FOR BENT 2 AND BENT 6

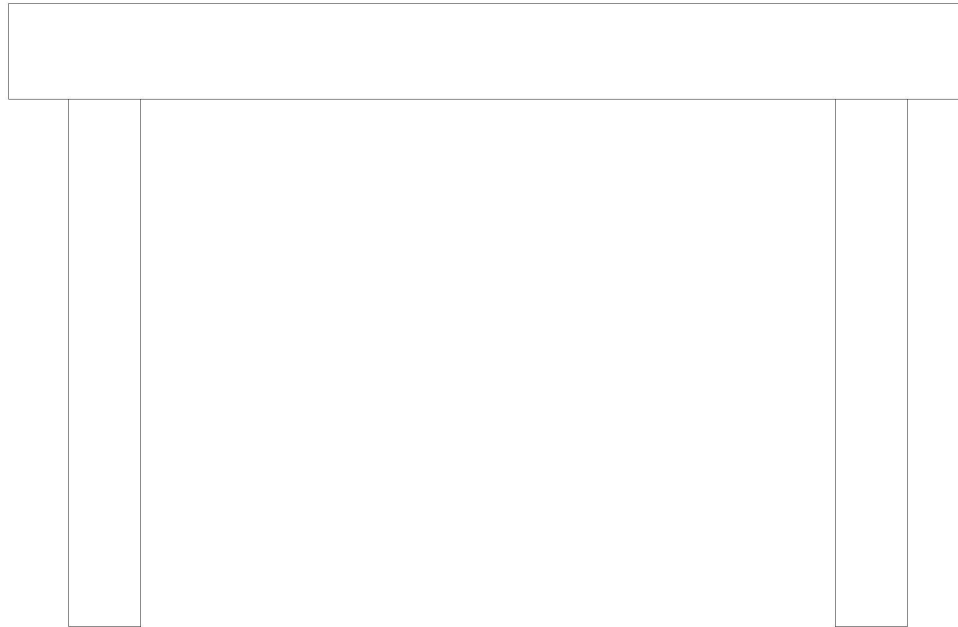
Bridge No: 200024

Drawn By: GLH

Date: 11/19/2012

File Name: S0034000129

Bridge Inspection Field Sketch



Bent #	1	Bents 3,5,7 similar	
Cap - Beam Type (Wood or Steel)			
Cap Size	35.5ft Long	0.958ft Wide	2.75ft High
Left Overhang	1.5ft		
Right Overhang	1.5ft		

Pile #	Material	Pile Type	Spacing	Length	Width/Diam.	Height	Orientation
1	Steel	Pile Bent	32.5 ft		1 ft		Vertical
2	Steel	Pile Bent			1 ft		Vertical

Title

BENT 1 SUBSTRUCTURE

Description

PILE DIAGRAM FOR BENTS 1 3 5 A
ND 7

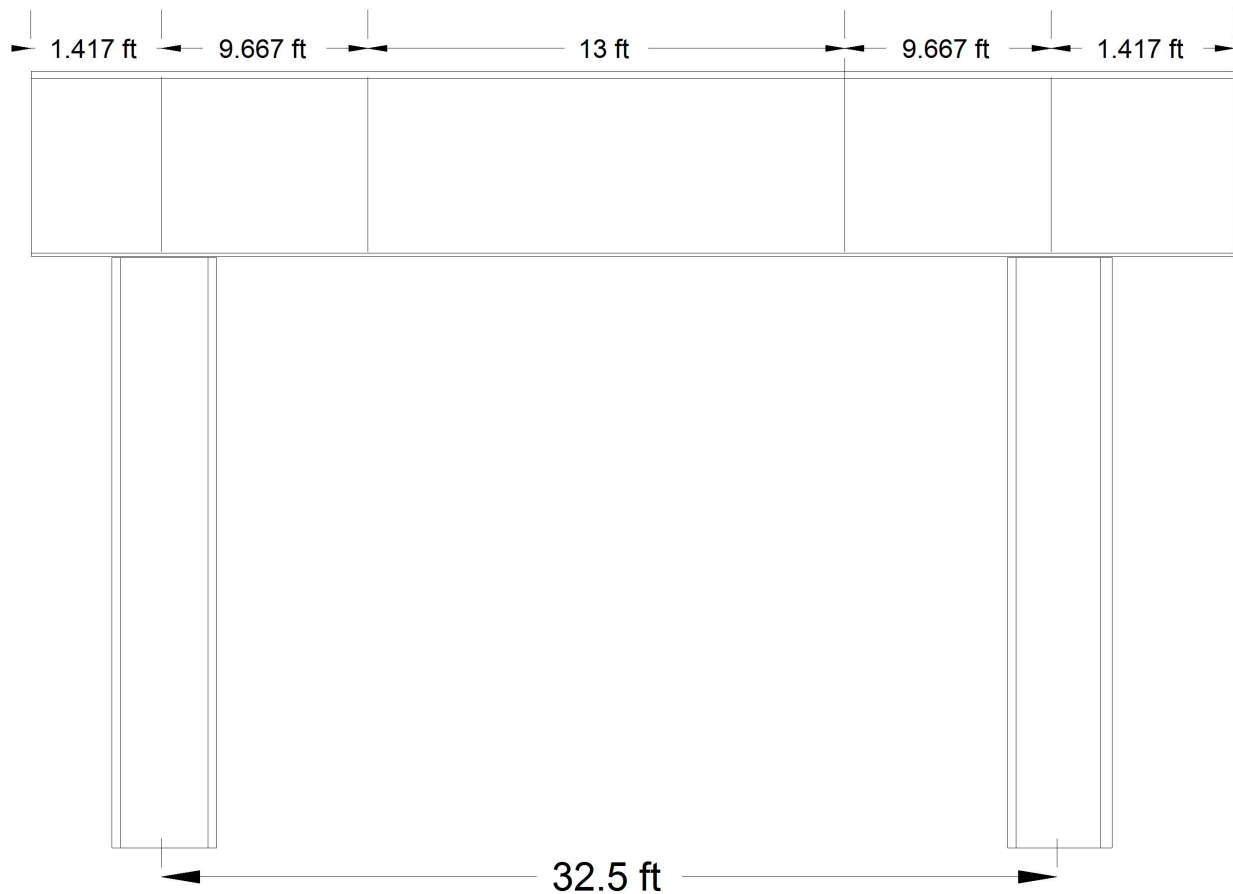
Bridge No: 200024

Drawn By: GLH

Date: 11/19/2012

File Name: S0034000130

Bridge Inspection Field Sketch



Title

STEEL CAP STIFFENER CENTERS

Description

CENTERS FOR STIFFENERS OF STEEL CAPS AT BENTS 1,3,5 AND 7

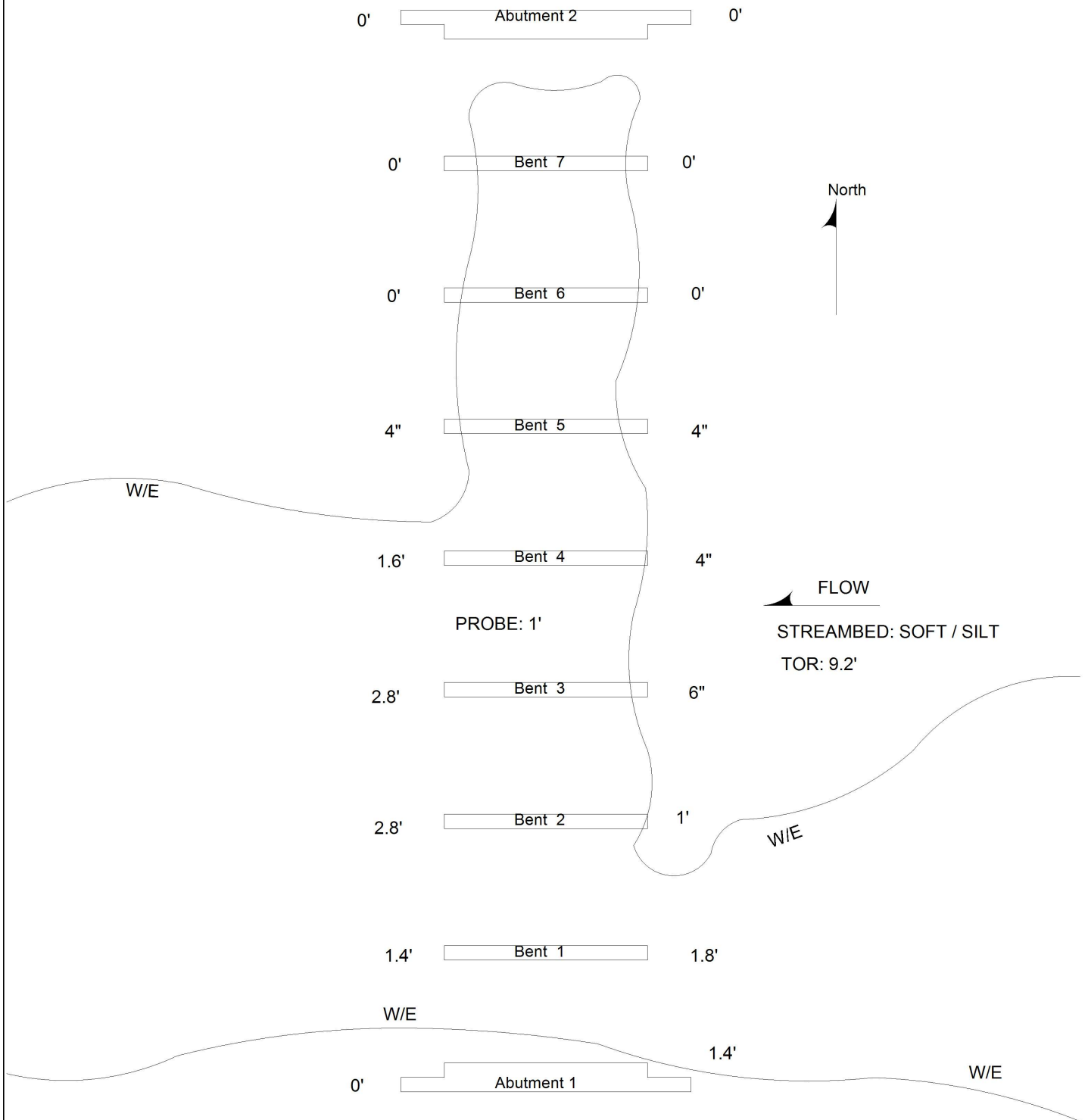
Bridge No: 200024

Drawn By: GLH

Date: 11/19/2012

File Name: S0034000131

Bridge Inspection Field Sketch



REVISED ON 02/15/10 BY J.L

Title

Chowan 24 Plan View

Description

Channel Plan View

Bridge No: 200024

Drawn By: BK

Date: 03/07/2006

File Name: S0170000066



North Bridge End



South Bridge End



Downstream



Upstream



Downstream Face



Upstream Face



Downstream Banks



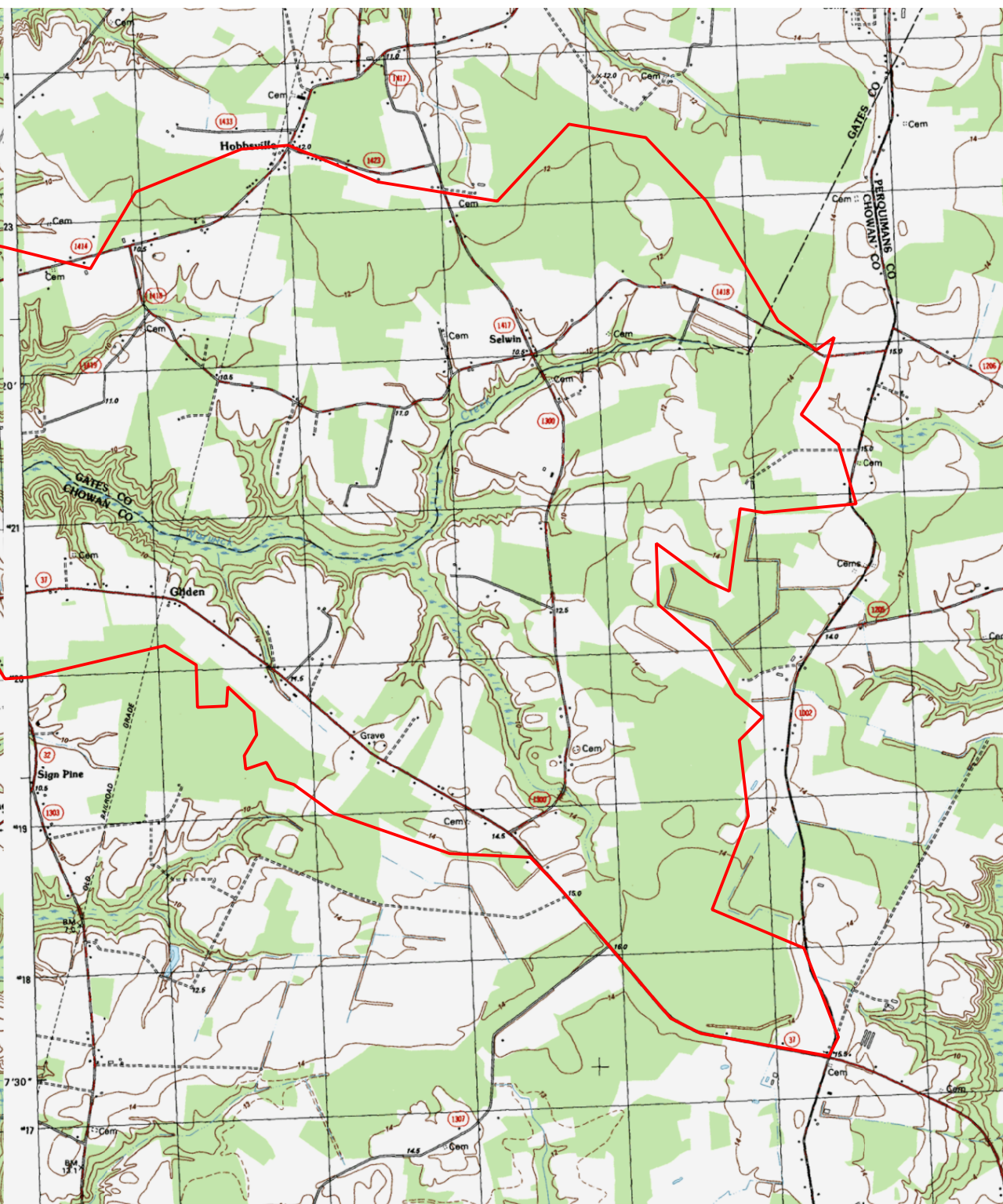
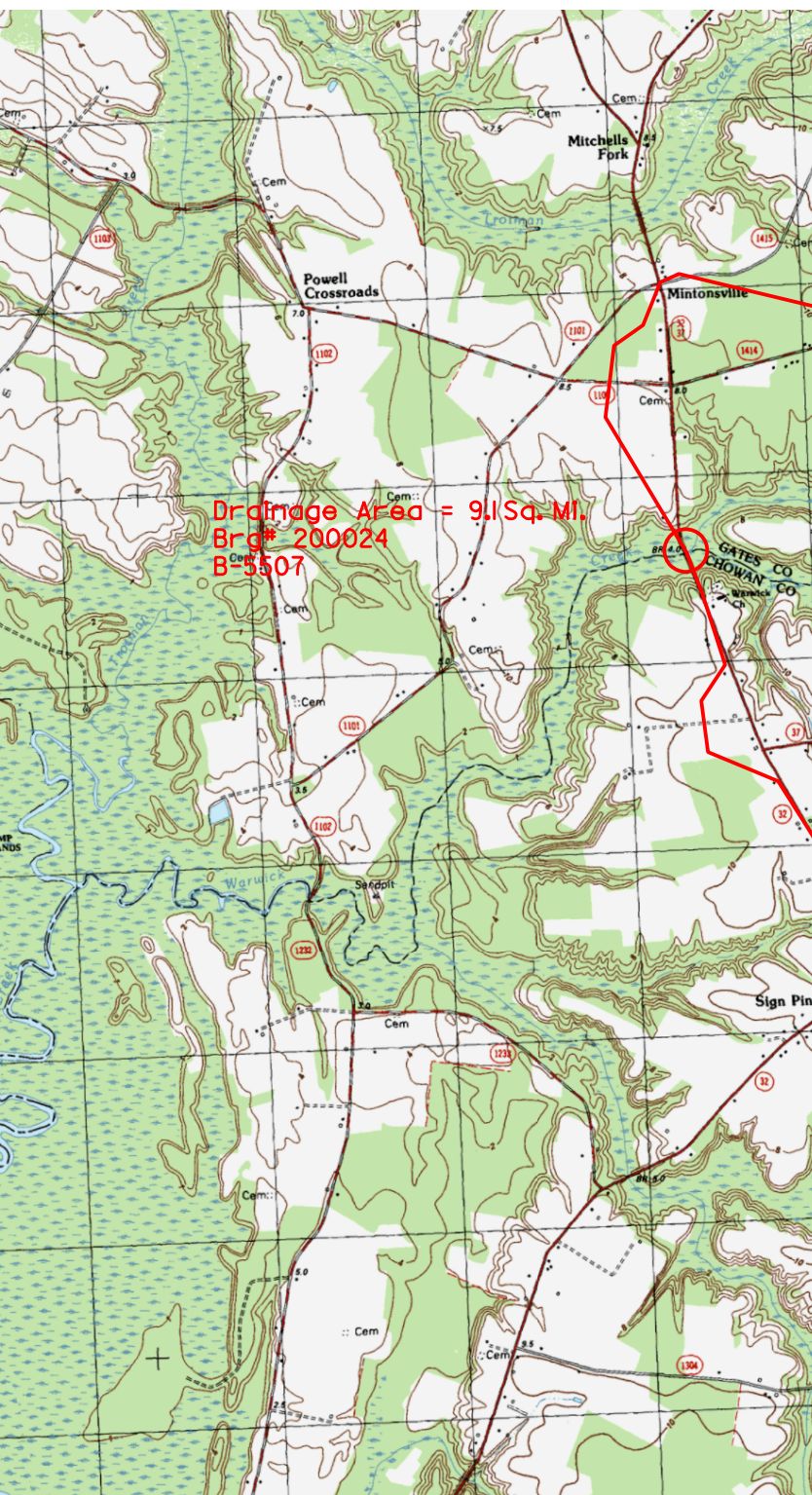
North Up Abut Typical



Look North



Look South



PRELIMINARY DESIGN AND ASSESSMENT
STREAM CROSSING AND ENCROACHMENTS

COUNTY Chowan

PROJECT# B-5507 #24

STREAM Warwick Swamp

ROUTE NC 32

ASSESSMENT PREPARED BY Ecological Engineering, LLP

1/20/2015

HYDROLOGIC EVALUATION

NEAREST GAUGING STATION ON THIS STREAM _____ (NONE ☒) _____

ARE FLOOD STUDIES AVAILABLE ON THIS STREAM: _____ No _____

FLOOD DATA:

Q10 __679__ cfs EST. BKWTR. _____ FT. Q25 __936__ cfs EST. BKWTR. _____ FT.

Q50 __1160__ cfs EST. BKWTR. _____ FT. Q100 __1410__ cfs EST. BKWTR. _____ FT.

Q500 __1990__ cfs OR OVERTOPPING CFS EST. BKWTR. _____ FT.

DRAINAGE AREA _____ METHOD USED TO COMPUTE Q _____

PROPERTY RELATED EVALUATIONS

DAMAGE POTENTIAL: LOW ☒ MODERATE _____ HIGH _____

COULD THIS BE SIGNIFICANTLY INCREASED BY PROPOSED

ENCROACHMENT: YES _____ NO ☒ _____

EXPLANATION: _____

LIST BUILDINGS IN FLOOD PLAIN _____ None _____ LOCATION _____

FLOOR ELEVATION: _____

UPSTREAM LAND USE: __Agriculture/Timber/Swamp__

ANTICIPATE ANY CHANGE? _____ No _____

ANY FLOOD ZONE? (FIA STUDIES, ETC.) YES ☒ NO _____

TYPE OF STUDY __Zone AE- No Study on Warwick Swamp- Flood Source is Chowan River__

BASE FLOOD ELEVATION _____ EI 7.0' _____ (100yr.)

REGULATORY FLOODWAY WIDTH _____ NA _____ (AS NOTED IN FIA STUDIES)

COMMENTS: _____

TRAFFIC RELATED EVALUATIONS

PRESENT YEAR 2014 TRAFFIC COUNT 2100 VPD %TRUCKS _____

DESIGN YEAR 2025 TRAFFIC COUNT 5600 (BMU) VPD % TRUCKS _____

EMERGENCY ROUTE _____ SCHOOL BUS ROUTE _____ MAIL ROUTE _____

DETOUR AVAILABLE? _____ LENGTH OF DETOUR _____ MILES

DOES THE LEVEL OF TRAFFIC SERVICE OF AN EXISTING CROSSING VARY GREATLY FROM
STANDARD DESIGN LEVELS? No _____

IS THE TRAFFIC VOLUME , TYPE, USAGE SUCH TO WARRANT CONSIDERATION FOR VARIANCE
FROM STANDARDS OR EXISTING LEVEL OF INTERRUPTION? No _____

COMMENTS: _____

HIGHWAY AND BRIDGE (CULVERT) RELATED EVALUATIONS

NOTE ANY OUTSIDE FEATURES WHICH MIGHT AFFECT STAGE, DISCHARGE OR FREQUENCY.

LEVEES NA AGGRADATION/DEGRADATION NA RESERVOIRS NA

DIVERSIONS NA DRAINAGE DISTRICT NA NAVIGATION NA

BACKWATER FROM ANOTHER SOURCE Chowan River

EXPLANATION: _____

ROADWAY OVERFLOW SECTION (NONE X) LENGTH _____ ELEVATION _____

EMBANKMENT: SOIL TYPE Sand TYPE SLOPE COVER Grass

COMMENTS: _____

PAGE 2 OF 3

ENVIRONMENTAL CONSIDERATIONS

LIST SPECIAL CONDITIONS OR CONSIDERATIONS WHICH AFFECT HYDRAULIC DESIGN (_____)

CAMA _____

MISCELLANEOUS COMMENTS

IS THERE UNUSUAL SCOUR POTENTIAL? YES _____ NO ☒ PROTECTION NEEDED ☐ No _____

ARE BANKS STABLE? _____ Yes _____ PROTECTION NEEDED ☐ No _____

DOES STREAM CARRY APPRECIABLE AMOUNT OF LARGE DEBRIS? _____ Moderate _____

COMMENTS: _____

ALTERNATIVES

RECOMMENDED DESIGN _____ 2@50', 36" PS Girder _____

DETOUR STRUCTURE _____ 80' Bridge on Downstream Side _____

LOW ROAD GRADE ☐ Match Ex. Low Steel ☐ DETOUR GRADE ☐ Match Existing _____

BRIDGE WATERWAY OPENING _____ > 500 Sq Ft _____ CULVERT OPENING _____ NA _____

WERE OTHER HYDRAULIC ALTERNATIVES CONSIDERED? YES _____ NO ☒ _____

DISCUSSION: _____

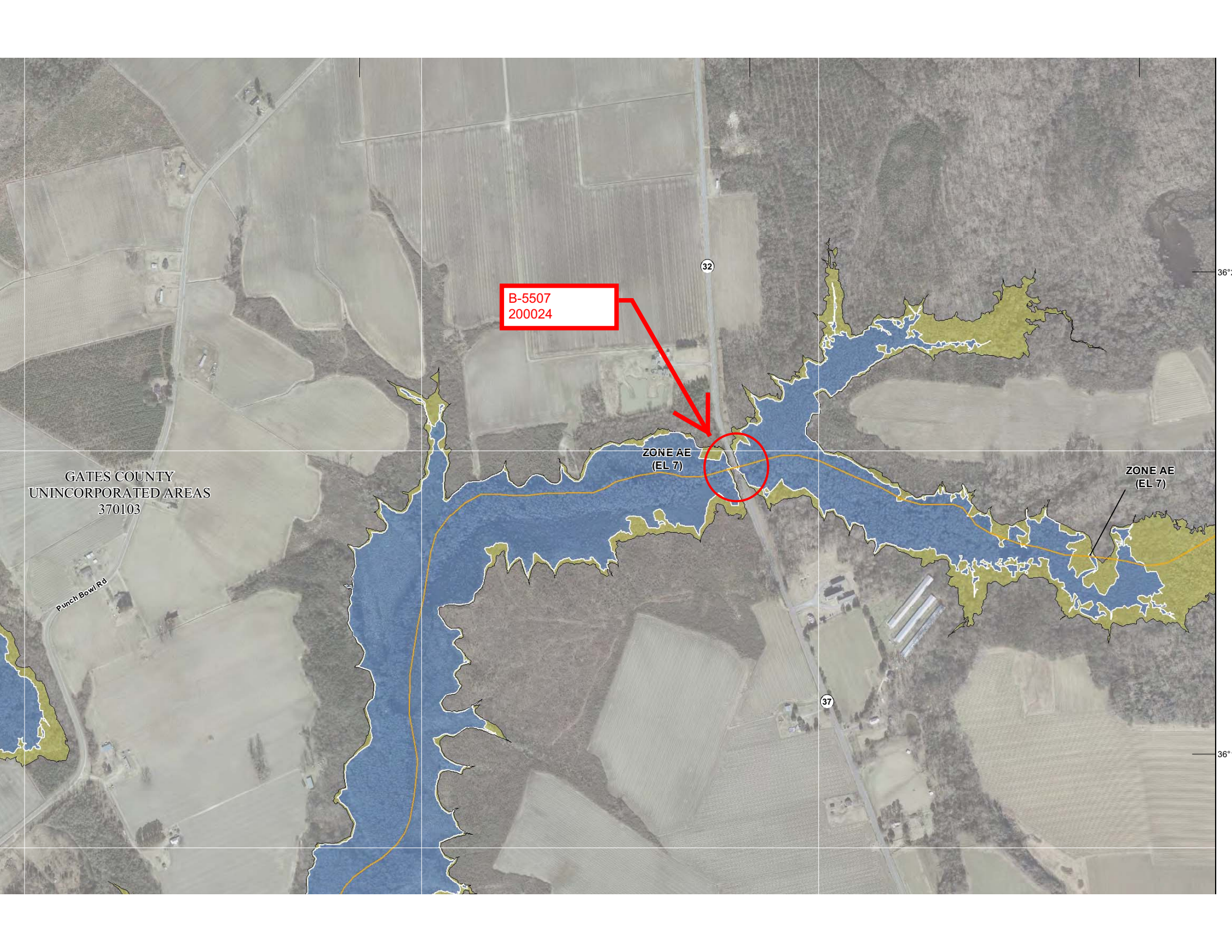
THIS SITE ASSESSMENT INDICATES THE DESIGN SHOULD FOLLOW:

(1) ☒ NORMAL PROCESS

(2) _____ NORMAL PROCESS WITH SPECIAL SPECIFIC CONSIDERATION FOR

(3) _____ SPECIFIC DESIGN PROCESS WITH APPROPRIATE RISK/ECONOMIC EVALUATION

ADDRESSING: _____



B-5507
200024

GATES COUNTY
UNINCORPORATED AREAS
370103

Punch Bowl Rd

32

ZONE AE
(EL 7)

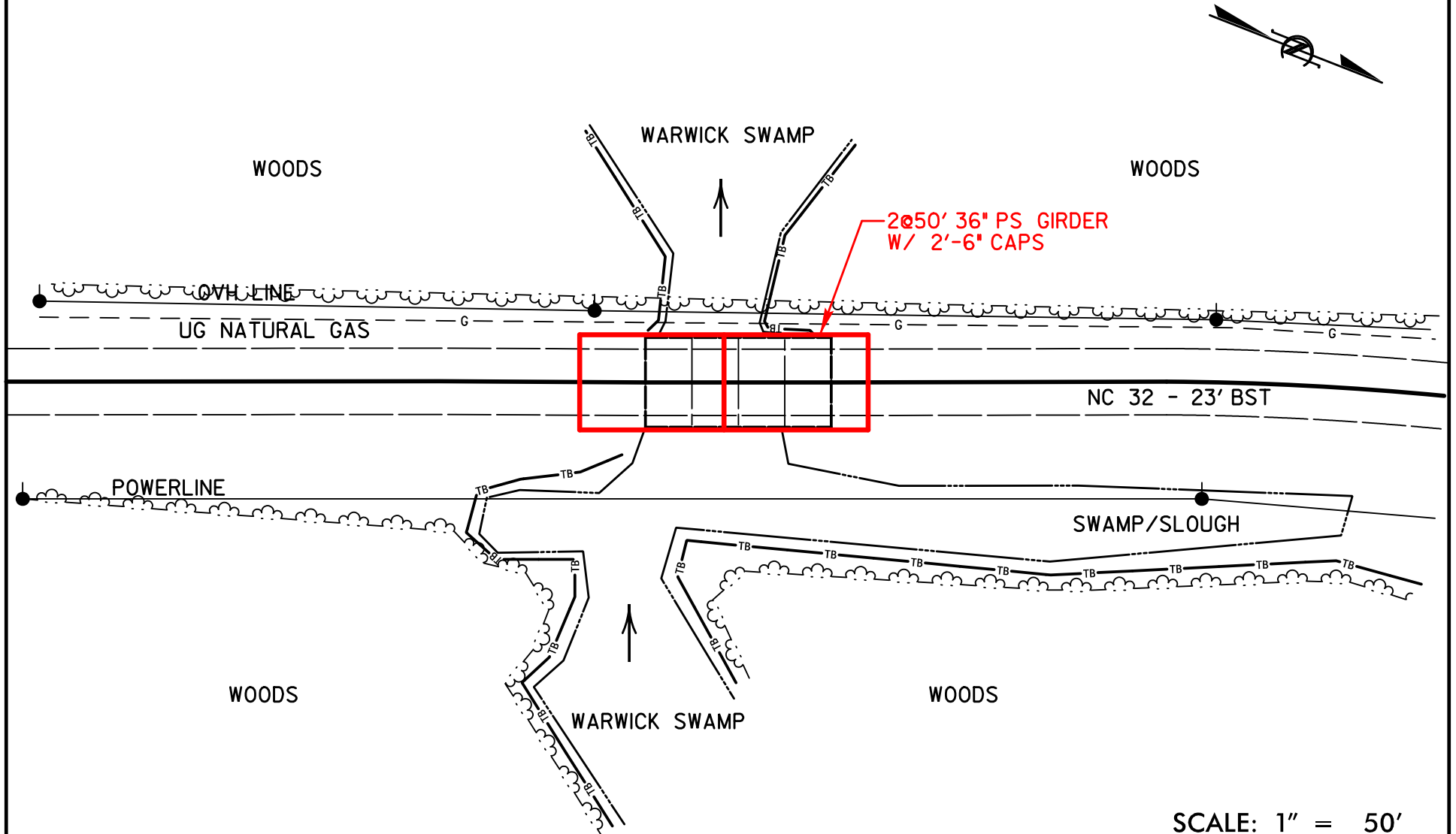
37

ZONE AE
(EL 7)

36°

36°

HYDRAULIC SKETCH – PLAN VIEW

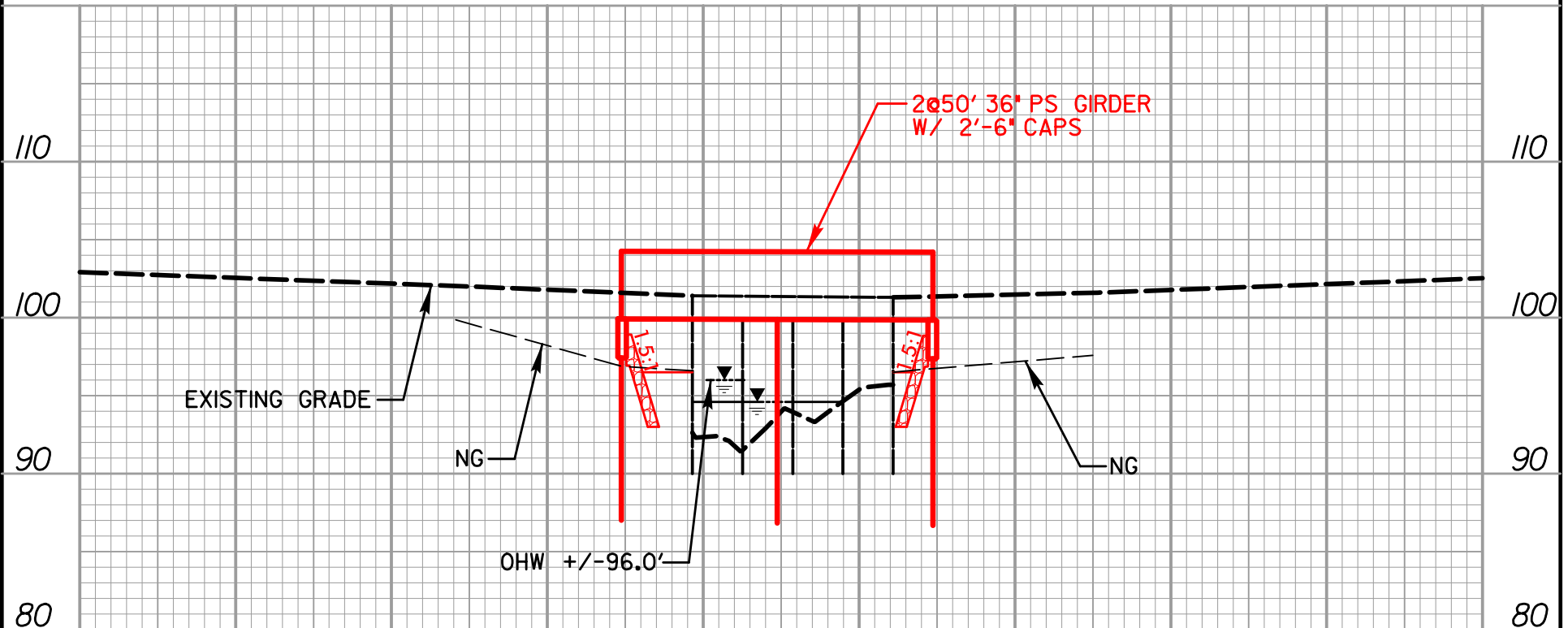


I.D. No.: B-5507

COUNTY: CHOWAN

BRIDGE No.: 200024

HYDRAULIC SKETCH – PROFILE VIEW



$64' + 2[10 + 1.5(5.0)] = 99.0'$ SAY 100'
PROPOSED SUPERSTRUCTURE DEPTH: 4.0' (FIG. 6-1) $0.02(16.5) = 4.3'$
MAINTAIN EX. LOW STEEL, RAISE GRADE +/- 2.8'

HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'
VERTICAL DATUM IS ASSUMED

I.D. No.: B-5507

COUNTY: CHOWAN

BRIDGE No.: 200024

Photo Hobbs

BRIDGE DEPARTMENT
N. C. STATE HIGHWAY & PUBLIC WORKS COMMISSION
RALEIGH, N. C.

BRIDGE SURVEY REPORT

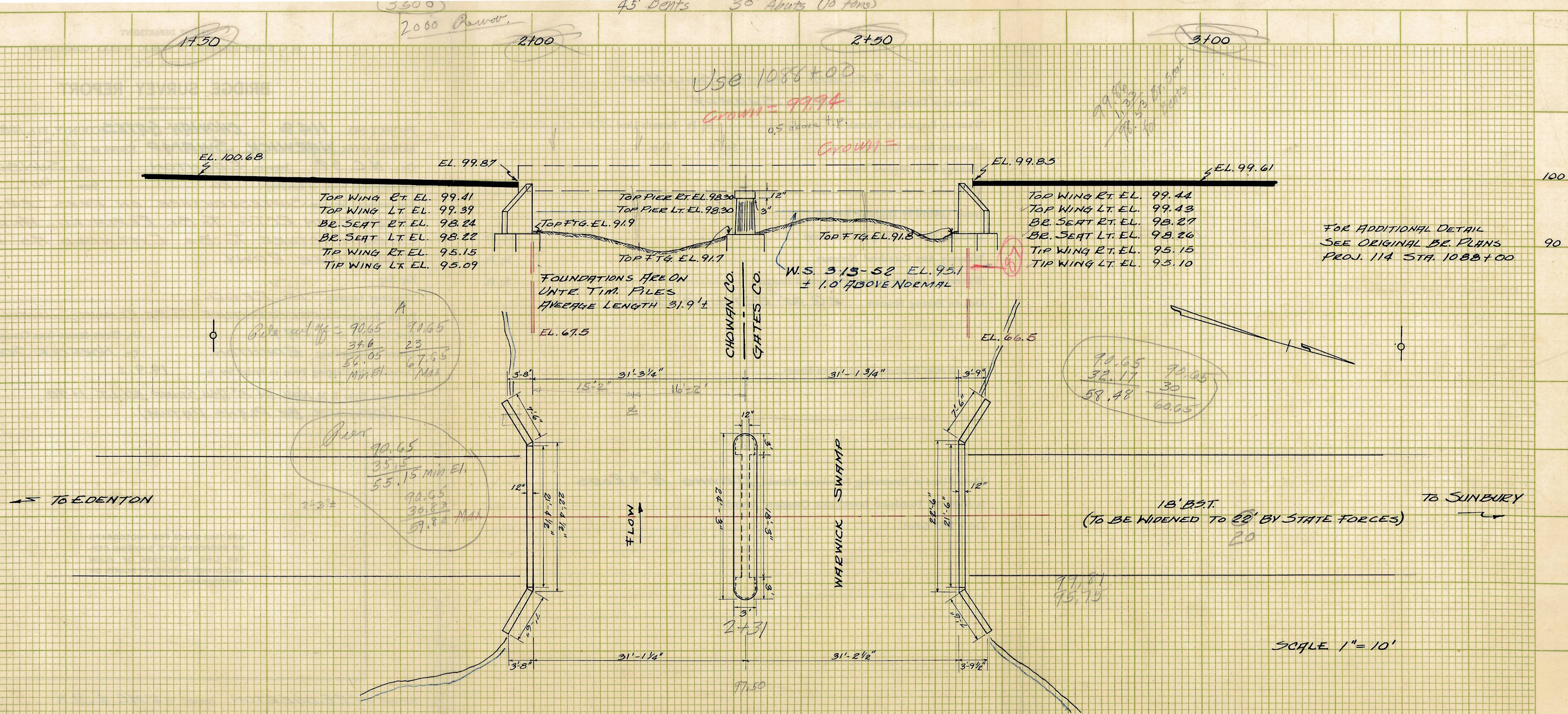
PROJECT NO. 1143 CHOWAN-GATES COUNTY, STA. 1088+00 OLD FEN.
BRIDGE OVER WARWICK SWAMP Known as BR #24
On N.C. 32 between EDENTON and SUNBURY
Recommended Width of Roadway 26' Skew 90°
Recommended Structure SUPERSTRUCTURE ON PRES. 2 @ 30' +
CLEAR SPAN R.C.T.G. TO BE REPLACED, AND
SUBSTRUCTURE TO BE EXTENDED AS REQD.
FOR WIDER RDWY.
Rip Rap
Temporary Crossing IS REQD.
Present Structure SUPERSTRUCTURE TO BE REMOVED, SUBSTRUCTURE RETAINED
New Location is AT Up, Down Stream from Crossing on Present Road
Nearest Shipping Point EDENTON On NORFOLK SOUTHERN R. R.
Distance from Shipping Point to Bridge Site is 19.9 ± miles.
Elevations From B. M. NAIL IN 8" ASH STUMP 30' LT. 1+70 Elev. 96.04
(ORIGINAL BR. PLANS DATUM.)

USE THIS SPACE FOR PHOTOGRAPH
OF PROPOSED SITE, SHOWING CEN-
TER LINE, DIRECTION OF FLOW
AND OTHER IMPORTANT POINTS ON
PHOTOGRAPH.

Surveyed by C. E. DERTON Assisted by F. M. C. & J. L. H. Date MAR 52
28-08

Drainage Area 9.5 Sq. Mi. Obtained from SOIL MAP
Character of Drainage Area FLAT SWAMPY
Waterway Required by Formula 1.20 Sq. Ft. Formula Used TAL. C. = 1.296
Maximum Stream Discharge _____ Sec. ft. Date _____
Discharge Data Obtained From _____
Period Covered by Discharge Records _____
Discharge Used for Design of Waterway _____ Sec. Ft.
Waterway Area Considered Necessary _____ Sq. Ft.
Waterway Area Provided by Recommended Structure _____ Sq. Ft.
Data on Existing Structure 2 @ 30' R.C.T.G. 18' RDWY.
Data on other Structures Up or Down Stream _____
Method Used in Determining Foundation Material DRIVING 1/2" φ RODS
Is Additional Foundation Investigation Considered Advisable _____
Other Information _____

20 0024 1952 NO TIP WARWICK SW NC 32 WO 1143.PDF
BR # 24
WARWICK SWAMP



D

B-5507-24

CHOWAN COUNTY

1/20/2015

SUNNY 50°

PFF

TRK

FLAT

* 1 BOOST

• 2 BOOST

□ 3 BOOSTS

⑥

54	WE
55	BED
56	BED
57	BED
58	BED
59	BED
60	WE
61	BELOW BRIDGE OPEN / BED
62	BOTTOM OF ABUT

1	5000	5000	100	4020 Nail-1
2	5032.753	5000	101.42	3008 BS - BOB CL
3	5082.964	4959.663	101.319	3008 EOB CL
10	5134.033	4918.464	101.349	3008 CL ROAD
11	5127.041	4908.594	101.546	3001 EOP
12	5245.231	4819.749	102.67	3001 EOP
13	5251.487	4830.283	101.98	3008 CL ROAD
14	4976.779	5044.48	101.97	3008 CL ROAD
15	4793.027	5192.231	103.873	3008 CL ROAD
16	4870.466	5130.074	103.026	3008 CL ROAD
17	5021.041	4990.043	103.76	3301 TOP RAIL
18	5021.796	4989.144	100.977	3119 TOP ABUT
19	5028.576	4983.56	99.902	3201 SEAT - CRUTCH BENT
20	5042.043	4972.793	99.866	3201 SEAT - CRUTCH BENT
21	5054.374	4962.71	99.832	3201 SEAT - CRUTCH BENT
22	5067.496	4952.279	99.86	3201 SEAT - CRUTCH BENT
23	5074.694	4946.686	100.95	3119 TOP ABUT
24	5075.517	4946.218	103.774	3301 TOP RAIL
25	5094.537	4970.194	103.753	3301 TOP RAIL
26	5094.259	4970.972	100.968	3119 TOP ABUT
27	5087.225	4976.543	99.845	3201 SEAT - CRUTCH BENT
28	5073.897	4987.256	99.867	3201 SEAT - CRUTCH BENT
29	5061.47	4997.255	99.89	3201 SEAT - CRUTCH BENT
30	5048.341	5007.897	99.9	3201 SEAT - CRUTCH BENT
31	5041.435	5013.435	101.004	3119 TOP ABUT
32	5040.223	5014.189	103.734	3301 TOP RAIL
33	5065.966	4951.52	94.399	3620 WE
34	5050.673	4959.125	94.584	3620 WE/WS
35	5036.781	4930.042	94.024	3620 WE
36	5070.083	4929.766	96.707	4000 NG
37	5024.894	4979.083	94.302	3620 WE
38	5022.153	4985.395	96.192	6044 OHW
39	5012.305	4959.085	94.592	3620 WE
40	5041.698	5012.922	92.962	4000 BOTTOM ABUT
41	5043.424	5011.703	92.282	6043 BED
42	5048.416	5007.336	92.399	6043 BED
43	5052.163	5005.435	92.047	6043 BED
44	5055.693	5003.695	91.407	6043 BED
45	5061.08	4997.77	92.854	6043 BED
46	5066.087	4994.32	94.151	6043 BED
47	5073.48	4988.039	93.308	6043 BED
48	5080.061	4983.342	94.474	3620 WE
49	5085.693	4979.189	95.515	4000 NG
50	5092.207	4973.593	95.686	6043 BED
51	5094.047	4971.474	95.625	4000 BOTTOM ABUT
52	5074.172	4946.522	96.157	4000 BOTTOM ABUT
53	5072.199	4947.919	95.436	4000 NG

54	5063.818	4954.361	94.608	3620 WE
55	5053.883	4963.021	93.385	6043 BED
56	5047.681	4967.441	92.702	6043 BED
57	5042.955	4971.422	91.228	6043 BED
58	5036.857	4976.074	91.01	6043 BED
59	5028.922	4982.882	93.092	6043 BED
60	5026.108	4984.902	93.8	3620 WE
61	5024.061	4987.494	95.332	6043 BED
62	5022.075	4988.922	96.162	4000 BOTTOM ABUT