



NC DEPARTMENT OF TRANSPORTATION      ATTENTION  
 DIVISION OF HIGHWAYS  
 BRIDGE MANAGEMENT UNIT

# BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection

COUNTY GUILFORD      BRIDGE NUMBER 400301      INSPECTION CYCLE 2 YRS  
 ROUTE US220      ACROSS BRUSH CREEK SPILLWAY      M.P. 0

LOCATION 2.0 MI.S.JCT.NC150

SUPERSTRUCTURE REINFORCED CONCRETE RIGID FRAME

SUBSTRUCTURE ABUTMENTS:RC FULL HEIGHT,INTERIOR BENTS:RC SOLID PIERS

SPANS 1@21'4, 3@20'0, 1@21'4 CONTINUOUS

LONGITUDE 79° 52' 46.6"      LATITUDE 36° 10' 7.8"

PRESENT CONDITION FAIR      INVENTORY RATING \_\_\_\_\_

INSPECTION DATE 04/20/2010      OPERATING RATING \_\_\_\_\_

PRESENT POSTING Not Posted      PROPOSED POSTING \_\_\_\_\_

COMPUTER UPDATE \_\_\_\_\_      ANALYSIS DATE \_\_\_\_\_

POSTING LETTER DATE \_\_\_\_\_      SUFFICIENCY RATING \_\_\_\_\_

OTHER SIGNS PRESENT NONE



LOOKING SOUTH

SIGN NOTICE ISSUED FOR	NUMBERED REQUIRED
<u>No</u> WEIGHT LIMIT	_____
<u>No</u> DELINEATORS	_____
<u>No</u> NARROW BRIDGE	_____
<u>No</u> ONE LANE BRIDGE	_____
<u>No</u> LOW CLEARANCE	_____

NATIONAL BRIDGE INVENTORY----- STRUCTURE INVENTORY AND APPRAISAL Run Date: 05/03/2010

**IDENTIFICATION**

(1) STATE NAME -NORTH CAROLINA BRIDGE 400301  
 (8) STRUCTURE NUMBER(FEDERAL) 00000000810301  
 INVENTORY ROUTE (ON/UNDER) - ON 121002200  
 (2) STATE HIGHWAY DEPARTMENT DISTRICT 7  
 (3) COUNTY CODE 81 (4) PLACE CODE 00000  
 (6) FEATURE INTERSECTED - BRUSH CREEK SPILLWAY  
 (7) FACILITY CARRIED US220  
 (9) LOCATION 2.0 MI.S.JCT.NC150  
 (11)MILEPOINT 0  
 (16)LAT 36° 10' 7.8" (17)LONG 79° 52' 46.6"  
 (98)BORDER BRIDGE STATE CODE PCT SHARE  
 (99)BORDER BRIDGE STRUCTURE NO

SUFFICIENCY RATING = 49.9  
 STATUS = Functionally Obsolete

**CLASSIFICATION** **CODE**

(112)NBIS BRIDGE SYSTEM - YES  
 (104)HIGHWAY SYSTEM NHS Route 1  
 (26) FUNCTIONAL CLASS - Arterial - Other 02  
 (100)STRAHNET HIGHWAY - Not a STRAHNET Route 0  
 (101)PARALLEL STRUCTURE - No Parallel Structure N  
 (102)DIRECTION OF TRAFFIC - 2-way Traffic 2  
 (103)TEMPORARY STRUCTURE - Not Temporary  
 (110)DESIGNATED NATIONAL NETWORK - Is Part of 1  
 (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 - Frame (except frame culverts) CODE 207  
 (44) STRUCTURE TYPE APPR :  
 TYPE - CODE  
 (45) NUMBER OF SPANS IN MAIN UNIT 5  
 (46) NUMBER OF APPROACH SPANS  
 (107)DECK STRUCTURE TYPE - Concrete cast-in-place CODE 1  
 (108)WEARING SURFACE / PROTECTIVE SYSTEM :  
 (A) TYPE OF WEARING SURFACE - Bituminous CODE 6  
 (B) TYPE OF MEMBRANE - None CODE 0  
 (C) TYPE OF DECK PROTECTION - None CODE 0

**CONDITION** **CODE**

(58) DECK 5  
 (59) SUPERSTRUCTURE 5  
 (60) SUBSTRUCTURE 5  
 (61) CHANNEL & CHANNEL PROTECTION 7  
 (62) CULVERTS N

**LOAD RATING AND POSTING** **CODE**

(31) DESIGN LOAD H 15 2  
 (64) OPERATING RATING - HS-19 534  
 (66) INVENTORY RATING - HS-15 527  
 (70) BRIDGE POSTING - No Posting Required 5  
 (41) STRUCTURE OPEN, POSTED ,OR CLOSED A  
 DESCRIPTION - Open, No Restriction

**AGE AND SERVICE**

(27) YEAR BUILT 1956  
 (106)YEAR RECONSTRUCTED  
 (42) TYPE OF SERVICE : ON - Highway  
 UNDER - Waterway CODE 15  
 (28) LANES: ON STRUCTURE 2 UNDER STRUCTURE  
 (29) AVERAGE DAILY TRAFFIC 21000  
 (30) YEAR OF ADT 2003 (109) TRUCK ADT PCT 14 %  
 (19) BYPASS OR DETOUR LENGTH 3 MI

**APPRAISAL** **CODE**

(67) STRUCTURAL EVALUATION 5  
 (68) DECK GEOMETRY 2  
 (69) UNDERCLEARANCES,VERTI & HORIZ N  
 (71) WATERWAY ADEQUACY 7  
 (72) APPROACH ROADWAY ALIGNMENT 7  
 (36) TRAFFIC SAFETY FEATURES 0000  
 (11)SCOUR CRITICAL BRIDGES 5

**GEOMETRIC DATA**

(48) LENGTH OF MAXIMUM SPAN 21 FT  
 (49) STRUCTURE LENGTH 103 FT  
 (50)CURB OR SIDEWALK: LEFT 2.3 FT RIGHT 2.3 FT  
 (51) BRIDGE ROADWAY WIDTH CURB TO CURB 28.1 FT  
 (52) DECK WIDTH OUT TO OUT 36.1 FT  
 (32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 24.0 FT  
 (33) BRIDGE MEDIAN - No Median CODE 0  
 (34) SKEW 0° (35) STRUCTURE FLARED NO  
 (10) INVENTORY ROUTE MIN VERT CLEAR 99 FT 99 IN  
 (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 28.1 FT  
 (53) MIN VERT CLEAR OVER BRIDGE RDWY 99 FT 99 IN  
 (54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad  
 (55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad 99.9 FT  
 (56) MIN LAT UNDERCLEAR LT REF - 0.0 FT

**PROPOSED IMPROVEMENTS**

(75) TYPE OF WORK - CODE 311  
 (76) LENGTH OF STRUCTURE IMPROVEMENT 126 FT  
 (94) BRIDGE IMPROVEMENT COST \$408,000  
 (95) ROADWAY IMPROVEMENT COST \$102,000  
 (96) TOTAL PROJECT COST \$612,000  
 (97) YEAR OF IMPROVEMENT COST ESTIMATE 2007  
 (114)FUTURE ADT 42000 (115) YEAR FUTURE ADT 2025

**INSPECTIONS**

(90) INSPECTION DATE 04/20/2010  
 (92) CRITICAL FEATURE INSPECTION : (93) CFI DATE  
 A) FRACTURE CRIT DETAIL - NO A)  
 B) UNDERWATER INSP - YES 48Mo B) 09/01/2008  
 C) OTHER SPECIAL INSP NO C)  
 SCOUR

**NAVIGATION DATA**

(38) NAVIGATION CONTROL - No Navigational Control CODE 0  
 (111)PIER PROTECTION - Not Applicable CODE  
 (39) NAVIGATION VERTICAL CLEARANCE 0  
 (116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR  
 (40) NAVIGATION HORIZONTAL CLEARANCE 0

# BRIDGE INSPECTION RECORD AND SUMMARY

INSPECTION TYPE Routine Inspection  
 BRIDGE NO. 400301 COUNTY GUILFORD ROUTE US220 OVER BRUSH CREEK SPILLWAY  
 STRUCTURE TYPE REINFORCED CONCRETE RIGID FRAME  
 ROUTE ORIENTATION S - N SPANS 1@21'4, 3@20'0, 1@21'4 CONTINUOUS

EVALUATION CODE: 0-2 CRITICAL, 3 & 4 POOR, 5 & 6 FAIR, 7-9 GOOD

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

Bridge I&A Form 1(82)H		<h1>FIELD INSPECTION REPORT</h1> <p><u>Bridge Inspection &amp; Analysis</u></p>	
<b>State of North Carolina</b> <b>Dept. of Transportation</b> <b>Division of Highways</b>			
Team Leader <b>RICK ALLRED</b>			
Assisted By <b>MATTHEW WALKER</b>			
Item No.	Grade		
2a	6	DECK ...6... SCATTERED H/L CRACKS ON UNDERSIDE	
3d	6	RAIL ...6... RAIL HAS AREAS OF SURFACE RUST .	
5	6	WALKWAYS ...6...BOTH HAVE SCATTERED TV H/L CRACKS WITH EFFLORESCENCE LEACHING ON UNDERSIDE .	
10	5	LONGITUDINAL BEAMS ...5... SEE DECK .	
36a	5	CAPS ...5... ABUTMENT CAP HAVE H/L CRACKING WITH EFFLORESCENCE LEAKING . ...6...PIER CAPS HAVE AREAS OF FINE H/L CRACKS .	
36b	5	COLUMNS / BREASTWALLS ...5... BOTH BREASTWALLS AND ALL COLUMNS HAVE SCATTERED FINE H/L CRACKS , EFFLORESCENCE LEAKING AT ABUTMENT BREASTWALL .  PIER 4 IS PITTING AT W/L 2 INCHES DEEP AT UPSTREAM END IB 6 INCH AREA .  ALL COLUMNS AND BREASTWALLS PITTING UP TO 1 INCH ALONG WATERLINE .	
36d	5	WINGWALL ...5... ALL MAP CRACKING .	
36e	6	FOOTINGS ...6... SEE UNDERWATER REPORT DATED 9/3/08	
53	4	UTILITY ...4... BRACKETS BROKEN IN 2 AREAS .	

# BRIDGE INSPECTOR'S RECOMMENDATION FOR MAINTENANCE REPAIRS

Bridge: 400301

County GUILFORD

Date: 04/20/2010

**These Repairs Should Be Made Within Twelve Months From Date Of This Inspection**

MMS Code	Description of Function	Unit	Quantity	Remarks	Est. Cost
3314	Maintain Steel Superstructure Components	LF	80	HANGERS BROKEN ON UTILITIES NEAR ABUTMENTS.	
3326	Maintain Concrete Deck	SF	500	DECK HAS AREAS OF EFFLORESCENCE LEACHING ON UNDERSIDE .	
3348	Maintain Concrete Substructure Components	LF	100	BREASTWALLS AND COLUMNS HAVE H/L CRACKS , EFFLORESCENCE LEAKING AT BREASTWALLS , 2 INCH DEEP PITTING ALONG WATERLINE AT PIER 4 , UP TO 1 INCH DEEP PITTING THRU-OUT COLUMNS AND BREASTWALLS AT WATERLINE .	

**Key**



Priority Maintenance Item



Critical Finding Item



Priority Maintenance Level Not Determined





ABUTMENT 2 HAS 2- 1" DEEP SURFACE SPALLS WITH REBAR EXPOSED



UTILITY HAS BRACKETS BROKEN IN 2 AREAS .





PIER 4 IS PITTING AT W/L 2 INCHES DEEP AT UPSTREAM END IB 6 INCH AREA .



PIER 3 COLUMN IS PITTING UP TO 1" DEEP AT WATERLINE

BRIDGE MANAGEMENT UNIT  
 DATA ON EXISTING STRUCTURE Run Date: 05/03/2010

COUNTY : GUILFORD	DIV : 7	DIST : 2	STRUCTURE NUMBER : 400301	LENGTH : 103 FEET
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ROUTE CARRIED : US220	FEATURE INTERSECTED : BRUSH CREEK SPILLWAY
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LOCATED : 2.0 MI.S.JCT.NC150	BRIDGE NAME :
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FUNC. CLASS : 02	SYST.ON : FA	SYST.UNDER : NFA	ADT & YR : 21000 2003	RAIL TYPE : LT 993 RT 993
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BUILT : 1956	BY : CNTY	PROJ :	FED.AID PROJ :	DESIGN LOAD : H 15
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REHAB :	BY :	PROJ :	ALIGNMENT : TAN	SKEW : 90	LANES : ON 2 UNDER
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NAVIGATION : VC 0.0 FT	HT. CRN. TO BED : HC 0.0 FT	19 FT	WATER DEPTH : 8 FT
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SUPERSTRUCTURE : REINFORCED CONCRETE RIGID FRAME

SUBSTRUCTURE : ABUTMENTS:RC FULL HEIGHT,INTERIOR BENTS:RC SOLID PIERS

SPANS : 1@21'4, 3@20'0, 1@21'4 CONTINUOUS

BEAMS OR GIRDERS : MONOLITHIC SLAB

FLOOR : 18 SLAB,5 AWS	ENCROACHMENT :	DECK (OUT TO OUT) : 2LNS@ SOUTH SIDE 36.1 FT
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CLEAR ROADWAY : 28.1 FT	BETWEEN RAILS : 32.7 FT	SIDEWALK OR CURB : LT 2.3 FT RT 2.3 FT
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VERT.CL.OVER : 99 FT 99 IN	VERT.CL.UNDER : 00 FT 00 IN	HOR.CL.UNDER : 0.0 FT
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INV.RTG. : HS-15	OPE.RTG. : HS-19	CONTR.MEMBER :	POSTED : SV	TTST	DATE
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SYSTEM : Primary U.S. Route	GREEN LINE ROUTE : Y
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2ND OPENING :	3RD OPENING :	4TH OPENING :	5TH OPENING :
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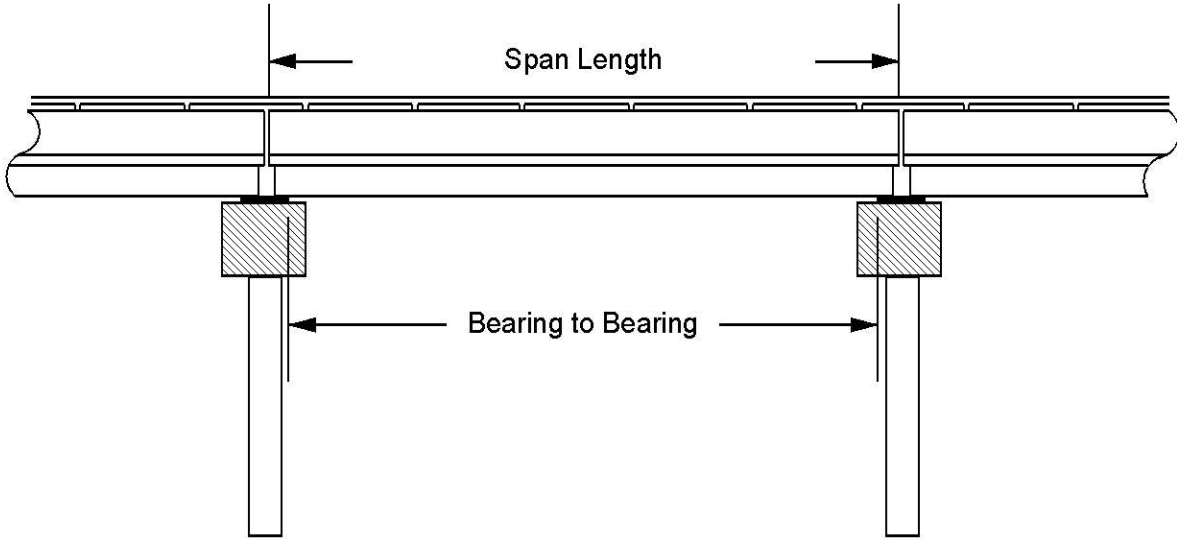
REMARKS :



# Structure Data Worksheet

Spans

County: GUILFORD      Structure No: 400301      Date: 04/20/2010      Inspected By: RLA



Span No	Span Length	Bearing to Bearing	Comments
1	21.333	20.292	NBIS-BL- 101.333
2	20.000	19.250	MEASUREMENTS VERIFIED 4/20/10...MYW
3	20.000	19.250	
4	20.000	19.250	
5	21.333	20.292	

# Stream Bed Soundings

(See next sheet for profile sketch)

Bridge No: 400301 County: GUILFORD Date: 04/20/2010 By: RLA

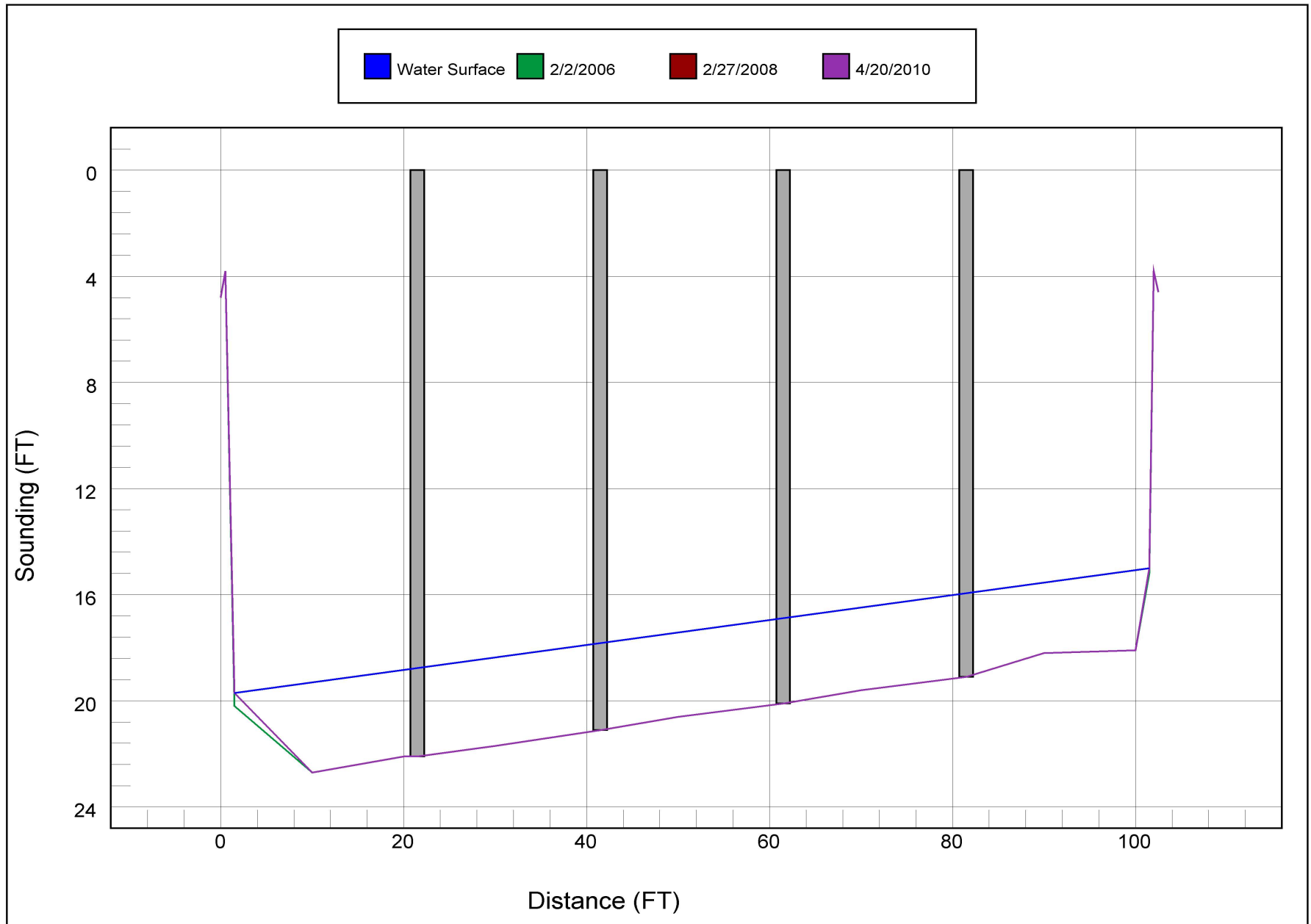
Record sounding from top of rail. Other location if needed: \_\_\_\_\_

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	4.8	ff			
0.5	3.8	tp WINGWALL			
1.5	19.7	WSWE	1.5	19.5	abutment 1
10	22.7				
20	22.1				
21.5	22.1	pier 1	21.5	18.5	pier 1
30	21.7				
41.5	21.1	pier 2	41.5	17.5	pier 2
50	20.6				
61.5	20.1	pier 3	61.5	16.5	pier 3
70	19.6				
81.5	19.1	pier 4	81.5	15.5	pier 4
90	18.2				
100	18.1				
101.5	15	WSWE			
102	3.8	tp WINGWALL			
102.5	4.6	ff			

### STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



# Bridge Inspection Field Sketch



Roadway	24ft Wide	2 Paved Lanes	Looking North
Left Shoulder	8ft Wide		8ft Unpaved
Right Shoulder	8ft Wide		8ft Unpaved
Left Guardrail			
Right Guardrail			

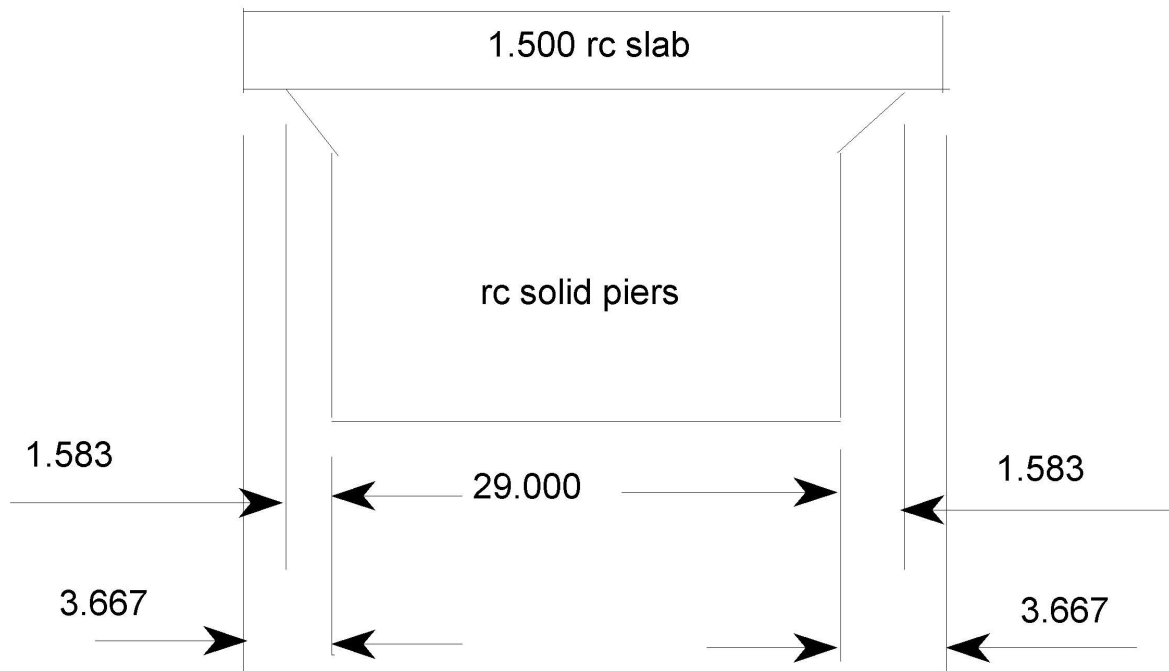
MEASUREMENTS VERIFIED 4/20/10...MYW

<b>Title</b> app rdway		<b>Description</b> app rdway	
<b>Bridge No:</b> 400301	<b>Drawn By:</b> MYW	<b>Date:</b> 04/20/10	<b>File Name:</b> S0058001060



# Bridge Inspection Field Sketch

concrete solid piers



solid piers are 1.500 thick

MEASUREMENTS VERIFIED 4/20/10...MYW

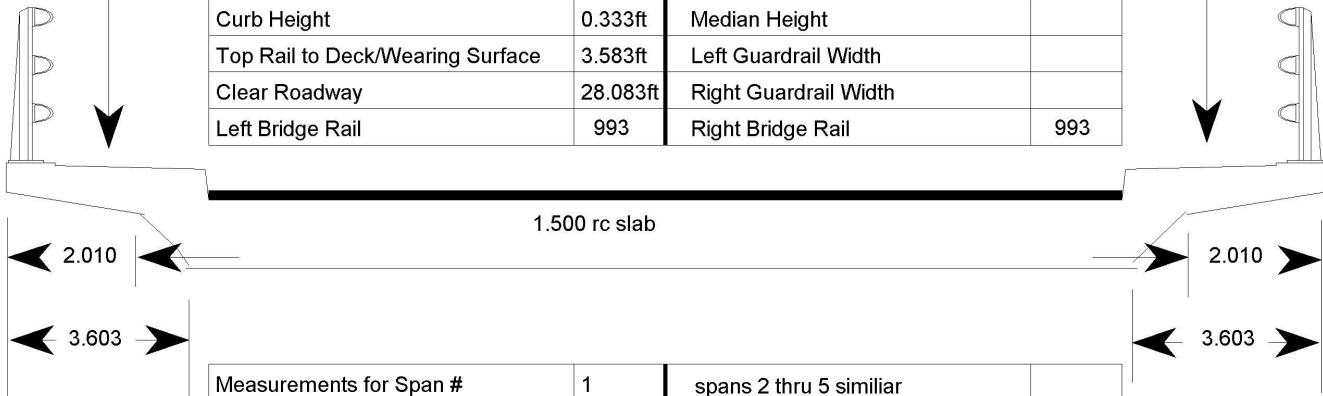
<b>Title</b> piers		<b>Description</b> piers	
<b>Bridge No:</b> 400301	<b>Drawn By:</b> acr	<b>Date:</b> 2/27/08	<b>File Name:</b> S0058002539

# Bridge Inspection Field Sketch

sidewalk- 2.290

sidewalk- 2.290

Deck Width/Out to Out	36.083ft	Wearing Surface	0.417ft
Between Rails	32.667ft	Median Width	
Curb Height	0.333ft	Median Height	
Top Rail to Deck/Wearing Surface	3.583ft	Left Guardrail Width	
Clear Roadway	28.083ft	Right Guardrail Width	
Left Bridge Rail	993	Right Bridge Rail	993



Measurements for Span #	1	spans 2 thru 5 similiar	
Deck Thickness	1.5	Left Overhang	2.01
Top of Rail to Bottom of Beam	6	Right Overhang	2.01

abutments- rc full height

int bts- rc solid piers

MEASUREMENTS VERIFIED 4/20/10...MYW

<b>Title</b>		<b>Description</b>	
data		data	
Bridge No: 400301	Drawn By: MYW	Date: 04/20/10	File Name: S0058001061

# Bridge Inspection Field Sketch

RETAINING WALL

ABUT B

RETAINING WALL

0.2  2'  
BT. 4

0.2  2'  
BT. 3

0.2  2'  
BT. 2

0.2  2'  
BT. 1



SPILLWAY

RETAINING WALL

ABUT A

RETAINING WALL

BOTTOM COMP. = CONCRETE

WATER SURFACE = 19.3' ATBT. 1, E. SIDE

Title  
PLAN VIEW

Description  
WATERWAY

Bridge No: 400301

Drawn By: BZC

Date: 9/3/2008

File Name: S0158000634



LOOKING SOUTH



LOOKING EAST DOWNSTREAM FROM TOP





LOOKING WEST UPSTREAM FROM TOP



LOOKING NORTH



LOOKING WEST



ABUTMENT 1, ABUTMENT 2 SIMILAR





PIER 2, PIERS 1,3,4 SIMILAR



SUPERSTRUCTURE SPAN 5, SPANS 1,2,3,4 SIMILAR



UTILITY AND HANGER UNDER LEFT OVERHANG, 2 LINES OF 6" DIAM. PVC



LOOKING EAST





LOOKING WEST UPSTREAM



LOOKING EAST DOWNSTREAM