



NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 BRIDGE MANAGEMENT UNIT

ATTENTION TOWN OF MONTREAT  
 PROMPT ACTION

# BRIDGE INSPECTION REPORT

INSPECTION TYPE: Routine Inspection - Municipal

COUNTY BUNCOMBE BRIDGE NUMBER 100528 INSPECTION CYCLE      YRS  
 ROUTE TEXAS ROAD ACROSS FLAT CREEK M.P. 0

0.04 MILES EAST OF INTERSECTION OF ASSEMBLY DRIVE AND TEXAS ROAD

LOCATION 200 FT.E ASSEMBLY DRIVE

SUPERSTRUCTURE TIMBER FLOOR ON I-BEAMS

SUBSTRUCTURE E.BTS:TIMBER CAPS/TIMBER PILES

SPANS 1@27'6

LONGITUDE 82° 18' 40.0" 82° 18' 9.5" LATITUDE 35° 38' 60.0" 35° 38' 37.0"

PRESENT CONDITION POOR INVENTORY RATING HS 6

INSPECTION DATE 04/18/2008 OPERATING RATING HS 10

PRESENT POSTING SV 9 TTST 14 SV 12 TTST 16 PROPOSED POSTING RETAIN EXISTING

COMPUTER UPDATE      ANALYSIS DATE 5/16/2008

POSTING LETTER DATE      SUFFICIENCY RATING     

OTHER SIGNS PRESENT 4 DELINEATORS



LOOKING EAST

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



## BRIDGE INSPECTION REPORT

CITY OF: Montreat

BRIDGE NO.: 100528

COUNTY: Buncombe

I HEREBY CERTIFY THAT THE DOCUMENTS CONTAINED HEREIN WERE PREPARED BY ME  
OR UNDER MY DIRECT SUPERVISION.

SIGNED, SEALED, AND DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2008

TITLE: LEONARD G. FLETCHER, PE, PLS  
PROJECT ENGINEER

# BRIDGE INSPECTION RECORD AND SUMMARY

 INSPECTION TYPE Routine Inspection - Municipal  
 BRIDGE NO. 100528 COUNTY BUNCOMBE  
 STRUCTURE TYPE TIMBER FLOOR ON I-BEAMS  
 ROUTE ORIENTATION W - E

ROUTE TEXAS ROAD

OVER FLAT CREEK

SPANS 1@27'6"

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

INSPECTION ITEM			ITEM 61		
DECK ITEMS		GRADES			
1. WEARING SURFACE		5	45. CHANNEL & CHANNEL PROT.	a. WATERWAY	8
2. DECK NO. OF EA TYPE SPN GRADE RATES SI & A ITEM 58		4		b. ALIGNMENT	8
a. CONCRETE				c. SCOUR	6
b. TIMBER				d. SLOPE PROT., RIP-RAP, DIKES, ETC.	7
c. STEEL PLANK			50. APPROACH ROADWAY CONDITION		5
d. OPEN GRID			51. APPROACH SLABS		
3. RAILING			52. PAINT SYSTEM CODE U		4
a. CONCRETE			53. UTILITIES		
b. TIMBER		7	54. RESPONSE TO LIVE LOAD		7
c. ALUMINUM			55. ESTIMATED REMAINING LIFE		8
d. STEEL					
4. CURBS, WHEELGUARDS, PARAPETS, MEDIANS		7			
5. WALKWAYS (ON OR ATTACHED TO STRUCTURE)			60. REGULATORY SIGN NOTICE ISSUED		NO
6. DECK EXP JTS. OR DEVICES. NO. OF EACH			61. PROMPT-ACTION NOTICE ISSUED		YES
a. STEEL PL OR FINGER			62. PRESENTLY POSTED		YES
b. MISC PREFAB			63. TOT. FIELD INSP TIME (INCLUDE WRITE UP)(MAN HR)		8
c. COMPRESSION SEAL			64. TOTAL SNOOPER INSP. TIME (HRS)		0
d. STANDARD JOINTS			65. TOTAL TRAFFIC CONTROL TIME (MAN HRS)		0
e. OPEN JOINTS					
7. DECK DEBRIS (INCLUDES EXCESS SAND/GRAVEL)		5			
			70. SI&A GENERAL CONDITION RATINGS		
SUPER STR. (FM. 1 (90)B TRUSS) ITEM 59			a. DECK	ITEM 58	4
10. LONGITUDINAL BEAMS OR GIRDERS		5	b. SUPERSTRUCTURE	ITEM 59	5
11. LONGITUDINAL JOIST OR STRINGERS			c. SUBSTRUCTURE	ITEM 60	4
12. INT. DIAP'S, X-FRAMES, BRACING & CONN'S			d. CHANNEL & CHANNEL PROT.	ITEM 61	7
13. END DIAP'S, CURTAIN WALLS, & CONN'S					
14. FLOOR BEAMS AND CONNECTIONS			71. SI&A FIELD APPRAISAL RATINGS		
15. BEARING ASSEMBLIES (INCLUDING MISALIGN)		5	a. WATERWAY ADAQUACY		8
16. DRAINAGE SYSTEM (ON STRUCTURE)		5	b. APPR. RDWY. ALIGNMENT		6
17. MOVABLE SPAN MACHINERY					
			72. FIELD SCOUR EVALUATION		G
SUB STR. ITEMS. ITEM 60 (INCLUDE SCOUR)					
35. TIM SUB STR.			USE OF INSP. ACCESSIBILITY EQUIPMENT		
a. ABUT. & INT. BENT CAPS & RISERS		6	SNOOPER (CODE S, 4, OR N)		HRS NO
b. PILES, POST, SILLS, & BRACING		5	LADDER		NO
c. BULKHEADS, WING'S, & TIE BACKS		4	BUCKET TRUCK		NO
36. CONC SUB STR.			BOAT		NO
a. ABUT. & INT. BENT CAPS			OTHER		NO
b. ABUT. & BENT COL'S BREASTWALLS					
c. ABUT. & INT. BENT PILES					
d. BACKWALLS, WING'S, RETAIN. WALLS					
e. ABUT. & BENT FOOTINGS & SILLS					
37. STEEL SUB STR.			SPECIAL INSPECTION REQUESTED FOR		
a. ABUT. & INT. BENT CAPS & RISERS					
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>Rog D. Elliott</i>
41. DRIFT		8	81. REVIEWED BY:		

Bridge I&A Form 1(82)H		<b>FIELD INSPECTION REPORT</b> <u>Bridge Inspection &amp; Analysis</u>	
State of North Carolina Dept. of Transportation Division of Highways			
Team Leader <b>RAY D. ELLIOTT, PE</b>			
Assisted By <b>BCH</b>			
Item No.	Grade		
1	5	THE WEARING SURFACE HAS TRANSVERSE CRACKING UP TO 1/4 INCH WIDE. THE ASPHALT IS ROUGH WITH MINOR AREAS OF SETTLEMENT. THERE IS A 4 FOOT DIAMETER AREA OF HEAVY MAP CRACKING WITH UP TO 1/2 INCH OF SETTLEMENT NEAR THE MIDSPAN.	
2b	4	THE TIMBER DECK SHOWS SOFTNESS, MOISTURE RETAINAGE, AND 1/4 INCH HAMMER PENTRATION THROUGHOUT EACH BAY. SEVERAL AREAS ALONG THE UNDERSIDE SHOW LEAKAGE FROM THE TOPSIDE AND DECAY HAS ADVANCED UP TO APPROXIMATELY 1 INCH DEEP. SEVERAL DECK BOARDS IN BAY 5 AT 10 FEET FROM ABUTMENT 1 SHOW HEAVY DECAY UP TO 2 INCHES DEEP. SEVERAL DECK BOARDS IN BAY 4 AT 10 FEET FROM ABUTMENT 2 SHOW SEVERE DECAY WITH COMPLETE SECTION LOSS EXPOSING A RUSTED STEEL PLATE ALONG THE TOP OF THE DECK BOARDS. THE DECK BOARD ENDS ALONG EACH OVERHANG ARE TYPICALLY SOFT WITH MOSS COVERAGE AND DECAY UP TO 2 INCHES DEEP WITH LAYER SEPERATION. NEARLY 20 PERCENT OF THE DECK BOARD ENDS SHOW HEAVY DECAY UP TO THE EXTERIOR GIRDER ALLOWING FOR NEAR COMPLETE LOSS OF SECTION. THE DECK NAILERS ARE TYPICALLY SOFT WITH LONGITUDINAL SPLITTING ALONG THE PORTION OVERHANGING THE GIRDER TOP FLANGE. A 24 INCH LONG SECTION OF THE GIRDER 6 NAILER IS BROKEN AT 10 FEET FROM ABUTMENT 1 WHILE THE NAILER AT GIRDER 2 SHOWS HEAVY SPLITTING NEAR ABUTMENT 1.	
3b	7	THE UNPAINTED TIMBER RAILS ARE FAIRLY NEW AND IN GOOD CONDITION.	
4	7	THE CURBS HAVE MINOR STAINING AND SOFTNESS ALONG THE VERY BOTTOM WHERE DEBRIS AND VEGETATION HAS ACCUMULATED.	
7	5	THERE IS DEBRIS BUILDUP UP TO 1 INCH DEEP AND 12 INCHES WIDE ALONG EACH WHEELGUARD PROHIBITING WATER FROM FLOWING OFF THE DECK.	
10	5	THE STEEL BEAMS HAVE RUST ALONG MOST OF THE TOP AND BOTTOM FLANGES. THE TOP FLANGE IS TYPICALLY WORSE WITH FLAKING RUST AND SECTION LOSS UP TO 1/16 INCH. THERE IS PITTING AND FLAKING PAINT AT SEVERAL BEARING LOCATIONS. THE WORSE SECTION LOSS NOTED IS LOCATED IN THE BOTTOM FLANGE OF GIRDER 2 AT ABUTMENT 2. IT HAS A LOSS OF 1/4 INCH FLANGE WIDTH AND 3/16 INCH LOSS OF FLANGE THICKNESS, ALONG WITH 1/16 INCH OF SECTION LOSS IN THE WEB.	
15	5	MOST OF THE BEARING ASSEMBLIES ARE COVERED WITH DIRT AND DEBRIS. THE BEARING PLATES HAVE HEAVY RUST AND PITTING.	
16	5	THE BRIDGE DRAINAGE EXITS THE DECK BENEATH THE RAILS ON EACH SIDE. ABOUT 30 PERCENT OF THE OPENING BENEATH THE RAIL ON THE NORTH SIDE AND 50 PERCENT ON THE SOUTH SIDE IS BLOCKED WITH DEBRIS AND VEGETATION.	
52	4	THE PAINT ON THE BEAMS HAS FLAKING THROUGHOUT. THERE ARE AREAS ALONG THE BEAM ENDS AND BEARING AREAS WITH LITTLE PAINT REMAINING.	

State of North Carolina  
 Dept. of Transportation  
 Division of Highways

# FIELD INSPECTION REPORT

## Bridge Inspeccion & Analysis

Team Leader **RAY D. ELLIOTT, PE**

Assisted By **BCH**

Item No.	Grade	
35a	6	THE TIMBER CAP AT ABUTMENT 1 APPEARS NEWER THAN AT ABUTMENT 2. THE CAPS EXHIBIT MINOR SPLITTING WITH ONLY MINOR HAMMER PENETRATION.
35b	5	PILE 1 AT ABUTMENT 1 HAS DECAY 2 INCHES DEEP BY 24 INCHES HIGH ON THE NORTH FACE. THE REMAINDER OF THIS PILE APPEARS SOUND. PILE 4 AT ABUTMENT 2 HAS DECAY 2 INCHES DEEP BY 36 INCHES HIGH ON THE BACK SIDE AGAINST THE BULKHEAD. PILE 4 AT ABUTMENT 1 HAS DECAY ON THE NORTH FACE 18 INCHES HIGH BY 4 INCHES WIDE BY 2 INCHES DEEP. THE REMAINING PILES HAVE SOFTNESS AND DECAY UP TO 1/4 INCH DEEP FOR +/- 12 INCHES FROM THE BOTTOM, AS WELL AS MINOR DAMAGE FROM INSTALLATION.
35c	4	THE WINGWALLS ARE GENERALLY IN POOR CONDITION. ABOUT 75 PERCENT OF THE WINGWALL BOARDS AND 50 PERCENT OF THE WINGWALL PILES HAVE HEAVY TO COMPLETE DECAY. ALL OF THE BULKHEAD BOARDS HAVE SOFTNESS AND SOME DECAY. 50 PERCENT OF THE BOARDS HAVE DECAY UP TO 1/2 INCH DEEP AND 10 PERCENT OF BOARDS HAVE AREAS OF COMPLETE DECAY. ABOUT HALF OF THE ABUTMENT 2 BOARDS ARE STAINED WHITE AND SATURATED WITH WATER. THERE IS AN AREA AT ABUTMENT 2 BETWEEN PILES 1 AND 2 AND BETWEEN PILES 3 AND 4 WHERE A STEADY STREAM OF WATER IS FLOWING FROM BETWEEN THE BULKHEAD BOARDS. THERE IS A SLAB REPAIR BETWEEN PILES 3 AND 4 AT ABUTMENT 2 WHICH HAS HEAVY DECAY BOTH ABOVE AND BENEATH IT. THE SOLDIER PILES AT THE NORTHEAST AND NORTHWEST CORNERS HAVE HEAVY DECAY FOR ABOUT 1/2 OF THEIR HEIGHT. THE OTHER SOLDIER PILES HAVE HEAVY DECAY AT THE TOP 12 INCHES.
45c	6	THERE IS A 12 INCH DIAMETER TREE AND A 24 INCH DIAMETER TREE ON THE WEST BANK 5 FEET AND 20 FEET FROM THE NORTHWEST WINGWALL THAT ARE UNDERMINED UP TO 4 FEET. THIS UNDERMINING EXTENDS BENEATH THE TRUNKS OF THE TREES AND SHOULD BE MONITORED OR THE TREES REMOVED TO REDUCE DANGER OF FALLING ONTO THE BRIDGE. THERE IS 12 INCHES OF UNDERMINING BENEATH THE UTILITY FOOTING AT THE SOUTHWEST CORNER OF THE BRIDGE.
45d	7	THERE IS RIP-RAP AT THE SOUTHEAST AND SOUTHWEST CORNERS. LARGE NATURAL STONE LINE MOST OF THE CHANNEL BANKS AS WELL AS VEGETATION.
50	5	THE WEST APPROACH SHOWS ONLY MINOR CRACKING UP TO 1/8 INCH WIDE. THE EAST APPROACH IS IN MUCH WORSE CONDITION. THERE IS HEAVY MAP CRACKING 5 FEET WIDE ALONG THE SOUTH SIDE AT THE EAST APPROACH. THERE ARE SEVERAL LARGE PATCHES AT THIS LOCATION WHICH ARE ROUGH AND UP TO 1 INCH HIGHER THAT THE SURROUNDING PAVEMENT. A FULL WIDTH PATCH HAS BEEN ADDED +/- 4 FEET FROM THE EAST FILL FACE WHICH IS NOT EVEN WITH THE PAVEMENT ON EITHER SIDE OF IT. SAND, GRAVEL, AND VEGETATION EXTEND 2 FEET WIDE ONTO THE PAVEMENT AT THE SOUTHEAST CORNER.

## BRIDGE INSPECTOR'S RECOMMENDATION FOR MAINTENANCE REPAIRS

Bridge: 100528

County BUNCOMBE

Date: 04/18/2008

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

Function Code	Description of Function	Unit	Quantity	Remarks	Est. Cost
556	Bridge approaches, surfacing or pavement replacement or repair	Man-Hours	80	CRACKING AND UNEVENESS IN EAST APPROACH. CRACKED AND SETTLED ASPHALT NEAR MID-SPAN.	
585	Maintenance of slope and shore devices	Man-Hours	60	UNDERMINED TREES AT NORTHWEST CORNER AND UTILITY FOOTING AT SOUTHWEST CORNER.	
580	Maintenance of timber substructure	Man-Hours	200	DECAYED PILES, BULKHEAD BOARDS, WINGWALL BOARDS, AND WINGWALL PILES. (PROMPT ACTION)	
578	General Maintenance of superstructure	Man-Hours	100	FLAKING RUST AND SECTION LOSS ON GIRDERS AND BEARINGS.	
559	Replacement of timber bridge floors	Sq-ft	585	DECAYED DECK BOARDS. (PROMPT ACTION)	
602	Sweep or Washing	Man-Hours	10	DEBRIS ALONG EACH CURB.	
554	Partial clenaing and partial painting of structural steel	Man-Hours	100	PAINT LOSS AND RUST ALONG GIRDERS AND BEARING ASSEMBLIES.	

# Structure Data Worksheet

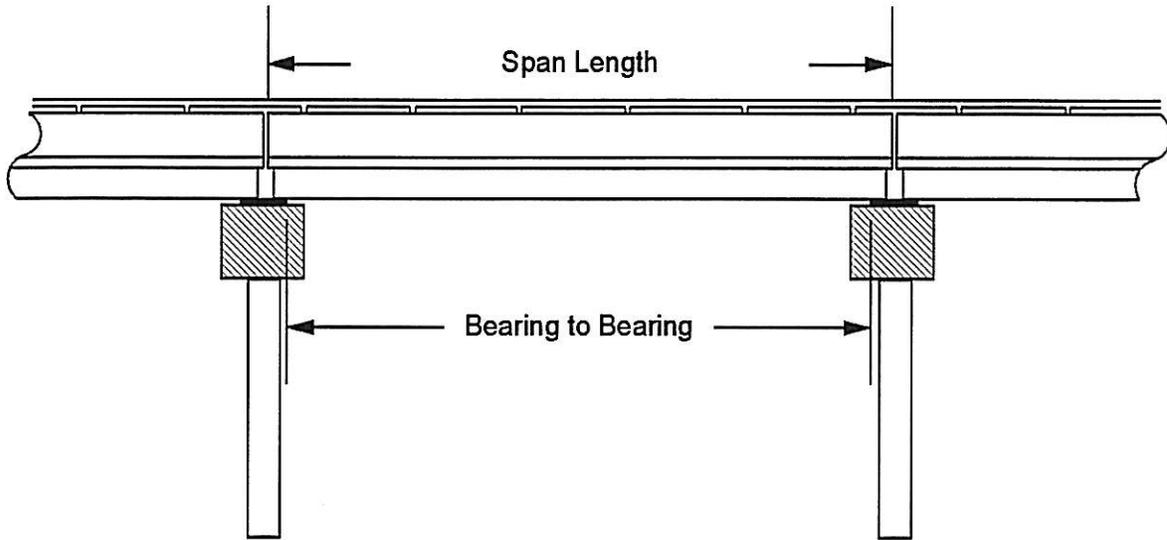
Spans

County: BUNCOMBE

Structure No: 100528

Date: 04/18/2008

Inspected By: RDE



Span No	Span Length	Bearing to Bearing	Comments
1	27.5 FT	25.08 FT	STEEL I - BEAM

# Stream Bed Soundings

(See next sheet for profile sketch)

Bridge No: 100528 County: BUNCOMBE Date: 04/18/2008 By: RDE

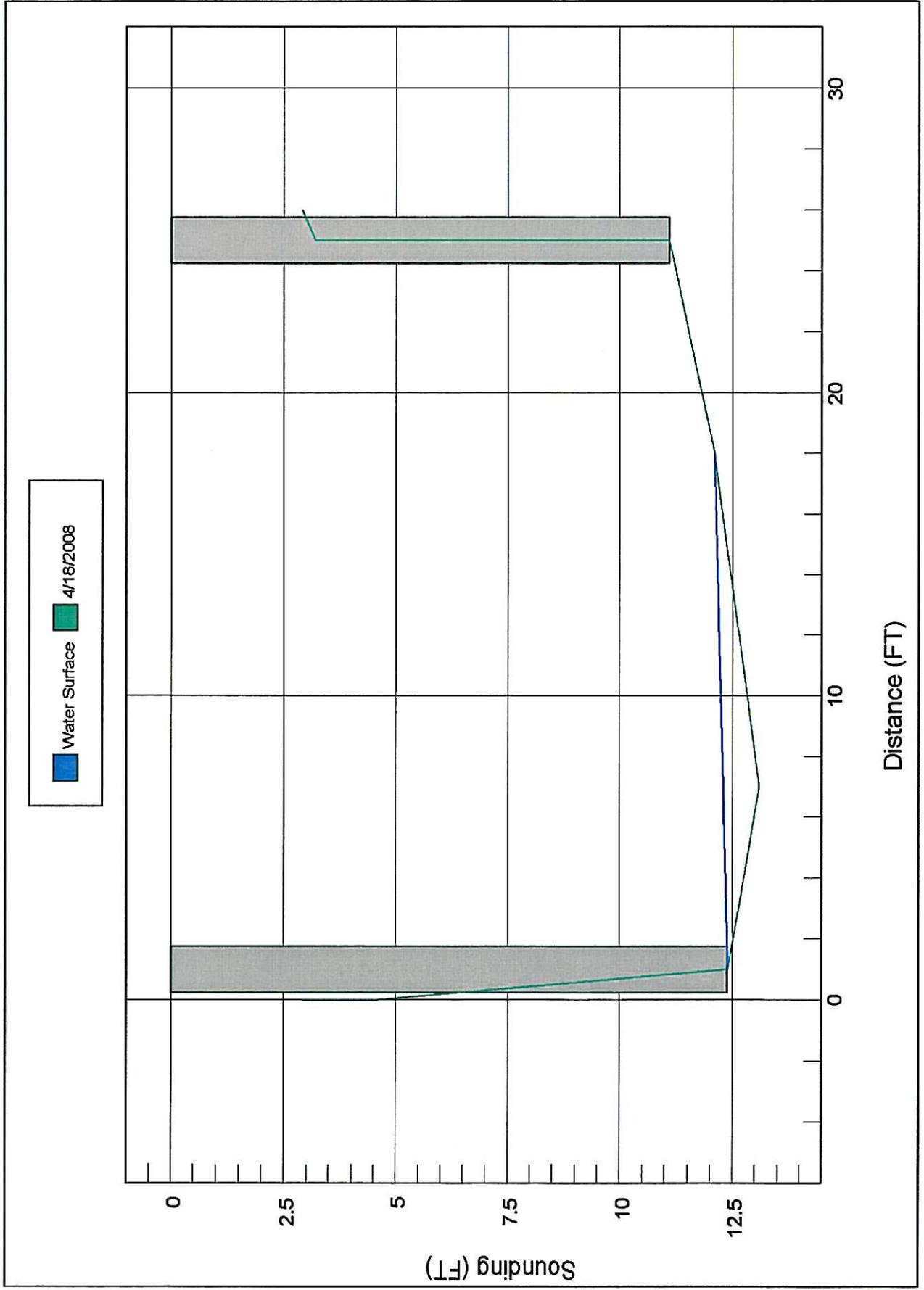
Record sounding from top of rail. Other location if needed: \_\_\_\_\_

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	2.9	TOP OF BULKHEAD	0	12.2	FACE OF ABUTMENT
0	4.6	Top of Cap			
1	12.4	Water Surface/Water Edge (WSWE)			
1	12.4	FACE OF ABUTMENT			
7	13.1	STREAMBED			
18	12.1	Water Surface/Water Edge (WSWE)			
18	12.1	EDGE OF WATER			
25	11.1	FACE OF ABUTMENT			
25.01	3.2	Top of Cap			
26	2.9	TOP OF BULKHEAD			

### STREAMBED PROFILE (Downstream)

Top of Rail = 0 FT (Sounding)



# Bridge Inspection Field Sketch



Roadway	16ft Wide	2 Paved Lanes	Looking East
Left Shoulder	2ft Wide		2ft Unpaved
Right Shoulder	2ft Wide		2ft Unpaved
Left Guardrail			
Right Guardrail			

**Title**  
APPROACH ROADWAY

**Description**  
APPROACH ROADWAY

**Bridge No:** 100528

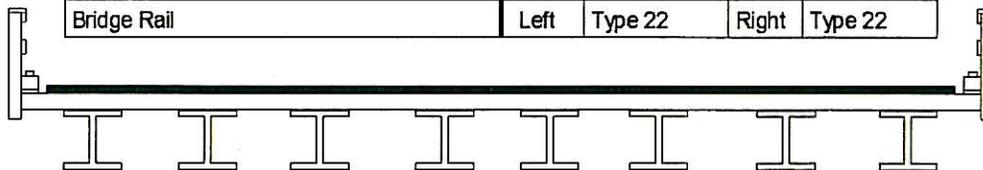
**Drawn By:** ZEL

**Date:** 4/22/2008

**File Name:** S0298001020

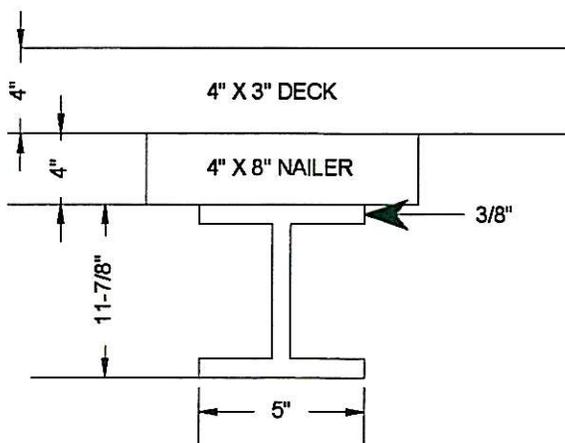
# Bridge Inspection Field Sketch

Deck Width/Out to Out	21.17ft	Between Rails	20.08ft
Clear Roadway	19.5ft	Wearing Surface	0.17ft
Median Width		Median Height	
Curb Height		Left	0.5ft
		Right	0.5ft
Sidewalk Width		Left	
		Right	
Clear Roadway (Rail to Median)		Left	
		Right	
Guardrail Width		Left	
		Right	
Top of Rail to Deck/Wearing Surface		Left	2.75ft
		Right	2.75ft
Bridge Rail		Left	Type 22
		Right	Type 22



Measurements for Span #	1		
Deck Thickness	0.33	Left Overhang	1.59
Top of Rail to Bottom of Beam	4.6	Right Overhang	1.59

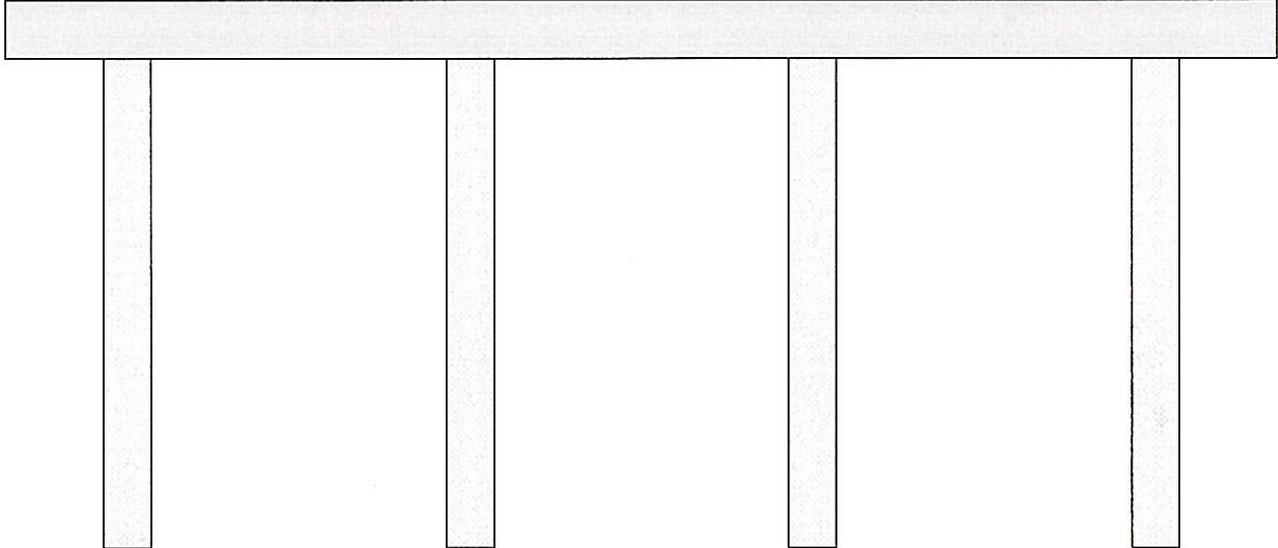
Beam Number	Beam Type	Spacing	Comments
1	Steel I Beam	2.54ft	TREATED TIMBER DECK ON STEEL I - BEAM
2	Steel I Beam	2.46ft	TREATED TIMBER DECK ON STEEL I - BEAM
3	Steel I Beam	2.75ft	TREATED TIMBER DECK ON STEEL I - BEAM
4	Steel I Beam	2.33ft	TREATED TIMBER DECK ON STEEL I - BEAM
5	Steel I Beam	2.42ft	TREATED TIMBER DECK ON STEEL I - BEAM
6	Steel I Beam	2.81ft	TREATED TIMBER DECK ON STEEL I - BEAM
7	Steel I Beam	2.67ft	TREATED TIMBER DECK ON STEEL I - BEAM
8	Steel I Beam	ft	TREATED TIMBER DECK ON STEEL I - BEAM



NOTE: 7" X 4" X 1-1/8" STEEL PLATE  
ON BEAM 1 AND 6 AT ABUTMENT 1

Title TYPICAL SECTION		Description TYPICAL SECTION	
Bridge No: 100528	Drawn By: ZEL	Date: 4/22/2008	File Name: S0298001021

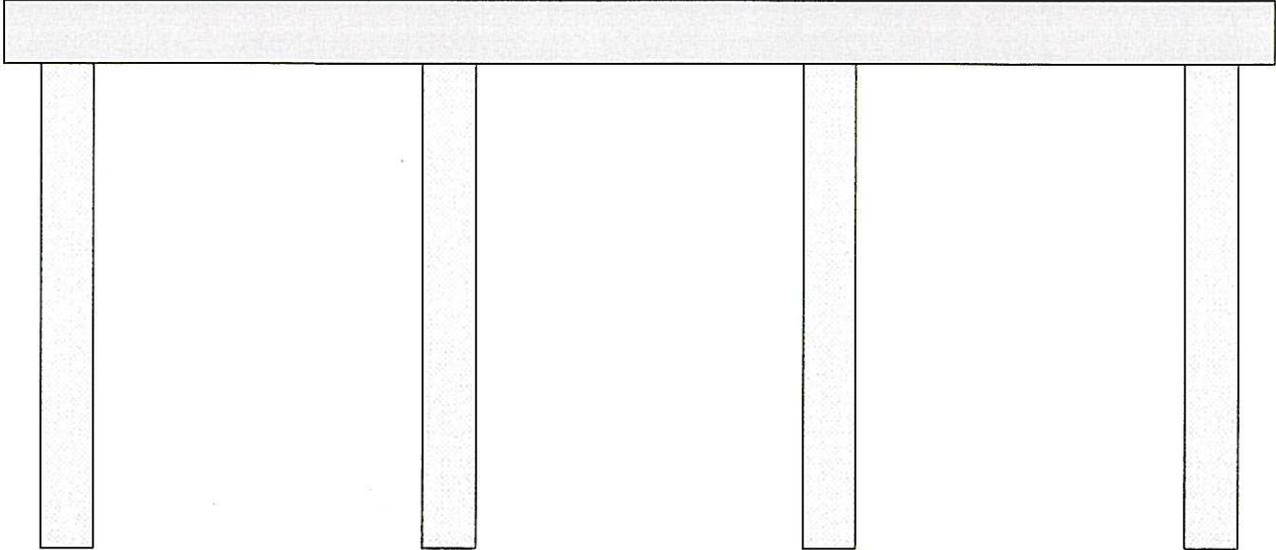
# Bridge Inspection Field Sketch



<b>Cap Information</b>			<b>Material</b> Timber							
Length	Width	Height	Left Overhang	Right Overhang	Left Beam to End of Cap.	Right Beam to End of Cap.				
22.250 ft.	1.000 ft.	1.000 ft.	2.125 ft.	2.125 ft.						
<b>Subcap Information</b>			<b>Material</b>							
Length	Width	Height	Left Overhang	Right Overhang	Left Pile to Splice.					
<b>Sill Information</b>			<b>Material</b>							
Length	Width	Height								
.833 ft.	.833 ft.	ft.								
Pile #	Material	Spacing	Width/Dia.	Height	Length	Orientation	Driven?	Replacement?	Removed?	Collar?
1	Timber	6 ft.	0.833 ft.	0.833 ft.		Vertical	No	No	No	No
2	Timber	6 ft.	0.833 ft.	0.833 ft.		Vertical	No	No	No	No
3	Timber	6 ft.	0.833 ft.	0.833 ft.		Vertical	No	No	No	No
4	Timber		0.833 ft.	0.833 ft.		Vertical	No	No	No	No
<b>Bent/Abutment #:</b> 1			<b>Similar Bents:</b>							

<b>Title</b> ABUTMENT 1		<b>Description</b> ABUTMENT 1			
<b>Bridge No:</b> 100528	<b>Drawn By:</b> ZEL	<b>Date:</b> 4/22/2008	<b>File Name:</b> S0298001022		

# Bridge Inspection Field Sketch



<b>Cap Information</b>			<b>Material</b> Timber							
Length	Width	Height	Left Overhang	Right Overhang	Left Beam to End of Cap.	Right Beam to End of Cap.				
20.000 ft.	.854 ft.	.969 ft.	1.000 ft.	1.000 ft.	1.010 ft.	1.010 ft.				
<b>Subcap Information</b>			<b>Material</b>							
Length	Width	Height	Left Overhang	Right Overhang	Left Pile to Splice.					
<b>Sill Information</b>			<b>Material</b>							
Length	Width	Height								
Pile #	Material	Spacing	Width/Dia.	Height	Length	Orientation	Driven?	Replacement?	Removed?	Collar?
1	Timber	6 ft.	0.833 ft.	0.833 ft.		Vertical	No	No	No	No
2	Timber	6 ft.	0.833 ft.	0.833 ft.		Vertical	No	No	No	No
3	Timber	6 ft.	0.833 ft.	0.833 ft.		Vertical	No	No	No	No
4	Timber		0.833 ft.	0.833 ft.		Vertical	No	No	No	No
<b>Bent/Abutment #:</b> 2		<b>Similar Bents:</b>								

<b>Title</b> ABUTMENT 2		<b>Description</b> ABUTMENT 2			
<b>Bridge No:</b> 100528	<b>Drawn By:</b> ZEL	<b>Date:</b> 5/5/2008	<b>File Name:</b> S0298001030		