



ATTENTION:
 REPAIRS MADE TO N.W.
 FENDER FLARE

UNDERWATER BRIDGE INSPECTION REPORT

TYPE INSPECTION SUPPLEMENTAL (FENDER ONLY)

COUNTY BRUNSWICK BRIDGE NO. 090014 ROUTE N.C. 133

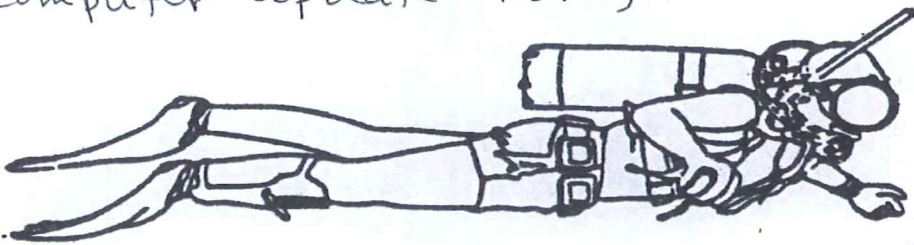
INSP. DATE 6/18/07 INSP. CYCLE 2 YR. ACROSS INTRACOASTAL WATERWAY
 (FENDER) (@ OAK ISLAND)

INSP. BY P.G. Rutherford
W.H. LOTZ REVIEWED BY [Signature]
JRL-7-16-07

TYPE WORK PERFORMED _____

_____ MH _____ (SPEC. WORK ONLY)

Computer update: 7-31-07



*✓ PGR
 7/17/07
 note: Inspector's
 Recommendation for
 Repairs*

- | | | | | | | | |
|-----------------|----------------|-------------------------------------|---------------------|-------------------------------------|------------------|-------------------------------------|-------|
| EQUIPMENT USED: | SURFACE SUPPLY | <input checked="" type="checkbox"/> | WET SUIT | <input checked="" type="checkbox"/> | COMMUNICATION | <input checked="" type="checkbox"/> | AMRON |
| | SCUBA | <input type="checkbox"/> | DRY SUIT | <input type="checkbox"/> | COMMUNICATION | <input type="checkbox"/> | OTS |
| | LIGHTS | <input checked="" type="checkbox"/> | ROPE | <input checked="" type="checkbox"/> | U/W PHOTOS TAKEN | <input type="checkbox"/> | |
| | BOAT | <input checked="" type="checkbox"/> | CONSTRUCTION EQUIP. | <input type="checkbox"/> | | | |

DATE	DIVER	CURRENT	VISIBILITY	METRO	DEPTH	TEAM WATER TIME
9/10/2004	PGR	TIDAL	1.5'	83° - CLEAR	20'	75 MINUTES
	WRM	TIDAL	1.5'	83° - CLEAR	20'	80 MINUTES

NATIONAL BRIDGE INVENTORY — STRUCTURE INVENTORY AND APPRAISAL

IDENTIFICATION				CLASSIFICATION		CODE
(1) STATE NAME -NORTH CAROLINA	BRIDGE	090014		SUFFICIENCY RATING =		65.8
(8) STRUCTURE NUMBER(FEDERAL)		00000000190014		STATUS =	Functionally Obsolete	
INVENTORY ROUTE (ON/UNDER) - ON		131001330				
(2) STATE HIGHWAY DEPARTMENT DISTRICT		3				
(3) COUNTY CODE 19	(4) PLACE CODE			(112)NBIS BRIDGE SYSTEM -		YES
(6) FEATURE INTERSECTED - INTRACOSTAL WATERWAY				(104)HIGHWAY SYSTEM NON NHS Route		0
(7) FACILITY CARRIED NC133				(26) FUNCTIONAL CLASS - Major Collector		07
(9) LOCATION 0.9 MI N JCT SR1104				(100)STRAHNET HIGHWAY - Not a STRAHNET Route		0
(11)MILEPOINT		0		(101)PARALLEL STRUCTURE - No Parallel Structure		N
(16)LAT 33° 55' 26.8"	(17)LONG 78° 4' 11.4"			(102)DIRECTION OF TRAFFIC - 2-way Traffic		2
(98)BORDER BRIDGE STATE CODE	PCT SHARE			(103)TEMPORARY STRUCTURE - Not Temporary		
(99)BORDER BRIDGE STRUCTURE NO				(110)DESIGNATED NATIONAL NETWORK - Not Part of		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				CONDITION		CODE
(43) STRUCTURE TYPE MAIN: Prestressed Concrete				(58) DECK		7
TYPE - Stringer Multibeam or Girder	CODE	502		(59) SUPERSTRUCTURE		6
(44) STRUCTURE TYPE APPR : Prestressed Concrete				(60) SUBSTRUCTURE		5
TYPE - Slab	CODE	501		(61) CHANNEL & CHANNEL PROTECTION		6
(45) NUMBER OF SPANS IN MAIN UNIT		37		(62) CULVERTS		N
(46) NUMBER OF APPROACH SPANS		28				
(107)DECK STRUCTURE TYPE - Concrete cast-in-place	CODE	1		LOAD RATING AND POSTING		CODE
(108)WEARING SURFACE / PROTECTIVE SYSTEM :				(31) DESIGN LOAD HS 20+MOD		6
(A) TYPE OF WEARING SURFACE - Concrete	CODE	1		(64) OPERATING RATING - HS-30		154
(B) TYPE OF MEMBRANE - None	CODE	0		(66) INVENTORY RATING - HS-18		132
(C) TYPE OF DECK PROTECTION - None	CODE	0		(70) BRIDGE POSTING - Posting Required		5
				(41) STRUCTURE OPEN, POSTED ,OR CLOSED		A
				DESCRIPTION - Open, No Restriction		
AGE AND SERVICE				APPRAISAL		CODE
(27) YEAR BUILT		1972		(67) STRUCTURAL EVALUATION		5
(106)YEAR RECONSTRUCTED		0		(68) DECK GEOMETRY		5
(42) TYPE OF SERVICE : ON - Highway				(69) UNDERCLEARANCES,VERTI & HORIZ		N
UNDER - Waterway	CODE	15		(71) WATERWAY ADEQUACY		8
(28) LANES: ON STRUCTURE 2 UNDER STRUCTURE		0		(72) APPROACH ROADWAY ALIGNMENT		8
(29) AVERAGE DAILY TRAFFIC		17000		(36) TRAFFIC SAFETY FEATURES		0111
(30) YEAR OF ADT 2005	(109) TRUCK ADT PCT	7 %		(11)SCOUR CRITICAL BRIDGES		T
(19) BYPASS OR DETOUR LENGTH		99 MI		PROPOSED IMPROVEMENTS		CODE
GEOMETRIC DATA				(75) TYPE OF WORK -		CODE
(48) LENGTH OF MAXIMUM SPAN		132 FT		(76) LENGTH OF STRUCTURE IMPROVEMENT		0 FT
(49) STRUCTURE LENGTH		4249 FT		(94) BRIDGE IMPROVEMENT COST		
(50)CURB OR SIDEWALK: LEFT 0.0 FT RIGHT 0.0 FT		0.0 FT		(95) ROADWAY IMPROVEMENT COST		
(51) BRIDGE ROADWAY WIDTH CURB TO CURB		40.0 FT		(96) TOTAL PROJECT COST		
(52) DECK WIDTH OUT TO OUT		42.3 FT		(97) YEAR OF IMPROVEMENT COST ESTIMATE		20
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS)		40.0 FT		(114)FUTURE ADT 34000	(115) YEAR FUTURE ADT	2025
(33) BRIDGE MEDIAN - No Median	CODE	0		INSPECTIONS		
(34) SKEW 0° (35) STRUCTURE FLARED		NO		(90) INSPECTION DATE		05/18/2005
(10) INVENTORY ROUTE MIN VERT CLEAR		99 FT 99 IN		(92) CRITICAL FEATURE INSPECTION :		(93) CFI DATE
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR		40.0 FT		A) FRACTURE CRIT DETAIL - NO		A)
(53) MIN VERT CLEAR OVER BRIDGE RDWY		99 FT 99 IN		B) UNDERWATER INSP - YES 48Mo		B) 09/01/2004
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad		99.9 FT		C) OTHER SPECIAL INSP NO		C)
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad		99.9 FT		SCOUR		
(56) MIN LAT UNDERCLEAR LT REF -		0.0 FT				
NAVIGATION DATA						
(38) NAVIGATION CONTROL - Navigational Control	CODE	1				
(111)PIER PROTECTION - In Place Functioning	CODE	2				
(39) NAVIGATION VERTICAL CLEARANCE		65				
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR						
(40) NAVIGATION HORIZONTAL CLEARANCE		90				

BRIDGE INSPECTION RECORD AND SUMMARY

REV. 5-30-97

INSPECTION TYPE		SUPPLEMENTAL (FENDER ONLY)		INSPECTION DATE		6/18/07	
BRIDGE NO.	090014	COUNTY	BRUNSWICK	ROUTE	N.C. 133	OVER	INTRACOASTAL WATERWAY
STRUCTURE TYPE		TIMBER FENDER SYSTEM		YEAR BUILT		1972	
LENGTH	N/A	ROUTE ORIENTATION	S to N	FOR SPANS	51	OF	65 SPANS
EVALUATION CODE: 0 - 2 CRITICAL, 3 & 4 POOR, 5 & 6 FAIR, 7 - 9 GOOD							
INSPECTION ITEM				ITEM 61		GRADE	
DECK ITEMS				GRADE		45 CHANNEL & CHANNEL PROT.	
1 WEARING SURFACE						a. WATERWAY	
2 DECK NO. OF EA. TYPE SPN. GRADE RATES SI & A ITEM 58						b. ALIGNMENT	
a. CONCRETE						c. SCOUR	
b. TIMBER						d. SLOPE PROT., DIKES RIP-RAP ETC.	
c. STEEL PLANK						50 APPROACH ROADWAY CONDITION	
d. OPEN GRID						51 APPROACH SLABS	
						52 PAINT SYSTEMS CODE	
						53 UTILITIES	
3 RAILING						54 RESPONSE TO LIVE LOAD	
a. CONCRETE						55 ESTIMATED REMAINING LIFE	
b. TIMBER						60 REGULATORY SIGN NOTICE ISSUED	
c. ALUMINUM						61 PROMPT - ACTION NOTICE ISSUED	
d. STEEL						62 PRESENTLY POSTED	
4 CURBS - WHEELGUARDS - PARAPETS - MEDIANS						63 TOT. FIELD INSP. TIME (INCLUDE WRITE UP)(M/H)	
5 WALKWAYS (ON OR ATTACHED TO STRUCTURE)						64 TOTAL SNOOPER INSP. TIME (HRS)	
6 DECK EXP. JTS. OR DEVICES NO. OF EACH						65 TOTAL TRAFFIC CONTROL TIME (M/H)	
a. STEEL PL. OR FINGER PL.						70 SI&A GENERAL CONDITION RATINGS	
b. MISC. PREFAB DEVICES						a. DECK ITEM 58	
c. COMPRESSION SEALS						b. SUPERSTRUCTURE ITEM 59	
d. STANDARD JOINTS						c. SUBSTRUCTURE ITEM 60	
e. OPEN JOINTS						d. CHANNEL & CHANNEL PROT. ITEM 61	
7 DECK DEBRIS (INCLUDE EXCESS SAND / GRAVEL)						71 SI&A FIELD APPRAISAL RATINGS	
SUPER STR. (FM. 1 (90) B TRUSS) ITEM 59						a. WATERWAY ADEQUACY	
10 LONGITUDINAL BEAMS OR GIRDERS						b. APPR. RDWY. ALIGNMENT	
11 LONGITUDINAL JOIST OR STRINGERS						72 FIELD SCOUR EVALUATION	
12 INT. DIAP'S, X-FRAMES, BRACING, & CONN'S						N/A	
13 END DIAP'S, CURTAIN WALLS, & CONN'S						** 4	
14 FLOOR BEAMS AND CONNECTIONS						8	
15 BEARINGS ASSEMBLIES (INCLUDE MISALIGN)							
16 DRAINAGE SYSTEMS (ON STRUCTURES)							
17 MOVABLE SPAN MACHINERY							
SUB STR ITEMS, ITEM 60 (INCLUDE SCOUR)							
35 TIM. SUB STR.						USE OF INSP. ACCESSIBILITY EQUIPMENT	
a. ABUT. & INT. BENT CAPS & RISERS						SNOOPER (CODE P, S, 4 or N)	
b. PILES, POST, SILLS, & BRACING						LADDER	
c. BULKHEADS, WING'S, & TIE BACKS						Y/N	
36 CONC. SUB STR.						Y/N	
a. ABUT. & INT. BENT CAPS						OVERSIDE LADDER	
b. ABUT. & BENT COL'S & BREASTWALLS						BUCKET TRUCK	
c. ABUT. & INT. BENT PILES						Y/N	
d. BACKWALLS - WING'S - RETAIN. WALLS						BOAT	
e. ABUT. AND BENT FOOTINGS & SILLS						Y/N	
37 STEEL SUB. STR.						Y/N	
a. ABUT. & INT. BENT CAPS & RISERS						NOTE: ** ITEM # 70 C REFERS TO ONLY THE FENDER SYSTEM	
b. PILES AND BRACING AND BULKHEADS						SINCE THIS IS A SUPPLEMENTAL REPORT FOR THE FENDER ONLY	
38 FOUNDATION PILES TYPE MATERIAL							
39 SLOPE PROT., RIP - RAP (INCLUDE DRAINAGE)							
40 FENDER SYSTEMS				4			
41 DRIFT				8		80 INSPECTED BY: <i>PBL acting TL</i>	
						81 REVIEWED BY:	
SPECIAL INSPECTION REQUESTED FOR :							

State of North Carolina
Dept. of Transportation
Division of Highways

Bridge Maint. Unit
Bridge Inspection Sect.

Team Leader:
Assisted By:

~~W. H. LOTZ~~ P. G. RUTHERFORD (ACTING TL)
~~B. HANCOCK, P. G. RUTHERFORD~~
W. R. MUELLER, Jim AHLMARIL

Bridge No. 090014

Route N.C. 133

County BRUNSWICK

Date: 6/18/07

FIELD INSPECTION REPORT
BRIDGE INSPECTION & ANALYSIS

Item No.

40 TIMBER FENDER SYSTEM (3)

- PREVIOUSLY NOTED EXCESSIVE LATERAL MOVEMENT OF FENDER SYSTEM HAS BEEN REPAIRED BY DRIVING AN ADDITIONAL PILE AT EACH CLUSTER AND OVERLAPPING ADDITIONAL WALERS

- PILES

MOST PILES HAVE MARINE BORER DAMAGE 1" TO 3" DEEP IN THE TIDAL ZONE WITH SOME PILES TO 5" DEEP

SEVERAL PILES ARE BORER DAMAGED WITH UP TO 90 % LOSS NEAR LOWER BOLTED CONNECTIONS

ADDITIONAL PILES DRIVEN TO STIFFEN THE FENDER SYSTEM ARE C.C.A. PILES , THE REST OF THE PILES ARE CREOSOTE PILES

CCA PILES SHOW RANDOM BORER HOLES TO 3/4".

SOME PILES ON NORTH AND SOUTH FENDERS ARE 100% DETERIORATED WITH CCA TIMBERS DRIVEN BESIDE THEM.

- WALERS

LOWER ROWS OF WALERS ARE MISSING AT RANDOM LOCATIONS

NUMEROUS WALERS ARE HOLLOW AND SEVERELY DETERIORATED AT ENDS (UP TO 4' DEEP) DUE TO MARINE BORERS

WALERS IN THE TIDAL ZONE ARE HEAVILY BORER DAMAGED +/- 2" DEEP WITH SEVERE LOSS AT RANDOM LOWER WALERS

NUMEROUS SPACER BLOCKS ARE MISSING THROUGH OUT FENDER SYSTEM

ADDED WALERS ARE C.C.A. , THE REST OF THE WALERS ARE CREOSOTE

- HARDWARE

BOLTED CONNECTIONS HAVE 30 % TO 50 % LOSS DUE TO RUST IN THE TIDAL ZONE WITH ONLY MINOR LOSS AT OTHER LOCATIONS

MODERATE RUST ON CABLE WRAPS WITH MOST UPPER CABLES COMPLETELY SEPARATED DUE TO RUST

- OLD PILE STUBS TO 4' ABOVE M/L THROUGH OUT FENDER SYSTEM

VERTICAL CLEARANCE MARKER MISSING AT WEST END.

VERTICAL CLEARANCE MARKER MISSING IN TIDAL ZONE AT EAST END.

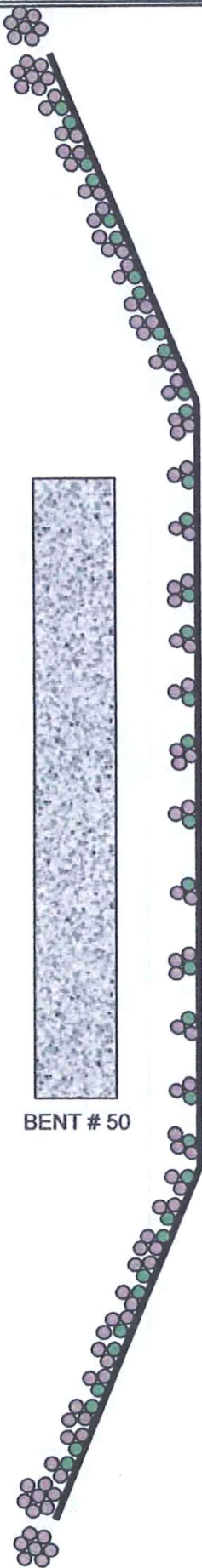
PREVIOUS DAMAGE AT NORTHWEST FLARE HAS BEEN REPAIRED WITH CCA TIMBER

JUSTIFYING RAISING THE GRADE TO (4).

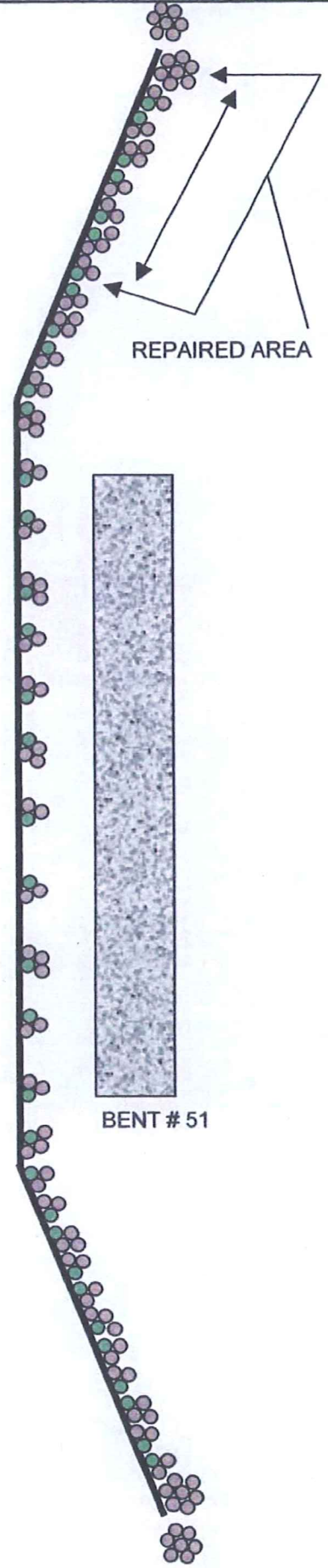
NORTHWEST DOLPHIN REPLACED WITH CCA TIMBER PILES.

NOTE: APPROXIMATELY 20' SAILBOAT SUNK AT EAST END OF BENT 50 AT A 45 DEGREE ANGLE FROM FOOTING TO FENDER AND LEANING AGAINST SEVERAL BATTER PILES.

FENDER PLAN VIEW



BENT # 50



REPAIRED AREA

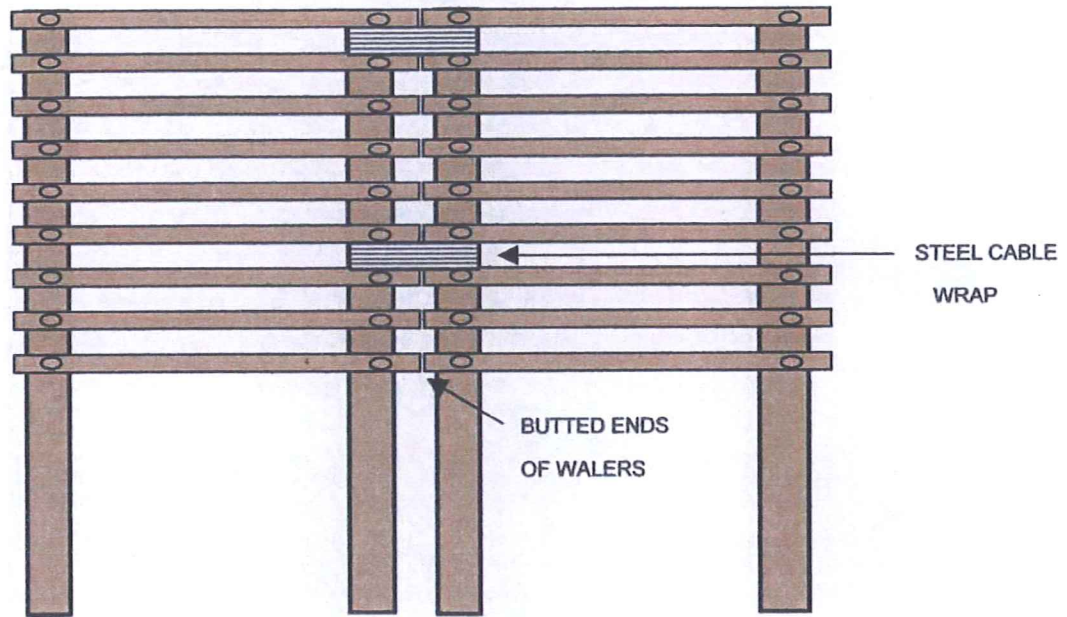
BENT # 51



- DENOTES OLDER CREOSOTE PILES
- DENOTES ADDED C.C.A. PILES

FENDER PROFILE

ORIGINAL DESIGN



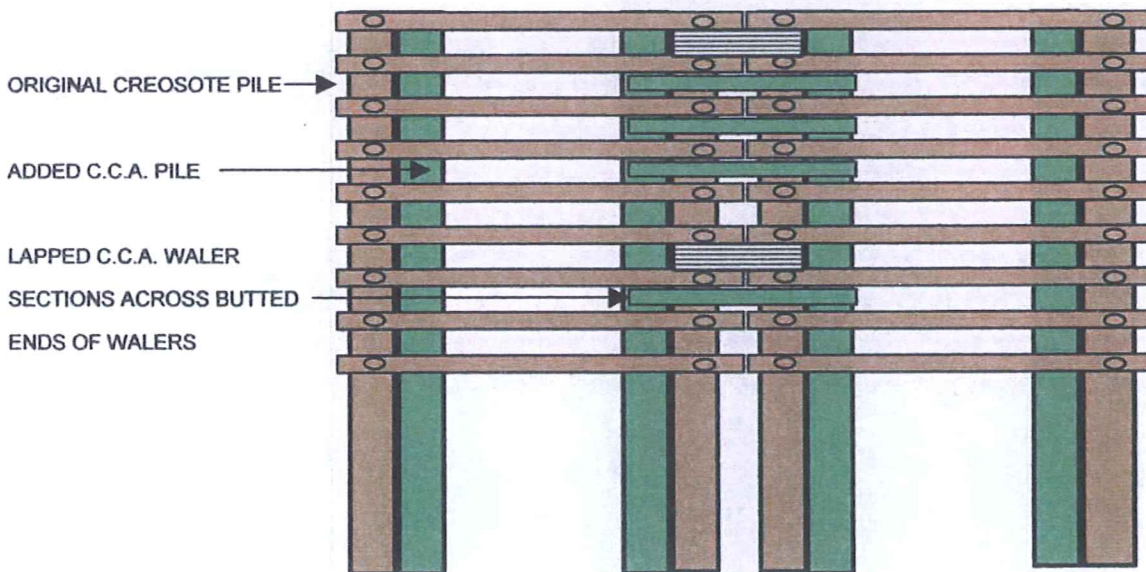
12" AVERAGE DIAMETER CREOSOTE TIMBER PILES

9 ROWS OF 10" x 10" CREOSOTE TIMBER WALERS

(WALERS WERE NOT LAPPED WHICH ALLOWED INDEPENDENT MOVEMENT OF FENDER SECTIONS)

REPAIRS WERE MADE TO STIFFEN FENDER SYSTEM CONSISTING OF DRIVING ADDITIONAL PILES AT EACH CLUSTER AND BY LAPPING ADDED WALER SECTIONS ACROSS ORIGINAL BUTTED ENDS OF WALERS

REPAIR DETAIL



BRIDGE INSPECTOR'S RECOMMENDATIONS FOR MAINTENANCE REPAIRS

Bridge: **090014**

County: **BRUNSWICK**

Division: **3**

Insp. By **W.H. LOTZ**

Date **6/18/07** Check By:

Date

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

Function Code	Description of Function	Unit	Quantity	Remarks	Est. cost
587	MAINTENANCE OF FENDER SYSTEM	M/H	1500	REPAIR OR REPLACE DETERIORATED AND MISSING FENDER COMPONENTS INSTALL VERTICAL CLEARANCE MARKERS	



LOOKING WEST

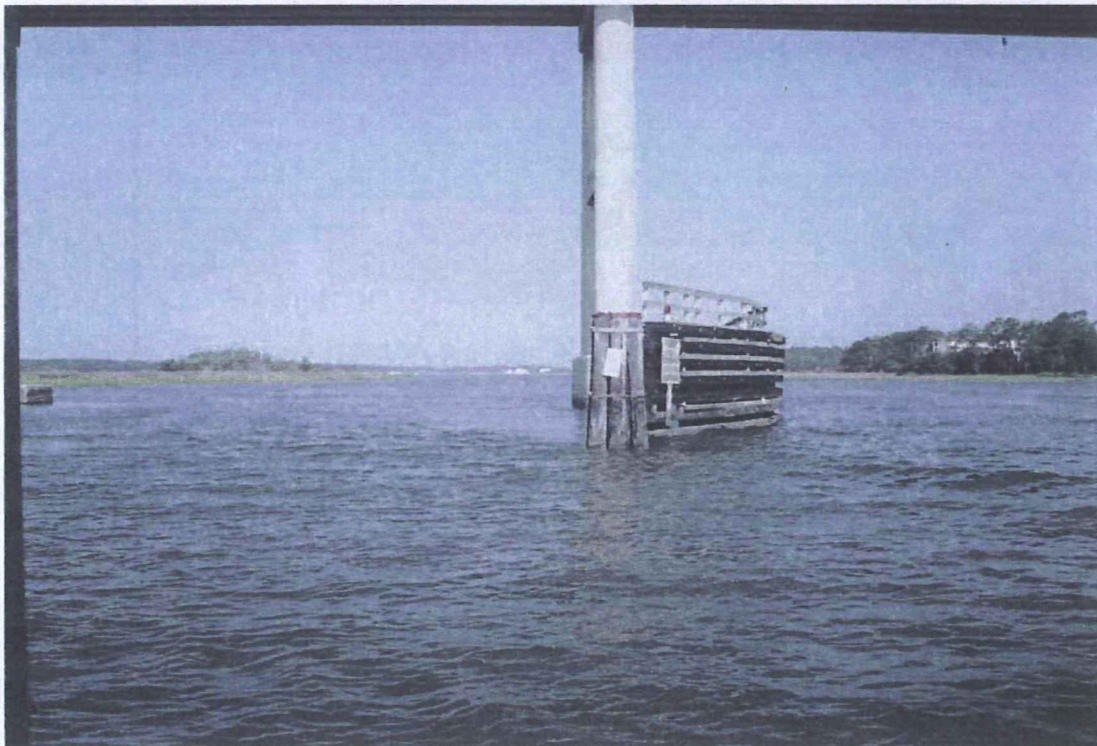
LOOKING EAST





BACKSIDE SOUTH FENDER

SOUTHEAST DOLPHIN





SOUTHWEST DOLPHIN

WARNING SIGN NORTHWEST CORNER





S.E. FLARE AND CLEARANCE MARKER

CABLE CROSSING SIGN

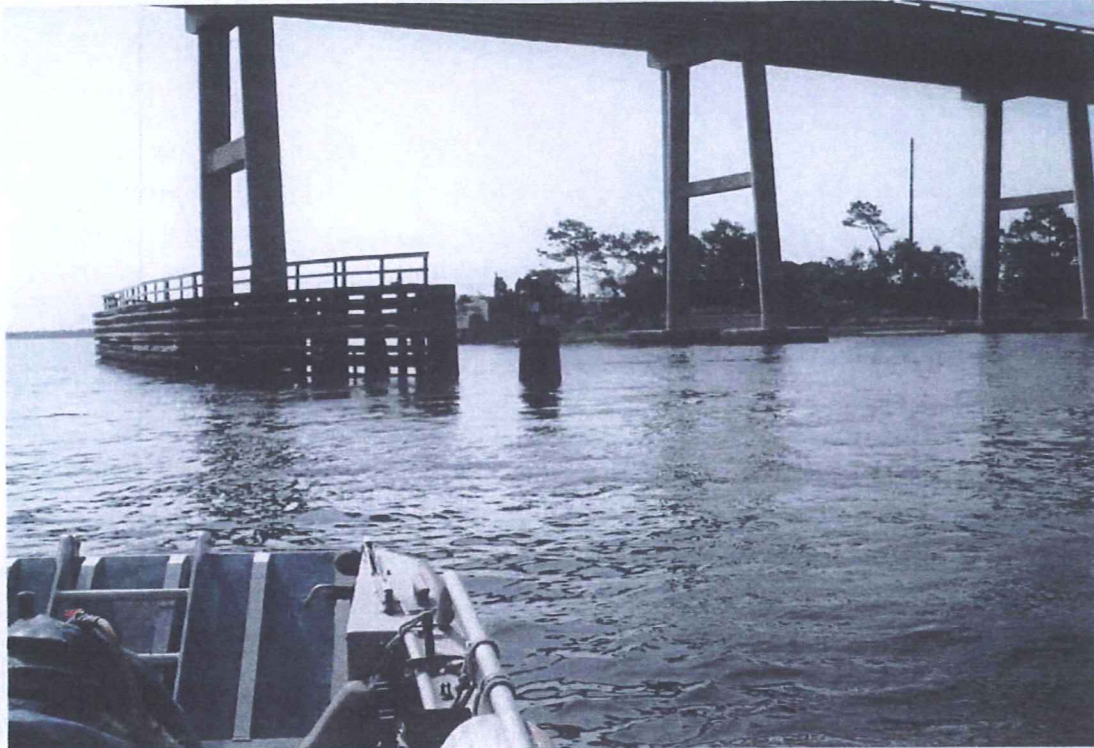




BACKSIDE NORTH FENDER

NORTHWEST DOLPHIN





SOUTHWEST DOLPHIN

RUSTED BROKEN CABLE WRAPS





BROKEN HANGING WALER, N.FENDER

MISSING WALERS

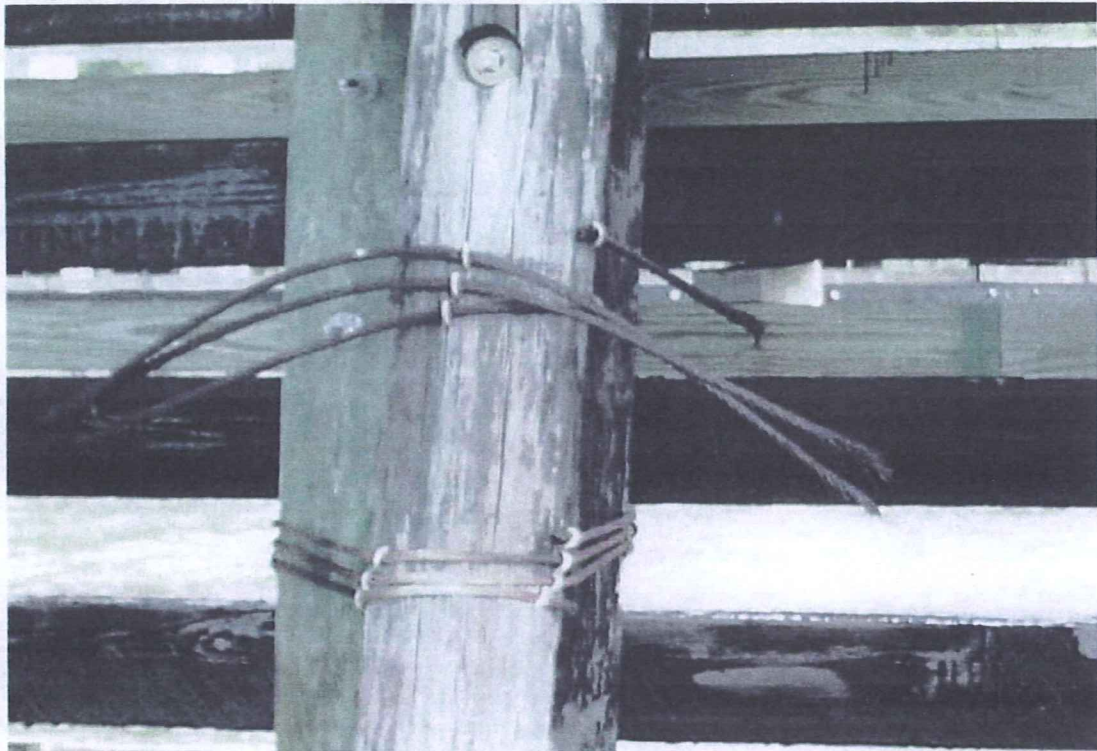




DECAYED PILE, N.FENDER

WALER DECAY, S.FENDER





BROKEN RUSTED CABLE WRAPS, S.FENDER

BROKEN RUSTED CABLE WRAPS, S.FENDER





3" DEEP X 3" DIAMETER BORER HOLE IN PILE, S.FENDER

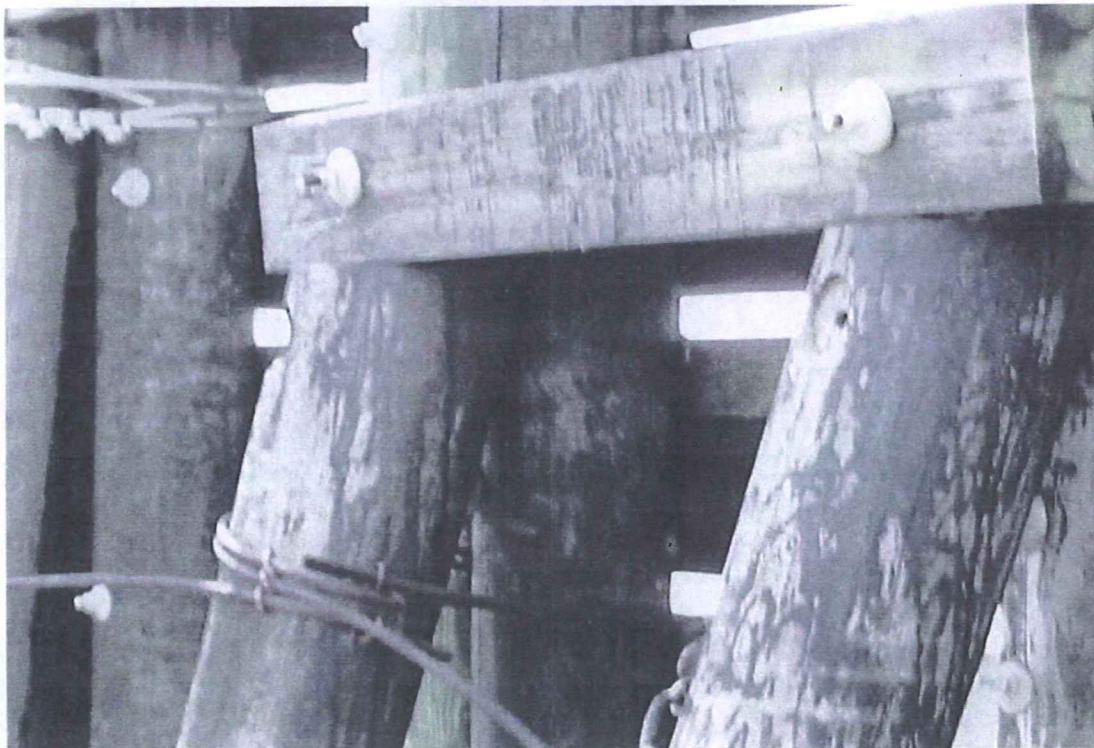
SAME HOLE WITH VIEW OF CRAB INSIDE





U/W PHOTO OF SEVERED PILE, S.FENDER

RANDOM BATTER PILES MISSING BOLTS



NORTH CAROLINA

Revised 6/13/97

DEPARTMENT of TRANSPORTATION

DIVISION of HIGHWAYS

BRIDGE MAINTENANCE UNIT

STRUCTURE DATA FILE

COUNTY BRUNSWICK BRIDGE NO. 090014

- CONTENTS:
- DATA CARD
 - STRUCTURE DATA WORK SHEETS
 - STREAM BED SOUNDINGS & PROFILE SKETCH
 - FORM 501 or 502
 - FORM BMD - 9
 - RETURNED PROMPT ACTION NOTICE SHOWING REPAIRS
 - OTHER SKETCHES & NOTES SHOWING STRUCTURE DETAILS
 - PHOTOGRAPHS

NOTE: STRUCTURE ANALYSIS - CHECK _____ YES or NO _____
WHEN PLANS ARE AVAILABLE

FIELD INSPECTOR _____

FATHOMETER PROFILE ENCLOSED

DATE: 6/18/07

BY: W.H. LOTZ

BRIDGE MAINTENANCE UNIT
 DATA ON EXISTING STRUCTURE

RUN DATE 07/31/2007

COUNTY : BRUNSWICK DIV : 3 DIST : 3 STRUCTURE NUMBER : 090014 LENGTH : 4249 FEET

ROUTE CARRIED : NC133 FEATURE INTERSECTED : INTRACOSTAL WATERWAY

LOCATED : 0.9 MI N JCT SR1104 BRIDGE NAME : OAK ISLAND BRIDGE

FUNC. CLASS : 07 SYST.ON : FA SYST.UNDER : NFA ADT & YR : 17000 2005 RAIL TYPE : LT 021 RT 021

BUILT : 1972 BY : DOH PROJ : 8.1313502 FED.AID PROJ : DESIGN LOAD : HS 20+MOD

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

NAVIGATION : HT. CRN. TO BED : 101 FT WATER DEPTH : 21 FT
 VC 65 FT HC 90

SUPERSTRUCTURE : REINF.CONC.DECK ON PRESTR.CONC.CORED SLAB&PRESTR.CONC.GDRS.

SUBSTRUCTURE : E.BTS&I.BT.1-36,63&64:RC CAP/PPC PILES;INT.BT.37-62;RCP&B

SPANS : 1@41'0.5, 27@40', 11@65', 22@92', 2@96', 1@132', 1@65'-4.5

BEAMS OR GIRDERS : SPANS1-28:14PPC CORED SLAB SECTIONS;SPANS29-65:PPC GIRDERS

FLOOR : PPPCCS/6A WS ENCROACHMENT : DECK (OUT TO OUT) : 42.3 FT

CLEAR ROADWAY : 40.0 FT BETWEEN RAILS : 40.0 FT SIDEWALK OR CURB : LT 0.0 FT RT 0.0 FT

VERT.CL.OVER : 99 FT 99 IN VERT.CL.UNDER : 00 FT 00 IN HOR.CL.UNDER : 0.0 FT

INV.RTG. : HS-18 OPE.RTG. : HS-30 CONTR.MEMBER : SLAB PC POSTED : SV 0 TTST 0 DATE

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

2ND OPENING : 3RD OPENING : 4TH OPENING : 5TH OPENING :

REMARKS :

FATHOMETER PROFILE

WATER SURFACE TO TOP OF FOOTING AT BENT # 49 = 8.2'

RUNS MADE SOUTH TO NORTH +/- 10' FROM BENTS # 49 - # 52

WEST SIDE

<u>BENT #</u>	<u>WATER DEPTH</u>
49	11.1'
50	18.7'
SOUTH FENDER	21.5'
NORTH FENDER	24.0'
51	18.4'
52	5.7'

FATHOMETER PROFILE

WATER SURFACE TO TOP OF FOOTING AT BENT # 49 = 8.2'

RUNS MADE SOUTH TO NORTH +/- 10' FROM BENTS # 49 - # 52

EAST SIDE

<u>BENT #</u>	<u>WATER DEPTH</u>
49	3.3'
50	17.4'
SOUTH FENDER	22.1'
NORTH FENDER	24.5'
51	15.9'
52	2.2'