



NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 STRUCTURE MANAGEMENT UNIT

ATTENTION: **PRIORITY ACTION REQUESTED - SCOUR ON WEST END**

# Structure Safety Report

## 2 Year Complete Topside and Underwater Element Inspection

INSPECTION DATE: 02/17/2022

DIVISION: 1 COUNTY: DARE STRUCTURE NUMBER: 270051 FREQUENCY: 24 MONTHS

FACILITY CARRIED: S.DOGWOOD TRAIL MILE POST: \_\_\_\_\_

LOCATION: .5 MI.N.JCT.YAUPON TR.

FEATURE INTERSECTED: PELICAN CANAL

LATITUDE: 36° 7' 35.71" LONGITUDE: 75° 44' 32.14"

SUPERSTRUCTURE: SINGLE 25'X11' ALUM. BOX CULVERT; 41'-6" ALONG CENTERLINE OF CULVERT

SUBSTRUCTURE: \_\_\_\_\_

SPANS: 1 BARREL. SEE CULVERT SKETCH FOR DETAILS.

FRACTURE CRITICAL     TEMPORARY SHORING     SCOUR CRITICAL     SCOUR PLAN OF ACTION

GRADES: (Inspector/NBI Coding) DECK N/N SUPERSTRUCTURE N/N SUBSTRUCTURE N/N CULVERT 6/6

POSTED SV: Not Posted POSTED TTST: Not Posted

OTHER SIGNS PRESENT: NONE



LOOKING NORTH

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

DIRECTION OF INSPECTION S-N

DIRECTION MATCHES PLANS \_\_\_\_\_

INSPECTED BY Ben Presgrave	SIGNATURE 	ASSISTED BY Christian Anderson
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IDENTIFICATION

(1) STATE NAME NORTH CAROLINA BRIDGE 270051  
 (8) STRUCTURE NUMBER (FEDERAL) 0550051  
 (5) INVENTORY ROUTE (ON/UNDER) ON 150000000  
 (2) STATE HIGHWAY DEPARTMENT DISTRICT 1  
 (3) COUNTY CODE (FEDERAL) 55 (4) PLACE CODE 63130  
 (6) FEATURE INTERSECTED PELICAN CANAL  
 (7) FACILITY CARRIED S.DOGWOOD TRAIL  
 (9) LOCATION .5 MI.N.JCT.YAUPON TR.  
 (11) MILEPOINT 0.0  
 (12) BASE HIGHWAY NETWORK 0  
 (13) LRS INVENTORY ROUTE & SUBROUTE  
 (16) LATITUDE 36° 7' 35.71" (17) LONGITUDE 75° 44' 32.14"  
 (98) BORDER BRIDGE STATE CODE PERCENT SHARED  
 (99) BORDER BRIDGE STRUCTURE NUMBER

SUFFICIENCY RATING 95.72  
 STATUS =  
 CLASSIFICATION CODE  
 (112) NBIS BRIDGE SYSTEM Y  
 (104) HIGHWAY SYSTEM Inventory Route not on NHS 0  
 (26) FUNCTIONAL CLASS Urban Local 19  
 (100) STRAHNET HIGHWAY Not a STRAHNET Route 0  
 (101) PARALLEL STRUCTURE No parallel structure exists N  
 (102) DIRECTION OF TRAFFIC 2-way traffic 2  
 (103) TEMPORARY STRUCTURE  
 (110) DESIGNATED NATIONAL NETWORK - on national network for trucks 0  
 (20) TOLL On Free Road 3  
 (21) MAINT - 04  
 (22) OWNER - 04  
 (37) HISTORICAL SIGNIFICANCE - 5

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE MAIN Aluminum, Wrought Iron, or Cast Iron  
 TYPE Culvert CODE 919  
 (44) STRUCTURE TYPE APPROACH Other  
 TYPE Other CODE 000  
 (45) NUMBER OF SPANS IN MAIN UNIT 1  
 (46) NUMBER OF SPANS IN APPROACH 0  
 (107) DECK STRUCTURE TYPE CODE N  
 (108) WEARING SURFACE/PROTECTIVE SYSTEM  
 (A) TYPE OF WEARING SURFACE CODE N  
 (B) TYPE OF MEMBRANE CODE N  
 (C) TYPE OF DECK PROTECTION CODE N

(58) DECK N  
 (59) SUPERSTRUCTURE N  
 (60) SUBSTRUCTURE N  
 (61) CHANNEL & CHANNEL PROTECTION 7  
 (62) CULVERTS 6

LOAD RATING AND POSTING

(31) DESIGN LOAD HS20 5  
 (63) OPERATING RATING METHOD - RFR - Load and Resistance Factor 3  
 (64) OPERATING RATING - HS-21 38  
 (65) INVENTORY RATING METHOD - 3  
 (66) INVENTORY RATING HS-17 30  
 (70) BRIDGE POSTING No Posting Required 5  
 (41) STRUCTURE OPEN, POSTED, OR CLOSED A  
 DESCRIPTION Open, no restriction

APPRAISAL

(67) STRUCTURAL EVALUATION CODE 6  
 (68) DECK GEOMETRY N  
 (69) UNDERCLEARANCES, VERT & HORIZ N  
 (71) WATERWAY ADEQUACY 7  
 (72) APPROACH ROADWAY ALIGNMENT 8  
 (36) TRAFFIC SAFETY FEATURES NNNN  
 (113) SCOUR CRITICAL BRIDGES 8

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 1,000 YEAR OF FUTURE ADT 2040

NAVIGATION DATA

(38) NAVIGATION CONTROL - CODE 0  
 (111) PIER PROTECTION CODE  
 (39) NAVIGATION VERTICAL CLEARANCE 0.0  
 (116) VERT - LIFT BRIDGE NAV MIN VERT CLEAR 0.0  
 (40) NAVIGATION HORIZONTAL CLEARANCE 0.0

INSPECTION

(90) INSPECTION DATE 02/22 (91) FREQUENCY 24  
 (92) CRITICAL FEATURE INSPECTION (93) CFI DATE  
 A) FRACTURE CRIT DETAIL A)  
 B) UNDERWATER INSP 60 B) 02/22  
 C) OTHER SPECIAL INSP C)

SCOUR

# Superstructure Build Details

Span Number 1

Span Length 24.6670

Skew 90.0000

Number of Items	Type of Component	Element Name	Quantity	Protective System Applied	Quantity (Sq Ft)
1	Aluminum Box Culvert Structural Plate	Other Culvert	42 Feet		

# Structure Element Scoring

Structure Number: 270051

Inspection Date 2/17/2022

Element Number	Parent Number	Element Name	Location	Total Quantity	Level 1 Quantity	Level 2 Quantity	Level 3 Quantity	Level 4 Quantity
243	0	Other Culvert	Culverts and Pipes	42	0	41	1	0

# Summary of Maintenance Needs

## Maintenance By Defect

Structure Number: 270051

Inspection Date: 02/17/2022

MMS Code	Element Name	Defect Name	Recommended Quantity
3370	Other Culvert	Scour	1 Feet
3370	Other Culvert	Connection	41 Feet

# Element Structure Maintenance Quantities

Structure Number: 270051

Inspection Date 02/17/2022

Location	MMS Code	Description	Maint Quantity	Total Quantity	Severe Quantity	Poor Quantity	Fair Quantity	Good Quantity
Culverts and Pipes	3370	Maintenance of NBI Culverts and Pipes	42	42	0	1	41	0

# Priority Actions Request

Structure Number 270051

Span1

3370 Culvert Section Aluminum Box Culvert Structural Plate  
1

Priority Level	Defect Type	Quantity	Defect Description
2	Scour	1	Span 1 Culvert Section 1: PRIORITY ACTION REQUESTED - 2' VERTICAL EXPOSURE OF TOEWALL ON WEST END

## Element Condition and Maintenance Data

Structure Number: 270051

Inspection Date: 02/17/2022

<b>Span 1</b>	<b>Culvert Section 1</b>
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**Aluminum Box Culvert Structural Plate**

Element Number	Element Name	Total Qty	CS1 Qty	CS2 Qty	CS3 Qty	CS4 Qty
243	Other Culvert	42	0	41	1	0 Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty
243	Scour	PRIORITY ACTION REQUESTED - 2' VERTICAL EXPOSURE OF TOEWALL ON WEST END	3	1	1 Feet
243	Connection	SURFACE RUST ON CONNECTION HARDWARE FROM HIGH WATERMARK TO MUDLINE	2	41	41 Feet

General Comments



## Elements Verified

Location	Name	Component	Element Name	Amount
Span 1	Culvert Section 1	Aluminum Box Culvert Structural Plate	Other Culvert	42

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# General Inspection Notes

# National Bridge and NC Inspection Items

Structure Number: 270051

Inspection Date: 02/17/2022

## National Bridge Inventory Items

Item	Grade Scale	Grade	
Item 58: Deck	0 - 9 , N	N	<p>Note:</p> <p>Items 58,59,60,62 reflect this inspection only.</p> <p>For overall NBI coding grade, see cover sheet.</p>
Item 59: Superstructure	0 - 9 , N	N	
Item 60: Substructure	0 - 9 , N	N	
Item 61: Channel and Channel Protection	0 - 9 , N	7	
Item 62: Culvert	0 - 9 , N	6	
Item 71: Waterway Adequacy	0 - 9 , N	7	
Item 72: Approach Roadway Alignment	0 - 9 , N	8	

Note: If NBI Inspection Item is not present, code NBI item with "N"

## NC SMU Inspection Items

Item	Grade Scale	Grade	Maint. Qty.	Maint. Code
Headwall	G, F, P, or C	G	0	4675
Wingwall	G, F, P, or C	G	0	3350
Scour	G, F, P, or C	F		
Drift	G, F, P, or C	G	0	3366
Estimated Remaining Life	G, F, P, or C			

Note: If NC SMU Inspection Item is not present, leave NC SMU item blank

## Inspection Information

Item	Grade Scale	Grade
Sign Noticed Issued	YES/NO	N
Priority Maintenance Request Submitted	YES/NO	Y
Inspection Time	Hours	3
Traffic Control Time	Hours	0
Snooper Time	Hours	0
Ladder Used	YES/NO	N
Bucket Truck Used	YES/NO	N
Boat Used	YES/NO	N
Other Equipment Used	YES/NO	Y
Portion of Structure in > 3' of water	YES/NO	Y

# National Bridge and NC SMU Inspection Item Details

Structure Number: 270051

Inspection Date: 02/17/2022

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Item	Priority Maintenance Issued	Grade	Y	Maint Code	Qty.	0
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Details PRIORITY ACTION REQUESTED - SCOUR ON WEST END

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Item	Other Equipment Used	Grade	Y	Maint Code	Qty.	0
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Details DRY SUIT / DIVE GEAR

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Item	Scour	Grade	F	Maint Code	Qty.	0
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Details PRIORITY ACTION REQUESTED - 2' VERTICAL EXPOSURE OF TOEWALL ON WEST END.

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Item	Portion of structure in > 3' of water (Y or N)	Grade	Y	Maint Code	Qty.	0
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Details INSIDE BARREL



AWS - CRACKED TO 1/8" AND SETTLED TO 1"



RAILING POSTS HAVE END DECAY TO 1" DEEP.



VEGETATION GROWING AROUND BOLT RING



Span 1 Culvert Section 1: PRIORITY ACTION REQUESTED - 2' VERTICAL EXPOSURE OF TOEWALL ON WEST END

Structure Number: 270051

Inspection Date 02/17/2022

Barrel Number 1

Skew 90 ° Length along centerline (ft) 41.5 Height Crown to Bed (ft) 12.0 Fill Depth (ft) 1.5

Section 1 Details Barrel Height (ft) 10.5 Barrel Width (ft) 24.667

Pipe Thickness Measurements

Location (ft)	Thickness (in)	Comment
1	0.223	
39	0.225	



LOOKING SOUTH



LOOKING EAST





LOOKING WEST



WEST PROFILE



LOOKING NORTH



EAST PROFILE



GUARDRAIL DETAIL



LOOKING THROUGH BARREL


# BRIDGE INSPECTOR'S RECOMMENDATION FOR MAINTENANCE REPAIRS

Bridge: 270051

County DARE


Date:


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

MMS Code	Description of Function	Unit	Quantity	Remarks	Est. Cost
 3370	Maintenance and Repair of NBIS Pipes and Culverts	LF	1	Span 1 Culvert Section 1: PRIORITY ACTION REQUESTED - 2' VERTICAL EXPOSURE OF TOEWALL ON WEST END	

## Key

 Priority Maintenance Item

 Critical Finding Item

 Priority Maintenance Level Not Determined

**BRIDGE INSPECTOR'S RECOMMENDATION FOR PRIORITY MAINTENANCE REPAIRS**

Bridge: 270051                      County DARE

THE FOLLOWING MAINTENANCE ITEMS HAVE BEEN SUBMITTED IN CONJUNCTION WITH A PRIORITY MAINTENANCE REQUEST

MMS Code	MMS Description	Quantity
3370	Maintenance and Repair of NBIS Pipes and Culverts	1              LF
Location:		
Bent/Span No.		
Priority Level	Status	
Priority Maintenance	Division Bridge Maintenance Notification	
Submitted Date:	Submitted By:	Assisted By:
02/18/2022	B. PRESRAVE	
Details		
Span 1 Culvert Section 1: PRIORITY ACTION REQUESTED - 2' VERTICAL EXPOSURE OF TOEWALL ON WEST END		

# Culvert Segment Details

Barrel 1

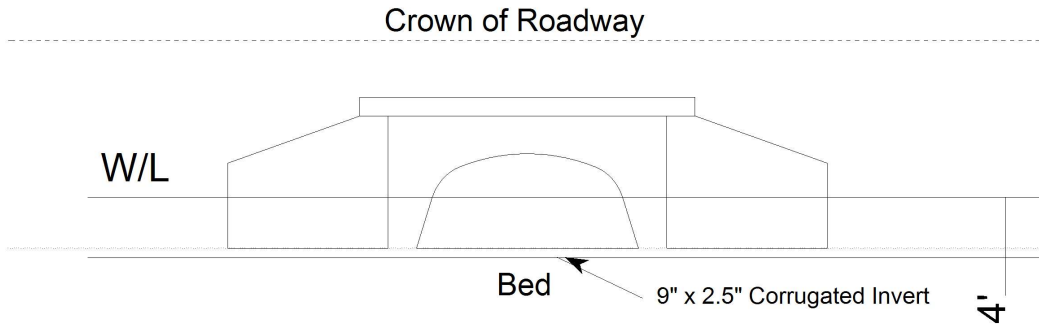
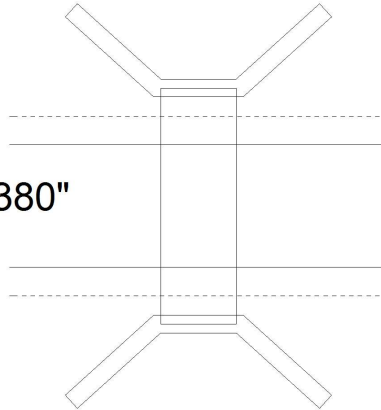
Has Bands?: No

Distance From Upstream End to Edge of Pavement: 6.837ft

	Distance From Upstream End of Segment (ft)	Width (ft)	Height (ft)	Pipe Thickness (in)	Corrugation Pattern	Leg Length (ft)	Top Radius (ft)	Bolt Material	Bolt Diameter (in)	# of Long. Bolt Rows	Transverse Spacing b/w Bolt Rows (ft)	Longitudinal Bolt Spacing (ft)	Bolt Condition	Rib Length (ft)	Rib Spacing (ft)	Type	Material
Upstream End	1	24.67	10.5	0.223	9 x 2.5	9.5	23.45733335	STE EL	0.75	2	0.125	0.375	GOOD	38	9in. (TYPE VI)	Metal Box Culvert (Structural Plate)	Aluminum
End of Segment 1	19	24.67	10.5	0.221	9 x 2.5	9.5	23.45733335	STE EL	0.75	2	0.125	0.375	GOOD	38	9in. (TYPE VI)	Metal Box Culvert (Structural Plate)	Aluminum
Beginning of Segment 2	21	24.67	10.5	0.221	9 x 2.5	9.5	23.45733335	STE EL	0.75	2	0.125	0.375	GOOD	38	9in. (TYPE VI)	Metal Box Culvert (Structural Plate)	Aluminum
Downstream End	39.5	24.67	10.5	0.225	9 x 2.5	9.5	23.45733335	STE EL	0.75	2	0.125	0.375	GOOD	38	9in. (TYPE VI)	Metal Box Culvert (Structural Plate)	Aluminum

# Bridge Inspection Field Sketch

25 MPH  
 HAUNCH RADIUS: ~ 37.380"



Looking Downstream

Number of Barrels	Skew	Distance From Crown to Bed	Fill Depth
1	90°	<b>12ft</b>	<b>1.5ft</b>
Length Along Center Line of Pipe		Length Along Center Line of Roadway	
41.5ft		25ft	

Barrel #	Width	Height	Distance From Scour at Inlet Previous Pipe	Scour at Outlet	Type
1	24.67ft	10.5ft	0	<b>2'</b>	Metal Box Culvert (Structural Plate)

## 25MPH SPEED LIMIT

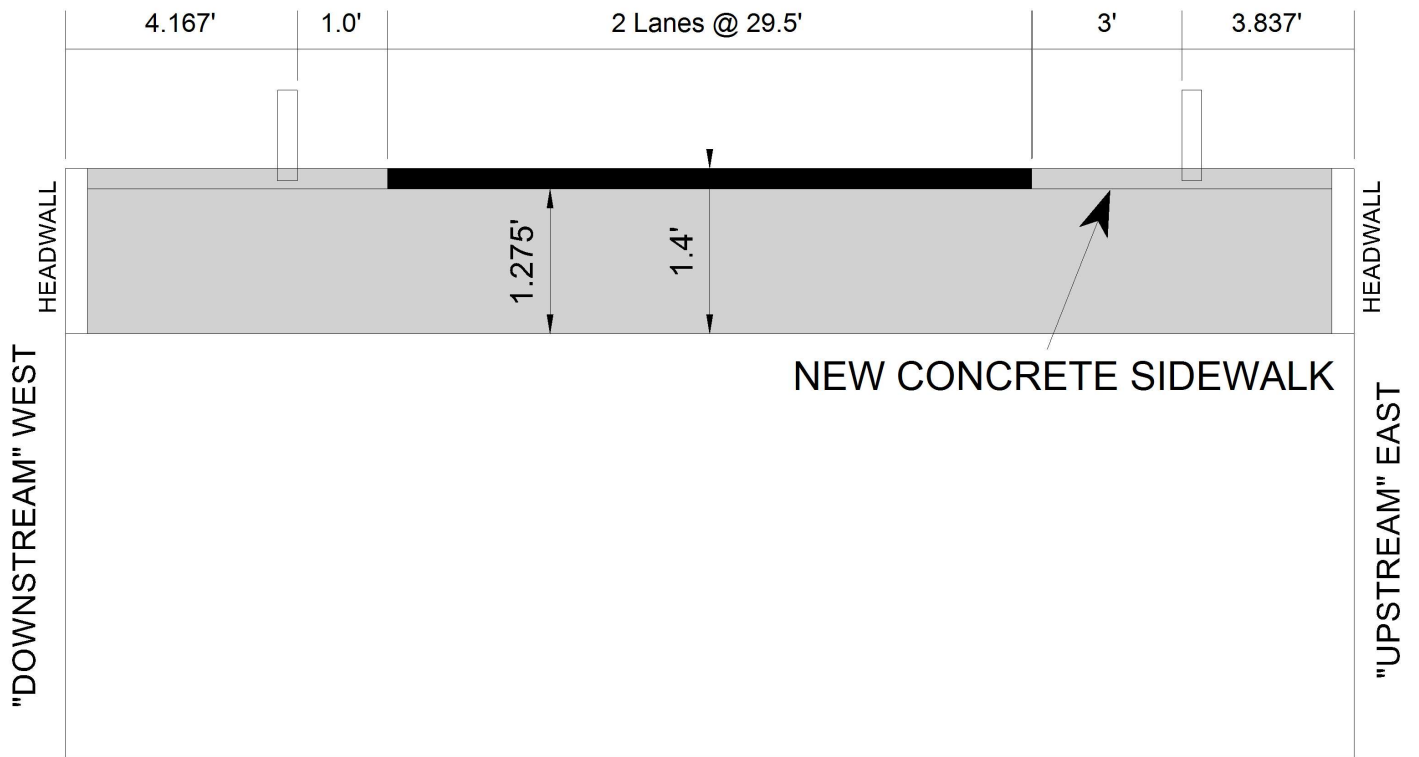
RIB LENGTH IS APPROXIMATE  
 SEE "CULVERT DETAILS" SKETCH FOR ALL TOPSIDE MEASUREMENTS  
 LEFT AWS TO GUARDRAIL = 1'  
 LEFT GUARDRAIL TO EOP = 3'  
 RIGHT AWS TO GUARDRAIL = 6'  
 RIGHT GUARDRAIL TO EOP = 2'

<b>Title</b> CULVERT DATA	<b>Description</b> CULVERT DATA
Title: 2/17/22	Date: 3/12/2014
Bridge No: 270051	Drawn By: BC
File Name: S0166000854	Date: 3/12/2014

# Bridge Inspection Field Sketch

ASPHALT THICKNESS: 1 1/2"

\*\*\* NO VISIBLE SHOULDER BREAKS ON STRUCTURE



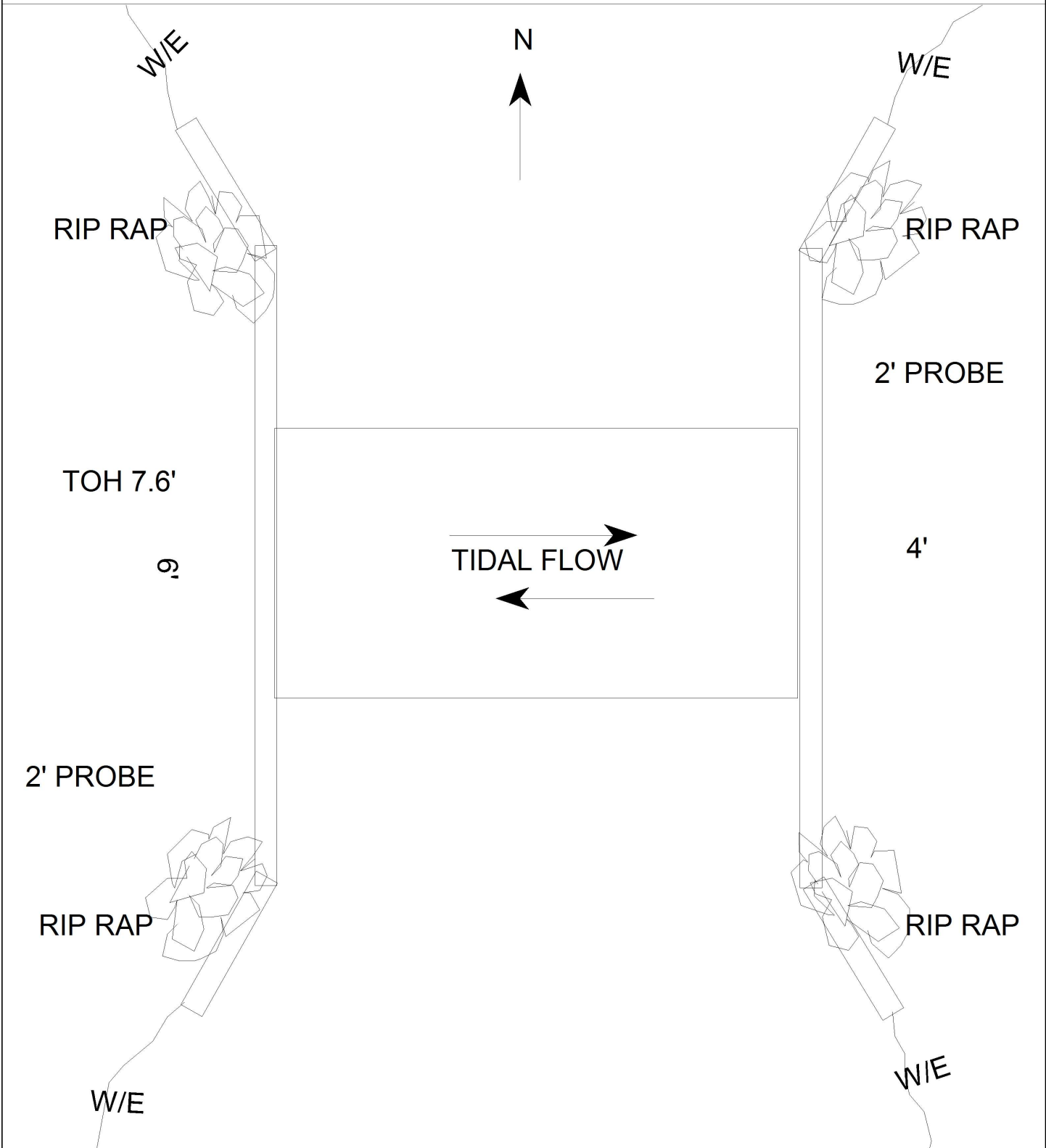
- ASPHALT WEARING SURFACE
- FILL OVER CULVERT
- TIMBER RAILS



<b>Title</b> CULVERT DETAILS      2/17/22		<b>Description</b> SINGLE ARCH PIPE	
<b>Bridge No:</b> 270051	<b>Drawn By:</b> BEA	<b>Date:</b> 3/09/2010	<b>File Name:</b> S0430000072



# Bridge Inspection Field Sketch



<b>Title</b> CHANNEL PLAN VIEW	<b>Description</b> CHANNEL PLAN VIEW
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<b>Bridge No:</b> 270051	<b>Drawn By:</b> BC	<b>Date:</b> 4/3/2012	<b>File Name:</b> S0170000584
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# Bridge Inspection Field Sketch



## MEASUREMENTS TAKEN 15' SOUTH OF BRIDGE

Roadway	24ft Wide	2 Paved Lanes	Looking North
Left Shoulder	4ft Wide		4ft Unpaved
Right Shoulder	4ft Wide		4ft Unpaved
Left Guardrail			
Right Guardrail			

**Title**  
APPROACH ROADWAY      2/17/22

**Description**  
SOUTH APPROACH (LOOKING NORTH)

**Bridge No:** 270051

**Drawn By:** LGH

**Date:** 3/09/2010

**File Name:** S0266000130