



NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 STRUCTURE MANAGEMENT UNIT

ATTENTION: MISSING 1 DELINEATOR AT THE NW CORNER (PAR)

# Structure Safety Report

## 2 Year Complete Topside and Underwater Element Inspection

INSPECTION DATE: 01/03/2022

DIVISION: 6 COUNTY: COLUMBUS STRUCTURE NUMBER: 230374 FREQUENCY: 24 MONTHS

FACILITY CARRIED: NC11 MILE POST: \_\_\_\_\_

LOCATION: 0.2 MI. S. JCT. NC87

FEATURE INTERSECTED: WEYMAN CREEK

LATITUDE: 34° 22' 19.42" LONGITUDE: 78° 16' 46.29"

SUPERSTRUCTURE: DOUBLE 12'X12' RCBC, 47' ALONG CENTERLINE OF CULVERT

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

SPANS: 2 BARRELS. 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 5/5

POSTED SV: Not Posted POSTED TTST: Not Posted

OTHER SIGNS PRESENT: 3 DELINEATORS



Sign noticed issued for	Number Required
<u>NO</u> WEIGHT LIMIT	<u>0</u>
<u>YES</u> DELINEATORS	<u>1</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 \_\_\_\_\_

NORTH

INSPECTED BY PATRICK G. RUTHERFORD	SIGNATURE 	ASSISTED BY STAN MATTHAIE, JOHN RORES, JASPER BENSON
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IDENTIFICATION

(1) STATE NAME NORTH CAROLINA BRIDGE 230374  
 (8) STRUCTURE NUMBER (FEDERAL) 0470374  
 (5) INVENTORY ROUTE (ON/UNDER) ON 130000110  
 (2) STATE HIGHWAY DEPARTMENT DISTRICT 6  
 (3) COUNTY CODE (FEDERAL) 47 (4) PLACE CODE 56600  
 (6) FEATURE INTERSECTED WEYMAN CREEK  
 (7) FACILITY CARRIED NC11  
 (9) LOCATION 0.2 MI. S. JCT. NC87  
 (11) MILEPOINT 0.0  
 (12) BASE HIGHWAY NETWORK 0  
 (13) LRS INVENTORY ROUTE & SUBROUTE  
 (16) LATITUDE 34° 22' 19.42" (17) LONGITUDE 78° 16' 46.29"  
 (98) BORDER BRIDGE STATE CODE PERCENT SHARED  
 (99) BORDER BRIDGE STRUCTURE NUMBER

SUFFICIENCY RATING 88.68  
 STATUS =  
 CLASSIFICATION  
 (112) NBIS BRIDGE SYSTEM YES  
 (104) HIGHWAY SYSTEM Inventory Route not on NHS 0  
 (26) FUNCTIONAL CLASS Rural Major Collector 07  
 (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 - 01  
 (22) OWNER - 01  
 (37) HISTORICAL SIGNIFICANCE - 5

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE MAIN Concrete Continuous  
 TYPE Culvert CODE 219  
 (44) STRUCTURE TYPE APPROACH  
 TYPE CODE  
 (45) NUMBER OF SPANS IN MAIN UNIT 2  
 (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 5  
 (62) CULVERTS 5

LOAD RATING AND POSTING

(31) DESIGN LOAD H 20 + Mod 6  
 (63) OPERATING RATING METHOD - 0  
 (64) OPERATING RATING - HS-26 46  
 (65) INVENTORY RATING METHOD - 0  
 (66) INVENTORY RATING HS-20 36  
 (70) BRIDGE POSTING No Posting Required 5  
 (41) STRUCTURE OPEN, POSTED, OR CLOSED  
 DESCRIPTION Open, no restriction A

AGE AND SERVICE

(27) YEAR BUILT 1954  
 (106) YEAR RECONSTRUCTED 0  
 (42) TYPE OF SERVICE ON - Highway  
 OFF - Waterway CODE 15  
 (28) LANES ON STRUCTURE 2 LANES UNDER STRUCTURE 0  
 (29) AVERAGE DAILY TRAFFIC 3700  
 (30) YEAR OF ADT 2018 (109) TRUCK ADT PCT 7  
 (19) BYPASS OR DETOUR LENGTH 1.0

APPRAISAL  
 (67) STRUCTURAL EVALUATION 5  
 (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

GEOMETRIC DATA

(48) LENGTH OF MAXIMUM SPAN 12.0  
 (49) STRUCTURE LENGTH 25.0  
 (50) CURB OR SIDEWALK: LEFT 0.0 RIGHT 0.0  
 (51) BRIDGE ROADWAY WIDTH, CURB TO CURB 0.0  
 (52) DECK WIDTH OUT TO OUT 0.0  
 (32) APPROACH ROADWAY WITH (W/ SHOULDERS) 27.0  
 (33) BRIDGE MEDIAN No median CODE 0  
 (34) SKEW 0 (35) STRUCTURE FLARED 0  
 (10) INVENTORY ROUTE MIN VERT CLEAR 999.9  
 (47) INVENTORY ROUTE TOTAL HORIZ CLEAR 26.2  
 (53) MIN VERT CLEAR OVER BRIDGE RDWY 999.9  
 (54) MIN VERT UNDERCLEAR: REFERENCE 0.0  
 (55) MIN LAT UNDERCLEARANCE RT: REFERENCE N 0.0  
 (56) MIN LAT UNDERCLEARANCE LT: 0.0

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 7,400 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 01/22 (91) FREQUENCY 24  
 (92) CRITICAL FEATURE INSPECTION (93) CFI DATE  
 A) FRACTURE CRIT DETAIL A)  
 B) UNDERWATER INSP 60 B) 01/22  
 C) OTHER SPECIAL INSP C)

SCOUR

# Superstructure Build Details

Span Number 1

Span Length 12.0000

Skew 90.0000

Number of Items	Type of Component	Element Name	Quantity	Protective System Applied	Quantity (Sq Ft)
1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	47 Feet		

Span Number 2

Span Length 12.0000

Skew 90.0000

Number of Items	Type of Component	Element Name	Quantity	Protective System Applied	Quantity (Sq Ft)
1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	47 Feet		

# Structure Element Scoring

Structure Number: 230374

Inspection Date 1/3/2022

Element Number	Parent Number	Element Name	Location	Total Quantity	Level 1 Quantity	Level 2 Quantity	Level 3 Quantity	Level 4 Quantity
241	0	Reinforced Concrete Culvert	Culverts and Pipes	94	0	93	1	0

# Summary of Maintenance Needs

## Maintenance By Defect

Structure Number: 230374

Inspection Date: 01/03/2022

MMS Code	Element Name	Defect Name	Recommended Quantity
3370	Reinforced Concrete Culvert	Delamination/Spall	1 Feet

# Element Structure Maintenance Quantities

Structure Number: 230374

Inspection Date 01/03/2022

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	1	94	0	1	93	0

# Priority Actions Request

Structure Number 230374

Other Ground Mounted Signs

3250 Other Ground Mounted Signs Other Ground Mounted Signs

Priority Level	Defect Type	Quantity	Defect Description
2		1	MISSING 1 DELINEATOR AT THE NW CORNER (PAR)

## Element Condition and Maintenance Data

Structure Number: 230374

Inspection Date: 01/03/2022

### Span 1 Culvert Section 1

#### Reinforced Concrete Box Culvert

Element Number	Element Name	Total Qty	CS1 Qty	CS2 Qty	CS3 Qty	CS4 Qty	
241	Reinforced Concrete Culvert	47	0	46	1	0	Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty	
241	Delamination/Spall	VOID ON THE EXTERIOR WALL. 8" DIAMETER X 2" DEEP. 1' FROM THE EAST END/ 5.5' ABOVE BOTTOM SLAB	3	1	1	Feet
241	Abrasion/Wear (PSC/RC)	COARSE AGGREGATE EXPOSED TO 1/4" BOTTOM SLAB UP 6'	2	45		Feet
241	Cracking (RC and Other)	H/L VERTICAL CRACK ON INTERIOR WALL NEAR C/L	2	1		Feet

General Comments

### Span 2 Culvert Section 1

#### Reinforced Concrete Box Culvert

Element Number	Element Name	Total Qty	CS1 Qty	CS2 Qty	CS3 Qty	CS4 Qty	
241	Reinforced Concrete Culvert	47	0	47	0	0	Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty	
241	Abrasion/Wear (PSC/RC)	COARSE AGGREGATE EXPOSED TO 1/4" BOTTOM SLAB UP 6'	2	46		Feet
241	Cracking (RC and Other)	H/L VERTICAL CRACKING ON INTERIOR WALL NEAR C/L	2	1		Feet

General Comments



## Elements Verified

Location	Name	Component	Element Name	Amount
Span 1	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	47
Span 2	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	47

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# General Inspection Notes

# National Bridge and NC Inspection Items

Structure Number: 230374

Inspection Date: 01/03/2022

## 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	5	
Item 62: Culvert	0 - 9 , N	5	
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	F	4	4675
Wingwall	G, F, P, or C	F	60	3350
Scour	G, F, P, or C	G		
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	Y
Priority Maintenance Request Submitted	YES/NO	Y
Inspection Time	Hours	4
Traffic Control Time	Hours	
Snooper Time	Hours	
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: 230374

Inspection Date: 01/03/2022

Item	Sign Notice Issued	Grade	Y	Maint Code	Qty.	0
Details	MISSING 1 DELINEATOR AT THE NW CORNER (PAR)					
Item	Priority Maintenance Issued	Grade	Y	Maint Code	Qty.	0
Details	MISSING 1 DELINEATOR AT THE NW CORNER (PAR)					
Item	Other Equipment Used	Grade	Y	Maint Code	Qty.	0
Details	DRYSUIT, LIGHT, AGA, OTS, SCUBA SDM, 6', 20 MINUTES					
Item	Headwalls	Grade	F	Maint Code	4675	Qty. 4
Details	MOWER DAMAGE AT THE END OF THE HEADWALLS. SPALL ON THE WEST HEADWALL OVER BARREL 1. 1'L X 5"W X 1.5"DEEP SPALL ON EAST HEADWALL, S. END. 4"V X 14"W X 1/2" DEEP. SPALL ON WEST HEADWALL, S. END. 4"V X 14"W X 1/2" DEEP.					
Item	Wingwalls	Grade	F	Maint Code	3350	Qty. 60
Details	COARSE AGGREGATE EXPOSED TO 1/4" DEEP ON ALL WINGS. VOID ON THE SE WING. 3"V X 1'W X 2"DEEP					
Item	General Comments and Misc Items	Grade		Maint Code	Qty.	0
Details	MISSING 1 DELINEATOR AT THE NW CORNER (PAR)					
Item	Portion of structure in > 3' of water (Y or N)	Grade	Y	Maint Code	Qty.	0
Details	MAX. DEPTH-6'					



SPALL ON EAST HEADWALL, SOUTH END



SPALL ON WEST HEADWALL, OVER BARREL 1



COARSE AGGREGATE EXPOSED ON WING (ALL WINGS SIMILIAR)



VOID ON THE SE WINGWALL. 3"V X 1"W X 2"DEEP



Span 1 Culvert Section 1: VOID ON THE EXTERIOR WALL. 8" DIAMETER X 2" DEEP. 1' FROM THE EAST END/  
5.5' ABOVE BOTTOM SLAB



COARSE AGGREGATE EXPOSED ON BARREL WALL (ALL BARRELS SIMILIAR)



Span 1 Culvert Section 1: H/L VERTICAL CRACK ON INTERIOR WALL NEAR C/L



Span 2 Culvert Section 1: H/L VERTICAL CRACKING ON INTERIOR WALL NEAR C/L



Structure Number: 230374

Inspection Date 01/03/2022

**Barrel Number 1**

Skew 90 ° Length along centerline (ft) 47.0 Height Crown to Bed (ft) 15.4 Fill Depth (ft) 3.4

Section 1 Details	Barrel Height (ft) <u>12.0</u>	Barrel Width (ft) <u>12.0</u>
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**Barrel Number 2**

Skew 90 ° Length along centerline (ft) 47.0 Height Crown to Bed (ft) 15.4 Fill Depth (ft) 3.4

Section 1 Details	Barrel Height (ft) <u>12.0</u>	Barrel Width (ft) <u>12.0</u>
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SOUTH



WEST PROFILE



WEST



EAST



EAST PROFILE



NORTH



ROADWAY OVERVIEW



LOOKING UPSTREAM



LOOKING DOWNSTREAM


# BRIDGE INSPECTOR'S RECOMMENDATION FOR MAINTENANCE REPAIRS

Bridge: 230374

County COLUMBUS

Date:


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

MMS Code	Description of Function	Unit	Quantity	Remarks	Est. Cost
 3250	Install or Replace Ground Mounted Signs	SF	1	MISSING 1 DELINEATOR AT THE NW CORNER (PAR)	

## Key

 Priority Maintenance Item

 Critical Finding Item

 Priority Maintenance Level Not Determined

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

Bridge: 230374

County COLUMBUS

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

MMS Code	MMS Description	Quantity
3250	Install or Replace Ground Mounted Signs	1 SF
Location:		
Bent/Span No.		
Priority Level	Status	
Priority Maintenance	Division Bridge Maintenance Notification Received	
Submitted Date:	Submitted By:	Assisted By:
01/03/2022	JOHN RORES	
Details		
MISSING 1 DELINEATOR AT THE NW CORNER (PAR)		



# Culvert Segment Details

Barrel 1

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 10.5ft

	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	12	12													RCBC	Concrete
Downstream End	47	12	12													RCBC	Concrete

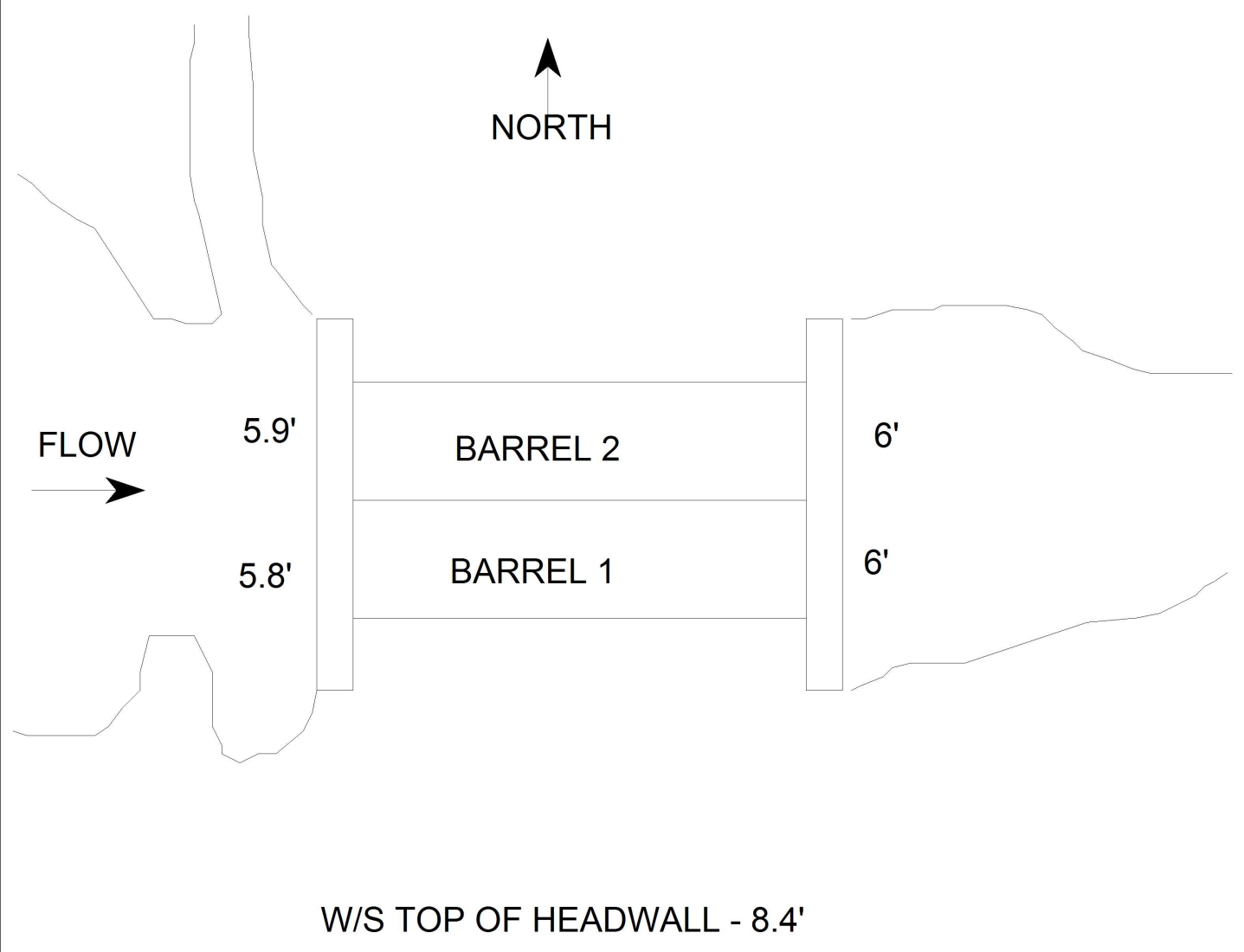
Barrel 2

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 10.5ft

	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	12	12													RCBC	Concrete
Downstream End	47	12	12													RCBC	Concrete

# Bridge Inspection Field Sketch



VERIFIED BY JER 1/3/22

<b>Title</b> PLAN VIEW		<b>Description</b> TOP VIEW	
Bridge No: 230374	Drawn By: PGR	Date: 1/8/20	File Name: S0174012378

# Bridge Inspection Field Sketch

MEASUREMENTS TAKEN +/- 50' SOUTH

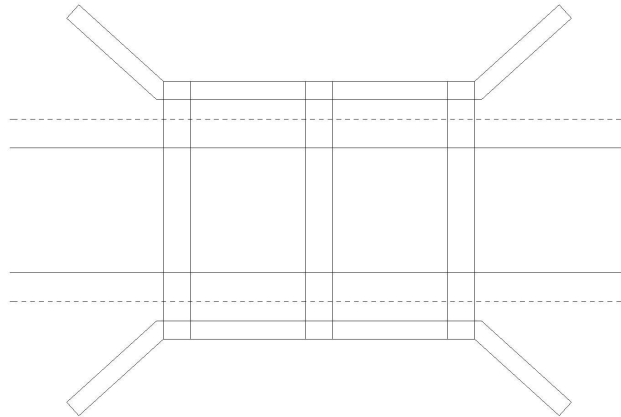


Roadway	22.3ft Wide	2 Paved Lanes	Looking North
Left Shoulder	8ft Wide	2.5ft Paved	5.5ft Unpaved
Right Shoulder	8ft Wide	2.5ft Paved	5.5ft Unpaved
Left Guardrail			
Right Guardrail			

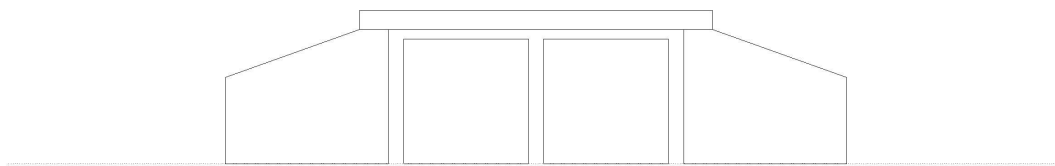
VERIFIED BY JER 1/3/22

<b>Title</b> Approach Roadway		<b>Description</b> NC 11	
<b>Bridge No:</b> 230374	<b>Drawn By:</b> FCJ	<b>Date:</b> 03/19/2007	<b>File Name:</b> S0258010761

# Bridge Inspection Field Sketch



Crown of Roadway



Bed

Looking Downstream

Number of Barrels	Skew	Distance From Crown to Bed	Fill Depth
2	90°	15.4ft	3.4ft
Length Along Center Line of Culvert		Length Along Center Line of Roadway	
47ft		24.6ft	

Barrel #	Width	Height	Wall Thickness	Scour at Inlet	Scour at Outlet
1	12ft	12ft		FILLED	
2	12ft	12ft	0.6ft	FILLED	

MAX. DEPTH 6'

EOP LEFT - 10'  
 EOP RIGHT - 10.5'  
 NO GUARDRAILS  
 SL - 55MPH

VERIFIED BY JER 1/3/22

<b>Title</b> CULVERT DATA	<b>Description</b> CULVERT DATA
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Bridge No: 230374	Drawn By: PGR	Date: 1/8/20	File Name: S0174012379
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