NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURE MANAGEMENT UNIT

ATTENTION:

Structure Safety Report

2 Year Complete Topside and Underwater Element Inspection

INSPECTION DATE: 02/21/2019

DIVISION: 6 **COUNTY:** ROBESON **STRUCTURE NUMBER:** 770511 **FREQUENCY:** 24 MONTHS

FACILITY CARRIED: I95 **MILE POST:**

LOCATION: 0.5 MI. N OF JCT. NC 301

FEATURE INTERSECTED: CREEK

LATITUDE: **LONGITUDE:**

SUPERSTRUCTURE: TRIPLE 11'X10' RC BOX CULVERT; 130'-0" ALONG CENTERLINE OF CULVERT

SUBSTRUCTURE:

SPANS: 3 BARRELS. SEE CULVERT SKETCH FOR DETAILS.

☐ FRACTURE CRITICAL ☐ TEMPORARY SHORING ☐ SCOUR CRITICAL ☐ SCOUR PLAN OF ACTION

NBI GRADES: **DECK** N **SUPERSTRUCTURE** N **SUBSTRUCTURE** N **CULVERT** 6

POSTED SV: Not Posted **POSTED TTST:** Not Posted

OTHER SIGNS PRESENT: NONE

LOOKING NORTH

Sign noticed issued for		Number Required
NO	**WEIGHT LIMIT**	0
NO	**DELINEATORS**	0
NO	**NARROW BRIDGE**	0
NO	**ONE LANE BRIDGE**	0
NO	**LOW CLEARANCE**	0

DIRECTION OF INSPECTION S-N

DIRECTION MATCHES PLANS

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

Structure Element Scoring

Structure Number: **770511**

Inspection Date **2/21/2019**

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	393	0	388	5	0

Summary of Maintenance Needs

Maintenance By Defect

Structure Number: **770511** Inspection Date: **02/21/2019**

MMS Code	Element Name	Defect Name	Recommended Quantity
3370	Reinforced Concrete Culvert	Delamination/Spall	2 Feet
3370	Reinforced Concrete Culvert	Cracking (RC and Other)	4 Feet
3370	Reinforced Concrete Culvert	Abrasion/Wear (PSC/RC)	129 Feet

Element Structure Maintenance Quantities

Structure Number: **770511** Inspection Date **02/21/2019**

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	135	393	0	5	388	0

Element Condition and Maintenance Data

Structure Number: **770511** Inspection Date: **02/21/2019**

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	131	0	130	1	0	Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty	
241	Damage	DAMAGE FULL HEIGHT AT UPSTREAM END OF EXTERIOR WALL FROM WING BEING TORN OFF DURING STORM FLOODING.	3	1		Feet
241	Abrasion/Wear (PSC/RC)	WATER ABRASION WITH COARSE AGGREGATE EXPOSED ALONG W/L	2	129	129	Feet
241	Delamination/Spall	SPALL AT WEST END ON TOP SLAB 4" DIAMETER X 1.5" DEEP	2	1	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	131	0	131	0	0	Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty	
241	Abrasion/Wear (PSC/RC)	WATER ABRASION WITH COARSE AGGREGATE EXPOSED ALONG W/L	2	130		Feet
241	Delamination/Spall	SPALL WITH EXPOSED REBAR NEAR WEST END ON INTERIOR WALL 1' LONG X 3" WIDE X 1/2" DEEP	2	1	1	Feet

General Comments

Span 3 — 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	131	0	127	4	0	Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty	
241	Cracking (RC and Other)	CONSTRUCTION JOINT OPEN TO 1/2"	3	1	1	Feet
241	Cracking (RC and Other)	DIAGONAL CRACKING WITH EFFLO. TO 1/16" ON EXTERIOR WALL AT WEST END	3	3	3	Feet
241	Abrasion/Wear (PSC/RC)	WATER ABRASION WITH COARSE AGGREGATE EXPOSED ALONG W/L	2	125		Feet
241	Cracking (RC and Other)	2' H/L VERTICAL CRACKS IN INTERIOR WALL	2	2		Feet

General Comments

Elements Verfied

Location	Name	Component	Element Name	Amount
Span 1	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	131
Span 2	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	131
Span 3	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	131

General Inspection Notes

National Bridge and NC Inspection Items

Structure Number: 770511 **Inspection Date:** 02/21/2019

National Bridge Inventory Items

Item	Grade Scale	Grade
Item 58: Deck	0 - 9 , N	**N**
Item 59: Superstructure	0 - 9 , N	**N**
Item 60: Substructure	0 - 9 , N	**N**
Item 61: Channel and Channel Protection	0 - 9 , N	**6**
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	**F**	**100**	**3350**
Scour	G, F, P, or C	**G**		
Drift	G, F, P, or C	**F**	**100**	**3366**
Estimated Remaining Life	G, F, P, or C			

Note: If NC SMU Insepction 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	**N**
Inspection Time	Hours	**12**
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**

National Bridge and NC SMU Inspection Item Details

Structure Number: 770511 **Inspection Date:** 02/21/2019

Item	Approach Roadway Alignment - Item 72	**Grade**	8	**Maint Code**		**Qty.**	0
Details	PATCHED AREA ON WEST PAVED SHOULDER. ROADWAY CRACKING IN SOUTH BOUND LANES TO 1/8"						
Item	Other Equipment Used	**Grade**	Y	**Maint Code**		**Qty.**	0
Details	DRYSUIT SDM, 35 MIN. 5.2' W/D 1' VIS 44D/OC/FOG, MILD CURRENT						
Item	Drift	**Grade**	F	**Maint Code**	3366	**Qty.**	100
Details	TREES IN DOWNSTREAM WATERWAY						
Item	Wingwalls	**Grade**	F	**Maint Code**	3350	**Qty.**	100
Details	S.W. AND N.W WINGS ARE REPLACED WITH STEEL SHEETING, SURFACE RUST ON STEEL SHEETING. WATER ABRASION WITH COARSE AGGREGATE EXPOSED TO 1/4".						

ROADWAY CRACKING IN SOUTH BOUND LANES

COARSE AGGREGATE EXPOSED ON WINGS

TREES IN DOWNSTREAM WATERWAY

COARSE AGGREGATE EXPOSED ON INTERIOR WALLS

Barrel 1 Section 1: DAMAGE FULL HEIGHT AT UPSTREAM END OF EXTERIOR WALL FROM WING BEING TORN OFF DURING STORM FLOODING.

Barrel 1 Section 1: SPALL AT WEST END ON TOP SLAB 4" DIAMETER X 1.5" DEEP

Barrel 2 Section 1: SPALL WITH EXPOSED REBAR NEAR WEST END ON INTERIOR WALL 1' LONG X 3" WIDE X 1/2" DEEP

Barrel 3 Section 1: DIAGONAL CRACKING WITH EFFLO. TO 1/16" ON EXTERIOR WALL AT WEST END

Barrel 3 Section 1: 2' H/L VERTICAL CRACKS IN INTERIOR WALL

Barrel 3 Section 1: CONSTRUCTION JOINT OPEN TO 1/2"

WEST

WEST PROFILE

S.W. WING REPLACED WITH STEEL SHEETING

N.W. WING REPLACED WITH STEEL SHEETING

FRONTSIDE RAIL

BACKSIDE RAIL

PATCHED AREA WEST SHOULDER

OVERVIEW SOUTH BOUND LANES

LOOKING NORTH

LOOKING SOUTH

MEDIAN CABLE BARRIER

OVERVIEW NORTH BOUND LANES

EAST

EAST PROFILE

NATIONAL BRIDGE INVENTORY-------- STRUCTURE INVENTORY AND APPRAISAL Run Date: 03/25/2019

IDENTIFICATION

(1) STATE NAME -NORTH CAROLINA BRIDGE **770511**
(8) STRUCTURE NUMBER(FEDERAL) 000000001550511
(5) INVENTORY ROUTE (ON/UNDER) - ON 11000950
(2) STATE HIGHWAY DEPARTMENT DISTRICT 1
(3) COUNTY CODE 155 (4) PLACE CODE
(6) FEATURE INTERSECTED - TENMILE SWAMP CREEK
(7) FACILITY CARRIED I95
(9) LOCATION 0.5 MI. N OF JCT. NC 301
(11)MILEPOINT
(16)LAT 34° 43' 0.69" (17)LONG 75° 59' 0.86"
(98)BORDER BRIDGE STATE CODE PCT SHARE
(99)BORDER BRIDGE STRUCTURE NO

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE MAIN: Concrete
TYPE - Culverts (includes frame culverts) CODE 119
(44) STRUCTURE TYPE APPR :
TYPE - CODE 000
(45) NUMBER OF SPANS IN MAIN UNIT 3
(46) NUMBER OF APPROACH SPANS
(107)DECK STRUCTURE TYPE - N CODE
(108)WEARING SURFACE / PROTECTIVE SYSTEM :
(A) TYPE OF WEARING SURFACE - Not Applicable CODE N
(B) TYPE OF MEMBRANE - Not Applicable CODE N
(C) TYPE OF DECK PROTECTION - Not Applicable CODE N

AGE AND SERVICE

(27) YEAR BUILT 2017
(106)YEAR RECONSTRUCTED
(42) TYPE OF SERVICE : ON - Highway
UNDER - Waterway CODE 15
(28) LANES: ON STRUCTURE 4 UNDER STRUCTURE 0
(29) AVERAGE DAILY TRAFFIC 52000
(30) YEAR OF ADT 2017 (109) TRUCK ADT PCT 23%
(19) BYPASS OR DETOUR LENGTH 1 MI

GEOMETRIC DATA

(48) LENGTH OF MAXIMUM SPAN 11 FT
(49) STRUCTURE LENGTH 36 FT
(50)CURB OR SIDEWALK: LEFT 000 FT RIGHT 000 FT
(51) BRIDGE ROADWAY WIDTH CURB TO CURB FT
(52) DECK WIDTH OUT TO OUT FT
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 77 FT
(33) BRIDGE MEDIAN - No Median CODE 0
(34) SKEW 0° (35) STRUCTURE FLARED 0
(10) INVENTORY ROUTE MIN VERT CLEAR 999.9 FT
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 76.7 FT
(53) MIN VERT CLEAR OVER BRIDGE RDWY 999.9 FT
(54) MIN VERT UNDERCLEAR REF Not a Highway or Railroad 0 FT
(55) MIN LAT UNDERCLEAR RT REF Not a Highway or Railroad 000 FT
(56) MIN LAT UNDERCLEAR LT REF - 000 FT

NAVIGATION DATA

(38) NAVIGATION CONTROL - No Navigational Control CODE 0
(111)PIER PROTECTION - CODE
(39) NAVIGATION VERTICAL CLEARANCE
(116)VERT - LIFT BRIDGE NAV MIN VERT CLEAR FT
(40) NAVIGATION HORIZONTAL CLEARANCE FT

SUFFICIENCY RATING = 94.1
STATUS = Not Deficient

CLASSIFICATION — CODE

(112)NBIS BRIDGE SYSTEM - YES
(104)HIGHWAY SYSTEM Is on the NHS 1
(26) FUNCTIONAL CLASS - Arterial - Interstate 01
(100)STRAHNET HIGHWAY - Interstate STRAHNET Route 1
(101)PARALLEL STRUCTURE - No Parallel Structure N
(102)DIRECTION OF TRAFFIC - 2-way Traffic 2
(103)TEMPORARY STRUCTURE -
(110)DESIGNATED NATIONAL NETWORK - On the National Network 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

CONDITION — CODE

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

LOAD RATING AND POSTING — CODE

(31) DESIGN LOAD Unknown 0
(63) OPERATING RATING METHOD - Field Evaluation and Document 0
(64) OPERATING RATING - HS-26 46
(65) INVENTORY RATING METHOD - Field Evaluation and Document 0
(66) INVENTORY RATING - HS-20 36
(70) BRIDGE POSTING - No Posting Required 5
(41) STRUCTURE OPEN, POSTED ,OR CLOSED A
DESCRIPTION - Open, No Restriction

APPRAISAL — CODE

(67) STRUCTURAL EVALUATION 6
(68) DECK GEOMETRY N
(69) UNDERCLEARANCES,VERTI & HORIZ N
(71) WATERWAY ADEQUACY 7
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 1NNN
(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 104000 (115) YEAR FUTURE ADT 2025

INSPECTIONS

(90) INSPECTION DATE 02/21/2019
(92) CRITICAL FEATURE INSPECTION : (93) CFI DATE
A) FRACTURE CRIT DETAIL - NO A)
B) UNDERWATER INSP - YES 24Mo B) 02/21/2019
C) OTHER SPECIAL INSP NO C)
SCOUR

BRIDGE MANAGEMENT UNIT

DATA ON EXISTING STRUCTURE Run Date: 03/25/2019

COUNTY :	DIVISION :	DISTRICT:	STRUCTURE NUMBER :	LENGTH :
ROBESON	6	1	770511	36 FEET

ROUTE CARRIED : I95

FEATURE INTERSECTED : TENMILE SWAMP CREEK

LOCATED : 0.5 MI. N OF JCT. NC 301

BRIDGE NAME :

CITY :

FUNC. CLASS :	SYST.ON :	SYST.UNDER :	ADT & YR :	RAIL TYPE :
01	FA	NFA	52000 2017	LT 0 RT 0

BUILT :	BY :	PROJ :	FED.AID PROJ :	DESIGN LOAD :
2017	DOH			Unknown

REHAB :	BY :	PROJ :	ALIGNMENT :	SKEW :	LANES :
			TAN.	90	ON 4 UNDER 0

NAVIGATION :				HT. CRN. TO BED :		WATER DEPTH :	
VC	FT	HC	FT	15	FT	5	FT

SUPERSTRUCTURE : TRIPLE 11'X10' RC BOX CULVERT; 130'-0" ALONG CENTERLINE OF CULVERT

SUBSTRUCTURE :

SPANS :

BEAMS OR GIRDERS :

FLOOR :	ENCROACHMENT :	DECK (OUT TO OUT) :
		FT

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

VERT.CL.OVER : 999.9 FT

INV.RTG. :	OPE.RTG. :	CONTR.MEMBER :	POSTED :		
HS-20	HS-26		SV	TTST	DATE

SYSTEM : Primary Interstate

GREEN LINE ROUTE : Y

UNDER ROUTES AND CLEARANCES

REMARKS :

Culvert Segment Details

Barrel 1

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 8.3'ft

	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	0	11	10													RCBC	Concrete
Downstream End	130.4	11	10													RCBC	Concrete

Barrel 2

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 8.3ft

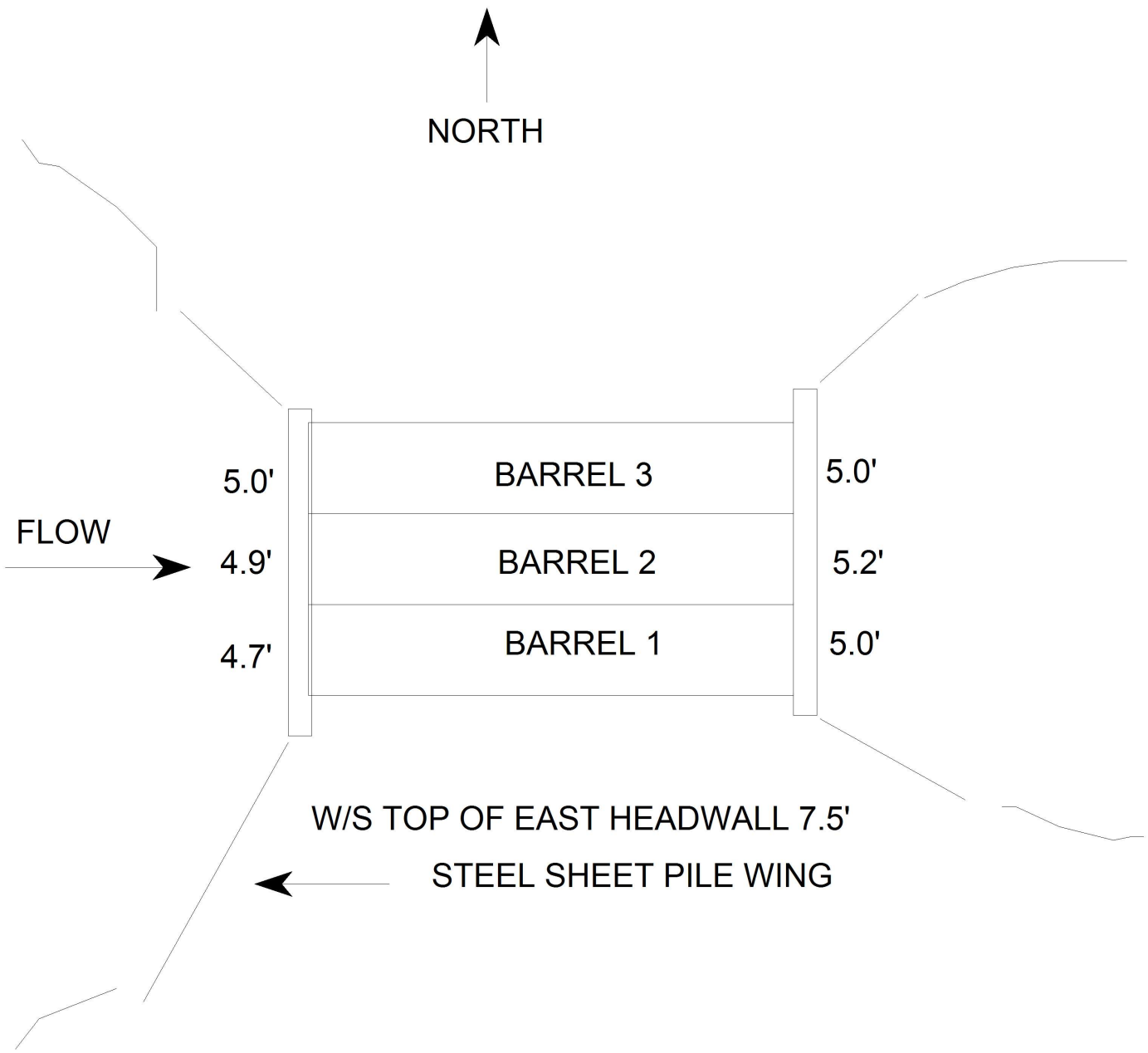
	Distance From Upstream End of Segment (ft)	Width (ft)	Height (ft)	Pipe Thickness (in)	Corrugation Pattern	Leg Length (ft)	Top Radius (ft)	Bolt Material	Bolt Diameter (in)	# of Long. Bolt Rows	Transverse Spacing b/w Bolt Rows (ft)	Longitudinal Bolt Spacing (ft)	Bolt Condition	Rib Length (ft)	Rib Spacing (ft)	Type	Material
Upstream End	0	11	10													RCBC	Concrete
Downstream End	130.4	11	10													RCBC	Concrete

Culvert Segment Details

Barrel 3 Has Bands?: No Distance From Upstream End to Edge of Pavement: 8.3ft

	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	0	11	10													RCBC	Concrete
Downstream End	130.4	11	10													RCBC	Concrete

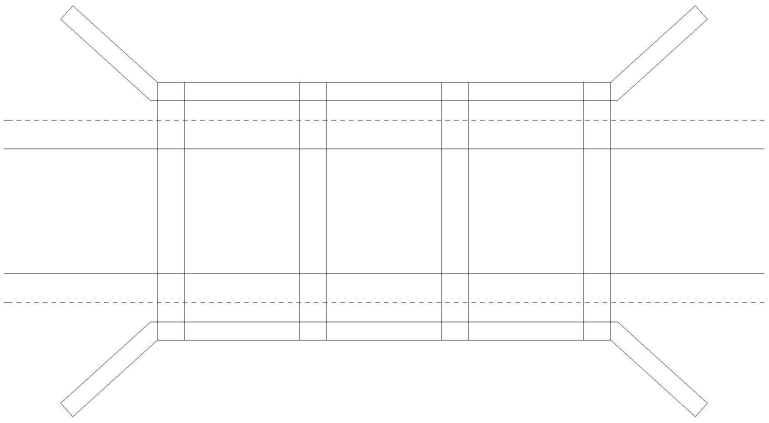
Bridge Inspection Field Sketch



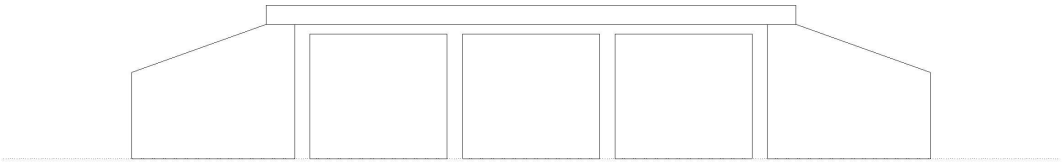
Title	Description
PLAN VIEW	TOP VIEW

Bridge No:	Drawn By:	Date:	File Name:
770511	PGR	2/21/19	S0174013315

Bridge Inspection Field Sketch



Crown of Roadway



Bed

Looking Downstream

Number of Barrels	Skew	Distance From Crown to Bed	Fill Depth
3	90°	15ft	2.0ft
Length Along Center Line of Culvert		Length Along Center Line of Roadway	
130.4ft		36ft	

Barrel #	Width	Height	Wall Thickness	Scour at Inlet	Scour at Outlet
1	11ft	10ft	0.7'ft		
2	11ft	10ft	0.7ft		
3	11ft	10ft	0.7ft		

LEFT EOP 8.3'
RIGHT EOP 10.5'
65 MPH SPEED LIMIT
GUARDRAILS PRESENT

MAX. DEPTH 5.2'
VERIFIED BY PGR 2/21/19

Title	**Description**
CULVERT DATA	CULVERT DATA

Bridge No: 770511	**Drawn By:** PGR	**Date:** 2/22/2017	**File Name:** S0174013316

Bridge Inspection Field Sketch

MEASUREMNTS TAKEN +/- 50' SOUTH OF STRUCTURE

Left Lanes			
Roadway	23.4ft Wide	2 Paved Lanes	South Bound
Right Shoulder	12.6ft Wide	11ft Paved	1.6ft Unpaved
Left Shoulder	17.4ft Wide	4ft Paved	13.4ft Unpaved
Right Guardrail	12.6ft from road		
Left Guardrail	17.4ft from road		
Median	28ft Wide		
Right Lanes			
Roadway	23.1ft Wide	2 Paved Lanes	North Bound
Left Shoulder	14.6ft Wide	4ft Paved	10.6ft Unpaved
Right Shoulder	12.5ft Wide	11.2ft Paved	1.3ft Unpaved
Left Guardrail	14.6ft from road		
Right Guardrail	12.5ft from road		

VERIFIED BY PGR 2/21/19

Title	**Description**
APPROACH ROADWAY	ROADWAY

Bridge No:	**Drawn By:**	**Date:**	**File Name:**
770511	PGR	2/22/2017	S0174013317