



NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 STRUCTURE MANAGEMENT UNIT

ATTENTION: P.A.R. ISSUED



Structure Safety Report

Routine Element Inspection

INSPECTION DATE: 07/29/2020

DIVISION: 7 COUNTY: GUILFORD STRUCTURE NUMBER: 400503 FREQUENCY: 24 MONTHS

FACILITY CARRIED: SR4771 MILE POST: _____

LOCATION: 0.1 MI.E.JCT.US29 0.1 MI.S.JCT.US29

FEATURE INTERSECTED: REEDY FORK CREEK

LATITUDE: 36° 10' 25.6" LONGITUDE: 79° 42' 38.77"

SUPERSTRUCTURE: _____

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: 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 _____

LOOKING NORTH

INSPECTED BY JOHN HAYES	SIGNATURE 	ASSISTED BY DAVID HERNANDEZ
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NATIONAL BRIDGE INVENTROY ----- STRUCTURE INVENTORY AND APPRAISAL

09/11/2020

IDENTIFICATION

(1) STATE NAME NORTH CAROLINA BRIDGE **400503**
 (8) STRUCTURE NUMBER (FEDERAL) **0810503**
 (5) INVENTORY ROUTE (ON/UNDER) ON **131047710**
 (2) STATE HIGHWAY DEPARTMENT DISTRICT **7**
 (3) COUNTY CODE (FEDERAL) **81** (4) PLACE CODE **28000**
 (6) FEATURE INTERSECTED **REEDY FORK CREEK**
 (7) FACILITY CARRIED **SR4771**
 (9) LOCATION **0.1 M.I.E.JCT.US29**
 (11) MILEPOINT **0.0**
 (12) BASE HIGHWAY NETWORK **0**
 (13) LRS INVENTORY ROUTE & SUBROUTE
 (16) LATITUDE **36° 10' 25.6"** (17) LONGITUDE **79° 42' 38.77"**
 (98) BORDER BRIDGE STATE CODE PERCENT SHARED
 (99) BORDER BRIDGE STRUCTURE NUMBER

SUFFICIENCY RATING **99.40**
 STATUS =
CLASSIFICATION
 (112) NBIS BRIDGE SYSTEM **YES**
 (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 - **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 **3**
 (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**

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

LOAD RATING AND POSTING

(31) DESIGN LOAD **H 20 + Mod 6**
 (63) OPERATING RATING METHOD - **0**
 (64) OPERATING RATING - **HS-24 46**
 (65) INVENTORY RATING METHOD - **0**
 (66) INVENTORY RATING **HS-19 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 **1955**
 (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 **2000**
 (30) YEAR OF ADT **2013** (109) TRUCK ADT PCT **7**
 (19) BYPASS OR DETOUR LENGTH **4.0**

APPRAISAL

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

GEOMETRIC DATA

(48) LENGTH OF MAXIMUM SPAN **7.0**
 (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) **20.0**
 (33) BRIDGE MEDIAN **No median** CODE **0**
 (34) SKEW **30** (35) STRUCTURE FLARED **0**
 (10) INVENTORY ROUTE MIN VERT CLEAR **999.9**
 (47) INVENTORY ROUTE TOTAL HORIZ CLEAR **20.0**
 (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 **4,000** 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 **07/20** (91) FREQUENCY **24**
 (92) CRITICAL FEATURE INSPECTION (93) CFI DATE
 A) FRACTURE CRIT DETAIL A)
 B) UNDERWATER INSP B)
 C) OTHER SPECIAL INSP C)

SCOUR

Superstructure Build Details

Span Number 1

Span Length 7.0000

Skew 60.0000

Number of Items	Type of Component	Element Name	Quantity	Protective System Applied	Quantity (Sq Ft)
1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	84 Feet		

Span Number 2

Span Length 7.0000

Skew 60.0000

Number of Items	Type of Component	Element Name	Quantity	Protective System Applied	Quantity (Sq Ft)
1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	84 Feet		

Span Number 3

Span Length 7.0000

Skew 60.0000

Number of Items	Type of Component	Element Name	Quantity	Protective System Applied	Quantity (Sq Ft)
1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	84 Feet		

Structure Element Scoring

Structure Number: 400503

Inspection Date 7/29/2020

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	252	68	35	149	0

Summary of Maintenance Needs

Maintenance By Defect

Structure Number: 400503

Inspection Date: 07/29/2020

MMS Code	Element Name	Defect Name	Recommended Quantity
3370	Reinforced Concrete Culvert	Abrasion/Wear (PSC/RC)	149 Feet

Element Structure Maintenance Quantities

Structure Number: 400503

Inspection Date 07/29/2020

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	149	252	0	149	35	68

Priority Actions Request

Structure Number 400503

Drift

3366 Drift Drift

Priority Level	Defect Type	Quantity	Defect Description
2		18	P.A.R. ISSUED FOR DRIFT AT INLET END OF ALL BARRELS IN A 21FT WIDE X 3FT HIGH X 2FT OUT AREA.
2		1	P.A.R. ISSUED FOR 1 MISSING DELINEATOR AT SOUTHWEST CORNER OF STRUCTURE. DELINEATOR IS BURRIED IN TREES AND VEGGIEITATION AND IS NOT VISIBLE FROM ROAD .

Element Condition and Maintenance Data

Structure Number: 400503

Inspection Date: 07/29/2020

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	84	64	20	0	0 Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty
241	Cracking (RC and Other)	H/L VERTICAL CRACKING	2	20	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	84	0	0	84	0 Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty
241	Abrasion/Wear (PSC/RC)	1/8" PITTING ALONG THE WATERLINE	3	84	84 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	84	4	15	65	0 Feet

Element Number	Defect Type	Defect Description	CS	CS Qty	Maint Qty
241	Abrasion/Wear (PSC/RC)	1/8" PITTING ALONG THE WATERLINE	3	65	65 Feet
241	Cracking (RC and Other)	H/L VERTICAL CRACKING	2	15	Feet
General Comments					

Elements Verified

Location	Name	Component	Element Name	Amount
Span 1	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	84
Span 2	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	84
Span 3	Culvert Section 1	Reinforced Concrete Box Culvert	Reinforced Concrete Culvert	84

General Inspection Notes

National Bridge and NC Inspection Items

Structure Number: 400503

Inspection Date: 07/29/2020

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	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	F	25	3350
Scour	G, F, P, or C	G		
Drift	G, F, P, or C	P	96	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	2
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	N

National Bridge and NC SMU Inspection Item Details

Structure Number: 400503

Inspection Date: 07/29/2020

Item	Sign Notice Issued	Grade	Y	Maint Code		Qty.	0
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Details 1 MISSING DELINEATOR AT SW CORNER.

Item	Priority Maintenance Issued	Grade	Y	Maint Code		Qty.	0
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Details MISSING DELINEATOR SW CORNER.
DRIFT AT INLET END ALL BARRELS.

Item	Drift	Grade	P	Maint Code	3366	Qty.	96
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Details P.A.R. ISSUED FOR DRIFT AT INLET END OF ALL BARRELS IN A 21FT WIDE X 3FT HIGH X 2FT OUT AREA.
BARREL 1 HAS UP TO 5FT OF SILT ALONG LENGTH.
BARREL 2 HAS UP TO 3FT OF PARTIAL SILT ALONG LENGTH.

Item	Wingwalls	Grade	F	Maint Code	3350	Qty.	25
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Details NORTHWEST WINGWALL IS WASHING BEHIND IT IN A 5FT X 5FT AREA .

Item	General Comments and Misc Items	Grade	P	Maint Code		Qty.	0
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Details P.A.R. ISSUED FOR 1 MISSING DELINEATOR AT SOUTHWEST CORNER OF STRUCTURE.



Span 3 Culvert Section 1: 1/8" PITTING ALONG THE WATERLINE



Span 3 Culvert Section 1: H/L VERTICAL CRACKING



P.A.R. ISSUED FOR DRIFT AT INLET END OF ALL BARRELS IN A 21FT WIDE X 3FT HIGH X 2FT OUT AREA.



BARREL 2 HAS UP TO 3FT OF PARTIAL SILT ALONG LENGTH.



BARREL 1 HAS UP TO 5FT OF SILT ALONG LENGTH.



P.A.R. ISSUED FOR 1 MISSING DELINEATOR AT SOUTHWEST CORNER OF STRUCTURE. DELINEATOR IS BURRIED IN TREES AND VEGGIEITATION AND IS NOT VISIBLE FROM ROAD .



NORTHWEST WINGWALL IS WASHING BEHIND IT IN A 5FT X 5FT AREA .

Structure Number: **400503**

Inspection Date **07/29/2020**

Barrel Number 1

Skew 60 ° Length along centerline (ft) 83.5 Height Crown to Bed (ft) 22.0 Fill Depth (ft) 15.0

Section 1 Details Barrel Height (ft) 8.0 Barrel Width (ft) 7.0

Barrel Number 2

Skew 60 ° Length along centerline (ft) 83.5 Height Crown to Bed (ft) 22.0 Fill Depth (ft) 15.0

Section 1 Details Barrel Height (ft) 8.0 Barrel Width (ft) 7.0

Barrel Number 3

Skew 60 ° Length along centerline (ft) 83.5 Height Crown to Bed (ft) 22.0 Fill Depth (ft) 15.0

Section 1 Details Barrel Height (ft) 8.0 Barrel Width (ft) 7.0



LOOKING SOUTH



LOOKING NORTH



LOOKING WEST



DOWNSTREAM LOOKING EAST



LOOKING EAST



UPSTREAM LOOKING WEST



BRIDGE INSPECTOR'S RECOMMENDATION FOR MAINTENANCE REPAIRS

Bridge: 400503

County GUILFORD

Date:


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

MMS Code	Description of Function	Unit	Quantity	Remarks	Est. Cost
 0	No Maintenance Required	NA	1	P.A.R. ISSUED FOR 1 MISSING DELINEATOR AT SOUTHWEST CORNER OF STRUCTURE. DELINEATOR IS BURRIED IN TREES AND VEGGIEITATION AND IS NOT VISIBLE FROM ROAD .	
 3366	Drift and Debris Removal	HR	18	P.A.R. ISSUED FOR DRIFT AT INLET END OF ALL BARRELS IN A 21FT WIDE X 3FT HIGH X 2FT OUT AREA.	

Key

 Priority Maintenance Item

 Critical Finding Item

 Priority Maintenance Level Not Determined

BRIDGE INSPECTOR'S RECOMMENDATION FOR PRIORITY MAINTENANCE REPAIRS

Bridge: 400503

County GUILFORD

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

MMS Code	MMS Description	Quantity
0	No Maintenance Required	1 NA
Location:		
Bent/Span No.		
Priority Level	Status	
	Request Awaiting Assignment	
Submitted Date:	Submitted By:	Assisted By:
07/29/2020	JOHN HAYES	
Details		
P.A.R. ISSUED FOR 1 MISSING DELINEATOR AT SOUTHWEST CORNER OF STRUCTURE. DELINEATOR IS BURRIED IN TREES AND VEGGIEITATION AND IS NOT VISIBLE FROM ROAD .		

MMS Code	MMS Description	Quantity
3366	Drift and Debris Removal	18 HR
Location:		
Bent/Span No.		
Priority Level	Status	
	Request Awaiting Assignment	
Submitted Date:	Submitted By:	Assisted By:
07/29/2020	JOHN HAYES	
Details		
P.A.R. ISSUED FOR DRIFT AT INLET END OF ALL BARRELS IN A 21FT WIDE X 3FT HIGH X 2FT OUT AREA.		

Culvert Segment Details

Barrel 1

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 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	7	8													RCBC	Concrete
Downstream End	83.5	7	8													RCBC	Concrete

Barrel 2

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 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	7	8													RCBC	Concrete
Downstream End	83.5	7	8													RCBC	Concrete

Culvert Segment Details

Barrel 3

Has Bands?: No

Distance From Upstream End to Edge of Pavement: 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	7	8													RCBC	Concrete
Downstream End	83.5	7	8													RCBC	Concrete

Bridge Inspection Field Sketch



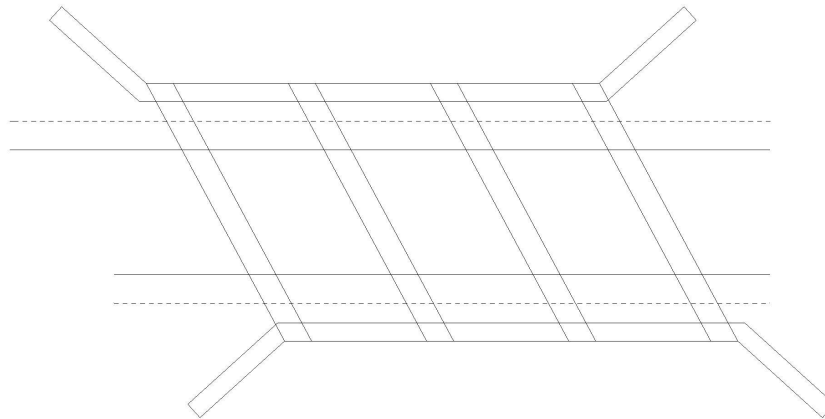
Roadway	20ft Wide	2 Paved Lanes	Looking North
Left Shoulder	6ft Wide		6ft Unpaved
Right Shoulder	6ft Wide		6ft Unpaved
Left Guardrail			
Right Guardrail			

APPR.RDWY. TAKEN 12FT FROM STRUC. AT SOUTH END

MEAS. VERIFIED 7/29/20...JBH

Title app rdway		Description app rdway	
Bridge No: 400503	Drawn By: MYW	Date: 07/14/08	File Name: S0058001489

Bridge Inspection Field Sketch



Crown of Roadway



Bed

Looking Downstream

Number of Barrels	Skew	Distance From Crown to Bed	Fill Depth
3	60°	22ft	15ft
Length Along Center Line of Culvert		Length Along Center Line of Roadway	
83.5ft		25.404ft	

Barrel #	Width	Height	Wall Thickness	Scour at Inlet	Scour at Outlet
1	7ft	8ft			
2	7ft	8ft	.500ft		
3	7ft	8ft	.500ft		

BARREL 2 HAS UP TO 3FT PARTIAL SILT
 UP TO 5' OF SILT IN BARREL 1
 BARREL 3 HAS UP TO 1.5FT WATER

RIGHT SHOULDER TO BREAKPOINT 5FT (SIGN)
 LEFT SHOULDER TO BREAKPOINT 6FT (SIGN)
 SPEED LIMIT 55 MPH

MEAS. VERIFIED 7/29/20...JBH

Title CULVERT DATA		Description CULVERT DATA	
Bridge No: 400503	Drawn By: RLA	Date: 7/14/08	File Name: S0054000179