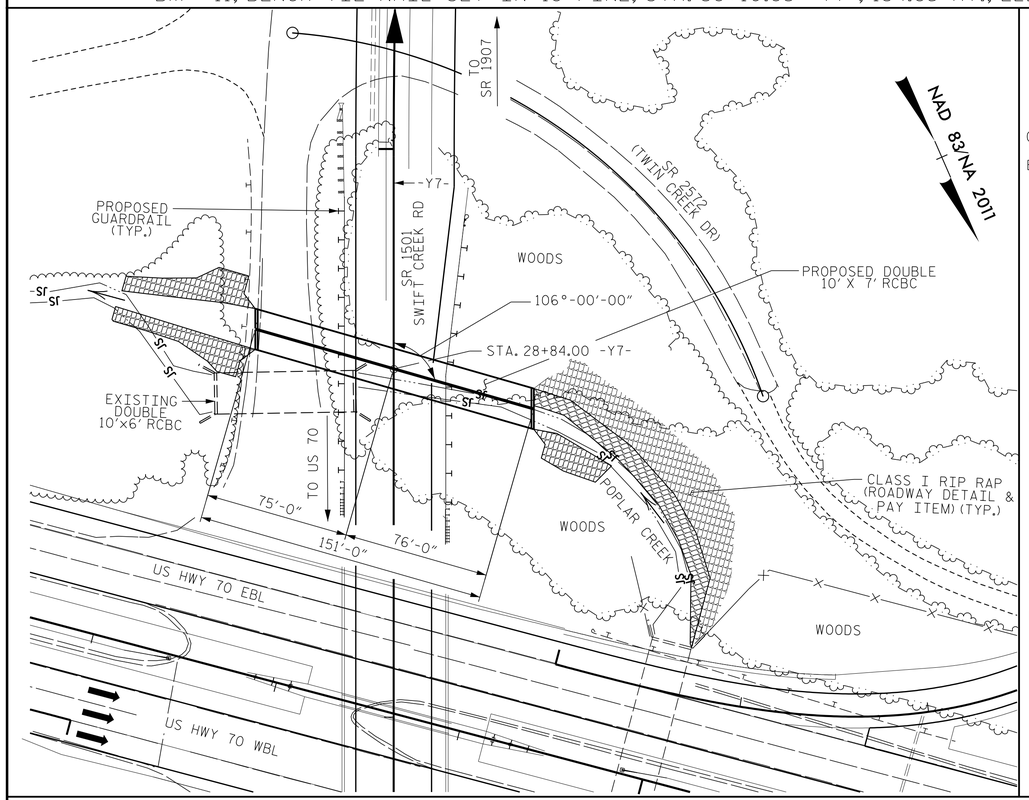
DocuSign Envelope ID: 428726C4-D93B-470A-90D6-37D2B6301B28

Bm #11, BENCH TIE NAIL SET IN 18" PINE, STA. 39+10.93 -Y7-, 134.85 RT., EL. 1396.42 N664851, E2188605



ROADWAY DATA

GRADE POINT ELEV. @ STA 28+84.00 -Y7-	= 217.68
BED ELEV. @ STATION 28+84.00 -Y7-	= 180.64
ROADWAY SLOPES	=1.5:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 560 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 187.5
DRAINAGE AREA	= 2.3 SQ. MI.
BASE DISCHARGE (Q100)	= 640 CFS
BASE HIGH WATER ELEVATION	= 187.9

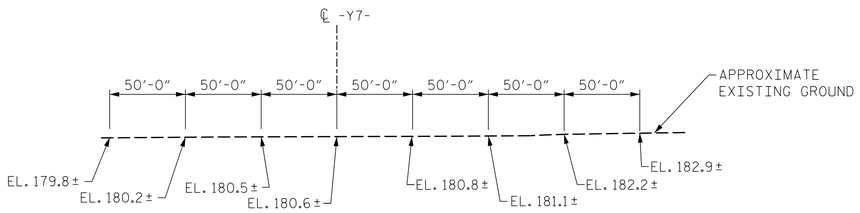
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 840+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YEAR
OVERTOPPING FLOOD ELEVATION	= 194.2

OVERTOPPING OCCURS AT THE FALSE CUT INTERFACE AT THE GRADE SEPERATION OF -L- AND -Y7- AND FLOWS LINE AHEAD ALONG -L- IN DITCHLINE (LT)

LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



PROFILE ALONG ℄ CULVERT

SAMPLE BAR REPLACMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30"(SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60 ksi.

TOTAL BILL OF MATERIAL

MATERIAL	ELEMENT	STAGE I	STAGE II
CLASS A CONCRETE (CU. YDS.)	BARREL	197.8	373.5
	HEADWALLS	----	2.1
	CURTAIN WALLS	1.4	1.1
	SILLS	1.5	----
	WINGS	9.1	9.1
	TOTAL	209.8 ⚠1	385.8
	TOTAL	595.6	
REINFORCING STEEL (LBS.)	BARREL	26454	37727
	WINGS	828	829
	TOTAL	27282	38556
	TOTAL	65838	
FOUNDATION COND. MAT'L (TONS)	———	155	130
	TOTAL	285	
REMOVAL OF EXISTING STRUCTURE		LUMP SUM	
CULVERT EXCAVATION		LUMP SUM	
ASBESTOS ASSESSMENT		LUMP SUM	

⚠1 CORRECTED STAGE I CONCRETE QUANITY FROM 290.8 TO 209.8

F.A. PROJECT NO. HISP-0070(163)

NOTES

ASSUMED LIVE LOAD ----------HL-93 OR ALTERNATE LOADING.

DESIGN FILL TO BOTTOM OF TOP SLAB, 28.85' (MIN.) AND 30.12' (MAX.)

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN THE CULVERT TO BE POURED IN THE FOLLOWING ORDER:

STAGE I:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF VERTICAL WALLS.

2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT.

STAGE II

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF VERTICAL WALL.

2. THE REMAINING PORTIONS OF THE WALL AND WINGS FULL HEIGHT FOLLOWED BY THE ENTIRE ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

THE EXISTING STRUCTURE CONSISTING OF A 10'x6' DOUBLE BARREL REINFORCED CONCRETE BOX CULVERT 74'-3" LONG ALONG CENTERLINE OF CULVERT AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING CULVERT IS PRESENTLY NOT POSTED FOR LOAD LIMIT.

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

FOR CULVERT DIVERSIONS DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGHT OF EXPANSION JOINT.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL TO A DEPTH OF 1 FOOT. CLASS B RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARREL. IF RIP RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS. COST OF BACKFILLING THE CULVERT SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITES, SEE SPECIAL PROVISIONS.

PROJECT NO. W-5600

JOHNSTON COUNTY

STATION: 28+84.00 -Y7-

SHEET 1 OF 8 REPLACES STRUCTURE NO. 514

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

ENGINEER OF RECORD:

DocuSigned by: John Arthur Dilworth

NORTH CAROLINA PROFESSIONAL SEAL 22072 ENGINEER JOHN ARTHUR DILWORTH

2/25/2021

WETHERILL ENGINEERING

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Fax: 919 851 8107
LICENSE NO. F-0377

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 10 FT. X 7 FT. CONCRETE BOX CULVERT 106° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C3-1
1	JCP	2-25-21	3			TOTAL SHEETS
2			4			8

DRAWN BY : B.C. HUNT DATE : 5-18
CHECKED BY : J.A. DILWORTH DATE : 5-18

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