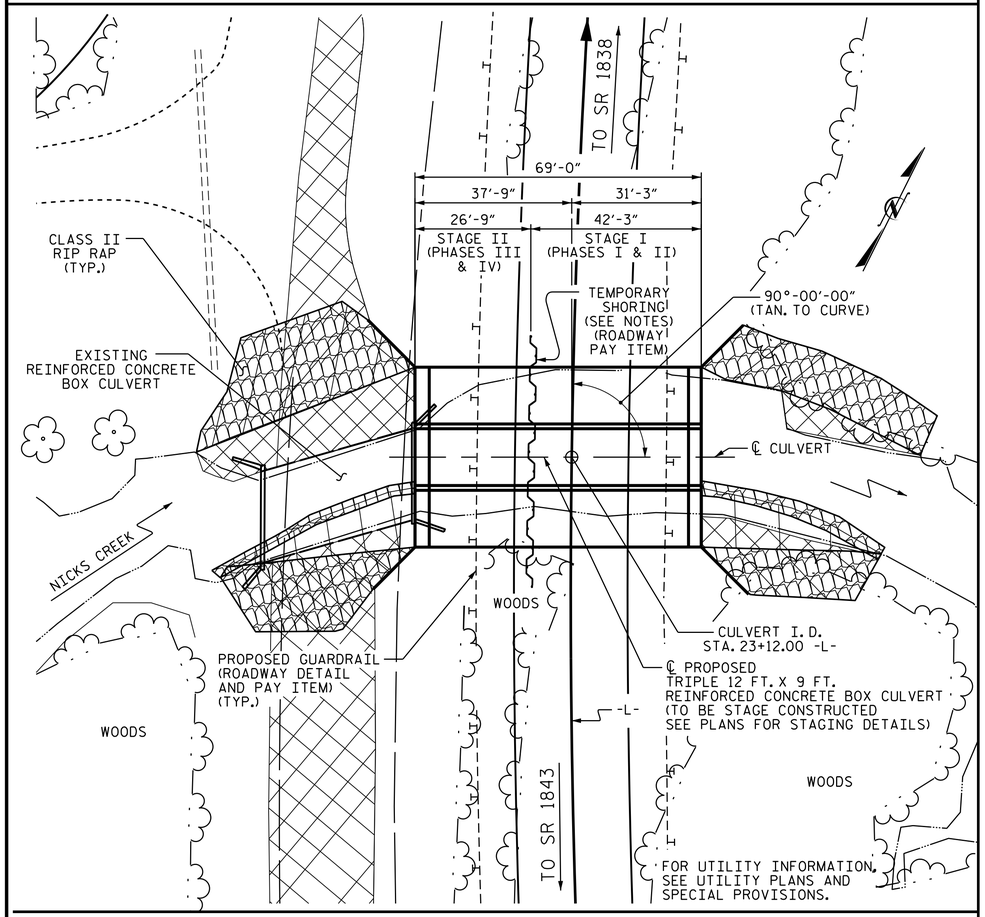
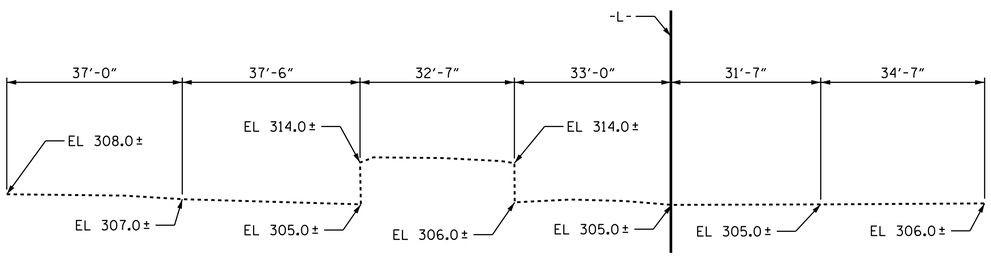
BENCH MARK 1: RR SPIKE IN BASE OF 17" OAK 101 FT. RIGHT OF STA. 14+71 -BL- EL. 313.95'



LOCATION SKETCH



PROFILE ALONG ℄ CULVERT

GRADE DATA

GRADE PT. EL. @ STA. 23+12.00 -L-	= 318.91'
BED EL. @ STA. 23+12.00 -L-	= 304.80'
ROADWAY SLOPES	= 3:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 2,050 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 314.6 FT.
DRAINAGE AREA	= 26.7 SQ. MI.
BASE DISCHARGE (Q100)	= 2,370 CFS
BASE HIGH WATER ELEVATION	= 315.22 FT.

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= +3,160 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YEARS
OVERTOPPING FLOOD ELEVATION	= 319.4 FT.

DRAWN BY : A. SORSENGINH DATE : 8/2021
CHECKED BY : M. G. SHAIKH DATE : 8/2021
DESIGN ENGINEER OF RECORD: A. YASMEEN DATE : 8/2021

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NOTES:

F.A. PROJECT NO.: 0022015

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

DESIGN FILL----------MAX. 6.38 FT.
MIN. 3.69 FT.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

CONCRETE IN STAGE I/STAGE II CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE I (PHASE I).
2. THE REMAINING PORTIONS OF THE WALLS, SILL AND WING FULL HEIGHT IN STAGE I (PHASE I).
3. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE I (PHASE II).
4. THE REMAINING PORTIONS OF THE WALLS, SILLS AND WING FULL HEIGHT IN STAGE I (PHASE II) FOLLOWED BY ROOF SLAB AND HEADWALL IN STAGE I.
5. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE II (PHASE III).
6. THE REMAINING PORTIONS OF THE WALLS, SILL AND WING FULL HEIGHT IN STAGE II (PHASE III).
7. WING FOOTING, CURTAIN WALL AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS IN STAGE II (PHASE IV).
8. THE REMAINING PORTIONS OF THE WALLS, SILLS AND WING FULL HEIGHT IN STAGE II (PHASE IV) FOLLOWED BY ROOF SLAB AND HEADWALL IN STAGE II.

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.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTNG OF RC DECK ON CONCRETE ENCASED STEEL PLATES WIDENED WITH SINGLE 19' X 6' RCBC ON ABUTMENTS: REINFORCED CONCRETE STUB AND LOCATED AT THE SAME LOCATION AS THE PROPOSED CULVERT SHALL BE REMOVED. THE EXISTING STRUCTURE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE STRUCTURE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED CULVERT, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 BARS FORM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACES 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 REINFORCED CONCRETE BOX CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL, SEE SECTION 414 OF THE STANDARD SPECIFICATIONS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR CONSTRUCTION SEQUENCE, SEE EROSION CONTROL PLANS.

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

DESIGN TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L- 15 FT. LT. FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:
UNIT WEIGHT OF SOIL ABOVE WATER TABLE, y=120 PCF
UNIT WEIGHT OF SOIL BELOW WATER TABLE, y=60 PCF
FRICTION ANGLE, Ø = 30°
COHESION, c = 0 PSF
GROUNDWATER ELEVATION = 312 FT.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L-, 15 FT. LT. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L-, 15 FT. LT. SEE GEOTECHNICAL STANDARD DETAIL 1801.02 FOR STANDARD TEMPORARY WALLS.

DO NOT USE CANTILEVER, BRACED, OR ANCHORED SHORING FOR TEMPORARY SHORING FROM STATION 18+00± -L-, 37 FT. LT. TO STATION 24+00± -L-, 15 FT. LT.

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

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

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

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.

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

TOTAL STRUCTURE QUANTITIES

		FOUNDATION CONDITIONING MATERIAL (TONS)	CLASS A CONCRETE (CY)	REINFORCING STEEL (LBS)
STAGE I	PHASE I	49	51.1	6,361
	PHASE II	78	131.4	15,889
STAGE II	PHASE III	31	36.7	4,196
	PHASE IV	50	88.4	10,149
TOTAL		208	307.6	36,595
REMOVAL OF EXISTING STRUCTURE @ STA. 23+12.00 -L-				LUMP SUM
CULVERT EXCAVATION @ STA. 23+12.00 -L-				LUMP SUM
ASBESTOS ASSESSMENT				LUMP SUM

SAMPLE BAR REPLACEMENT

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"

SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND Fy =60 KSI.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

DocuSigned by: Kevin Fischer
9/30/2021
NORTH CAROLINA PROFESSIONAL SEAL 30878 ENGINEER W. KEVIN FISCHER

DocuSigned by: Krishna P. Sedai
9/30/2021
NORTH CAROLINA PROFESSIONAL SEAL 031583 ENGINEER KRISHNA PRASAD SEDAI

PROJECT NO. BR-0035
MOORE COUNTY
STATION: 23+12.00 -L-

SHEET 1 OF 8 REPLACES BRIDGE NO. 24

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 12 FT. X 9 FT. CONCRETE BOX CULVERT 90° SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			8