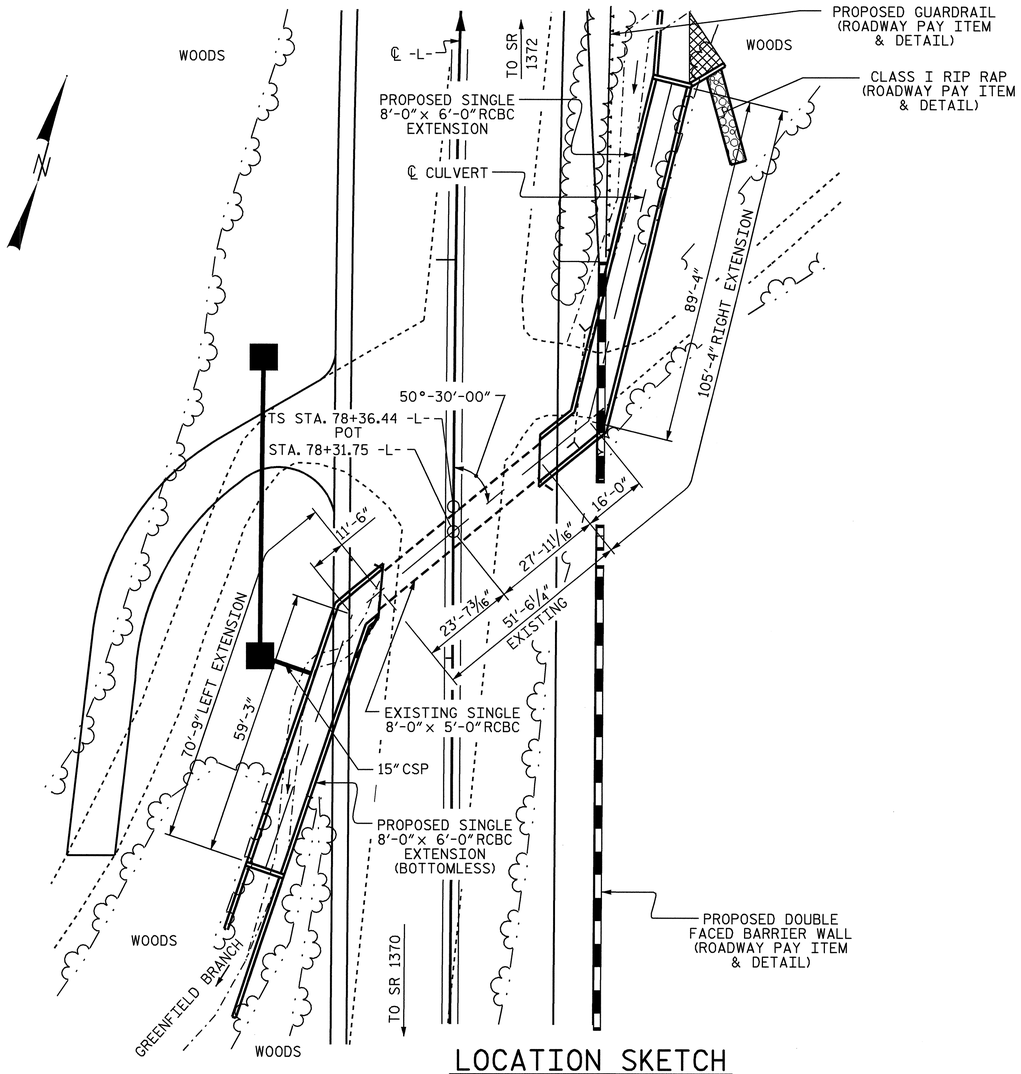
BM #4 : RR SPIKE IN BASE OF 27" YELLOW POPLAR 76.32' LEFT OF -L- STA. 89+45.29 ELEV. 1875.570

F.A. PROJECT NO. NHF-321(12)



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 380 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YRS
DESIGN HIGH WATER ELEVATION	= 1835.500
DRAINAGE AREA	= 0.45 SQ.MILE
BASIC DISCHARGE (Q100)	= 470 CFS
BASIC HIGH WATER ELEVATION	= 1836.700

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 544 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 100 YRS.(+)
OVERTOPPING FLOOD ELEVATION	= 1838.000

ROADWAY DATA

GRADE POINT EL. @ STA.78+31.75 -L-	= 1837.30
BED EL. @ STA. 78+31.75 -L-	= 1824.33
ROADWAY SLOPES	= 2 :1 LEFT
	= 2 :1 RIGHT

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE		
LEFT BARREL EXTENSION	73.7	C.Y.
RIGHT BARREL EXTENSION	107.6	C.Y.
TOTAL	181.3	C.Y.
REINFORCING STEEL		
LEFT BARREL EXTENSION	9593	LBS.
RIGHT BARREL EXTENSION	12704	LBS.
TOTAL	22297	LBS.
RIGHT EXTENSION ONLY		
FOUNDATION COND. MAT'L	70	TONS
CULVERT EXCAVATION	= LUMP SUM	

THE REQUIRED BEARING CAPACITY FOR THE FOOTINGS ON THE LEFT EXTENSION IS 5 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.

THE BOTTOM OF FOOTING ELEVATION MAY BE LOWERED IN ORDER TO SATISFY THE BEARING CAPACITY OR MINIMUM ROCK EMBEDMENT REQUIREMENTS.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE STANDARD SPECIFICATION ARTICLE 410-12.

THE SCOUR CRITICAL ELEVATION IS THE BOTTOM OF FOOTING. THE SCOUR CRITICAL ELEVATION IS FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTINGS SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.

NOTES

ASSUMED LIVE LOAD ----------HS20-44 OR ALTERNATE LOADING.

DESIGN FILL----------LEFT EXTENSION = 5.8' RIGHT EXTENSION = 8.3'

FOR OTHER DESIGN DATA AND GENERAL NOTES SEE SHEET SN.

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

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

LEFT EXTENSION

1. WING FOOTINGS AND WALL FOOTINGS INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

RIGHT EXTENSION

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY 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.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL 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.

DOWELS (D1) SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

FOR CULVERT DIVERSION 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 LENGTH OF THE EXPANSION JOINT.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

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 FROM 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.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

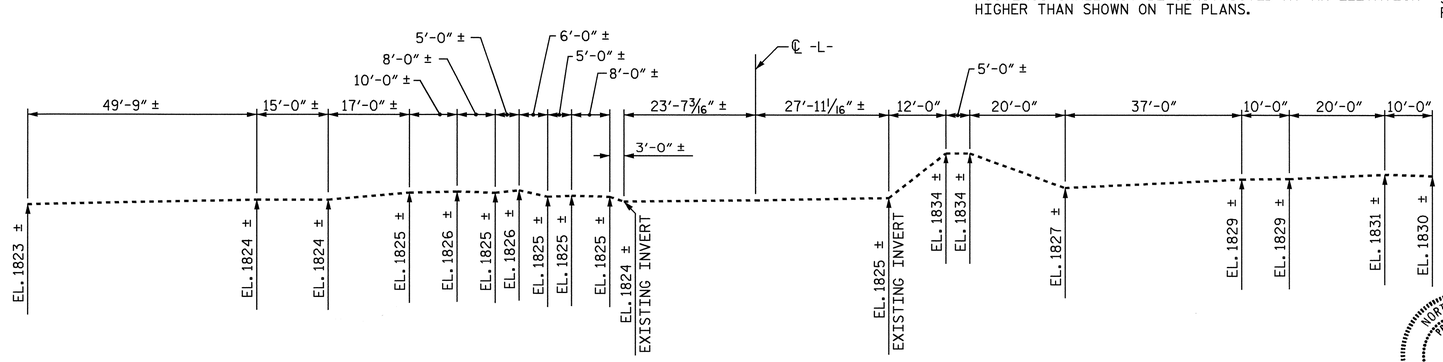
IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

FOOTINGS OF LEFT EXTENSION SHALL BE KEYED INTO ROCK A MINIMUM OF 6 INCHES.

THE 15" Ø CSP THROUGH THE SIDEWALL OF THE CULVERT SHALL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL SHALL BE FIELD BENT AS NECESSARY TO CLEAR PIPE.

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

STOCK PILE BED MATERIAL AND AFTER CULVERT CONSTRUCTION IS COMPLETE, PLACE STOCK PILED BED MATERIAL FLUSH IN-BETWEEN SILLS.



PROFILE ALONG ℄ CULVERT

PROJECT NO. R-2237B

CALDWELL COUNTY

STATION: 78+31.75 -L-

SHEET 1 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SINGLE 8 FT. X 6 FT. CONCRETE BOX CULVERT EXTENSIONS 50° 30' 00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 11915 ENGINEER JOHN C. FRYE, JR. 10/8/04

NORTH CAROLINA PROFESSIONAL SEAL 23926 ENGINEER BRIAN C. HANKS 10/8/04

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			19

ASSEMBLED BY : J.L. WALTON DATE : 5/26/04
CHECKED BY : K.K. PUROHIT DATE : 7/30/04