

NOTES

ASSUMED LIVE LOAD -----HL-93 OR ALTERNATE LOADING.
 DESIGN FILL----- 9.98 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 CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
 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.
 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 ABOVE LOWER WALL CONSTRUCTION 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.

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 SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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 CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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.

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"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" SAMPLE LENGTH PLUS TWO SPlice LENGTHS AND $f_y = 60$ ksi.

PROJECT NO. EXAMPLE
 COUNTY
 STATION: _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 Raleigh
 SINGLE 7 FT. X 8 FT.
 CONCRETE BOX CULVERT
 60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			1			1
2			2			1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY DATA

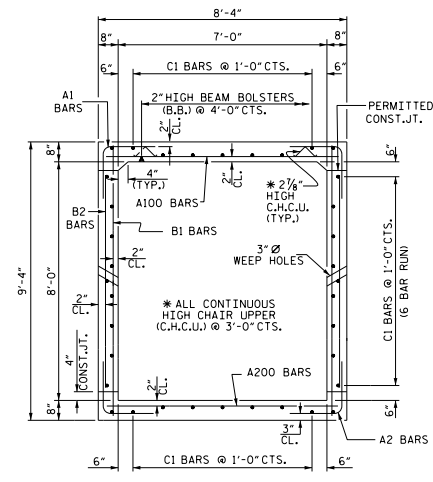
GRADE POINT ELEV. @ STA. 57+89.00 -L- = 770.63
 BED ELEV. @ STA. 57+89.00 -L- = 752.80
 ROADWAY SLOPES @ STA. 57+89.00 -L- = 2:1

HYDRAULIC DATA

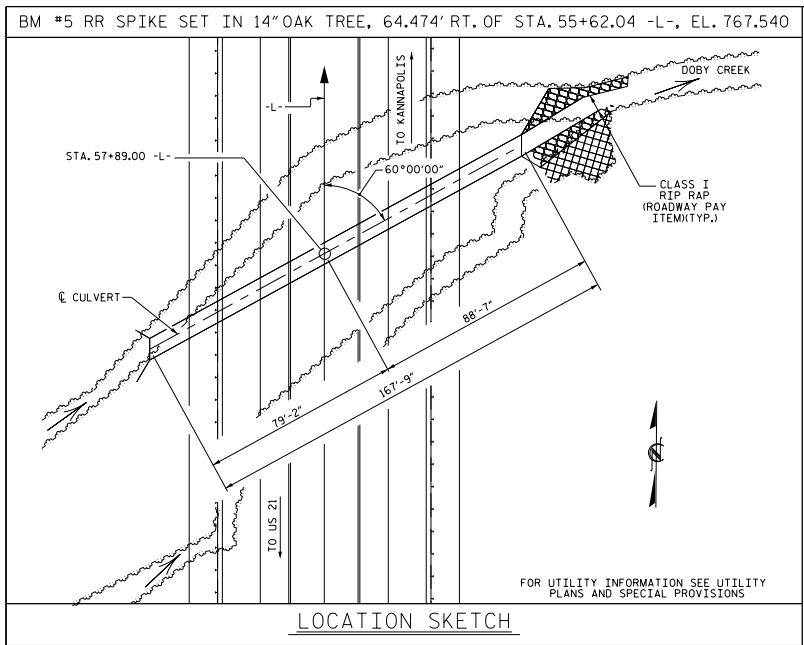
DESIGN DISCHARGE = 330 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YEARS
 DESIGN HIGH WATER ELEVATION = 761.50
 DRAINAGE AREA = 0.16 SQ. MI.
 BASE DISCHARGE (Q100) = 370 C.F.S.
 BASE HIGH WATER ELEVATION = 762.10

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 900 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YEARS
 OVERTOPPING FLOOD ELEVATION = 768.20



RIGHT ANGLE SECTION OF BARREL
 THERE ARE 36 C1 BARS IN SECTION OF BARREL



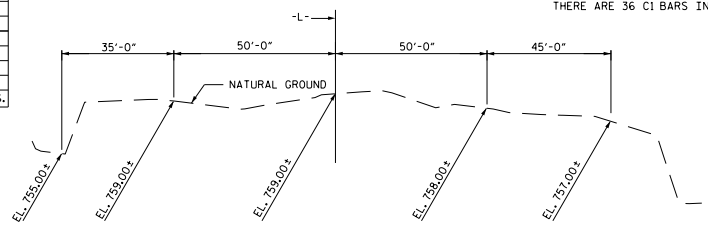
LOCATION SKETCH

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
BARREL @ 0.811 C.Y. / FT.	= 136.0 C.Y.
WINGS ETC.	= 26.0 C.Y.
TOTAL	= 162.0 C.Y.
REINFORCING STEEL	
BARREL	= 15,363 LBS.
WINGS ETC.	= 1,661 LBS.
TOTAL	= 17,024 LBS.
CULVERT EXCAVATION, STA. 57+89.00 -L-	LUMP SUM
FOUNDATION COND. MATERIAL, BOX CULVERT	= 146 TONS

BAR TYPE		BILL OF MATERIAL				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
A100	280	#4	STR	7'-11"	1481	
A101	4	#4	STR	5'-9"	15	
A102	4	#4	STR	3'-9"	10	
A103	4	#4	STR	1'-10"	5	
A200	435	#4	STR	7'-11"	2300	
A201	4	#4	STR	6'-7"	18	
A202	4	#4	STR	5'-3"	14	
A203	4	#4	STR	4'-0"	11	
A204	4	#4	STR	2'-8"	7	
A1	336	#4	6	4'-11"	1104	
A2	672	#4	6	4'-10"	2170	
B1	336	#4	STR	8'-10"	1983	
B2	336	#4	STR	7'-4"	1646	
C1	216	#4	STR	29'-8"	4281	
G1	4	#4	STR	9'-2"	24	
S2	12	#8	STR	9'-2"	294	
TOTAL REINFORCING STEEL					15363 LBS.	

SPlice LENGTH CHART		
BAR	SIZE	SPlice LENGTH
C1	#4	2'-5"
B1	#4	1'-10"



PROFILE ALONG CULVERT

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

DRAWN BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 DESIGN ENGINEER OF RECORD: _____ DATE: _____

FIGURE 9 - 4