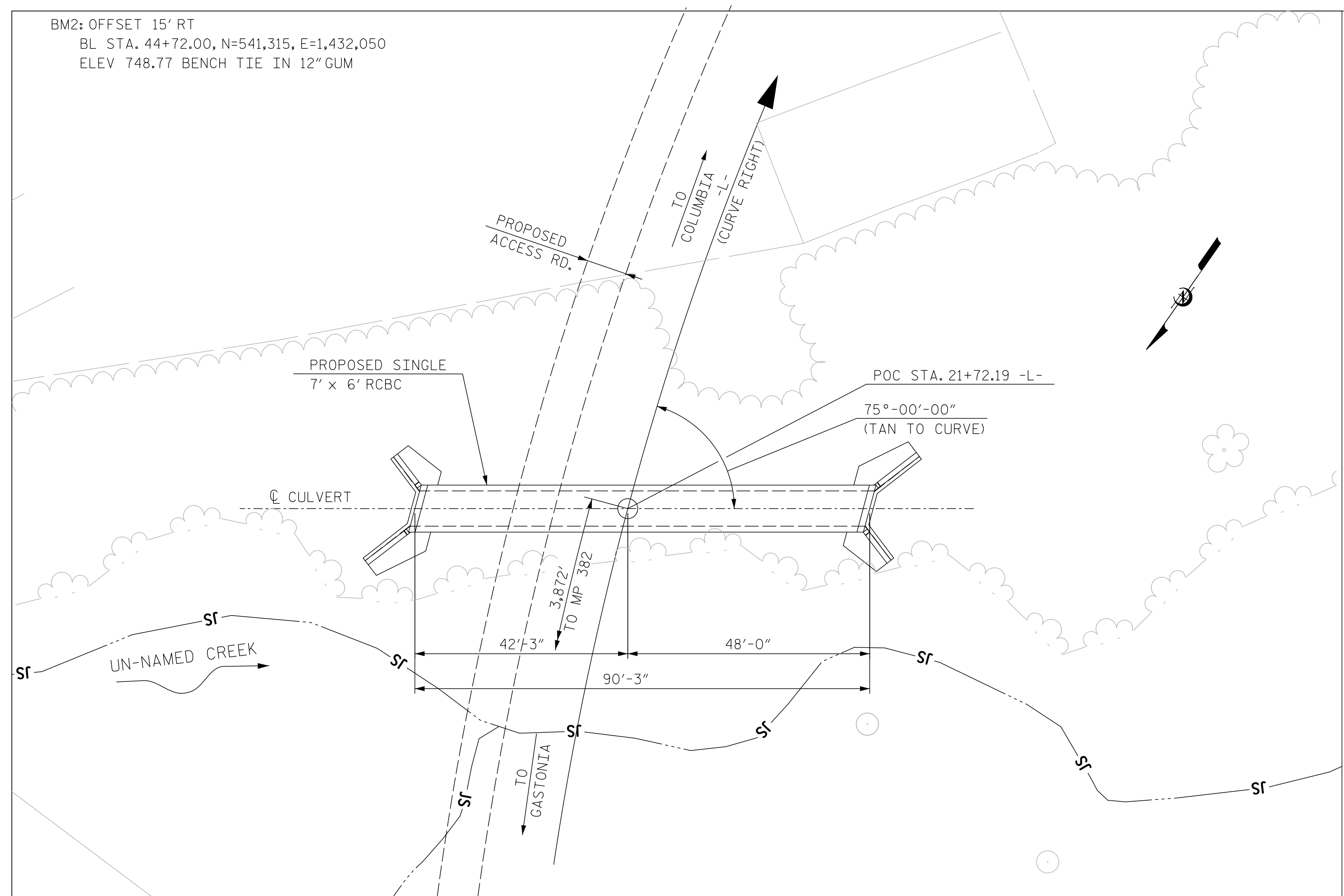
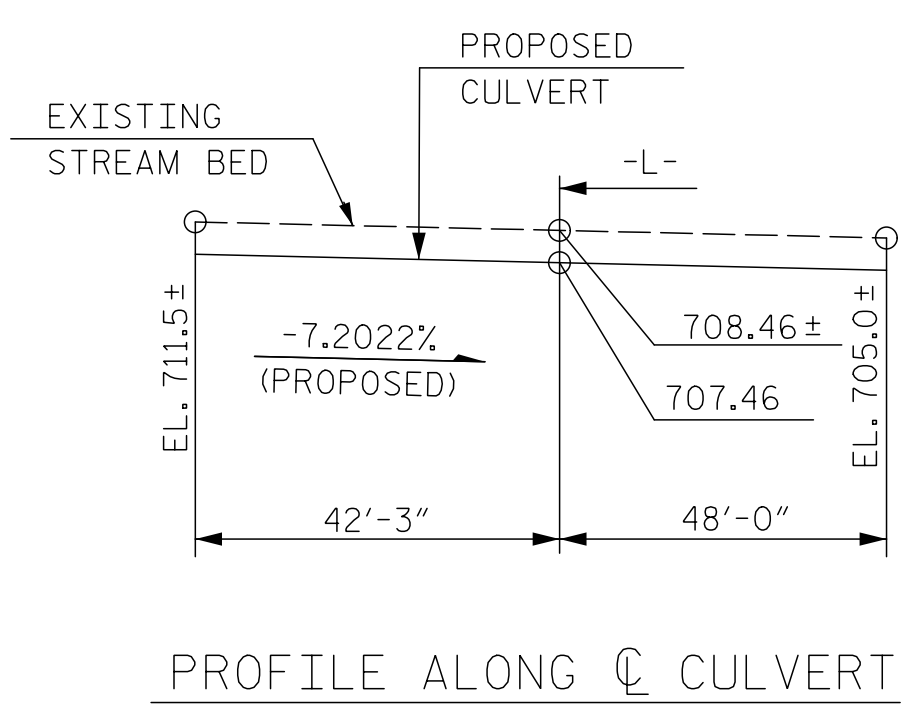


BM2: OFFSET 15' RT
 BL STA. 44+72.00, N=541,315, E=1,432,050
 ELEV 748.77 BENCH TIE IN 12" GUM

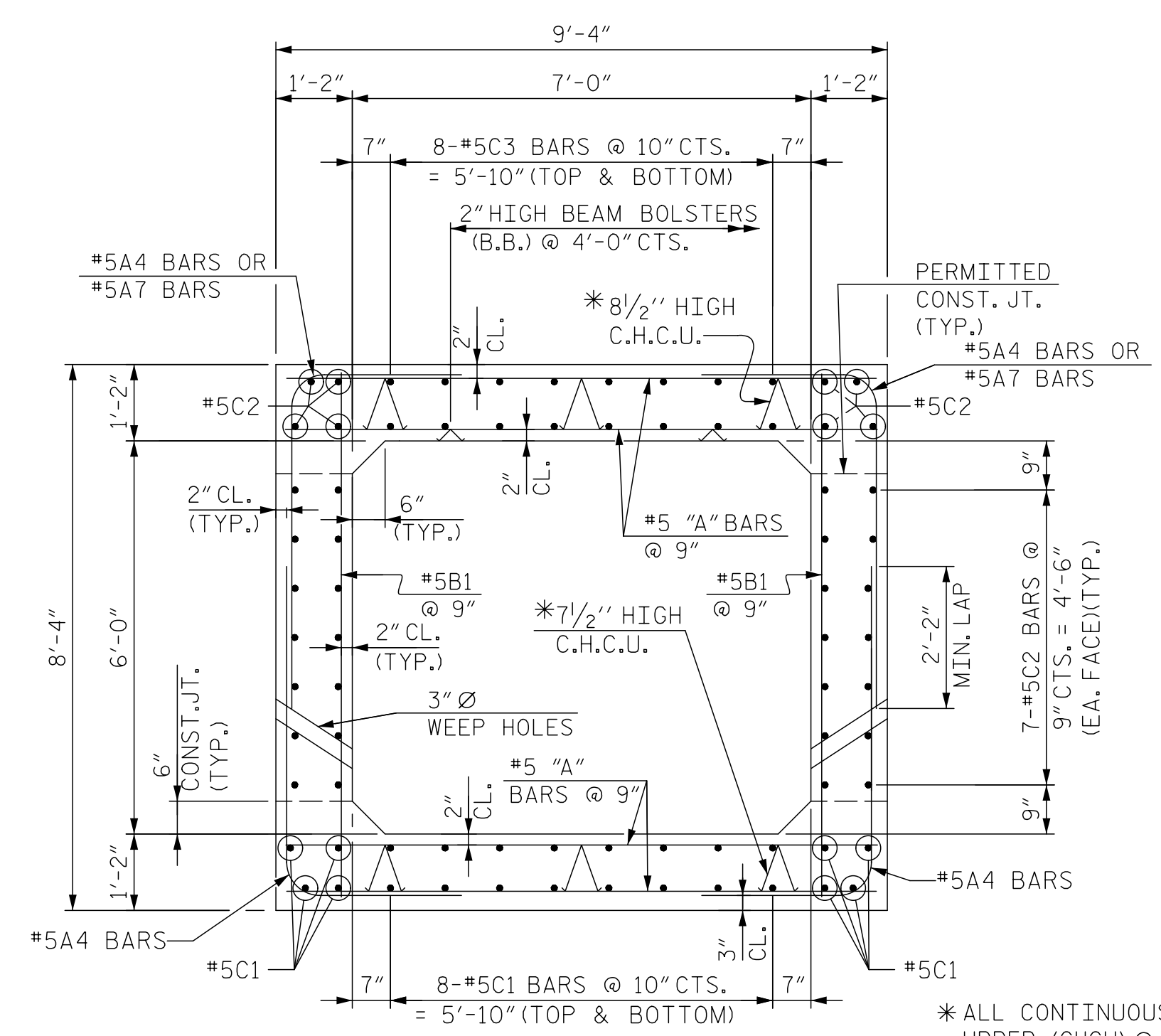


LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



PROFILE ALONG CULVERT



RIGHT ANGLE SECTION OF BARREL
 THERE ARE 76 "C" BARS IN SECTION OF BARREL

* ALL CONTINUOUS HIGH CHAIR UPPER (CHCU) @ 3'-0" CTS.

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 fy = 60ksi.

NOTES

ASSUMED LIVE LOAD = AREMA E80.
 THIS CULVERT HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF AREMA'S MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES.
 DESIGN FILL - 14.23' (BASE OF RAIL TO TOP OF STRUCTURE).
 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.
 FOR OTHER DESIGN DATA AND NOTES SEE STRUCTURE STANDARD NOTES 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 FOOTING AND FLOOR SLAB INCLUDING 6" OF ALL VERTICAL WALLS.
 2) THE REMAINING PORTIONS OF WALL, AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

AT THE CONTRACTOR'S OPTION, THE CONTRACTOR 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.

NO BACKFILLING OF EXTERIOR WALLS SHALL BE PERMITTED UNTIL TOP SLAB HAS BEEN PLACED AND CURED. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARILY BRACING WALLS UNTIL TOP SLAB IS COMPLETED.

HYDRAULIC DATA

DESIGN DISCHARGE	270 CFS
FREQUENCY OF DESIGN FLOOD	100 YR.
DESIGN HIGH WATER ELEV.	716.4
DRAINAGE AREA	102 ACRES
BASIC DISCHARGE (Q100)	270 CFS
BASIC HIGH WATER ELEV.	716.4

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	688.6 CFS
FREQUENCY OF OVERTOPPING FLOOD	> 500 YR.
OVERTOPPING FLOOD ELEV.	726.8

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 DETAILS 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. CONSTRUCTION JOINTS SHALL BE A MINIMUM OF 10' FROM THE END OF THE BARREL AND SHALL NOT BE LOCATED WITHIN 14' NORMAL OF PROPOSED TRACK LOCATION.

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.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", JANUARY 2018, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (HEREIN CALLED STANDARD SPECIFICATIONS), EXCEPT AS NOTED HEREIN, ELSEWHERE ON PLANS, OR IN THE SPECIAL PROVISIONS.

ALL CONCRETE SHALL BE 4,500 PSI CLASS AA CONCRETE WITH NO. 57 OR 67 COARSE AGGREGATE AND SHALL BE AIR-ENTRAINED. MINIMUM CEMENT CONTENT PER CUBIC YARD OF CONCRETE SHALL BE 6.5 BAGS. NO SUBSTITUTION OF FLYASH, BLAST FURNACE SLAG OR OTHER MATERIAL WILL BE PERMITTED IN MEETING THIS MINIMUM CEMENT REQUIREMENT. CHAMFER ALL EXPOSED EDGES AND CORNERS 3/4" EXCEPT AS NOTED. THE USE OF GROUND GRANULATED BLAST FURNACE SLAG IS NOT PERMITTED IN THIS STRUCTURE.

CONTROL OF WORK: ALL WORK INVOLVED IN THE CONSTRUCTION OF THE RAILWAY STRUCTURE SHALL BE PERFORMED SATISFACTORY TO THE ENGINEER AND/OR NORFOLK SOUTHERN RAILWAY COMPANY. ALL METHODS OF HANDLING THE WORK AFFECTING THE SAFETY OF RAIL OPERATIONS MUST BE APPROVED BY THE RAILWAY COMPANY BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. RAIL TRAFFIC SHALL, AT ALL TIMES, BE MAINTAINED AND PROTECTED. THE CONTRACTOR SHALL NOT AT ANY TIME DELAY OR INTERFERE WITH RAIL OPERATIONS.

FOR PORTLAND CEMENT, SEE SPECIAL PROVISIONS.

FOR FINE AND COARSE AGGREGATE, SEE SPECIAL PROVISIONS.

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.

GRADE DATA

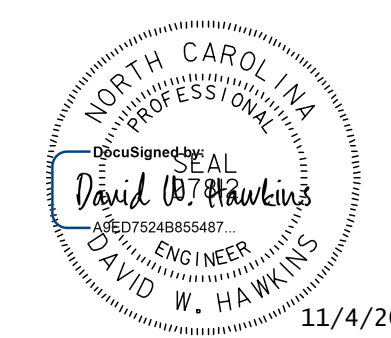
TOP OF RAIL ELEV. @ POC STA. 21+72.19 -L- = 729.50
 CULVERT BED ELEVATION @ STA. 11+00.00 -L- = 707.46
 ROADWAY SLOPES 2:1

TOTAL STRUCTURE QUANTITIES	
CLASS AA CONCRETE	
BARREL @ 1.34 CY/FT	121.3 C.Y.
WING ETC.	19.4 C.Y.
TOTAL	140.7 C.Y.
REINFORCING STEEL	
BARREL @ 18,036 LBS.	
WINGS ETC. @ 2,435 LBS.	
TOTAL	20,471 LBS.
FOUNDATION CONDITIONING MATERIAL, BOX CULVERT @ 59 TONS	
CULVERT EXCAVATION @ POC STATION 21+72.19 -L-	LUMP SUM

PROJECT NO. P-5705A
MECKLENBURG COUNTY
 STATION: 21+72.19 -L-

SHEET 1 OF 5 RR MILEPOST #382

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 LOCATION SKETCH/
 BARREL SECTION FOR
 SINGLE 7 FT. x 6 FT.
 CONCRETE BOX CULVERT
 AT STA. 21+72.19 -L-



HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT	DATE: 11/18
CHECKED BY: N. HART	DATE: 12/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 12/18

DWG. NO. 1

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-1
1			3			TOTAL SHEETS
2			4			6