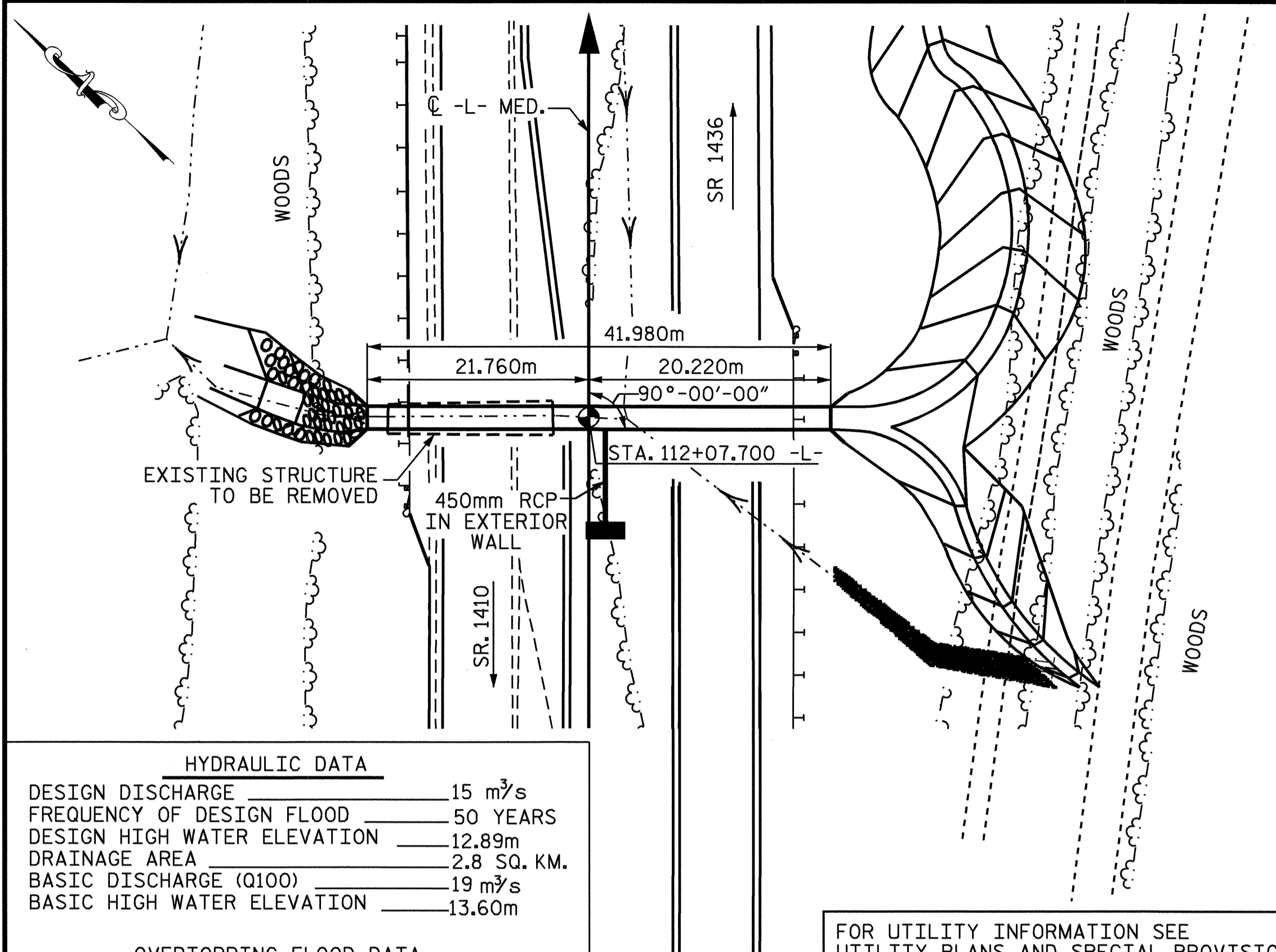


B.M.-2, A NAIL IN ROOT OF 9" GUM, LOCATED AT STA. 108+03.194 -L- OFFSET 46.450m LEFT ELEV. 12.240m.



**HYDRAULIC DATA**

DESIGN DISCHARGE 15 m<sup>3</sup>/s  
 FREQUENCY OF DESIGN FLOOD 50 YEARS  
 DESIGN HIGH WATER ELEVATION 12.89m  
 DRAINAGE AREA 2.8 SQ. KM.  
 BASIC DISCHARGE (Q100) 19 m<sup>3</sup>/s  
 BASIC HIGH WATER ELEVATION 13.60m

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE 19m<sup>3</sup>/s  
 FREQUENCY OF OVERTOPPING FLOOD 100 YRS.  
 OVERTOPPING FLOOD ELEVATION 13.53m

FOR UTILITY INFORMATION SEE UTILITY PLANS AND SPECIAL PROVISIONS.

**LOCATION SKETCH**

**BILL OF MATERIAL STAGE I**

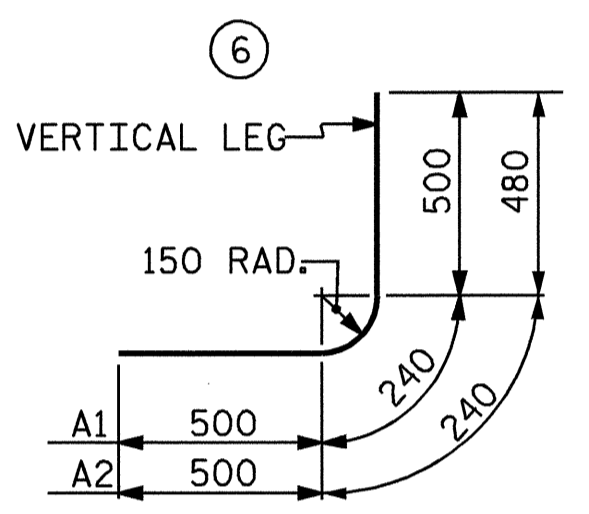
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	188	#13	6	1240	232
A100	80	#16	STR	2360	293
A2	188	#13	6	1220	228
A200	84	#16	STR	2360	308
B1	160	#13	STR	2340	372
B2	190	#13	STR	1880	355
C1	68	#13	STR	8580	580
G1	2	#13	STR	2380	5
REINFORCING STEEL					= 2373 KG

**BILL OF MATERIAL STAGE II**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	306	#13	6	1240	377
A100	130	#16	STR	2360	476
A2	306	#13	6	1220	371
A200	137	#16	STR	2360	502
B1	260	#13	STR	2340	605
B2	306	#13	STR	1880	572
C2	102	#13	STR	9000	912
G1	2	#13	STR	2380	5
E1	16	#16	STR	1220	30
REINFORCING STEEL					= 3850 KG

**\*\*\* SPLICE LENGTH CHART \*\*\***

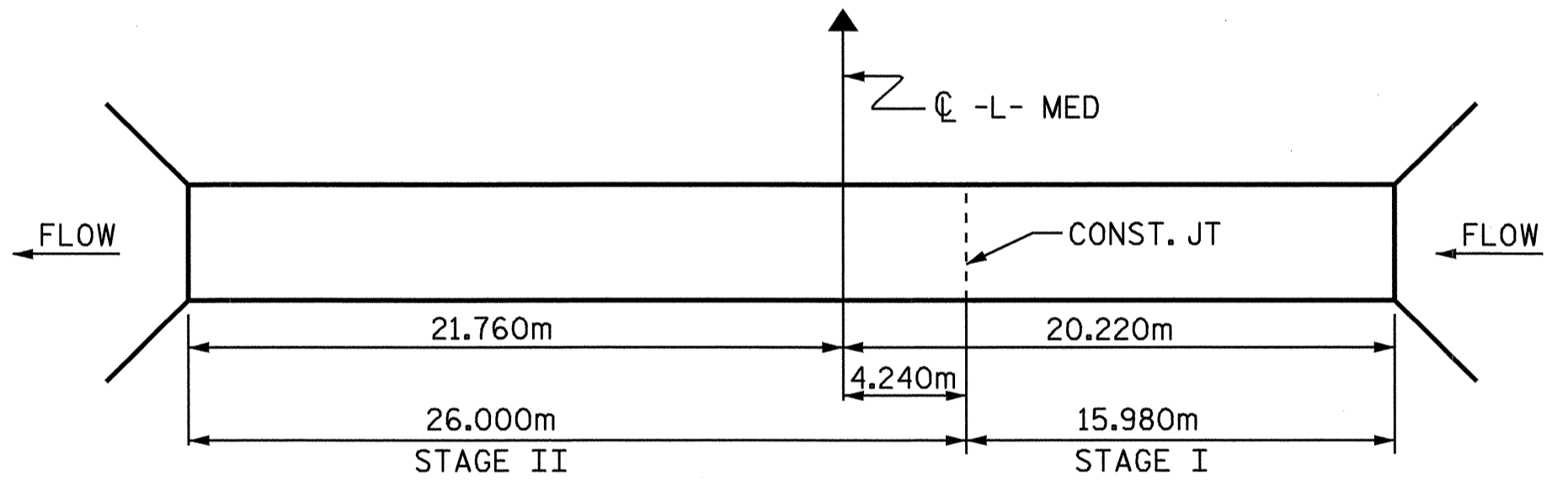
BAR	SIZE	SPLICE LENGTH
B1	13	540
C1	13	590



**BAR TYPE**  
DIMENSIONS ARE OUT TO OUT

**NOTES**

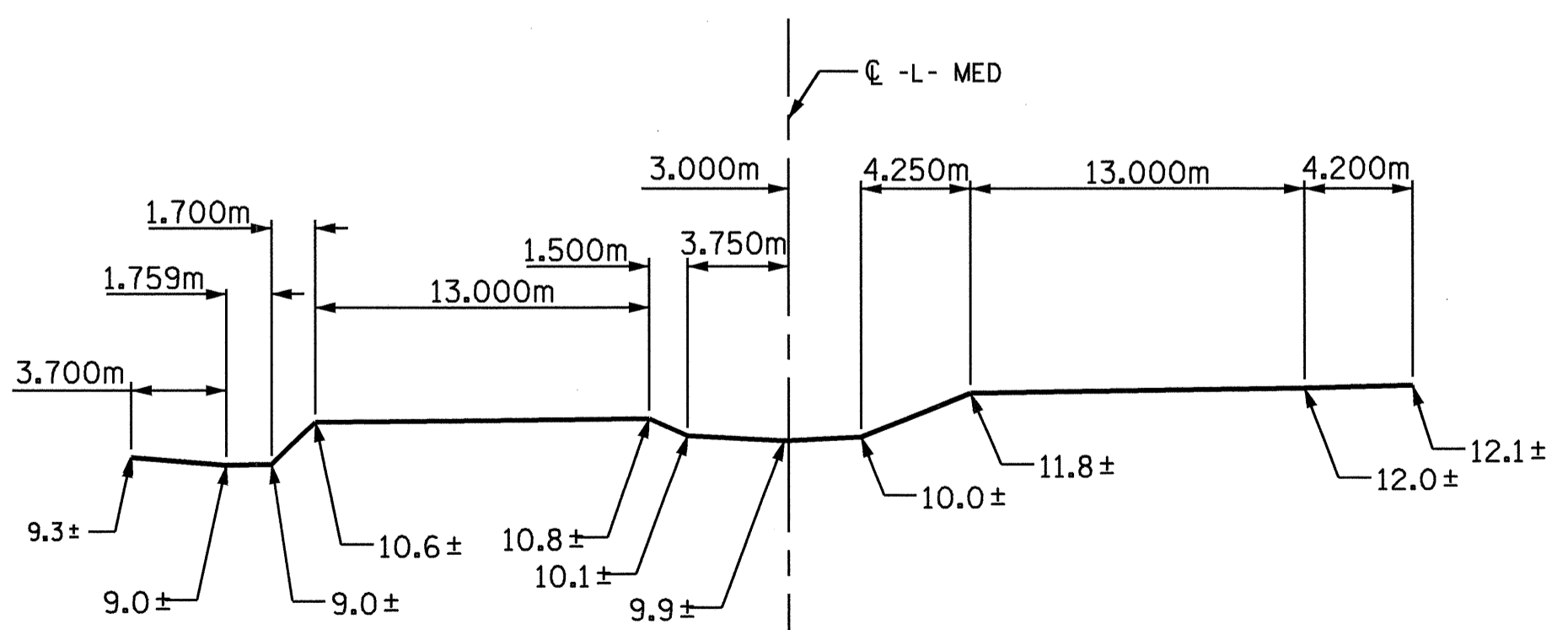
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
- ALL ELEVATIONS ARE IN METERS.
- ASSUMED LIVE LOAD -----MS18 OR ALTERNATE LOADING.
- DESIGN FILL----- 1.16m
- FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.
- 76mm Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
  - WING FOOTINGS AND FLOOR SLAB INCLUDING 100mm OF ALL VERTICAL WALLS.
  - 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 21.0m. 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.
- 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.
- A 900mm 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.
- THE 450mm DIA. PIPE THROUGH THE SIDEWALL OF THE CULVERT SHALL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL SHALL BE FIELD BENT AS NECESSARY TO CLEAR PIPE.
- THE EXISTING 1.83m(W) x 1.22m(H) SINGLE BARREL CULVERT SHALL BE REMOVED (APPROXIMATE LENGTH = 15.1m).



**CONSTRUCTION SEQUENCE**

**TOTAL STRUCTURE QUANTITIES**

	CLASS A CONCRETE	REINFORCING STEEL	FOUNDATION COND. MAT'L.	CULVERT EXCAVATION	REMOVAL OF EXISTING STRUCTURE
STAGE I	36.6 m <sup>3</sup>	2630 kg.	27 M. TONS	LUMP SUM	
STAGE II	55.4 m <sup>3</sup>	4106 kg.	44 M. TONS	LUMP SUM	LUMP SUM
TOTAL	92.0 m <sup>3</sup>	6736 kg.	71 M. TONS	LUMP SUM	LUMP SUM



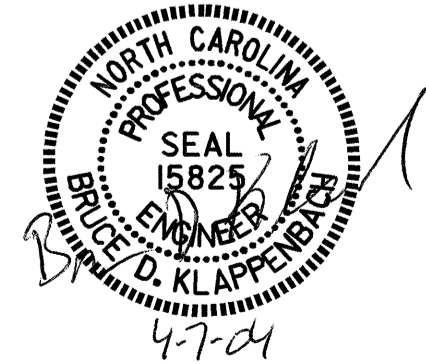
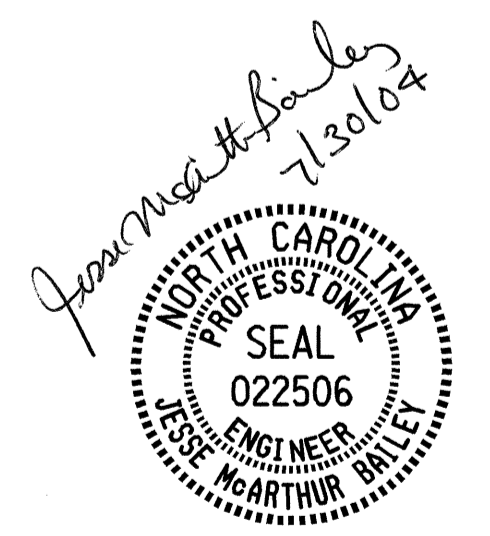
**PROFILE ALONG CULVERT**

**STRUCTURE QUANTITIES STAGE I**

CLASS A CONCRETE	
BARREL @ 1.88m m <sup>3</sup> /m	30.0 m <sup>3</sup>
WINGS ETC.	6.6 m <sup>3</sup>
TOTAL	36.6 m <sup>3</sup>
REINFORCING STEEL	
BARREL	2373 kg
WINGS ETC.	257 kg
TOTAL	2630 kg
CULVERT EXCAVATION	----- LUMP SUM
FOUNDATION COND. MAT'L	---- 27 METRIC TONS

**STRUCTURE QUANTITIES STAGE II**

CLASS A CONCRETE	
BARREL @ 1.88m m <sup>3</sup> /m	48.8 m <sup>3</sup>
WINGS ETC.	6.6 m <sup>3</sup>
TOTAL	55.4 m <sup>3</sup>
REINFORCING STEEL	
BARREL	3850 kg
WINGS ETC.	256 kg
TOTAL	4106 kg
CULVERT EXCAVATION	----- LUMP SUM
FOUNDATION COND. MAT'L	---- 44 METRIC TONS
REMOVAL OF EXISTING STRUCTURE	-- LUMP SUM



PROJECT NO. R-2514A  
ONSLOW COUNTY  
 STATION: 112+07.700 -L- MED

SHEET 1 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**SINGLE 2.1m X 2.1m  
 CONCRETE BOX CULVERT  
 90°-00'-00" SKEW**

ASSEMBLED BY : J.B. WILSON DATE : 6/03  
 CHECKED BY : M.G. SHAIKH DATE : 7/03  
 DRAWN BY : EEM 6/97  
 CHECKED BY : ARB 7/97

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. C-1  
 TOTAL SHEETS 9