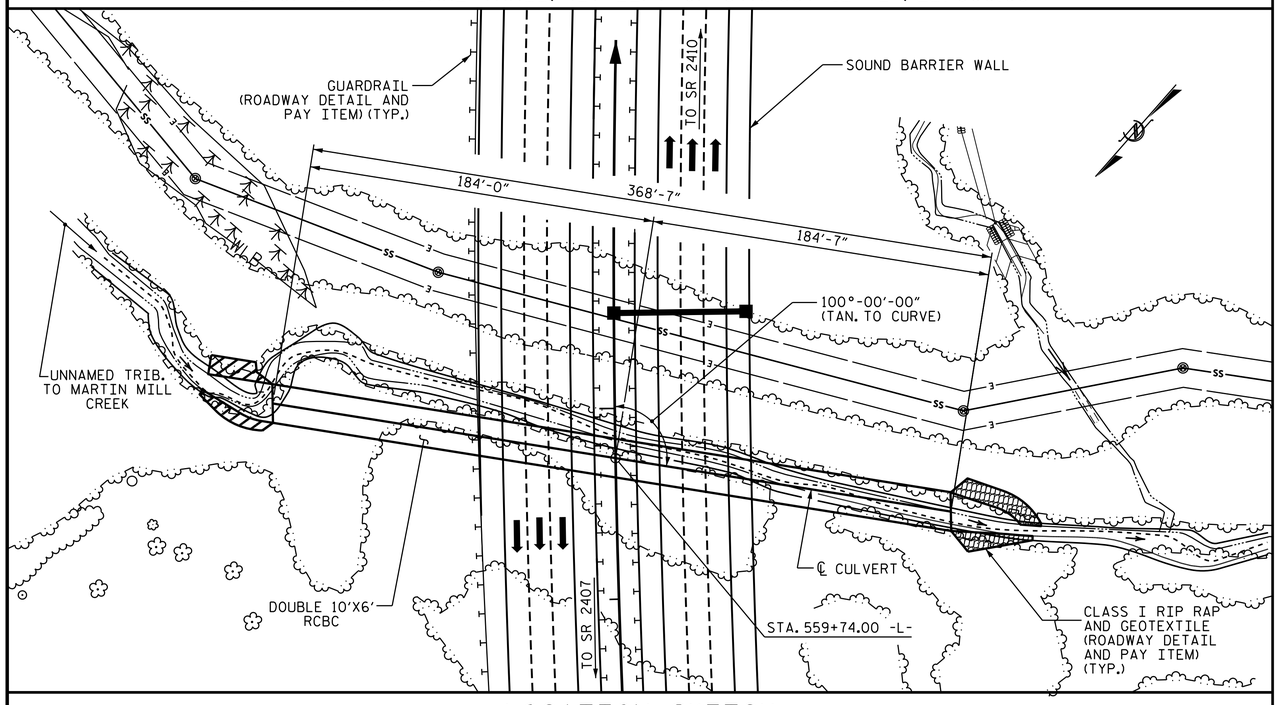
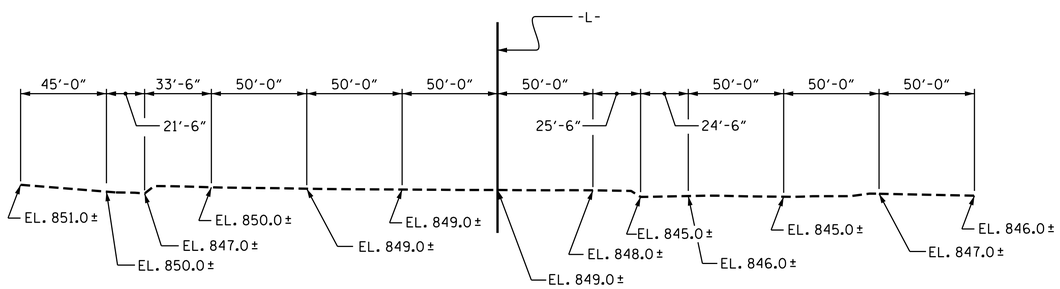
BENCH MARK #5: RAILROAD SPIKE SET IN BASE OF 42" FORKED OAK, 19' OFF OF NORTH EP OF WESTON LAKE TRAIL, 427' LEFT OF STA. 557+12 -L-, EL. 866.68




LOCATION SKETCH




PROFILE ALONG ℄ CULVERT

## ROADWAY DATA

| | |
|---|---|
| GRADE PT. EL. @ STA. 559+74.00 -L- | =903.42 |
| BED EL. @ STA. 559+74.00 -L- | =844.74 |
| ROADWAY SLOPES | =2:1 |

## HYDRAULIC DATA

| | |
|---|---|
| DESIGN DISCHARGE | =670 C.F.S. |
| FREQUENCY OF DESIGN FLOOD | =50 YR. |
| DESIGN HIGH WATER ELEVATION | =852.0 |
| DRAINAGE AREA | =246 ACRES |
| BASE DISCHARGE (Q100) | =750 C.F.S. |
| BASE HIGH WATER ELEVATION | =852.9 |

## OVERTOPPING FLOOD DATA

| | |
|---|---|
| OVERTOPPING DISCHARGE | =670+ C.F.S. |
| FREQUENCY OF OVERTOPPING FLOOD | =50+ YR. |
| OVERTOPPING HIGH WATER ELEVATION | =852.0 NG |

## TOTAL STRUCTURE QUANTITIES

| | | | | |
|---|---|---|---|---|
| CULVERT EXCAVATION | | | | LUMP SUM |
| FOUNDATION CONDITIONING MATERIAL | | | | 591 TONS |
| CLASS A CONCRETE | | | | |
| BARREL @ | 5.113 | CY/FT | 1,577.8 | C.Y. |
| BARREL @ | 2.831 | CY/FT | 169.9 | C.Y. |
| WINGS ETC. | | | 19.4 | C.Y. |
| SILLS ETC. | | | 6.4 | C.Y. |
| TOTAL | | | 1,773.5 | C.Y. |
| REINFORCING STEEL | | | | |
| BARREL | | | 154,274 | LBS. |
| WINGS ETC. | | | 964 | LBS. |
| TOTAL | | | 155,238 | LBS. |
| PLACEMENT OF NATURAL STREAM BED MATERIAL | | | | LUMP SUM |

F. A. PROJECT NO. NHF-0918(93)

## NOTES

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

DESIGN FILL---------- 54.75 FT.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS CULVERT SHALL BE SUBMITTED. SEE SHEET SN.

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 WILL BE PAID FOR BY THE CONTRACTOR.

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.

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. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR CULVERT DIVERSION CHANNEL 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.

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, SILLS, BAFFLES 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 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.

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 REINFORCED CONCRETE BOX CULVERT SHALL BE CONSTRUCTED WITH 3 INCHES OF CAMBER TO ACCOUNT FOR ANTICIPATED SETTLEMENT.

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

NATURAL STREAM BED MATERIAL SHALL BE USED TO BACKFILL THE CULVERT BETWEEN SILLS AND BAFFLES. SEE SPECIAL PROVISIONS FOR "PLACEMENT OF NATURAL STREAM BED MATERIAL."

PROJECT NO. U-2579B
FORSYTH COUNTY
STATION: 559+74.00 -L-

SHEET 1 OF 8 BRIDGE NO. 691

NORTH CAROLINA PROFESSIONAL SEAL 21638 ENGINEER LAURA E. SUTTON
Docusigned by: Laura E. Sutton AE35E3E67276406... 8/8/2014

NORTH CAROLINA PROFESSIONAL SEAL 23371 ENGINEER VIPUL A. PATEL
Docusigned by: Vipul A. Patel 339B086CBE1C486... 8/8/2014

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD

DOUBLE 10 FT. X 6 FT. CONCRETE BOX CULVERT 100° SKEW

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | C-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 30 |

STR. #19

DRAWN BY : R. P. PATEL DATE : 11-5-13
CHECKED BY : J. P. MCCARTHA DATE : 11-8-13
DESIGN ENGINEER OF RECORD: R. P. PATEL DATE : 4-29-14

08-AUG-2014 11:02
R:\Structures\Plans\Culverts\U2579B_SD_CU_19.dgn
lsutton