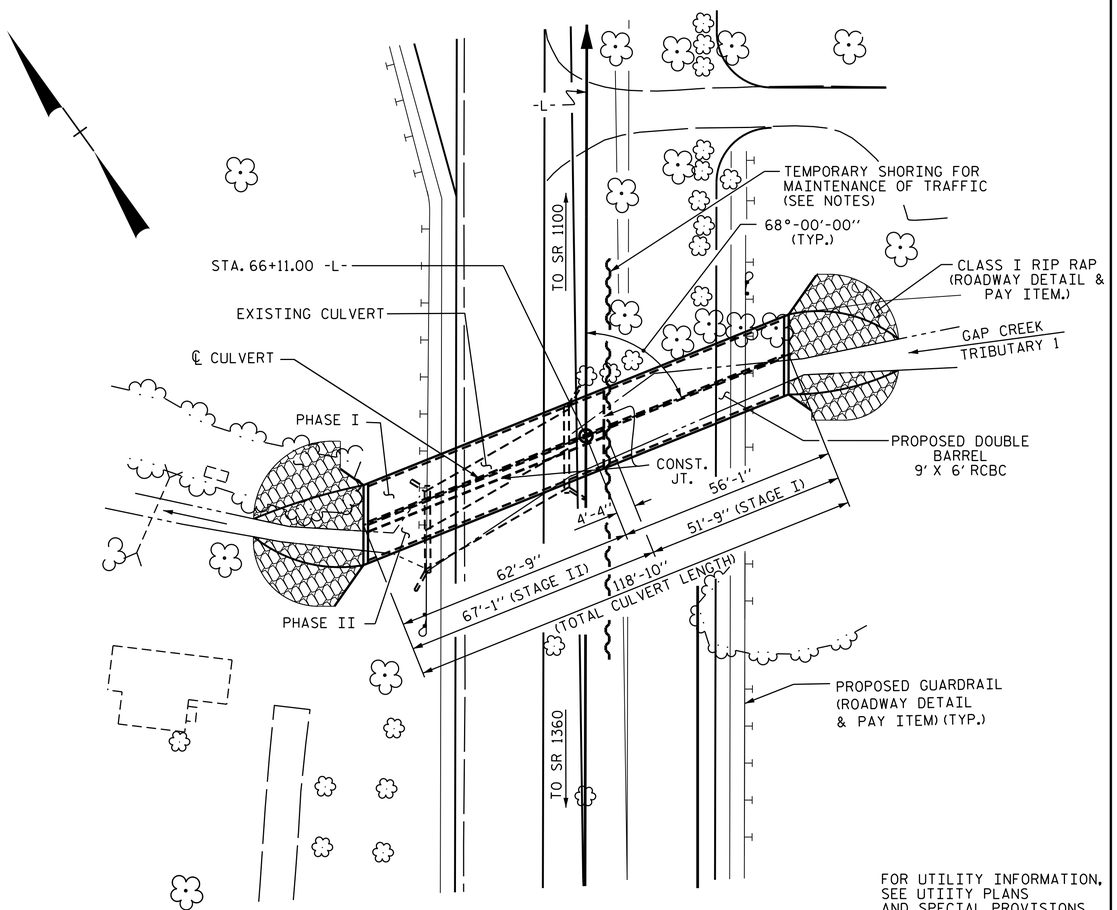
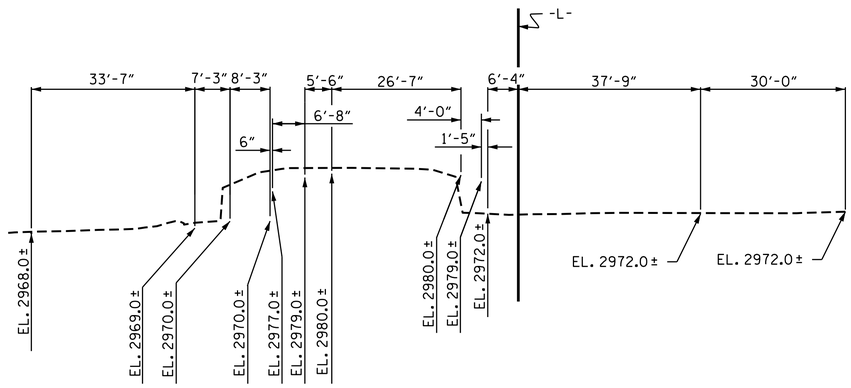
F.A. PROJECT NO. STP-0221 (39)

B.M. #3 - RAILROAD SPIKE IN BASE OF POWER POLE,
291.00 FT. LT. OF STA. 69+00.00 -L-, EL. 2962.09', N 919454, E 1261861




FOR UTILITY INFORMATION, SEE UTIITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH




PROFILE ALONG ℄ CULVERT

## NOTES

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

DESIGN FILL _____ 3.10 FT. (MIN.), 6.46 FT. (MAX.)

FOR OTHER DESIGN DATA AND NOTES, SEE STANDARD NOTE SHEET.

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

CONCRETE IN STAGE I CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTING, EDGE BEAM AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB, EDGE BEAM AND HEADWALL.

CONCRETE IN STAGE II CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. PHASE I WING FOOTING, EDGE BEAM AND FLOOR SLAB TO CONSTRUCTION JOINT INCLUDING 4" OF PHASE I VERTICAL WALLS.
2. THE REMAINING PORTIONS OF PHASE I WALLS AND PHASE I WING FULL HEIGHT.
3. PHASE II WING FOOTING, EDGE BEAM AND FLOOR SLAB TO CONSTRUCTION JOINT INCLUDING 4" OF PHASE II VERTICAL WALL.
4. THE REMAINING PORTIONS OF PHASE II WALL AND PHASE II WING FULL HEIGHT.
5. ROOF SLAB, HEADWALL AND EDGE BEAM.

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 FACES OF THE EXTERIOR WALLS AND BOTH FACES OF INTERIOR 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.

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 MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR CONSTRUCTION SEQUENCE, SEE EROSION CONTROL PLANS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING DOUBLE 9' X 6' REINFORCED CONCRETE BOX CULVERT SHALL BE REMOVED.

TRAFFIC ON US 221 SHALL BE MAINTAINED. IN ORDER TO MAINTAIN TRAFFIC THE CULVERT SHALL BE CONSTRUCTED IN SECTIONS AS DIRECTED BY THE ENGINEER.

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.

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.

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 EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

## TOTAL STRUCTURE QUANTITIES

| | |
|---|---|
| CLASS A CONCRETE | |
| STAGE I | 104.5 C.Y. |
| STAGE II | 132.3 C.Y. |
| TOTAL | 236.8 C.Y. |
| REINFORCING STEEL | |
| STAGE I | 11,889 LBS. |
| STAGE II | 15,736 LBS. |
| TOTAL | 27,625 LBS. |
| CULVERT EXCAVATION | LUMP SUM |
| FOUNDATION COND. MAT'L | |
| STAGE I | 88 TONS |
| STAGE II | 114 TONS |
| TOTAL | 202 TONS |
| REMOVAL OF EXISTING STRUCTURE | LUMP SUM |

## ROADWAY DATA

GRADE POINT ELEV. @ STATION 66+11.00 -L- = 2981.02
BED ELEV. @ STATION 66+11.00 -L- = 2969.45
ROADWAY SLOPES = 2:1

## HYDRAULIC DATA

DESIGN DISCHARGE _____ = 430 C.F.S.
FREQUENCY OF DESIGN FLOOD_____= 50 YR.
DESIGN HIGH WATER ELEVATION = 2976.10
DRAINAGE AREA = _____ = 0.81 SQ. MI.
BASE DISCHARGE (Q100) _____ = 500 C.F.S.
BASE HIGH WATER ELEVATION = 2976.38

## OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE --------- = 915 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD ----- = 500+ YR.
OVERTOPPING FLOOD ELEVATION = 2980.70

NORTH CAROLINA PROFESSIONAL SEAL 14855 ENGINEER DOUGLAS R. CALHOUN
DocuSigned by: Douglas R. Calhoun 430196F9D5E0429...
7/23/2015

NORTH CAROLINA PROFESSIONAL SEAL 17230 ENGINEER WAEL S. ARAFAT
DocuSigned by: Wael Arafat 4139C12A32AB406...
7/23/2015

PROJECT NO. R-2915A
WATAUGA/ASHE COUNTY
STATION: 66+11.00 -L-

SHEET 1 OF 9 REPLACES BRIDGE No. 374

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# DOUBLE 9'-0" X 6'-0" CONCRETE BOX CULVERT

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | C-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 20 |

STR. #2

DRAWN BY : V.X. NGUYEN DATE : 1-26-15
CHECKED BY : H.T. BARBOUR DATE : 5-1-15
DESIGN ENGINEER OF RECORD: J.P. McCARTHA DATE : 6-15

23-JUL-2015 12:42
R:\Structures\FinalPlans\STR#2\R-2915A_SD_CU_01.dgn
warafat