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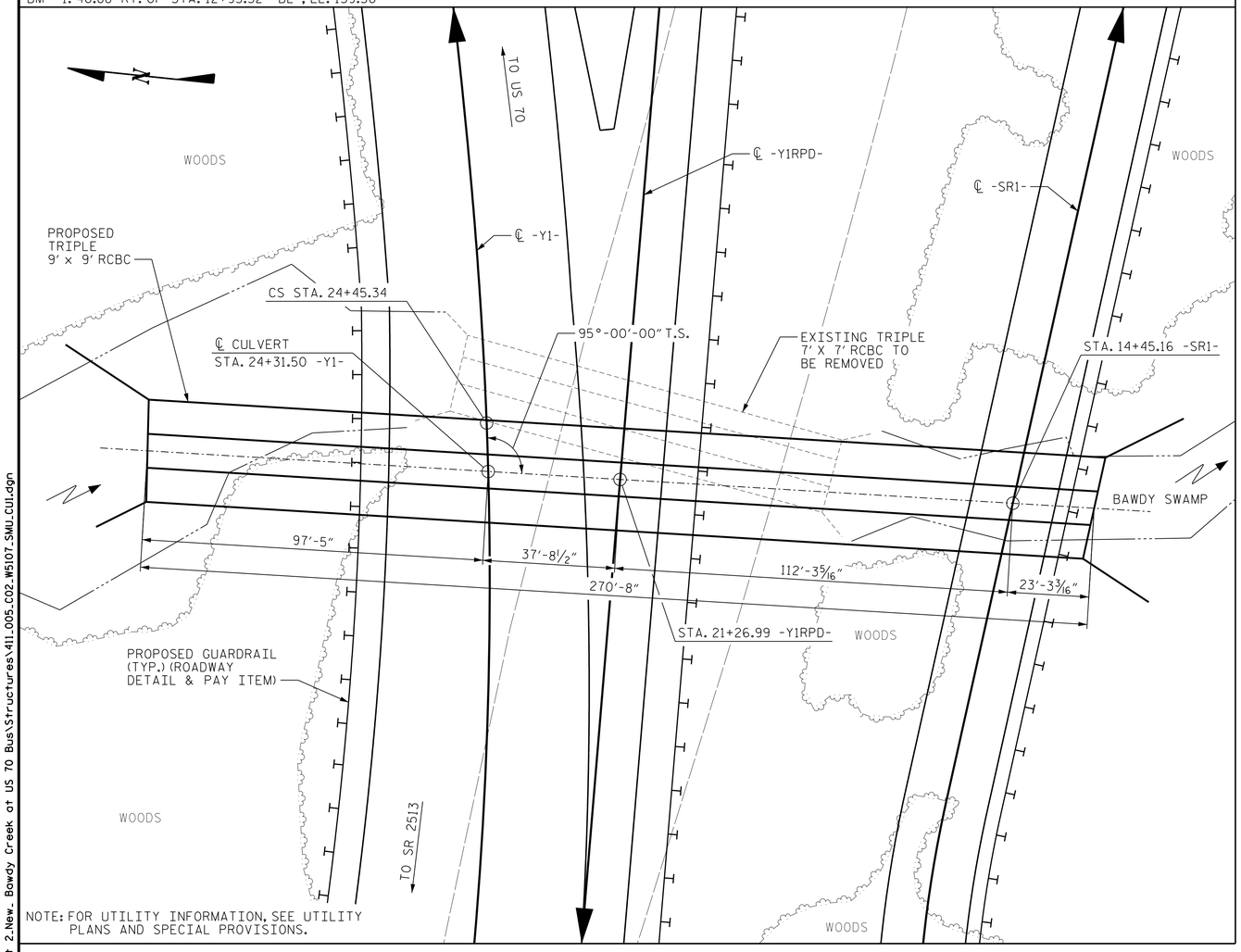
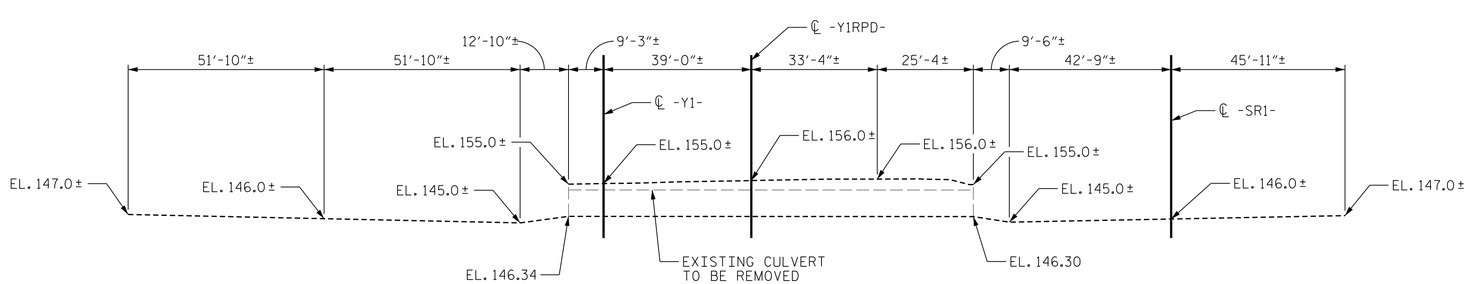


LOCATION SKETCH

GRADE POINT ELEVATION @ 24+31.50 -Y1- = 177.05
BED ELEVATION @ 24+31.50 -Y1- = 145.75
ROADWAY SLOPES = 4:1 & 3:1



PROFILE ALONG ℄ CULVERT

NOTES

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

DESIGN FILL----------23.8 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.

AT THE CONTRACTOR'S OPTION, HE 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.

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 FEET. 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, ON 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQURING 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.

THE EXISTING STRUCTURE CONSISTING OF TRIPLE 7' X 7' BARREL REINFORCED CONCRETE BOX CULVERT AND WINGWALLS, LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED.

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.

EXCAVATE 1 FT. BELOW CULVERT AND FOOTINGS AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS.

SCOUR PROTECTIONS ARE REQUIRED AT BOTH INLET AND OUTLET OF THE CULVERT. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.

THE SCOUR CRITICAL ELEVATIONS ARE THE AS-BUILT BOTTOM OF BOX CULVERT ELEVATIONS. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDROGRAPHIC DATA

DESIGN DISCHARGE .....= 650 CFS
FREQUENCY OF DESIGN FLOOD .....= 50 YRS.
DESIGN HIGH WATER ELEVATION .....= 152.4 FT.
DRAINAGE AREA .....= 3.42 SQ.MI.
BASE DISCHARGE (Q100).....= 800 CFS
BASE HIGH WATER ELEVATION .....= 153.05 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE .....= 2500 CFS
FREQUENCY OF OVERTOPPING FLOOD .....= 500+ YRS.
OVERTOPPING FLOOD ELEVATION .....= 159.5 FT.

-Y1- PROFILE DATA

PVI STA. 28+50.00 -Y1-
PVI EL. = 198.93
VC = 880.00
g1 = +5.2272%
g2 = -5.1709%

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE				
BARREL @	4.16	CY/FT	1126.1	C.Y.
WING ETC.			47.8	C.Y.
TOTAL			1173.9	C.Y.
REINFORCING STEEL				
BARREL			163,049	LBS.
WINGS ETC.			2,787	LBS.
TOTAL			165,836	LBS.
CULVERT EXCAVATION ---------- LUMP SUM				
FOUNDATION CONDITIONING MATERIAL 573 TONS				
REMOVAL OF EXISTING STRUCTURE --- LUMP SUM				

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. W-5107
JOHNSTON COUNTY
STATION: 24+31.50 -Y1-

SHEET 1 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 9 FT. X 9 FT. CONCRETE BOX CULVERT

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER PAUL A. de PAOLI
11/20/2014

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			C-8
1			3					TOTAL SHEETS
2			4					36

STR. #4

DRAWN BY :	J.S. ISRAELNAIM	DATE :	05/14
CHECKED BY :	P.A. de PAOLI	DATE :	06/14
DESIGN ENGINEER OF RECORD :	P.A. de PAOLI	DATE :	06/14

11/20/2014
10:13:19 AM
User: blanning
Filename: P:\NC Bridges\M12005 - W-5107 Johnston Co\M12005.04.Culvert 2.New_ Bawdy Creek at US 70 Bus\Structures\411.005.C02.W5107.SMU.CUL.dgn