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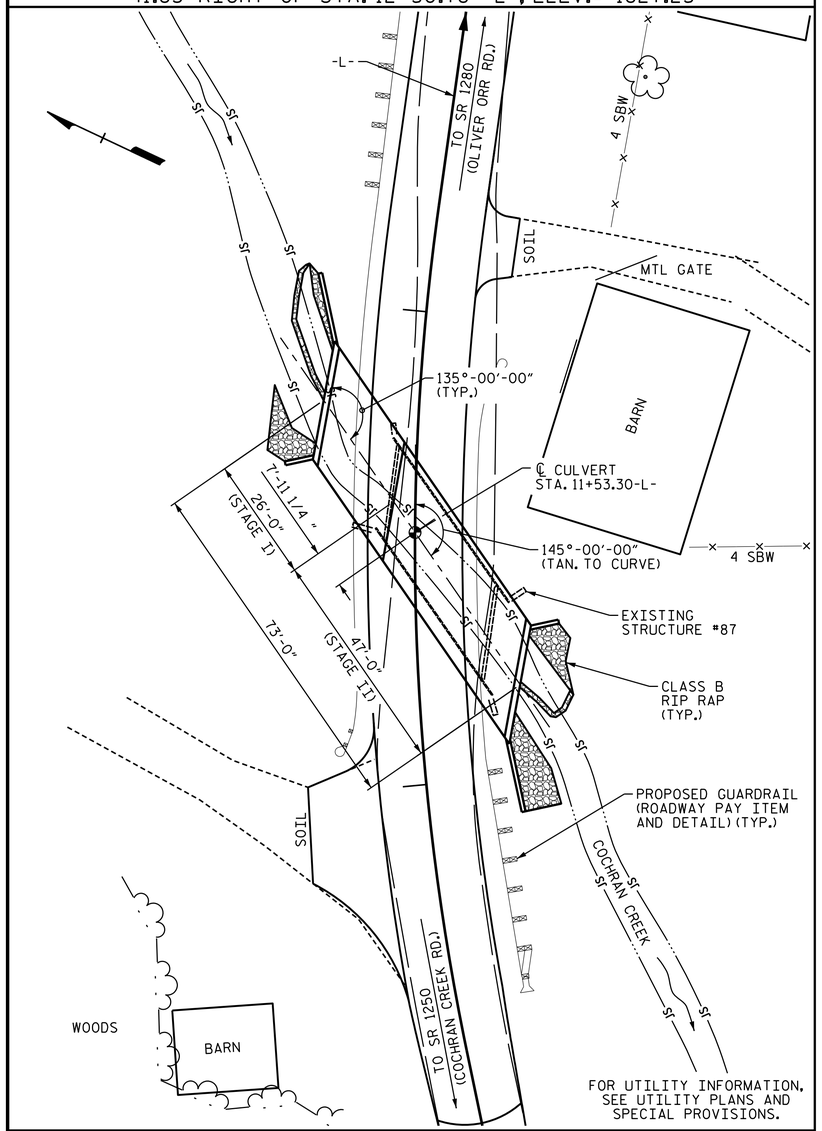
BM1: 8" SPIKE SET IN BASE OF A 36" WALNUT TREE, 41.83' RIGHT OF STA. 12+50.78 -L-, ELEV.= 1827.25



LOCATION SKETCH

NOTES

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

MAXIMUM DESIGN FILL.....1.3'

MINIMUM DESIGN FILL.....1.1'

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR CULVERT DIVERSION DETAILS, SEE EROSION CONTROL PLANS.

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

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

1. WING FOOTINGS AND FLOOR SLAB FOR PHASE I, INCLUDING 4" OF ALL VERTICAL WALLS OF PHASE I.

2. THE REMAINING PORTIONS OF THE WALLS OF PHASE I AND WINGS FULL HEIGHT.

3. WING FOOTING AND FLOOR SLAB FOR PHASE II, INCLUDING 4" OF ALL VERTICAL WALLS OF PHASE II.

4. THE REMAINING PORTIONS OF THE WALLS OF PHASE II AND WINGS FULL HEIGHT.

5. ROOF SLAB AND HEADWALLS OF PHASE II.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES."

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN: 20'-6" WITH AN ASPHALT WEARING SURFACE ON A TIMBER DECK AND TIMBER JOISTS HAVING A CLEAR ROADWAY WIDTH OF 24'-0" SUPPORTED ON A SUBSTRUCTURE OF TIMBER CAPS ON TIMBER POSTS, AND CONCRETE SILLS SHALL BE REMOVED. THE EXISTING STRUCTURE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED CULVERT, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF THE 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.

* 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.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

THE EXISTING BRIDGE SHALL BE PARTIALLY REMOVED AS SHOWN IN THE TRAFFIC CONTROL PLANS. THE EXISTING RAIL SHALL BE REMOVED AND REATTACHED TO THE REMAINING PORTION OF THE EXISTING BRIDGE. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF THE CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

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.

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
STAGE I	56.8 CU. YDS.
STAGE II	93.0 CU. YDS.
TOTAL	149.8 CU. YDS.
REINFORCING STEEL	
STAGE I	8,503 LBS.
STAGE II	13,953 LBS.
TOTAL	22,456 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	
STAGE I	33 TONS
STAGE II	60 TONS
TOTAL	93 TONS
REMOVAL OF EXISTING STRUCTURE	LUMP SUM
TEMPORARY EDGE BEAM	LUMP SUM
CLASS B RIP RAP	27 TONS
GEOTEXTILE FOR DRAINAGE	30 SQ. YDS.
ASBESTOS ASSESSMENT	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	= 380 CFS
FREQUENCY OF DESIGN FLOOD	= 5 YEARS
DESIGN HIGH WATER ELEVATION	= 1821.6
DRAINAGE AREA	= 2.2 SQ.MI.
BASE DISCHARGE (Q100)	= 1000 CFS
BASE HIGH WATER ELEVATION	= 1824.09

HORIZONTAL CURVE DATA

PI STA 11+33.77
Δ = 19°-44'-13.2" (RT)
D = 11°-00'-00.0"
L = 179.43'
T = 90.61'
R = 520.87'

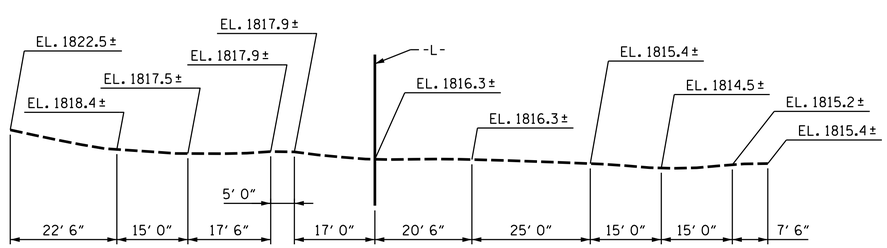
OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 450 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 5+ YEARS
OVERTOPPING FLOOD ELEVATION	= 1822.4

GRADE DATA

GRADE POINT ELEV. @ STA. 11+53.30 -L-	= 1822.13
INVERT ELEV. @ STA. 11+53.30-L-	= 1814.99
ROADWAY SIDE SLOPES	= VARIES

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROFILE ALONG ℄ CULVERT

PROJECT NO. 17BP.14.R.79
GRAHAM COUNTY
STATION: 11+53.30 -L-

SHEET 1 OF 11 REPLACES BRIDGE #87

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 8FT. X 5FT. CONCRETE BOX CULVERT 145° SKEW

DESIGN ENGINEER OF RECORD:
Digitally signed by Thomas M. Harris
DATE: 12/14/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 19299 ENGINEER THOMAS M. HARRIS

WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

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

SHEET NO. C-1
TOTAL SHEETS 11

DRAWN BY : M. HOBBS DATE : 10/2014
CHECKED BY : M. MILLS DATE : 10/2014