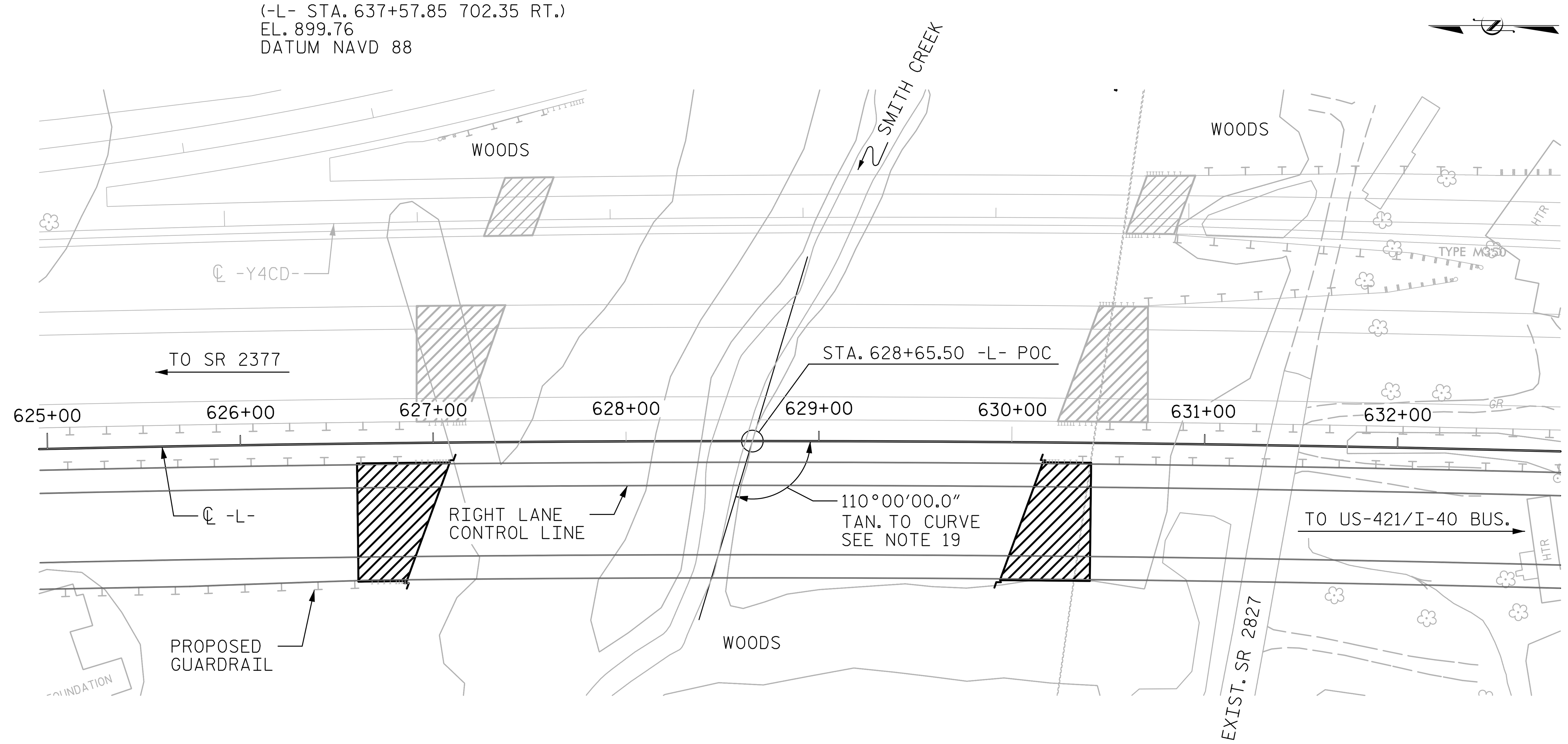
BENCH MARK #9: R/R SPIKE SET IN PAVEMENT OF RACHEL ST. -BY14- AT INTERSECTION OF GERRY DR. -BY15- STA. 8+99 27′ LT. (-L- STA. 637+57.85 702.35 RT.) EL. 899.76 DATUM NAVD 88



OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = > 74300 CFS
FREQUENCY OF OVERTOPPING FLOOD = > 500 YRS.
OVERTOPPING FLOOD ELEVATION = 865.00

HYDRAULIC DATA

DESIGN DISCHARGE = 2400 CFS
FREQUENCY OF DESIGN FLOOD = 50 YR
DESIGN HIGH WATER ELEVATION = 830.70
DRAINAGE AREA = 3.9 SQ. MI.
BASE DISCHARGE (Q100) = 2700 CFS
BASE HIGH WATER ELEVATION = 831.20

LOCATION SKETCH

GENERAL NOTES

1. ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING
2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
3. THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
4. FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.
5. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
6. FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
7. FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
8. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
9. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
10. FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
11. 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.
12. PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
13. REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
14. THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
15. NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
16. THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
17. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
18. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
19. BRIDGE ID AND ANGLE SHALL ONLY BE USED TO IDENTIFY BRIDGE LOCATION AND SHALL NOT BE USED FOR BRIDGE GEOMETRY.

FOUNDATION NOTES:

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1.
3. PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.
4. DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 183 TONS PER PILE.
5. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
6. DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 525 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 65 TSF.
7. INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 785 FEET (LT), 782 FEET (CT), AND 782 FEET (RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 15 FEET INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
8. PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 805 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.
9. THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 812.0 FEET. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
10. PILES AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.
11. DRIVE PILES AT BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 217 TONS PER PILE.
12. THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
13. TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT BENT NO. 2. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
14. OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 2.
15. PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.
16. DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 183 TONS PER PILE.
17. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT ALL END BENTS AND BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION	5′-0″ DIA. DRILLED PIERS IN SOIL	5′-0″ DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 5′-0″ DIA. DRILLED PIER	PDA TESTING	SID INSPECTIONS	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63″ PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		HP 14 X 73 STEEL PILES		CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	NO.	LIN.FT.	LIN.FT.	LUMP SUM
SUPERSTRUCTURE	—	—	—	—	—	—	—	19479	21678	—	LUMP SUM	—	—	18	1830.34	—	—	—	—	615.15	—
END BENT NO. 1	—	—	—	—	—	—	—	—	—	70.7	—	10429	—	—	—	14	840	—	—	—	—
BENT NO. 1	—	101.0	60.0	72.0	—	—	—	—	—	178.2	—	46925	12800	—	—	—	—	—	—	—	—
BENT NO. 2	LUMP SUM	—	—	—	—	—	—	—	—	214.2	—	48792	5443	—	—	—	—	24	690	—	—
END BENT NO. 2	—	—	—	—	—	—	—	—	—	46.6	—	8514	—	—	—	13	1430	—	—	—	—
TOTAL	LUMP SUM	101.0	60.0	72.0	1	1	1	19479	21678	509.7	LUMP SUM	114660	18243	18	1830.34	27	2270	24	690	615.15	LUMP SUM

PROJECT NO. U-2579B
FORSYTH COUNTY
STATION: 628+65.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON FUTURE I-74
(WINSTON SALEM NORTHERN BELTWAY)
OVER SMITH CREEK
BETWEEN US-158 AND US-421/I-40 BUS.
GENERAL NOTES, LOCATION SKETCH,
& TOTAL BILL OF MATERIALS
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-357
1			3			TOTAL SHEETS
2			4			707

Prepared by:
JACOBS
JACOBS ENGINEERING GROUP
111 CORNING ROAD, SUITE 200
CARY, NORTH CAROLINA 27518
TEL: (919) 859-5000

DWG. NO. 4 OF 44

DocuSigned by: Steven K Doerrer
A22D3DBEFA1D43F...
8/8/2014

NORTH CAROLINA PROFESSIONAL SEAL 16572 ENGINEER STEVEN K. DOERRER

DRAWN BY : EML DATE : 6/8/14
CHECKED BY : OKH DATE : 6/8/14

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