CONTRACT: C201637 TIP PROJECT: B-3481

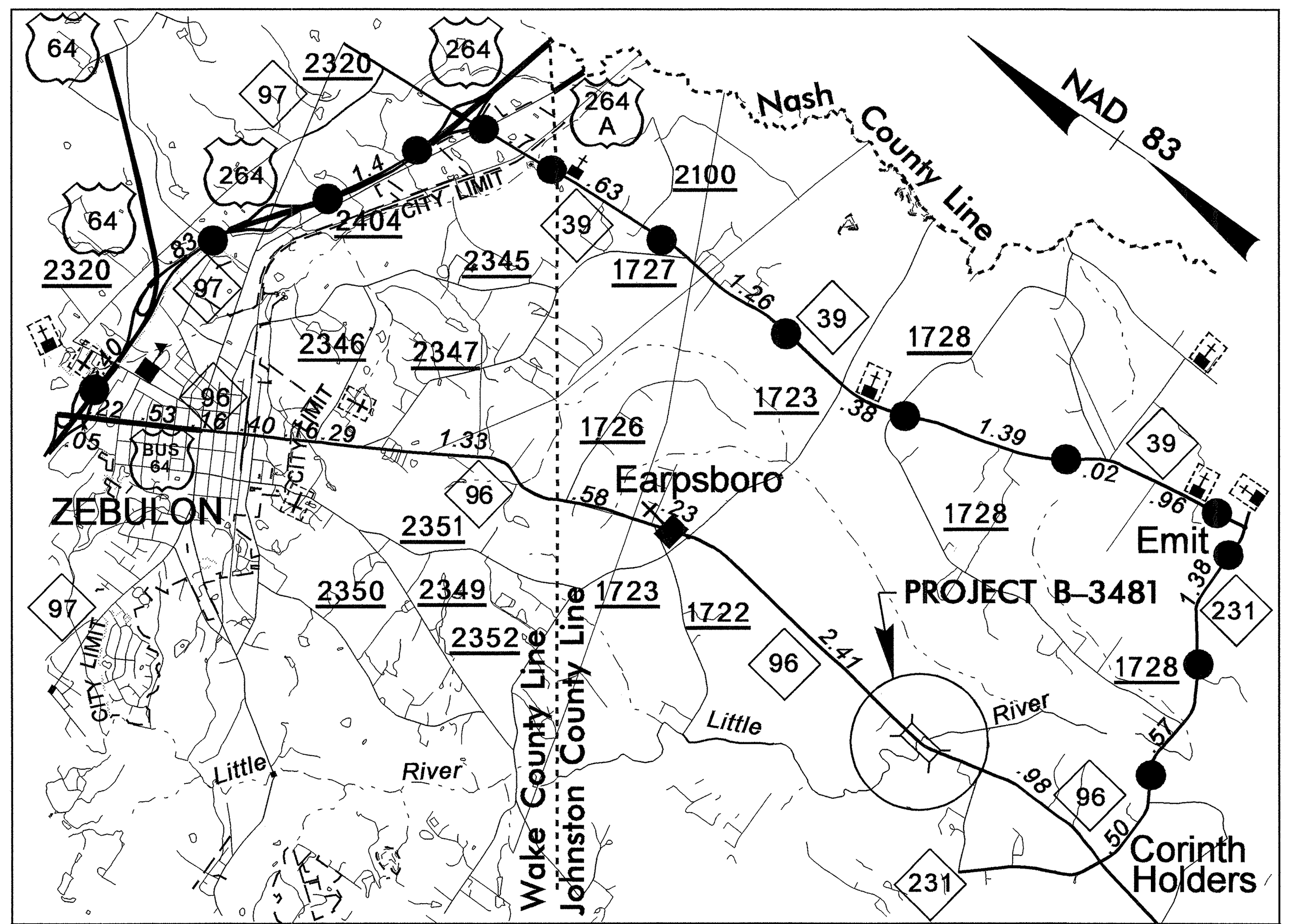
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols
See Sheet 1-C For Survey Control Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

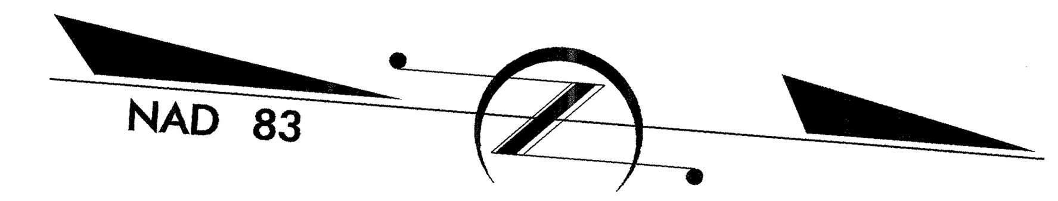
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3481	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33098.1.1	BRSTP-96(2)	P.E.	
33098.2.2	BRSTP-96(2)	R/W & UTILITIES	
33098.3.2	BRSTP-96(8)	CONST.	

JOHNSTON COUNTY

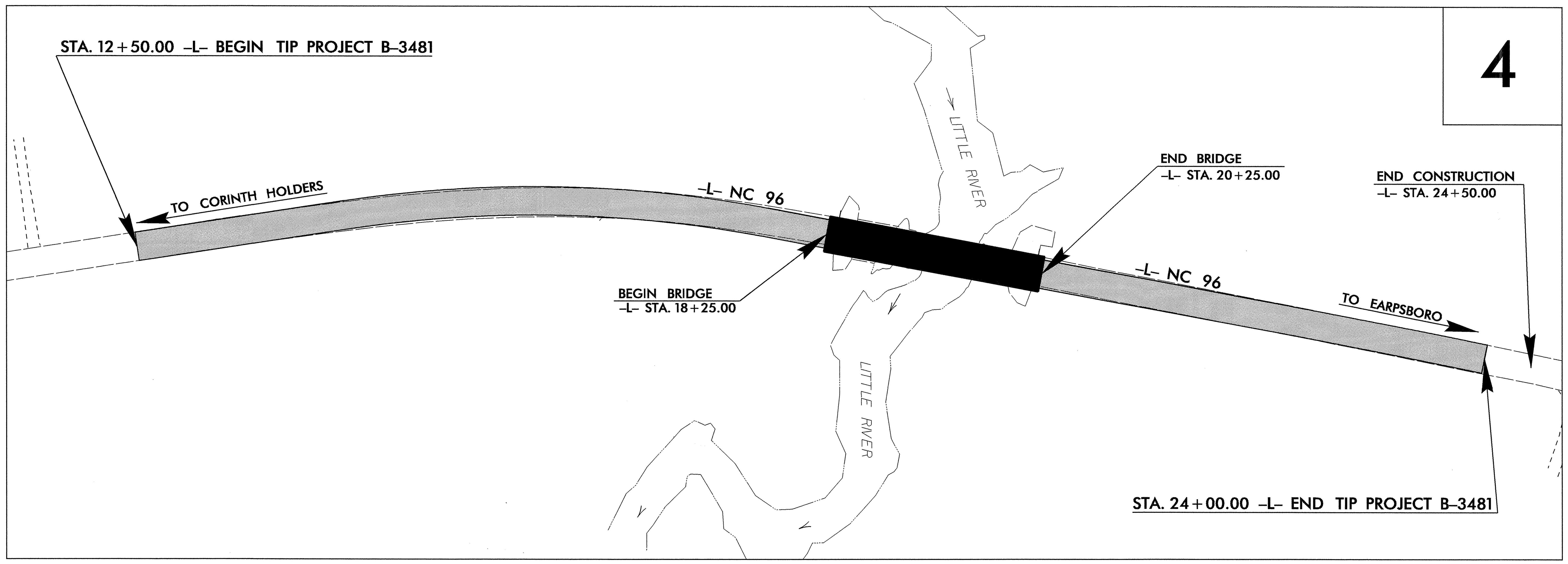
LOCATION: BRIDGE NO. 94 OVER LITTLE RIVER ON NC 96
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE



VICINITY MAP



DETOUR ROUTE



** DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVES AND STOPPING SIGHT DISTANCES.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 2970
ADT 2025 = 4500
DHV = 10 %
D = 60 %
T = 14 % *
V = 55 MPH
* TTST 6 % DUAL 8 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3481 =	0.180 MI
LENGTH STRUCTURE TIP PROJECT B-3481 =	0.038 MI
TOTAL LENGTH OF TIP PROJECT B-3481 =	0.218 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 16, 2005

LETTING DATE:
MAY 15, 2007

JAMES A. SPEER, PE
PROJECT ENGINEER

DANNY GARDNER
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SEAL 026480
SIGNATURE: 3/6/07 P.E.

ROADWAY DESIGN ENGINEER
SEAL 14571
SIGNATURE: 2/20/2007 P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Art McMillan P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

RD212399 2/20/2007 b3481 dwgardner RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
B-3481	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14571 ENGINEER JAMES A. SPEER

2/20/2007

8/17/99

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	ANCHORAGE FOR FRAMES DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY, AND BREAKUP OF EXISTING ASPHALT PAVEMENT SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-2	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION SUMMARY
X-2 THRU X-9	CROSS-SECTIONS
S-1 THRU S-31	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-18-06

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Progress Energy-Power Distribution

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

EFF. 07-18-06

2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.04	Drainage Ditches with Class 'B' Rip Rap

19-FEB-2007 12:20
r:\proj\u-4703_rdy_dsn_sht_1a.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-3481	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing High Quality Wetland Boundary — HQ WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- River Basin Buffer — RBB
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

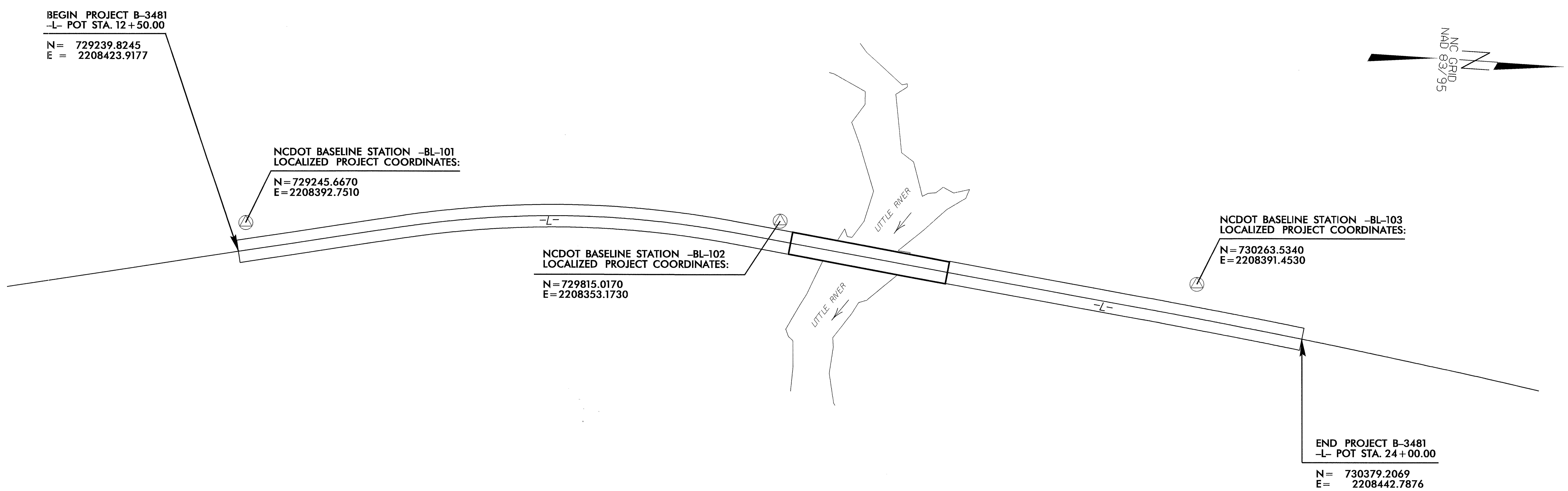
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

6/2/99

SURVEY CONTROL SHEET B-3481

JOHNSTON COUNTY

BRIDGE 94 OVER LITTLE RIVER ON NC96



BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	GPS B3481-2	728605.0200	2208538.4210	250.50	OUTSIDE PROJECT LIMITS	
101	BL-101	729245.6670	2208392.7510	229.94	12+62.36	29.20 LT
102	BL-102	729815.0170	2208353.1730	209.45	18+29.17	21.18 LT
103	BL-103	730263.5340	2208391.4530	226.88	22+78.92	36.17 LT
3	GPS B3481-3	730811.4800	2208483.5730	243.65	OUTSIDE PROJECT LIMITS	

****
111 ELEVATION = 228.75
N 729167 E 2208461
L STATION 11+71 21' RIGHT
RR SPIKE IN BASE OF 12" PINE
****

****
112 ELEVATION = 199.52
N 729850 E 2208285
L STATION 18+55 93' LEFT
RR SPIKE IN BASE OF 12" ELM
****

****
113 ELEVATION = 225.68
N 730206 E 2208362
L STATION 22+19 58' LEFT
RR SPIKE IN BASE OF 24" PINE
****

(△) INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES

NOTES

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
B3481_LS_CONTROL_050804.TXT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-3481-1" WITH STATE PLANE GRID COORDINATES OF NORTHING: 728121.992(ft) EASTING: 2208645.075(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990418 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-3481-1" TO -L- STATION 12+50.00 IS N 11°11'28.12" W 1139.50' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-3481	2

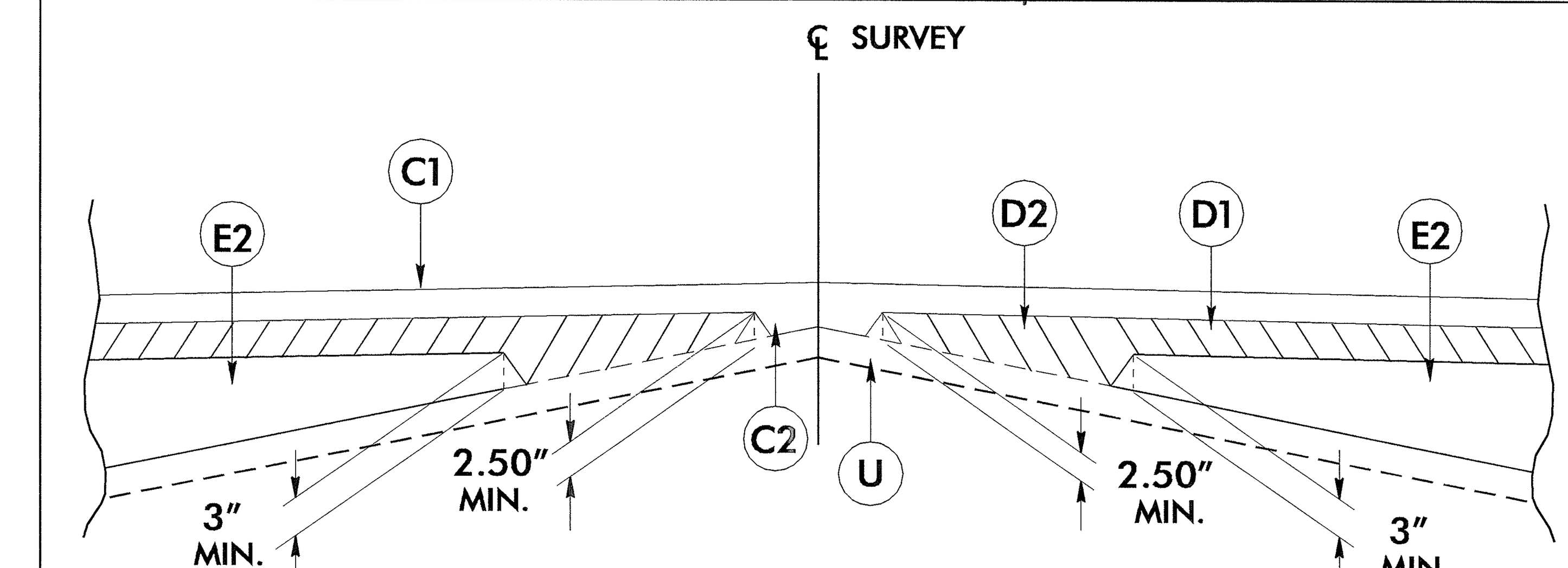
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14571 JAMES A. SPEER — 2/20/2007

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22898 CLARK S. MORRISON — 2-20-07

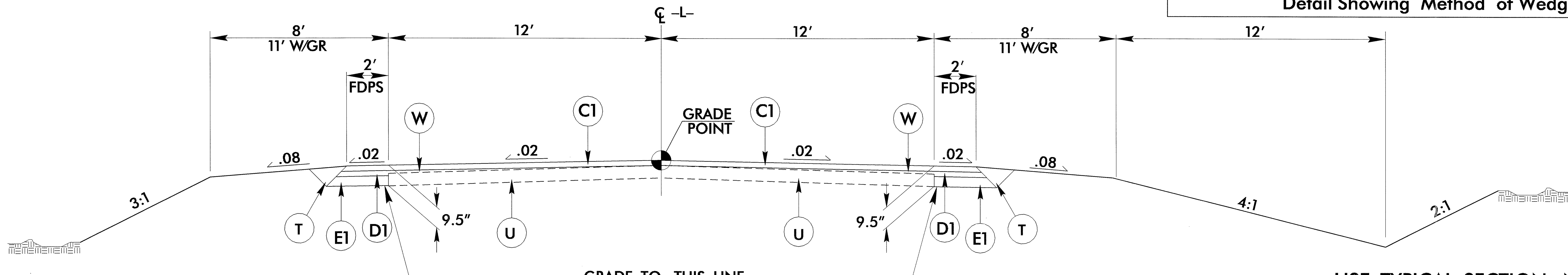
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	T	EARTH MATERIAL
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL FOR RESURFACING)
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



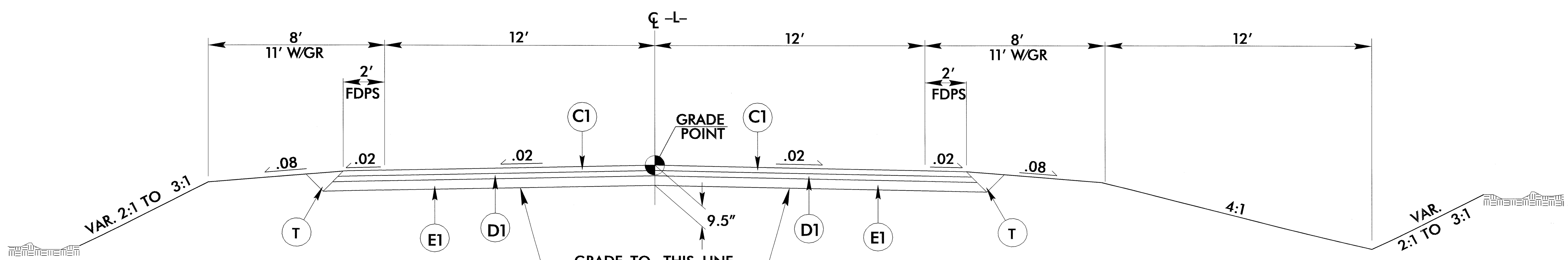
Detail Showing Method of Wedging



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA. 12+50.00 TO STA. 13+50.00
–L– STA. 23+25.00 TO STA. 24+00.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

–L– STA. 13+50.00 TO STA. 18+25.00 (BEGIN BRIDGE)
–L– STA. 20+25.00 (END BRIDGE) TO STA. 23+25.00

6/2/99

02-FEB-2007 10:13
r:\proj\b3481_typ
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-3481	2-A

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

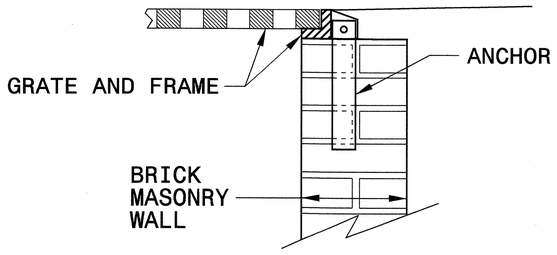
ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

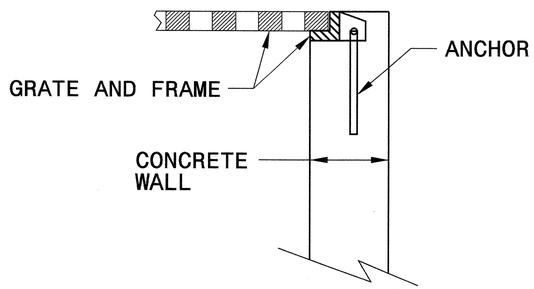
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

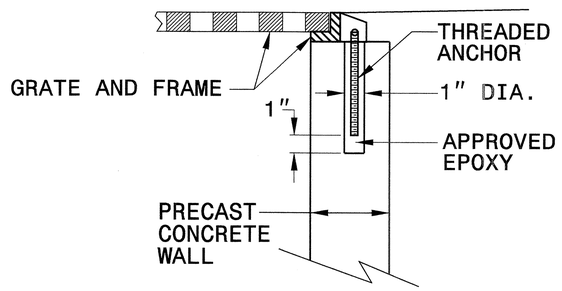
840D25



BRICK MASONRY CONSTRUCTION



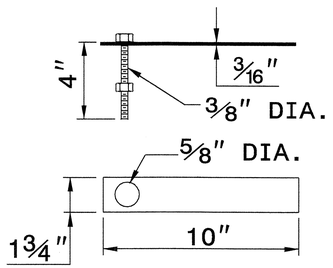
CONCRETE CONSTRUCTION



PRECAST CONCRETE CONSTRUCTION

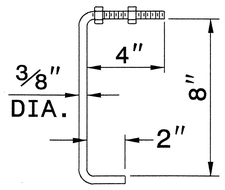
DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



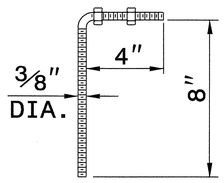
MASONRY ANCHOR

3/8" DIA. BOLT WITH PLATE



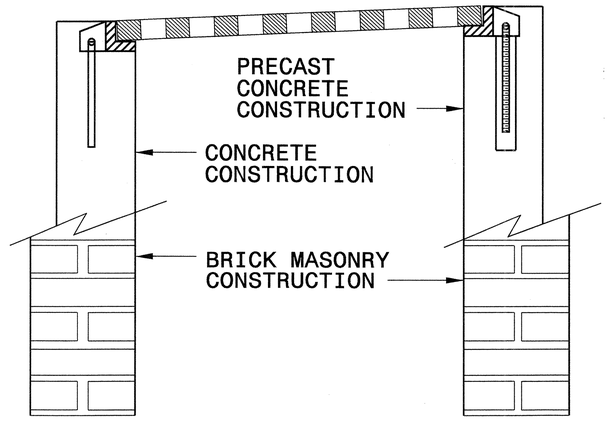
CONCRETE ANCHOR

3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR

3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

840D25

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWARD
3/6/07

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE: 9/27/06
FILE SPEC.:

27-SEP-2006 09:01
S:\Contracts\Contracts\Special Details\ericwardlstds\06 Stds to Special Details\840D25 Anchorage for Frames\0640d25.dgn
ericward AT PE222193

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-3481	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201637

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (19+25.00)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0318000000-E	300	10	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0366000000-E	310	56	LF	15" RC PIPE CULVERTS, CLASS III
0714000000-E	310	28	LF	18" BIT COAT CS PIPE CULVERTS, TYPE B 0.064" THICK
0807000000-E	310	2	EA	18" BIT COAT CS PIPE ELBOWS, TYPE B 0.064" THICK
1489000000-E	610	610	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	390	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	525	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	77	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	50	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	14	EA	RIGHT OF WAY MARKERS
2286000000-N	840	3	EA	MASONRY DRAINAGE STRUCTURES
2367000000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.29
2556000000-E	846	60	LF	SHOULDER BERM GUTTER
3030000000-E	862	625	LF	STEEL BM GUARDRAIL
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3566000000-E	867	310	LF	WOVEN WIRE FENCE RESET
3574000000-E	867	50	LF	GENERIC FENCING ITEM 2-STRAND ELECTRIC FENCE RESET
3649000000-E	876	68	TON	RIP RAP, CLASS B
3656000000-E	876	927	SY	FILTER FABRIC FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4025000000-E	901	14.6	SF	CONTRACTOR FURNISHED, TYPE *** SIGN (D)
4072000000-E	903	67	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4155000000-N	907	7	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	684	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	174	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4445000000-E	1145	128	LF	BARRICADES (TYPE III)
4685000000-E	1205	1,900	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	1,900	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4770000000-E	1205	800	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (1)
4900000000-N	1251	15	EA	PERMANENT RAISED PAVEMENT MARKERS
6000000000-E	1605	430	LF	TEMPORARY SILT FENCE
6006000000-E	1610	150	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	175	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	325	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	3	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	125	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	3	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	300	LF	SAFETY FENCE
6030000000-E	1630	840	CY	SILT EXCAVATION
6036000000-E	1631	1,600	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	30	SY	COIR FIBER MAT
6038000000-E	SP	927	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	375	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	8	EA	SPECIAL STILLING BASINS
6071030000-E	SP	225	LF	COIR FIBER BAFFLES
6071050000-E	SP	4	EA	**" SKIMMER (2")
6084000000-E	1660	3	ACR	SEEDING & MULCHING
6087000000-E	1660	2	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2.25	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	2	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	8	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION

31-JAN-2007 10:19
c:\proj\b3481sh
$$$$USERNAME$$$$

6/21/00

COMPUTED BY: D. W. GARDNER DATE: 01/22/07
CHECKED BY: J. B. GAUTHIER DATE: 02/06/07

PROJECT REFERENCE NO.	SHEET NO.
B-3481	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) .064 12"	.064 15"	.064 18"	.064 24"	.079 30"	.079 36"	.109 42"	.109 48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	T.B.D.I. STD. 840.35	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	CORR. STEEL ELBOWS NO. & SIZE	PREFORMED SCOUR HOLE	REMARKS
-L- STA. 17+75.00	RT.	1	OUT	213.21	209.97	201.00	0.32											28										1						1	1	2@18"	1	
-L- STA. 17+98.00	RT.	2	1	213.28	210.21	209.97	0.010		24																			1						1	1			
-L- STA. 17+98.00	LT.	3	2	213.28	210.53	210.21	0.010		32																			1						1	1			
PROJECT TOTAL									56									28										3						3	3	2@18"	1	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I. (N.S.)	MEDIAN DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUCTION BOX

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GRAU 350	ANCHORS TYPE B-77	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	REMARKS
-L-	15+25.00	18+25.00	RT	300			18+25		8	11					1	1				
-L-	20+25.00	21+62.50	RT	137.50				20+25	8	11					1	1				
-L-	16+87.50	18+25.00	LT	137.50				18+25	8	11					1	1				
-L-	20+25.00	23+25.00	LT	300			20+25		8	11					1	1				
			SUB-TOTAL	875.00																
		LESS DEDUCTIONS FOR ANCHORS																		
			GRAU-350 4@50 =	-200																
			TYPE B-77 4@18.75 =	-75																
			PROJECT TOTAL	600.00											4	4				
			SAY	625.00																
		ADDITIONAL GUARDRAIL POSTS = 10 EA.																		

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCL. EXCAVATION	EMBT+%	BORROW	WASTE
SUMMARY NO. 1				
-L- STA 12+50.00 TO 18+25.00 (BEG BRG)	6008	2153		3855
TOTAL SUMMARY NO. 1	6008	2153		3855
SUMMARY NO. 2				
-L- STA 20+25.00 (END BRG) TO 24+00.00	1504	2928	1424	
TOTAL SUMMARY NO. 2	1504	2928	1424	
SUMMARY TOTALS	7512	5081	1424	3855
WASTE IN LIEU OF BORROW			-1424	-1424
PROJECT TOTAL	7512			2431
SAY	7550 YD^3			

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS

STATION TO STATION	ASPHALT REMOVAL	ASPHALT BREAK-UP
-L- STA. 13+50 TO STA. 15+25	466.67	
-L- STA. 15+25 TO STA. 18+00		733.33
-L- STA. 18+00 TO STA. 18+43	114.67	
-L- STA. 20+15 TO STA. 20+50	93.33	
-L- STA. 20+50 TO STA. 23+05		680
-L- STA. 23+05 TO STA. 23+25	53.33	
TOTAL	728	1413.33
SAY	750	1435

19-FEB-2007 11:29
I:\proj\B3481\sum
$$$$USERNAME$$$$

RD212399 2/19/2007 b3481sum dwgardner RD-Oce34

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3481	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14571 ENGINEER JAMES A. SPEER

James A Speer

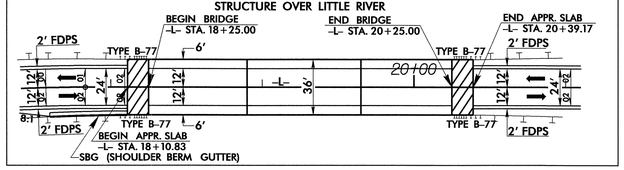
2/20/2007

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER CLARENCE D. ROBINSON, JR.

3-6-07

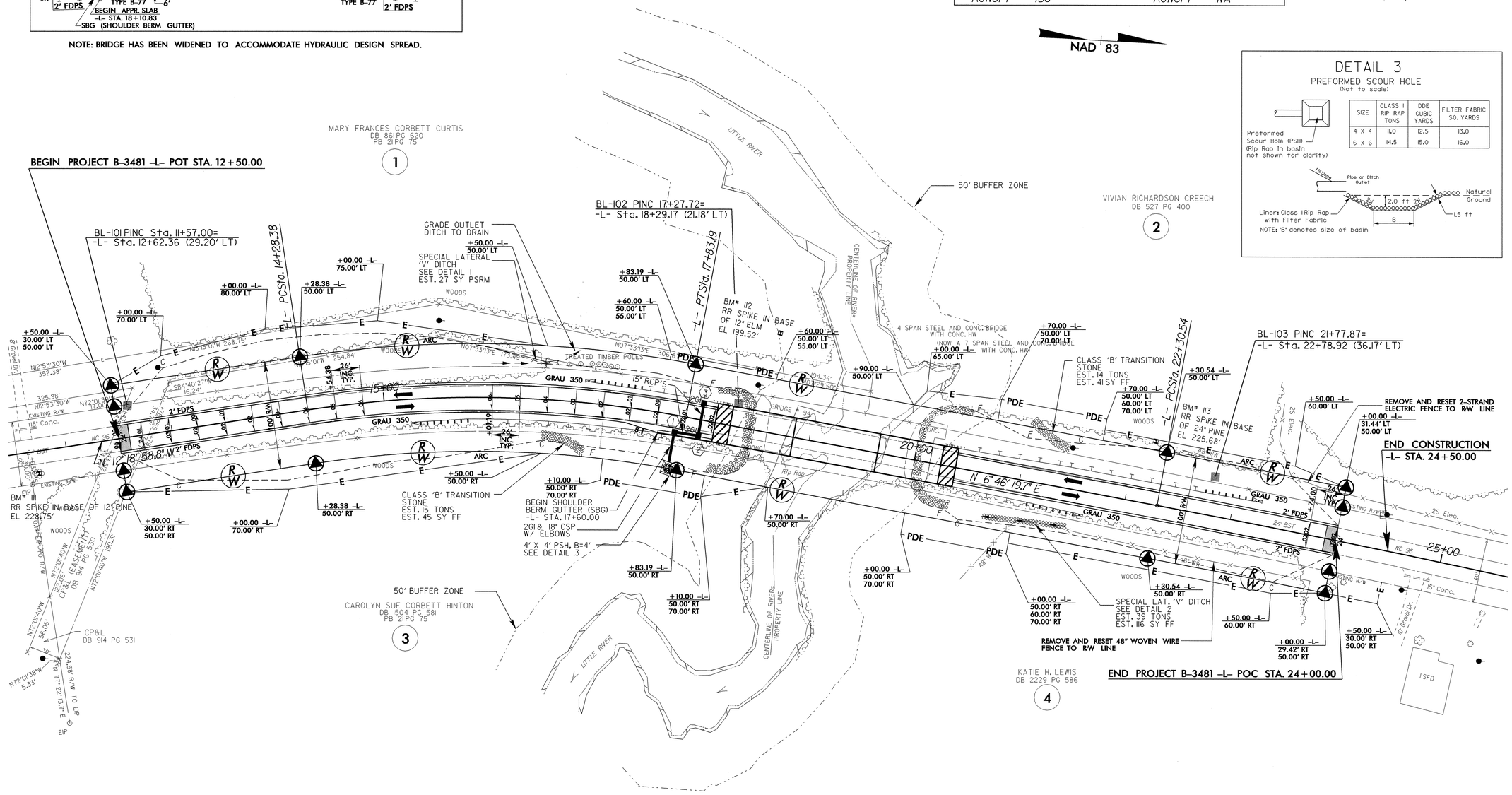
SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT STRUCTURE OVER LITTLE RIVER



NOTE: BRIDGE HAS BEEN WIDENED TO ACCOMMODATE HYDRAULIC DESIGN SPREAD.

-L-	
PI Sta 16+07.44	PI Sta 24+44.64
Δ = 19° 05' 18.6" (RT)	Δ = 2° 10' 42.3" (RT)
D = 5° 22' 47.6"	D = 0° 30' 31.7"
L = 354.81'	L = 428.15'
T = 179.07'	T = 214.10'
R = 1,065.00'	R = 11,261.00'
SE = 0.06	SE = NA
RUNOFF = 156'	RUNOFF = NA

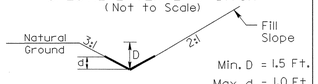
NAD 83



DETAIL 3
PREFORMED SCOUR HOLE
(Not to scale)

SIZE	CLASS I RIP RAP TONS	DDE CUBIC YARDS	FILTER FABRIC SQ. YARDS
4 X 4	11.0	12.5	13.0
6 X 6	14.5	15.0	16.0

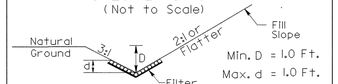
DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = PERMANENT SOIL REINFORCEMENT MATERIAL

-L- STA 16+00 TO 16+60 (LT)

DETAIL 2
SPECIAL DITCH
(Not to Scale)



Type of Liner = CLASS 'B' RIPRAP

-L- STA 20+40 TO 21+50 (RT)

SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-31 FOR STRUCTURE PLANS

20-FEB-2007 14:48
C:\PROJECTS\3481\Design
$$$$USERNAME$$$$

RD212399 2/20/2007 b3481s4 dwgardner RD-Oce34

PROJECT REFERENCE NO.	SHEET NO.
B-3481	5

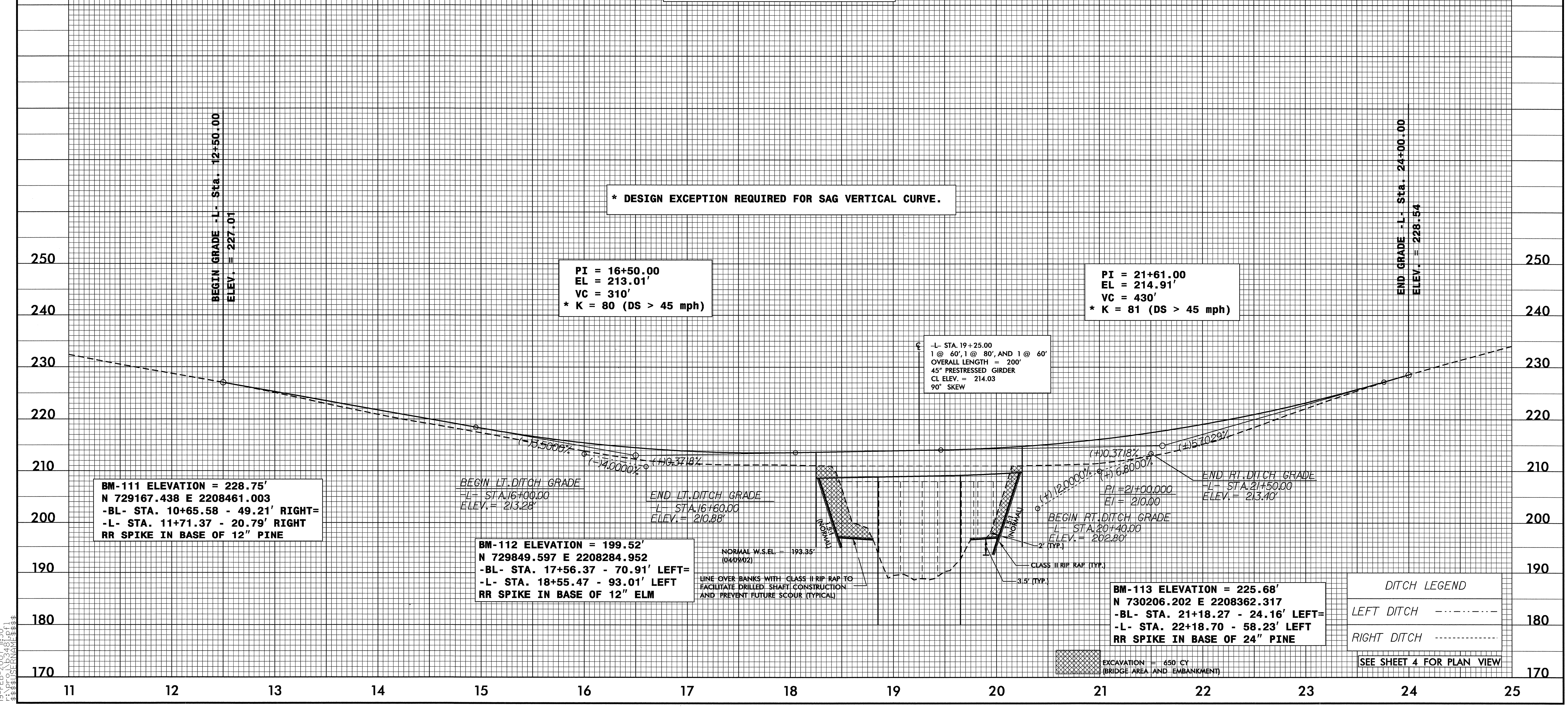
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14571 JAMES A. SPEER — 2/20/2007

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026480 LARRY D. ROBINSON, JR. — 3/6/07

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 9300 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 206.2 FT
BASE DISCHARGE	= 11000 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 207.4 FT
OVERTOPPING DISCHARGE	= 27000CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 213.5 FT
DATE OF SURVEY	= 4/9/02
W.S.ELEVATION AT DATE OF SURVEY	= 193.35FT



* DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE.
BEGIN GRADE -L- Sta. 12+50.00
ELEV. = 227.01
END GRADE -L- Sta. 24+00.00
ELEV. = 228.54
PI = 16+50.00
EL = 213.01'
VC = 310'
* K = 80 (DS > 45 mph)
PI = 21+61.00
EL = 214.91'
VC = 430'
* K = 81 (DS > 45 mph)
-L- STA. 19+25.00
1 @ 60', 1 @ 80', AND 1 @ 60'
OVERALL LENGTH = 200'
45" PRESTRESSED GIRDER
CL ELEV. = 214.03
90° SKEW
(-)3.5000%
(-)4.0000%
(+)0.3718%
(+)0.3718%
(+)12.0000%
(+)6.8000%
(+)5.7029%
BEGIN LT.DITCH GRADE
-L- STA.16+00.00
ELEV.= 213.28'
END LT.DITCH GRADE
-L- STA.16+60.00
ELEV.= 210.88'
PI =21+00.000
El = 210.00
BEGIN RT.DITCH GRADE
-L- STA.20+40.00
ELEV.= 202.80'
END RT.DITCH GRADE
-L- STA.21+50.00
ELEV.= 213.40'
NORMAL W.S.EL. = 193.35' (040902)
LINE OVER BANKS WITH CLASS II RIP RAP TO FACILITATE DRILLED SHAFT CONSTRUCTION AND PREVENT FUTURE SCOUR (TYPICAL)
2' (TYP.)
CLASS II RIP RAP (TYP.)
3.5' (TYP.)
1.5:1 (NORMAL)
BM-111 ELEVATION = 228.75'
N 729167.438 E 2208461.003
-BL- STA. 10+65.58 - 49.21' RIGHT=
-L- STA. 11+71.37 - 20.79' RIGHT
RR SPIKE IN BASE OF 12" PINE
BM-112 ELEVATION = 199.52'
N 729849.597 E 2208284.952
-BL- STA. 17+56.37 - 70.91' LEFT=
-L- STA. 18+55.47 - 93.01' LEFT
RR SPIKE IN BASE OF 12" ELM
BM-113 ELEVATION = 225.68'
N 730206.202 E 2208362.317
-BL- STA. 21+18.27 - 24.16' LEFT=
-L- STA. 22+18.70 - 58.23' LEFT
RR SPIKE IN BASE OF 24" PINE
EXCAVATION = 650 CY (BRIDGE AREA AND EMBANKMENT)
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
SEE SHEET 4 FOR PLAN VIEW
250
240
230
220
210
200
190
180
170
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

5/14/99

19-FEB-2007 11:30 r:\pro\b3481-pfl

RD212399 2/19/2007 b3481pfl dwgardner RD-Oce34