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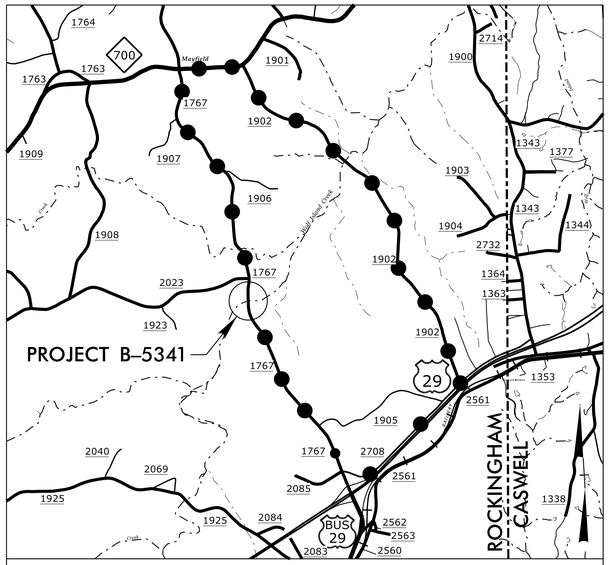
09/08/99

TIP PROJECT: B-5341

CONTRACT: C203664

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



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5341	1	

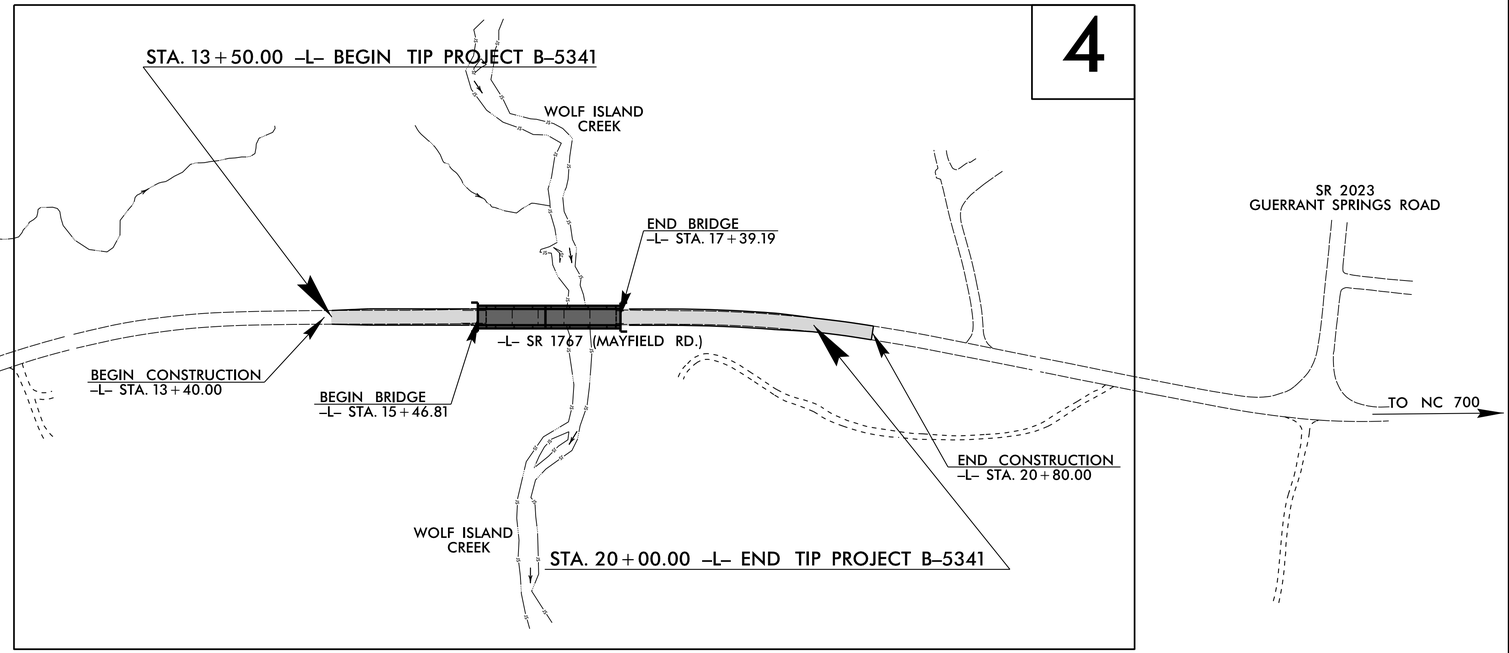
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46055.1.1	BRSTP-1767(5)	P.E.
46055.2.FD1	BRSTP-1767(5)	R/W & UTILITIES
46055.3.FD1	BRSTP-1767(5)	CONST.

LOCATION: BRIDGE NO. 110 OVER WOLF ISLAND CREEK ON SR 1767 (MAYFIELD ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

NAD 83/
NSRS 2007

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2016 = 720
ADT 2040 = 800
K = 12 %
D = 60 %
T = 6 % *
V = 55 MPH
* TTST = 3% DUAL = 3%
FUNC CLASS =
MINOR COLLECTOR
"SUB-REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5341 = 0.087 MI.
LENGTH STRUCTURE TIP PROJECT B-5341 = 0.036 MI.
TOTAL LENGTH OF TIP PROJECT B-5341 = 0.123 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 23, 2015

LETTING DATE: JANUARY 19, 2016

JAMES A. SPEER, PE
PROJECT ENGINEER

DANIEL W. GARDNER, JR, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

10/15/2015
DocuSigned by: Frank F. Fleming
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING

ROADWAY DESIGN ENGINEER

10/15/2015
DocuSigned by: Daniel W. Gardner, Jr.
P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 033871 ENGINEER DANIEL W. GARDNER JR

DEPARTMENT OF TRANSPORTATION · STATE OF NORTH CAROLINA

14-OCT-2015 15:51
R:\Roadway\Proj\B-5341_Rdy_tsh.dgn
$$$$USERNAME$$$$

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033871 ENGINEER DANIEL W. GARDNER, JR.

10/15/2015

DocuSigned by: Daniel W. Gardner, Jr.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

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 II.

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.

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

Duke Energy, Power

AT&T, Telephone

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-17-2012
REV. 10-30-2012

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
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
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
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	
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
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
840.66	Drainage Structure Steps
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
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
B-5341	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

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 Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

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
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- 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 R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- 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 Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

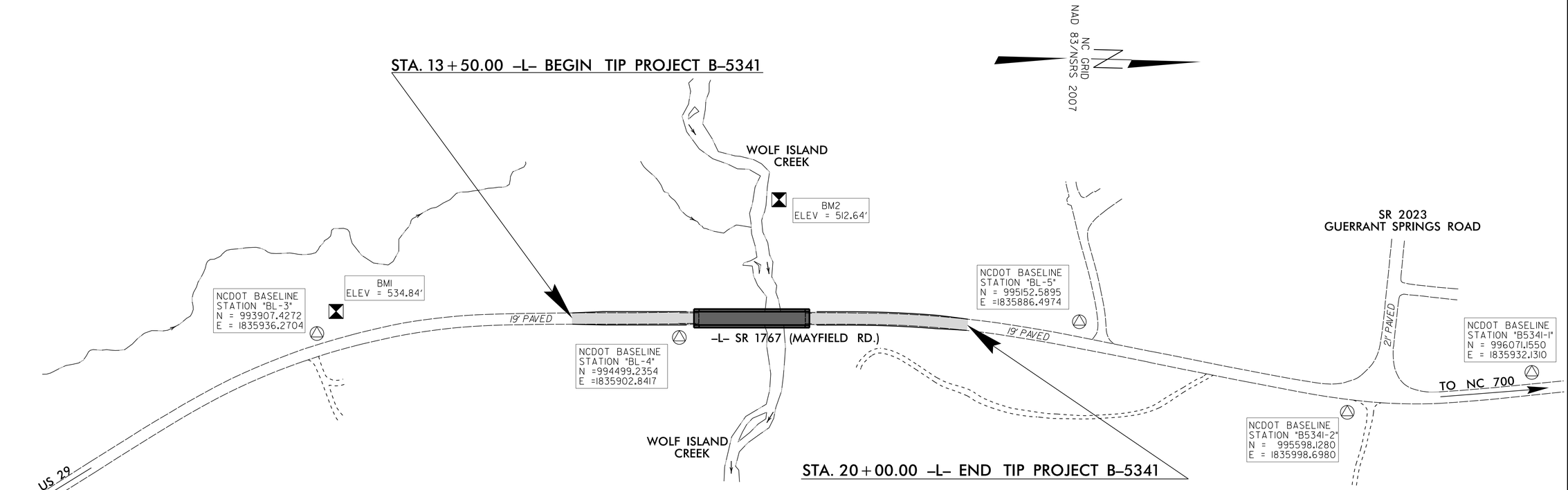
MISCELLANEOUS:

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

12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
B–5341	1C–1
Location and Surveys	

B–5341 SURVEY CONTROL SHEET



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5341-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 995,598.128(ft) EASTING: 1,835,998.698(ft) ELEVATION: 546.46'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999169995 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5341-2" TO -L- STATION 13+50 IS S 4°38'06" W 1,294.79' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	993907.4272	1835936.2704	537.36	OUTSIDE PROJECT LIMITS	
4	BL-4	994499.2354	1835902.8417	516.65	15+41.36	14.01 RT
5	BL-5	995152.5895	1835886.4974	540.13	21+92.72	26.36 LT
2	B5341-2	995598.1280	1835998.6980	546.46	OUTSIDE PROJECT LIMITS	
1	B5341-1	996071.1550	1835932.1310	532.37	OUTSIDE PROJECT LIMITS	

NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX*

THE FILES TO BE FOUND ARE AS FOLLOWS: B5341_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT; IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

BENCHMARK DATA

```
.....................................
BM1       ELEVATION = 534.84
N 993919      E 1835908
BL STATION 5+13.00 28 LEFT
RR SPIKE IN 20" POPLAR
.....................................
.....................................
BM2       ELEVATION = 512.64
N 994636      E 1835706
BL STATION 12+35.00 193 LEFT
RR SPIKE IN 24" POPLAR
.....................................
```

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	993961.2078	1835936.3654
PC	10+34.74	993994.8435	1835927.6936
PCC	12+05.96	994163.7049	1835900.9288
PT	13+82.45	994340.0074	1835893.0924
PC	18+04.91	994762.3130	1835881.7843
PT	21+55.99	995111.9819	1835906.3763
POT	23+01.96	995255.9215	1835930.6694

-L- FINAL NEW PERMANENT DRAINAGE EASEMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+40.00	25.00	994298.4605	1835919.3932
L	13+40.00	45.00	994299.1656	1835939.3808
L	14+00.00	63.00	994359.2387	1835955.6000
L	14+00.00	25.00	994358.2215	1835917.6136
L	20+35.00	-30.00	994995.1023	1835860.3931
L	20+50.00	-64.00	995013.9542	1835828.1841
L	20+80.00	-54.00	995043.5537	1835841.7294
L	20+75.00	-30.00	995035.5124	1835864.9137
L	20+20.00	30.00	994974.4081	1835918.6742
L	20+16.00	41.00	994969.5036	1835929.2725
L	20+35.00	48.00	994987.2879	1835938.0007
L	20+42.00	30.00	994995.9392	1835920.7942
L	15+00.00	-25.00	994456.8473	1835864.9548
L	15+00.00	-47.00	994456.2584	1835842.9627
L	15+70.00	-47.00	994526.2334	1835841.0890
L	15+70.00	-25.00	994526.8222	1835863.0811
L	17+05.00	-30.00	994661.6400	1835854.4693
L	17+05.00	-47.00	994661.1850	1835837.4754
L	17+70.00	-47.00	994726.1617	1835835.7355
L	17+70.00	-30.00	994726.6167	1835852.7294
L	15+25.00	25.00	994483.1767	1835914.2677
L	15+25.00	45.00	994483.7121	1835934.2606
L	15+65.00	45.00	994523.6978	1835933.1899
L	15+65.00	25.00	994523.1624	1835913.1970
L	17+05.00	30.00	994663.2461	1835914.4478
L	17+05.00	52.00	994663.8350	1835936.4399
L	17+60.00	52.00	994718.8153	1835934.9677
L	17+60.00	30.00	994718.2264	1835912.9756

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
B-5341	2A-1

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033871 — DANIEL W. GARDNER, JR. — Daniel W. Gardner, Jr.

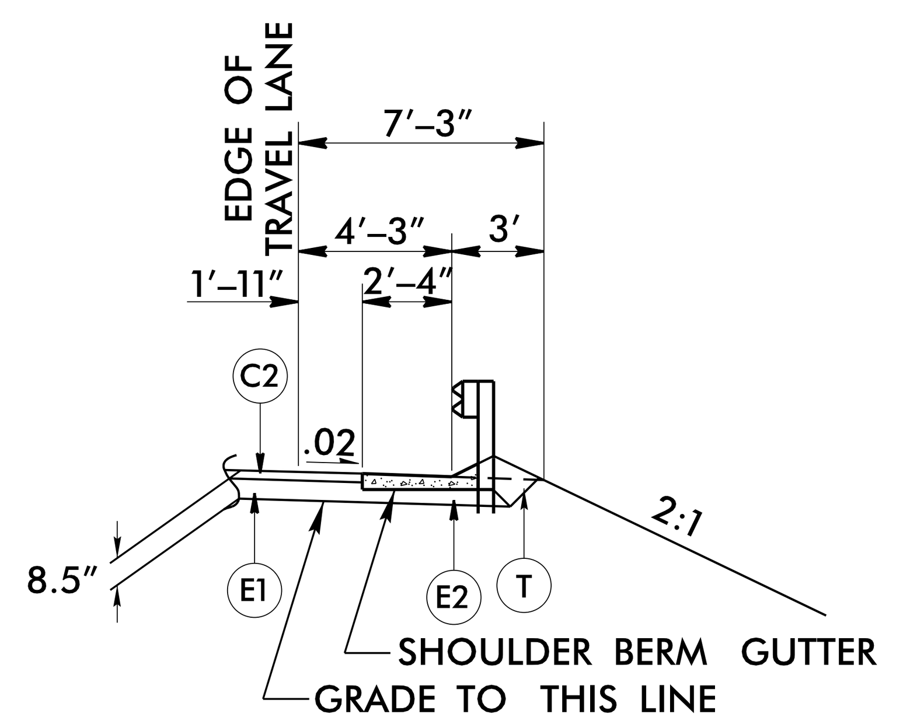
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 — CLARK S. MORRISON — Clark S Morrison

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

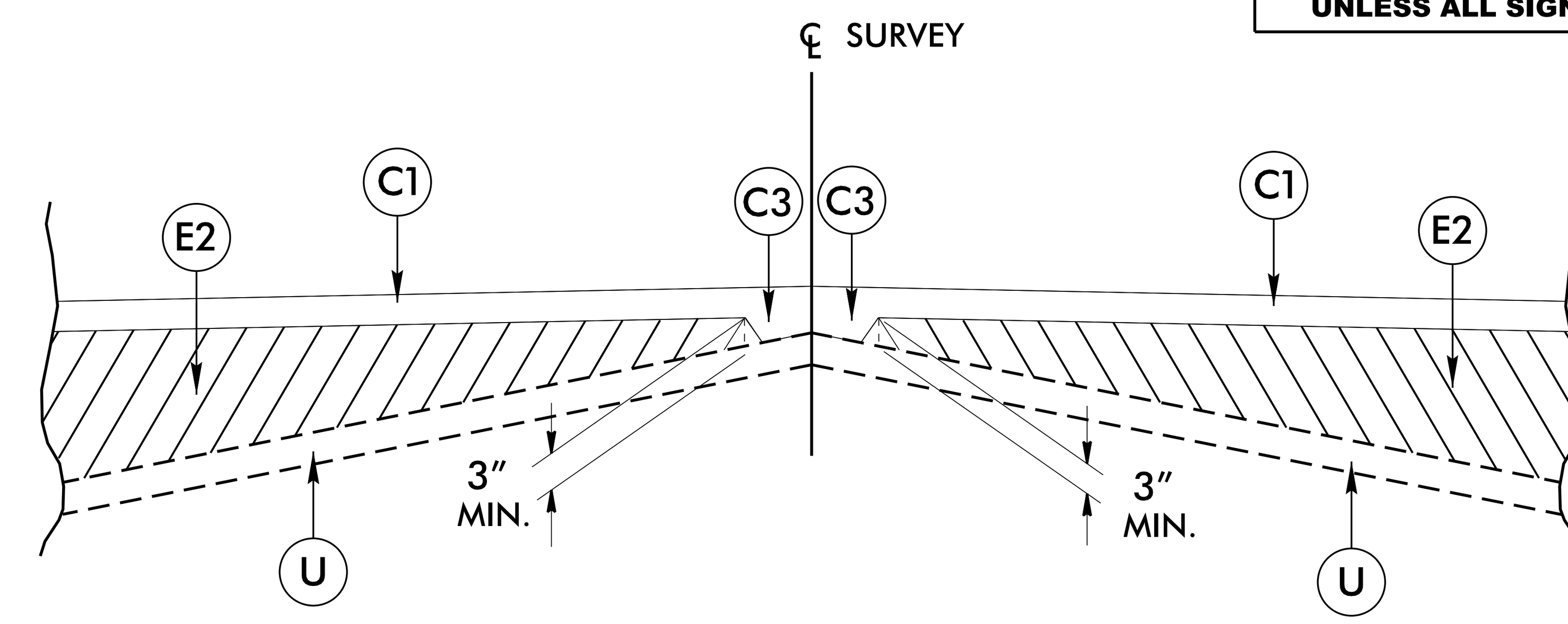
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
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" OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL
W	VAR. DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).
U	EXISTING PAVEMENT.

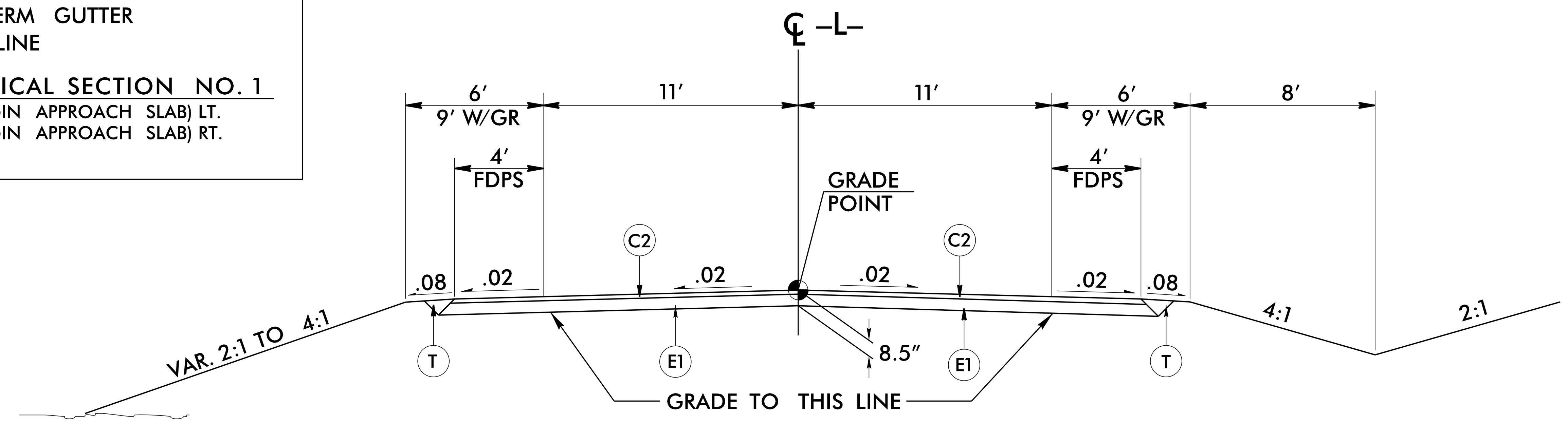
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1
-L- STA 15+10.00 TO STA 15+35.81 (BEGIN APPROACH SLAB) LT.
-L- STA 15+10.00 TO STA 15+35.81 (BEGIN APPROACH SLAB) RT.



Detail Showing Method of Wedging

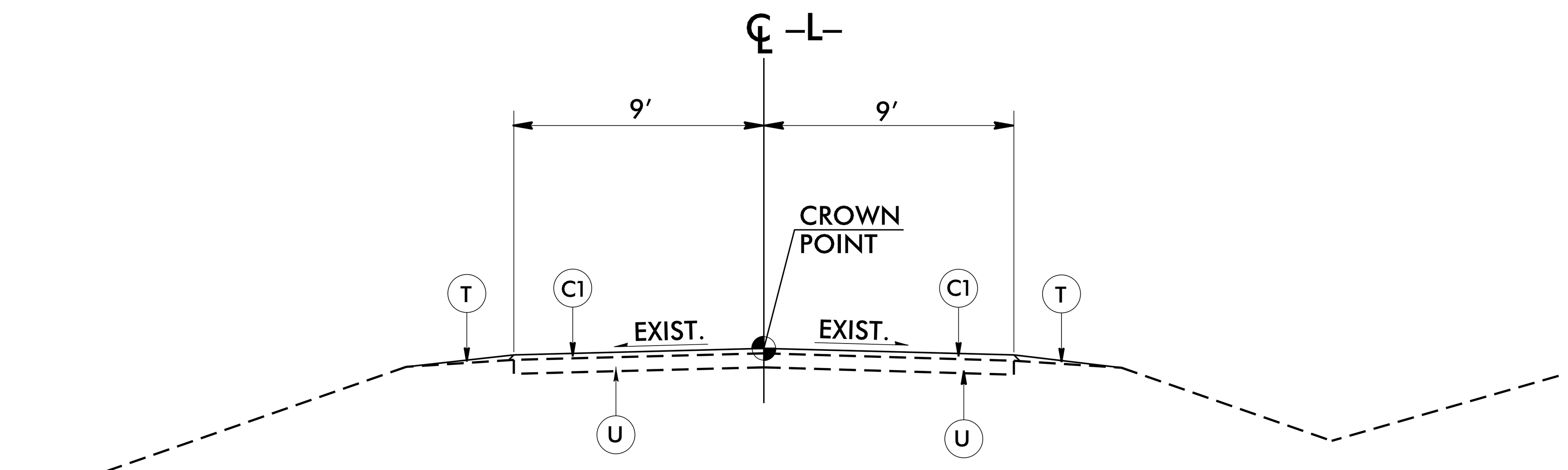


TYPICAL SECTION NO. 1

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA 13+50.00 TO STA 14+00.00

USE TYPICAL SECTION NO. 1 AS FOLLOWS
-L- STA 14+00.00 TO STA 15+46.81 (BEGIN BRIDGE)
-L- STA 17+39.19 (END BRIDGE) TO STA 19+50.00

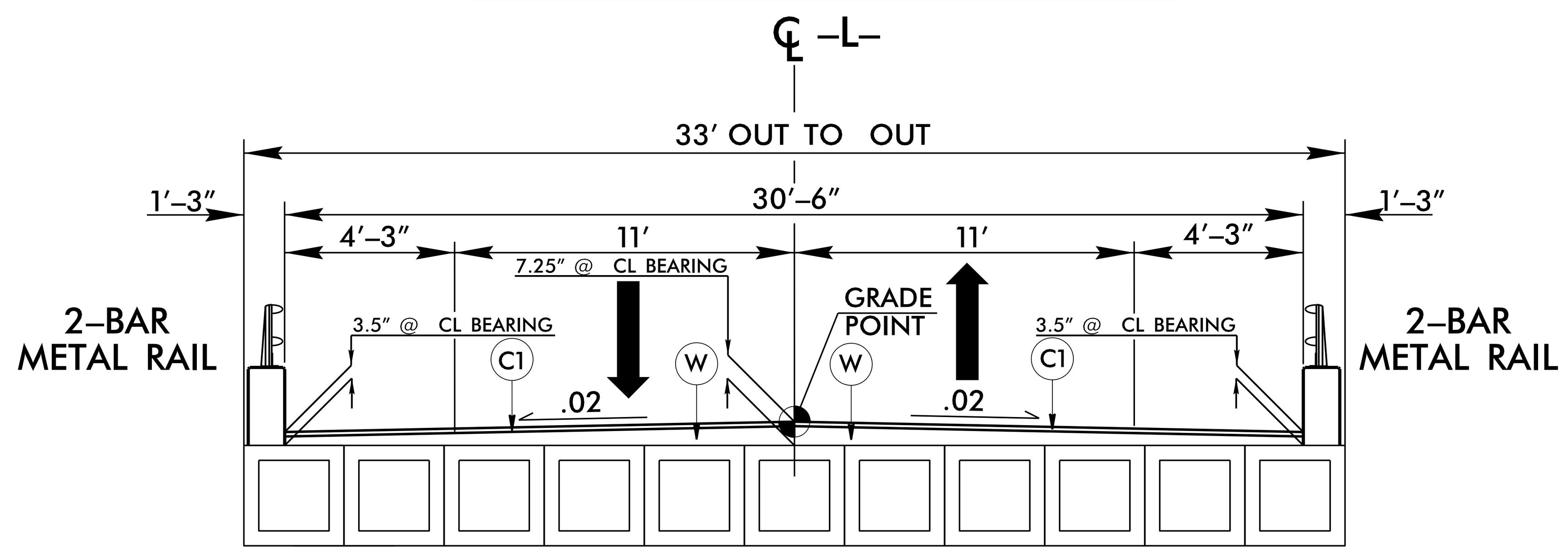
NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO TYPICAL SECTION NO. 2
-L- STA 19+50.00 TO STA. 20+00.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS
-L- STA 20+00.00 TO STA 20+80.00

NOTE: MILL PAVEMENT FOR TIE-IN.



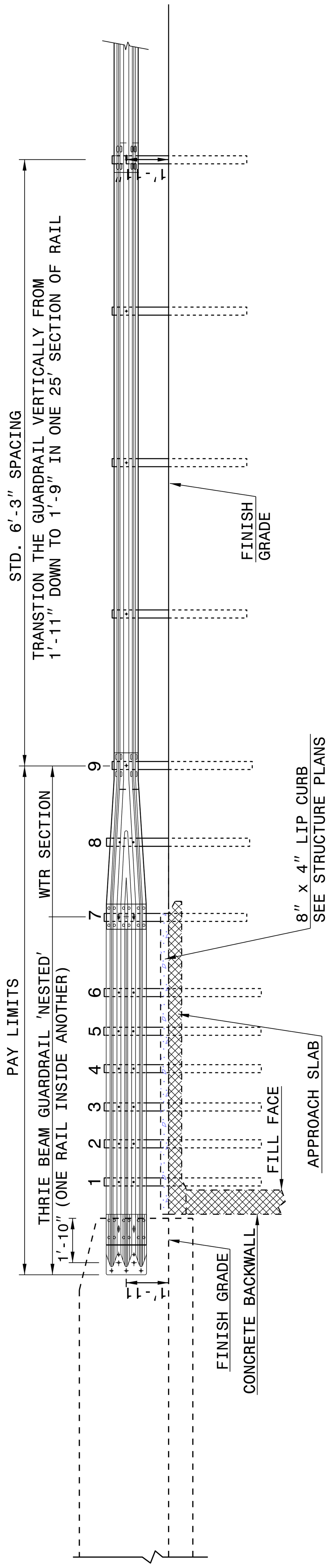
DETAIL FOR WEARING SURFACE ON BOX BEAM BRIDGE

TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS
-L- STA. 15+46.81 (BEGIN BRIDGE) TO STA. 17+39.19 (END BRIDGE)

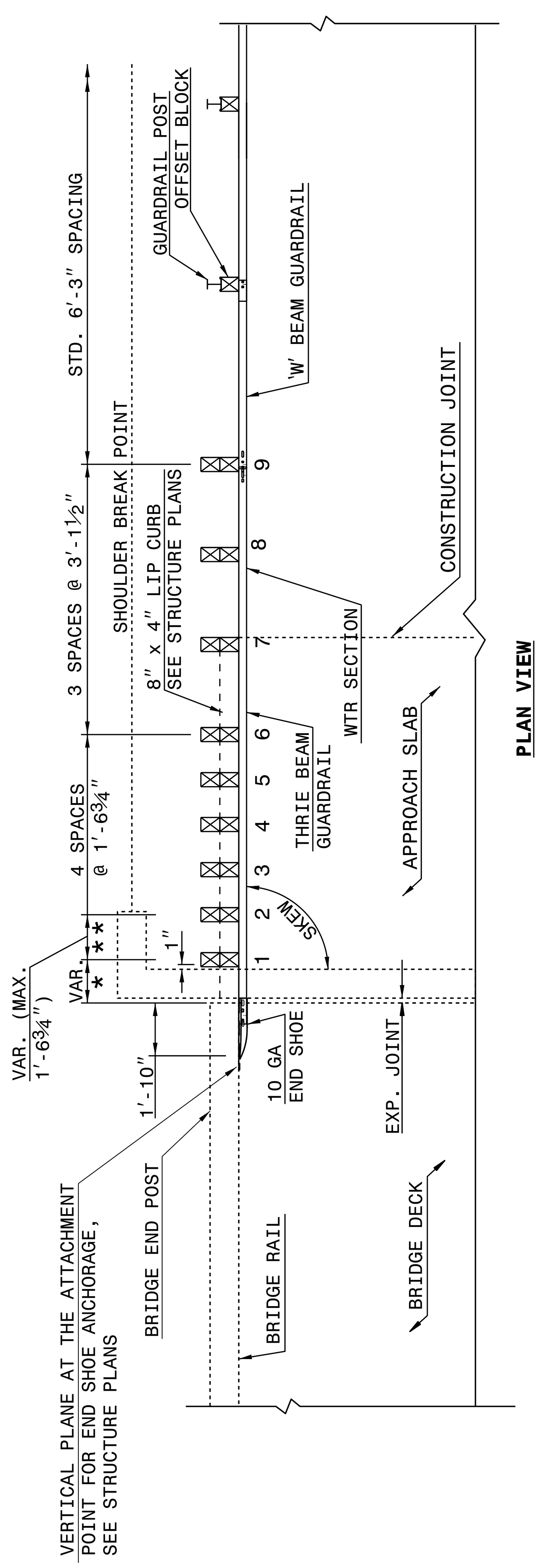
SR 1767 IS IDENTIFIED AS A BIKE ROUTE IN THE PIEDMONT TRIAD REGIONAL BIKE STUDY (2005).

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER — SHEET 2 OF 7 862d03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.

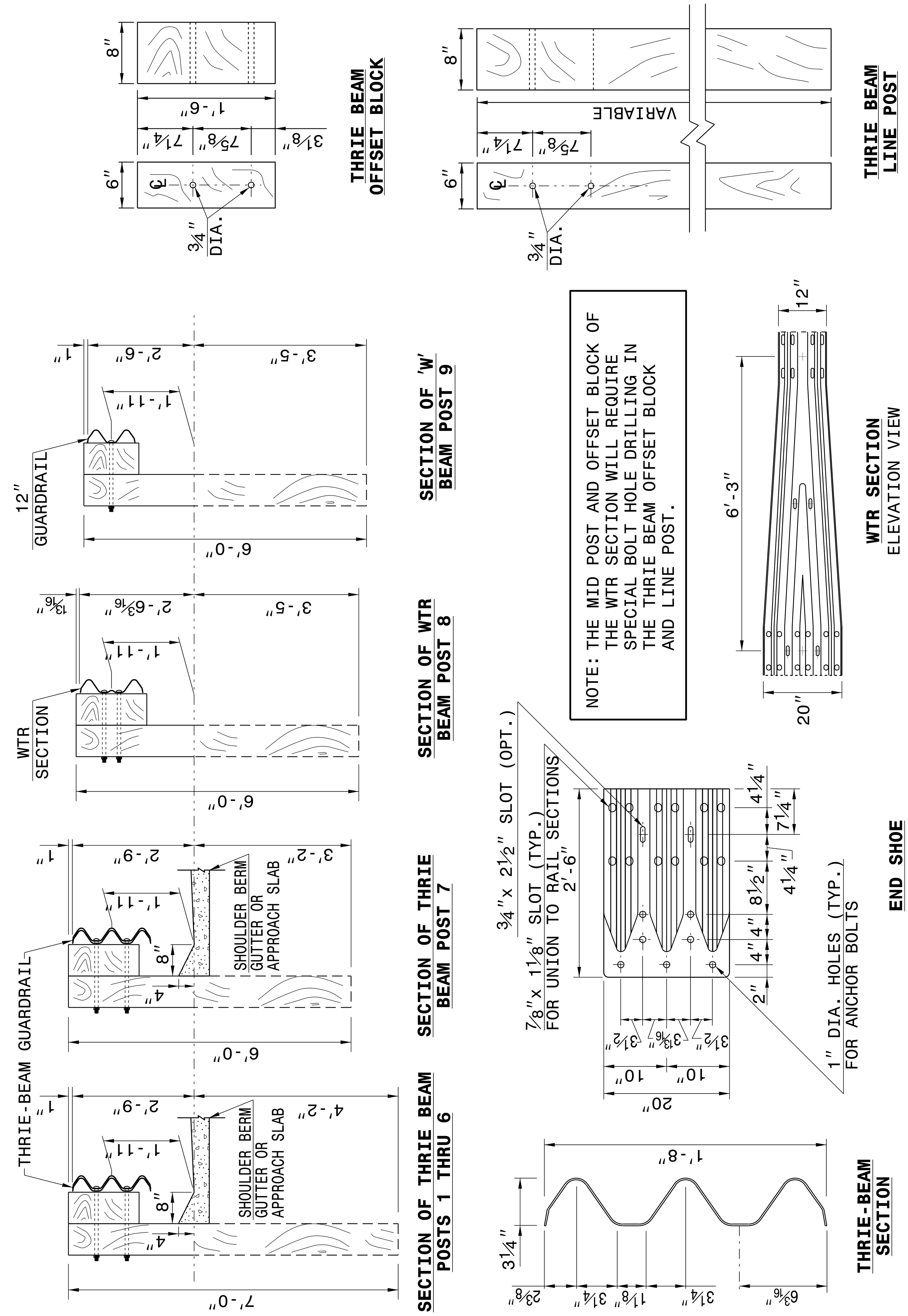


PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 **862d03**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III — SHEET 3 OF 7 862d03



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III	SHEET 3 OF 7 **862d03**

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

10/15/2015

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

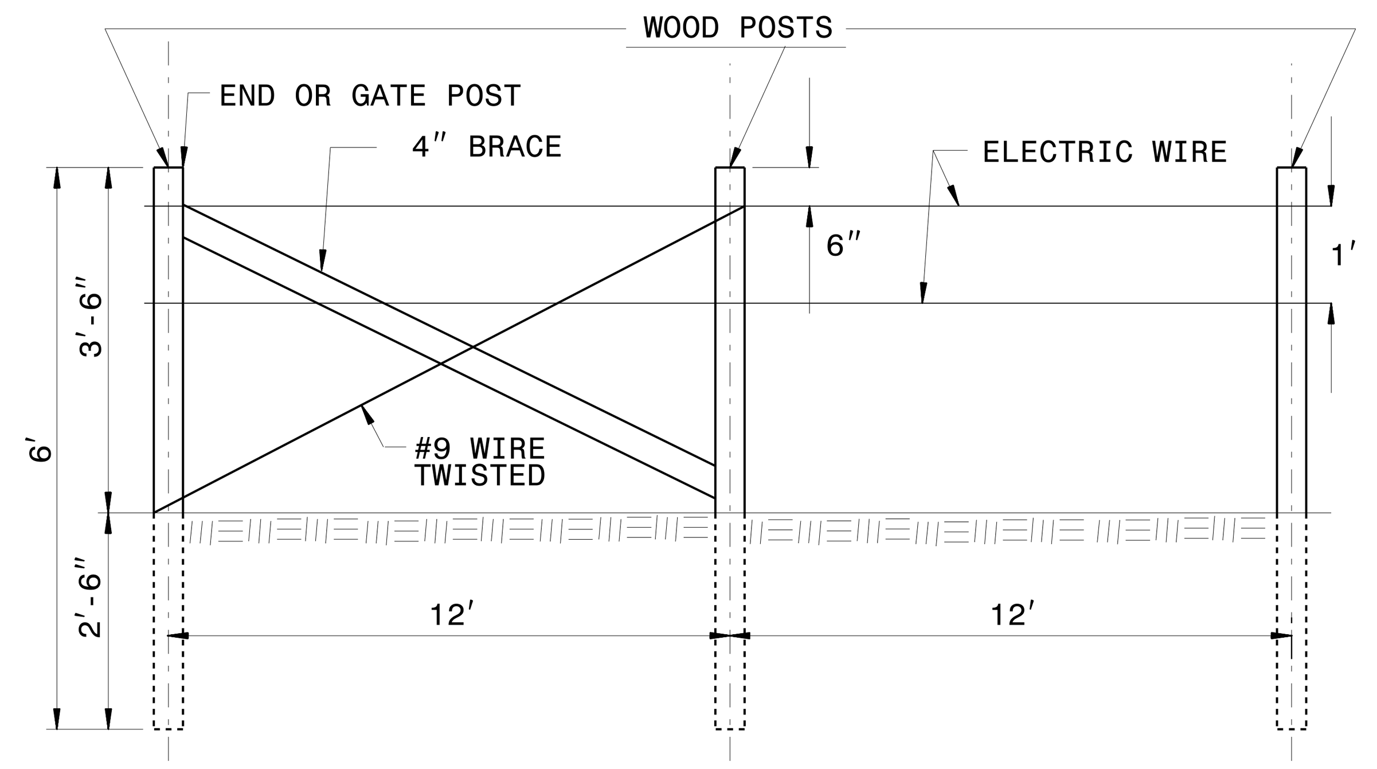
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

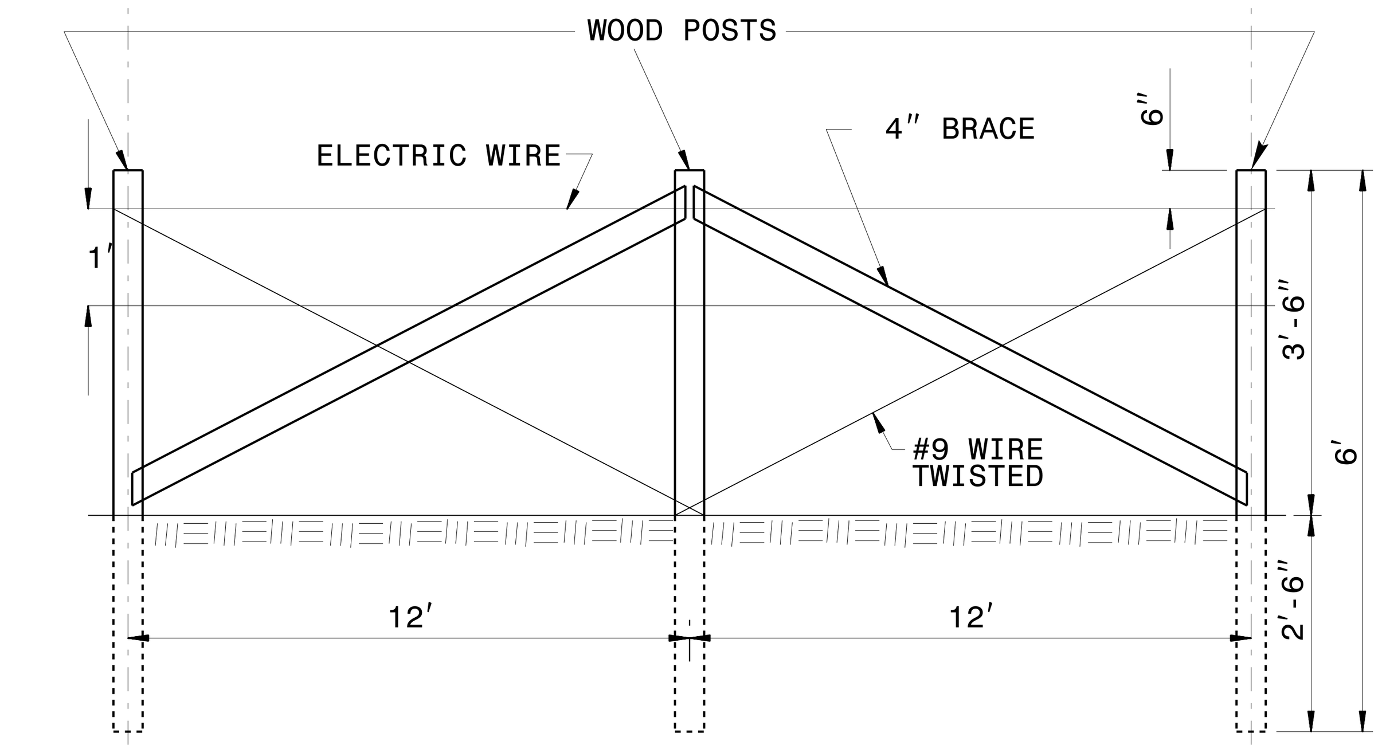
SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJ. REFERENCE NO.	SHEET NO.
B-5341	2C-2



ONE STRAND ELECTRIC BARBED WIRE FENCE END OR GATE LOCATION



LINE BRACES

NOTES :

ELECTRIC WIRE, GATES, LATCH DEVICES, HINGES, AND INSULATORS SHALL BE OF A TYPE AND INSTALLED AS APPROVED BY THE ENGINEER.

CLASS B CONCRETE ANCHOR TO BE USED AT GATE POSTS OR WHERE REQUIRED BY SOIL CONDITIONS. CONCRETE ANCHOR MAY ALO BE USED IN LIEU OF SETTING POSTS TO THEIR REQUIRED DEPTH.

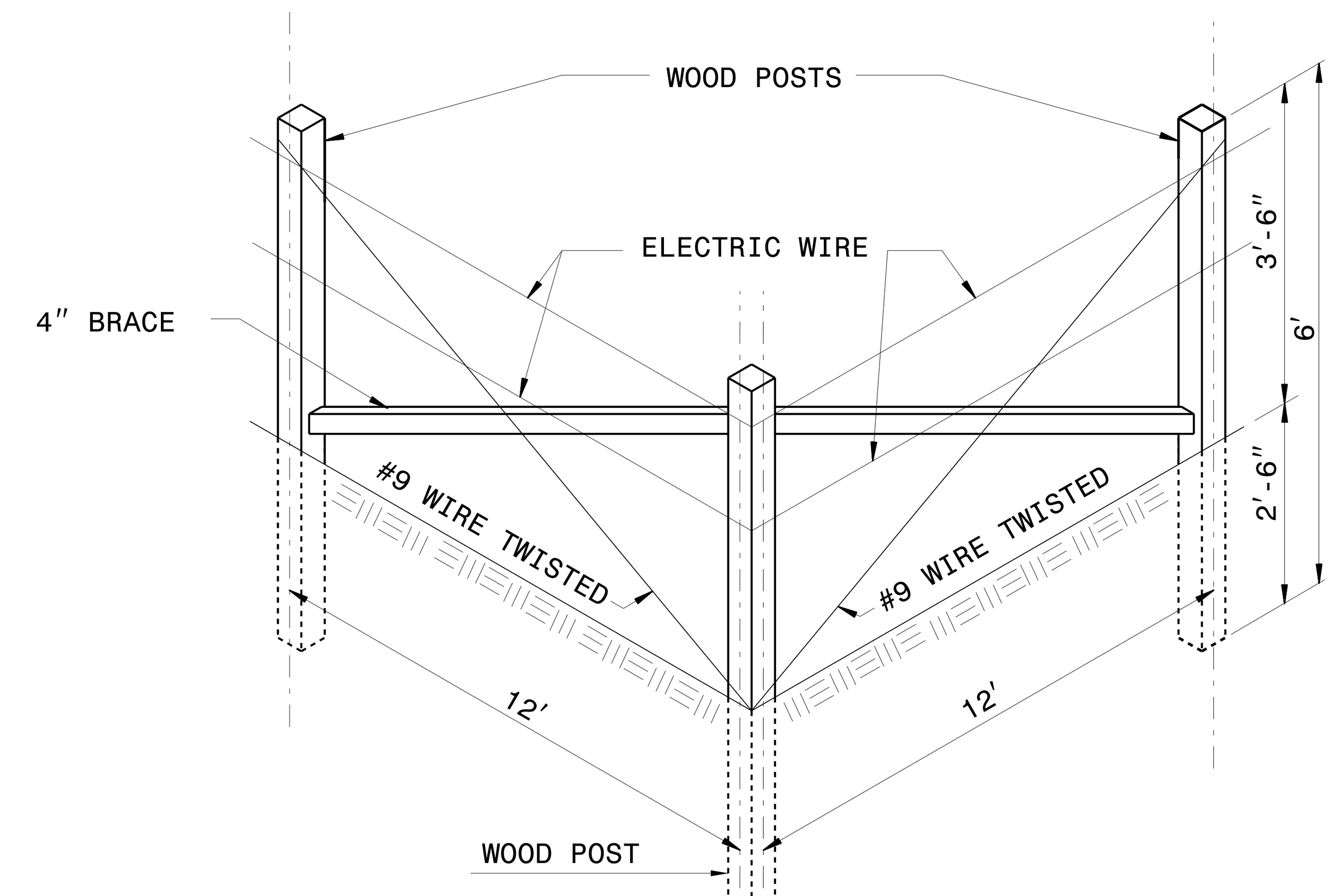
THE FENCE SHALL BE INSTALLED FACING THE PROPERTY OWNER EXCEPT ON HORIZONTAL CURVES GREATER THAN 3 DEGREES WHERE THE FENCE SHALL BE INSTALLED AS TO PULL AGAINST ALL POSTS.

MAXIMUM SPACING OF LINE BRACES IS 6″.

ALL POSTS AND BRACES MAY BE EITHER ROUND OR SQUARE AT THE OPTION OF THE CONTRACTOR, PROVIDED THAT THE SAME TYPE IS USED THROUGHOUT THE PROJECT FOR BOTH POSTS AND BRACES. DIMENSIONS SHOW THE DIAMETER OF ROUND POSTS OR EDGE DIMENSIONS OF SQUARE POSTS.

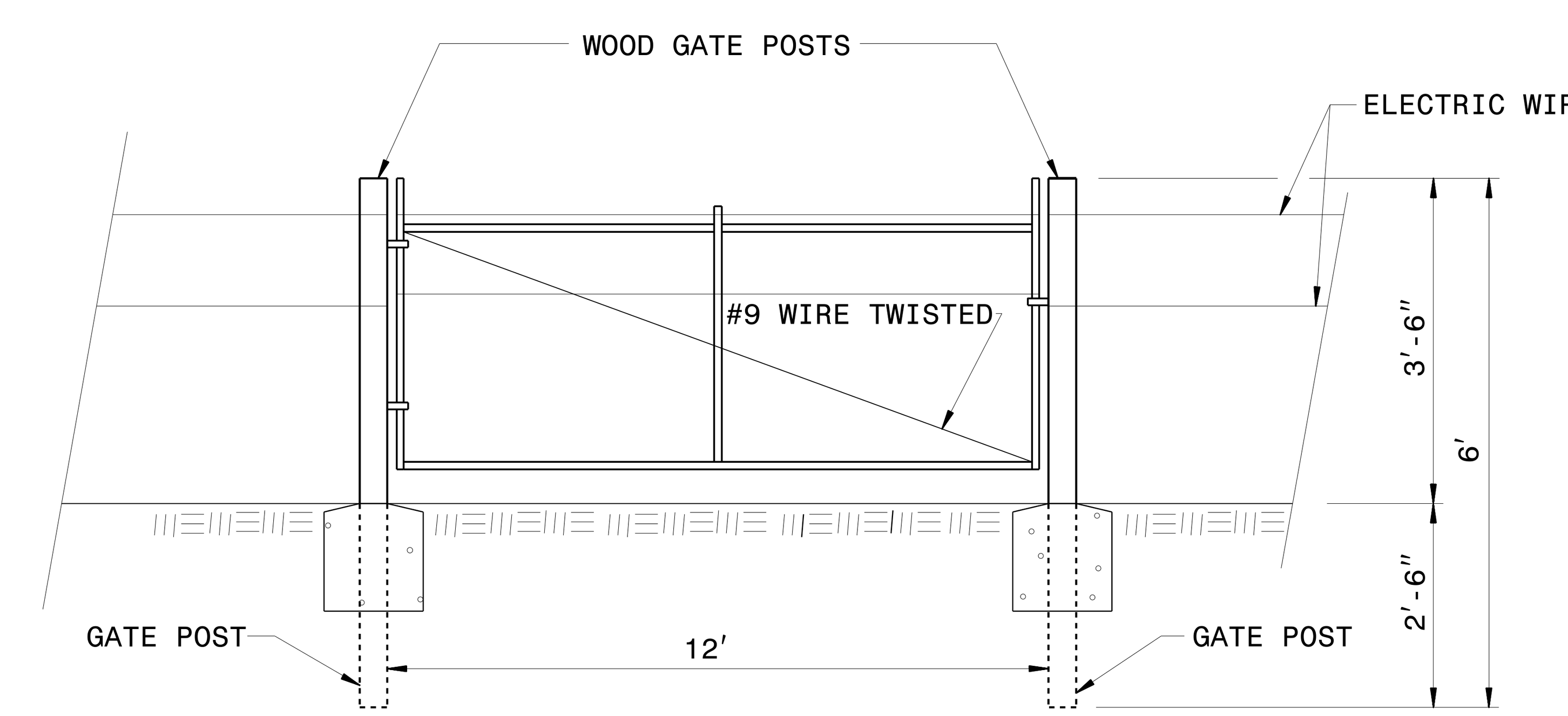
THE BRACE WIRE IS TO BE PLACED AROUND POSTS WITH ONE WIRE ON EACH SIDE OF THE BRACE. ALL BRACE WIRES TO BE TIGHTENED BY TWISTING BETWEEN BRACE AND EACH POST.

POSTS TO BE NOTCHED 1″ FOR BRACES AND ATTACHED TO BRACES USING TWO GALVANIZED 12D NAILS AT EACH END OR AS DIRECTED BY THE ENGINEER.

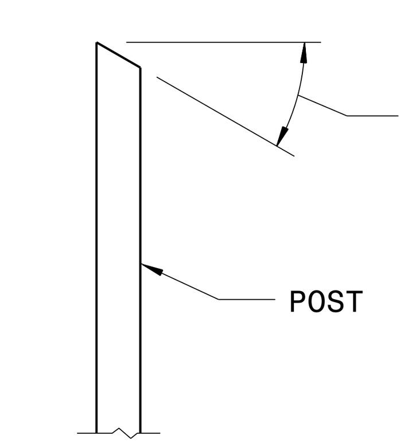


FENCE CORNER

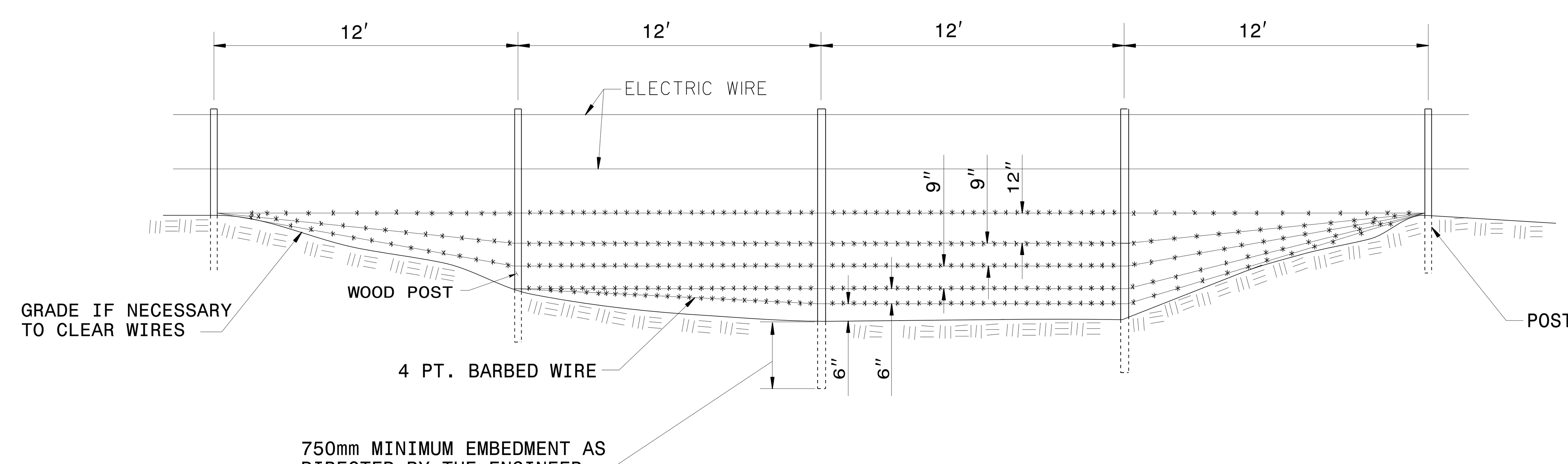
TO BE USED WHEN CORNER ANGLE IS 15° OR GREATER



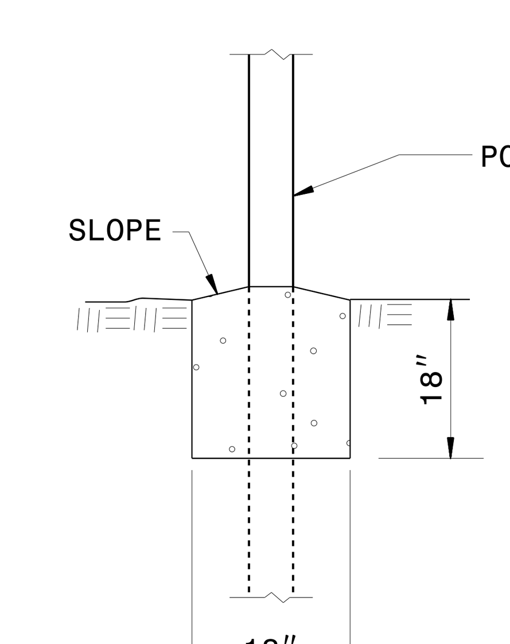
GATE



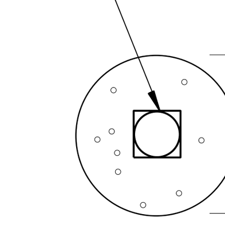
DETAIL SHOWING METHOD OF CUTTING POST TOPS



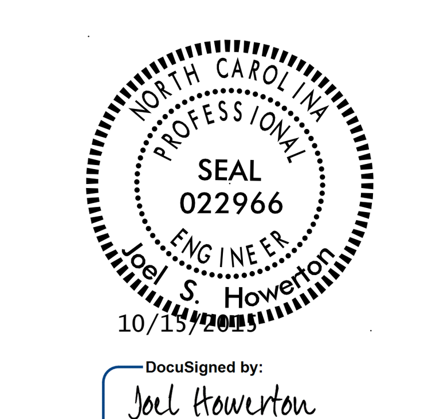
DETAIL OF DITCH CROSSING



DETAIL OF POST ANCHOR



SECTION PLAN



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STANDARDS AND SPECIAL DESIGN
Office 919-707-6950 FAX 919-250-4119

TEMPORARY 2 STRAND ELECTRIC WIRE FENCE

ORIGINAL BY: ______ DATE: ______
MODIFIED BY: rnbritt DATE: 10-14-04
CHECKED BY: ______ DATE: ______
FILE SPEC.: details/nbritt/metric/misc/electricfence.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
SUMMARY NO. 1					
–L– 13+50.00	–L– 15+46.81	48	990	942	
TOTAL SUMMARY NO. 1		48	990	942	
SUMMARY NO. 2					
–L– 17+39.19	–L– 20+00.00	101	1277	1176	
TOTAL SUMMARY NO. 2		101	1277	1176	
SUMMARY TOTALS		149	2267	2118	
PROJECT TOTALS		149	2267	2118	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				106	
GRAND TOTALS		149		2224	
SAY		200		2300	
DDE = 18 CY					
UNDERCUT EXCAVATION = 200 CY					
SELECT GRANULAR MATERIAL = 300 CY					

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.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

"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 SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GRAU 350	ANCHORS TYPE III	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	14+71.81	15+46.81	LT.	75				15+46.81	4.25	9		56.25		1.125	1	1							
–L–	14+71.81	15+46.81	RT.	75			15+46.81		4.25	9	56.25		1.125		1	1							
–L–	17+39.19	18+14.19	LT.	75			17+39.19		4.25	9	56.25		1.125		1	1							
–L–	17+39.19	19+76.69	RT.	237.5				19+50.00	6.00	9		87.50		1.75	1	1							
			SUB-TOTAL	462.5											4	4							
LESS DEDUCTIONS FOR ANCHORS GRAU-350 4 @ 50 =				-200																			
TYPE III 4 @ 18.75 =				-75																			
			PROJECT TOTAL	187.5											4	4							
			SAY	200.0																			
ADDITIONAL GUARDRAIL POSTS = 5 EA.																							

SUMMARY OF ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	13+50.00	15+58.09	LT/RT	437.08
–L–	17+33.35	20+00.00	LT/RT	550.34
			TOTAL:	987.43
			SAY:	990

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	LOC.	STATION	STATION	LENGTH
–L–	LT.	15+10.00	15+35.81	25.81
–L–	RT.	15+10.00	15+35.81	25.81
			TOTAL:	51.62
			SAY:	55.00

RD278051

COMPUTED BY:	DWG	DATE:	8-4-14
CHECKED BY:	JBG	DATE:	06-15-15

PROJECT NO.	SHEET NO.
B-5341	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

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

Columns: LINE & STATION / SIZE / THICKNESS OR GAUGE; OFFSET; STRUCTURE NUMBER (FROM, TO); TOP ELEVATION (FT.); INVERT ELEVATION (FT.); INVERT ELEVATION (FT.); MINIMUM REQUIRED SLOPE (%); Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)

LINE & STATION	OFFSET		FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
L 15+14	15	LT	0401		518.2																
			0401	Out		515.3	509.3			24							X				
L 15+14	15	RT	0402		518.2																
			0402	0401		515.4	515.3	0.5													
L 20+53	25	LT	0403			524.5	521.5														
								SHEET TOTALS		24											
								PROJECT TOTALS		24											

C. S. PIPE (SE: SHOP ELONGATED) and R. C. PIPE CLASS III

STRUCTURE FROM	TO	C.S. 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)	R.C. III 12	15	18	24	30	36	42	48
0401																	
0401	Out																
0402																	
0402	0401																
0403																60	
SHEET TOTALS																60	
PROJECT TOTALS																60	

R. C. PIPE CLASS IV and R. C. PIPE CLASS V

STRUCTURE FROM	TO	R.C. IV 12	15	18	24	30	36	42	48	R.C. V 12	15	18	24	30	36	42	48
0401																	
0401	Out																
0402																	
0402	0401		28														
0403																	
SHEET TOTALS			28														
PROJECT TOTALS			28														

QUANTITIES FOR DRAINAGE STRUCTURES — NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

STRUCTURE FROM	TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.D.I. STD. 840.35	15" DRAINAGE PIPE ELBOWS EACH	PIPE REMOVAL LIN. FT.	REMARKS
0401								1										1	1			
0401	Out																			2		
0402								1										1	1			
0402	0401																					
0403					4.500																	
SHEET TOTALS					4.500			2										2	2	2.000		
PROJECT TOTALS					4.500			2										2	2	2.000		

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: DWG	DATE: 05/27/14
CHECKED BY: JBG	DATE: 06/11/15

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5341	3G-1

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	STATION	STATION	AGGREGATE TYPE ASU/AST	AGGREGATE THICKNESS INCHES	SHALLOW UNDERCUT CY	CLASS IV SUBGRADE STABILIZATION TONS	GEOTEXTILE FOR SOIL STABILIZATION SY	STABILIZER AGGREGATE TONS	CLASS IV AGGREGATE STABILIZATION TONS
	CONTINGENCY (GEOTECH)		ASU		200	400	400		
				TOTAL CY/TONS/SY:	200 CY	400 TONS	*400 SY		

ASU= AGGREGATE SUBGRADE, AST = AGGREGATE STABILIZATION
*TOTAL SQUARE YARDS OF GEOTEXTILE FOR SOIL STABILIZATION IS ONLY THE ESTIMATED QUANTITY FOR ASU/AST AND MAY ONLY REPRESENT A PORTION OF THE GEOTEXTILE QUANTITY SHOWN IN THE ITEM SHEETS OF THE PROPOSAL.


PROJECT REFERENCE NO. B-5341
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033871 ENGINEER DANIEL W. GARDNER, JR.
NORTH CAROLINA PROFESSIONAL SEAL 20147 ENGINEER FRANK F. FLEMING
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/NSRS 2007
-L-
PI Sta 11+20.61
Δ = 10° 54' 02.5" (RT)
D = 6° 21' 58.3"
L = 171.23'
T = 85.87'
R = 900.00'
PI Sta 12+94.22
Δ = 2° 01' 20.6" (RT)
D = 1° 08' 45.3"
L = 176.49'
T = 88.25'
R = 5,000.00'
SE = SEE PLANS
PI Sta 19+81.00
Δ = 11° 06' 48.9" (RT)
D = 3° 09' 55.8"
L = 351.08'
T = 176.09'
R = 1,810.00'
SE = SEE PLANS
BEGIN APPR. SLAB -L- STA 15+35.81
END BRIDGE -L- STA 17+39.19
-L- PC Sta. 18+04.91
2-BAR METAL RAIL
TYPE III
4' PS
8:1
SBG
N 1° 32' 01.8" W
30'-6"
BEGIN BRIDGE -L- STA 15+46.81
END APPR. SLAB -L- STA 17+50.19
(NTS)
PS - "PAVED SHOULDER"
SBG - SHOULDER BERM GUTTER
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
-L- POT Sta. 10+00.00
-L- PC Sta. 10+34.74
-L- PCC Sta. 12+05.96
-L- PT Sta. 13+82.45
-L- PC Sta. 18+04.91
-L- PT Sta. 21+85.99
-L- POT Sta. 23+01.96
-BL-3
-BL-4
-BL-5
BM 1 ELEV=534.84' SEE SHEET 1-C
BM 2 ELEV=512.64' SEE SHEET 1-C
DIBRELL CHILDREN'S FARM I, LLC DB 1389 PG 930
LND FARM I, LLC DB 1388 PG 2295
DANNY R. FRENCH DB 755 PG 717
TOMMY LEWIS STRADER DB 953 PG 1404
TAMMY R. FRENCH DB 1330 PG 1029
N 14° 21' 24.8" W
N 9° 34' 47.0" E
MAYFIELD RD. SR 1767
18' BST
WOODS
REMOVE EXISTING STRUCTURE
CLASS B RIP RAP EST 1 TON EST 5 SY GEOTEXTILE
CLASS II RIP RAP (STR. PAY ITEM)
15" W/ ELBOWS
50' TAPER LT & RT
20' INC TYP.
GRAU 350
PDE
BEGIN CONSTRUCTION -L- STA. 13+40.00
-L- STA. 13+50.00 BEGIN STATE PROJECT B-5341
STANDARD V DITCH W/CLASS B RIP RAP SLOPE = +/- 6.0% EST DDE = 7 CY EST 22 TONS EST 65 SY GEOTEXTILE SEE DETAIL 1
CLASS II RIP RAP BANK STABILIZATION EST 120 TONS EST 160 SY GEOTEXTILE SEE DETAIL 5 (STR. PAY ITEM)
CLASS II RIP RAP (STR. PAY ITEM)
DO NOT DISTURB ELECTRIC FENCE
SPECIAL CUT DITCH SEE DETAIL 2
STANDARD 3.0' BASE DITCH W/CLASS II RIP RAP SLOPE = +/- 12.0% EST DDE = 10 CY EST 60 TONS EST 80 SY GEOTEXTILE SEE DETAIL 3
STANDARD V DITCH W/PSRM EST 9 SY SEE DETAIL 4
CLASS I RIP RAP EST 20 TONS EST 39 SY GEOTEXTILE
END CONSTRUCTION -L- STA. 20+80.00
-L- STA. 20+00.00 END STATE PROJECT B-5341
PROPERTY LINE FOLLOWS CENTERLINE OF CREEK
EXACAVATE EXISTING ROAD FILL TO NATURAL GROUND = 180 CY (STRUCTURE PAY ITEM)
NOTE: SBG - SHOULDER BERM GUTTER -L- STA. 15+10.00 TO BEGIN APPROACH SLAB LT. & RT.
DETAIL 1 STANDARD 'V' DITCH (Not to Scale) Min. D=1.0 Ft. Max. d=1.0 Ft. Type of Liner= CLASS B RIP RAP FROM STA. 13+50 L TO STA. 13+93 L RT
DETAIL 2 SPECIAL CUT DITCH (Not to Scale) Min. D=1.0 Ft. FROM STA. 19+00 L TO STA. 20+00 L LT
DETAIL 3 STANDARD BASE DITCH (Not to Scale) Min. D= 2.0 Ft. Max. d= 2.0 Ft. B= 3.0 Ft. Type of Liner= CLASS II RIP RAP STA. 20+53 L LT
DETAIL 4 STANDARD 'V' DITCH (Not to Scale) Min. D= 1.0 Ft. Max. d= 1.0 Ft. Type of Liner= PSRM FROM STA. 20+55 TO STA. 20+66 L LT DDE = 1 CY
DETAIL 5 BANK STABILIZATION (Not to Scale) Type of Liner= CLASS II RIP RAP FROM STA. 16+38 TO STA. 16+65 L CL
SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-23 FOR STRUCTURE PLANS
REVISIONS
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5341	5

ROADWAY DESIGN ENGINEER — SEAL 033871 — Daniel W. Gardner, Jr.

HYDRAULICS ENGINEER — SEAL 20147 — Frank F. Fleming

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	5300	CFS
DESIGN FREQUENCY	=	25	YR
DESIGN HW ELEVATION	=	511.3	FT
BASE DISCHARGE	=	7814	CFS
BASE FREQUENCY	=	100	YR
BASE HW ELEVATION	=	512.76	FT
OVERTOPPING DISCHARGE	=	9600+	CFS
OVERTOPPING FREQUENCY	=	500+	YR
OVERTOPPING ELEVATION	=	518.5	FT
	=		FT
DATE OF SURVEY	=	12/05/2013	
W.S.ELEVATION AT DATE OF SURVEY	=	498.8	FT

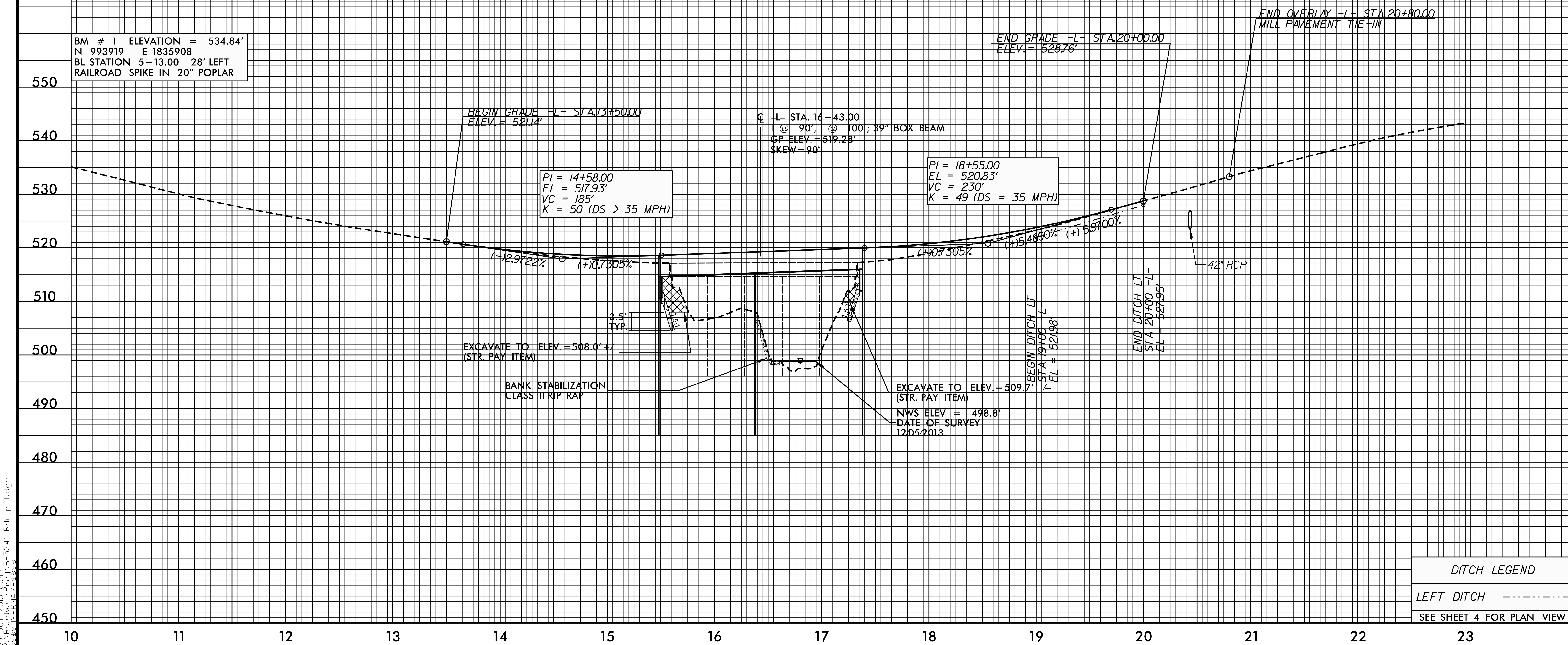
PIPE HYDRAULIC DATA

42" RCP-III Sta. 20+44 L

DRAINAGE AREA	=	8.8	AC
DESIGN FREQUENCY	=	25	YR
DESIGN DISCHARGE	=	22.0	CFS
DESIGN HW ELEVATION	=	527.0	FT
100 YEAR DISCHARGE	=	24.0	CFS
100 YEAR HW ELEVATION	=	527.1	FT
OVERTOPPING FREQUENCY	=	500+	YR
OVERTOPPING DISCHARGE	=	27.0	CFS
OVERTOPPING ELEVATION	=	529.0	FT

BM # 2 ELEVATION = 512.64'
N 994636 E 1835706
BL STATION 12+35.00 193' LEFT
RAILROAD SPIKE IN 24" POPLAR

BM # 1 ELEVATION = 534.84'
N 993919 E 1835908
BL STATION 5+13.00 28' LEFT
RAILROAD SPIKE IN 20" POPLAR



DITCH LEGEND

LEFT DITCH - · · - · · -

SEE SHEET 4 FOR PLAN VIEW