This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

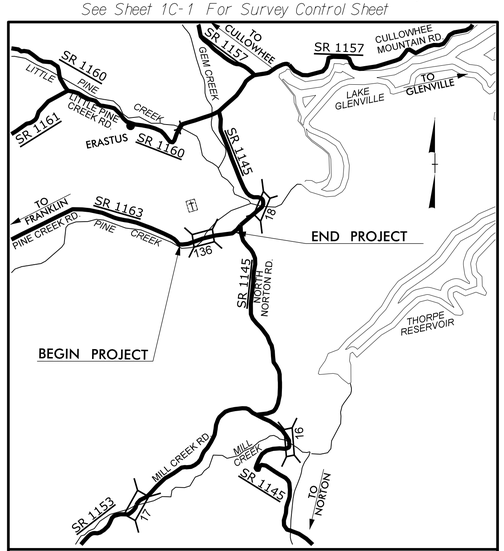
The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: B–5404

CONTRACT: C203671

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

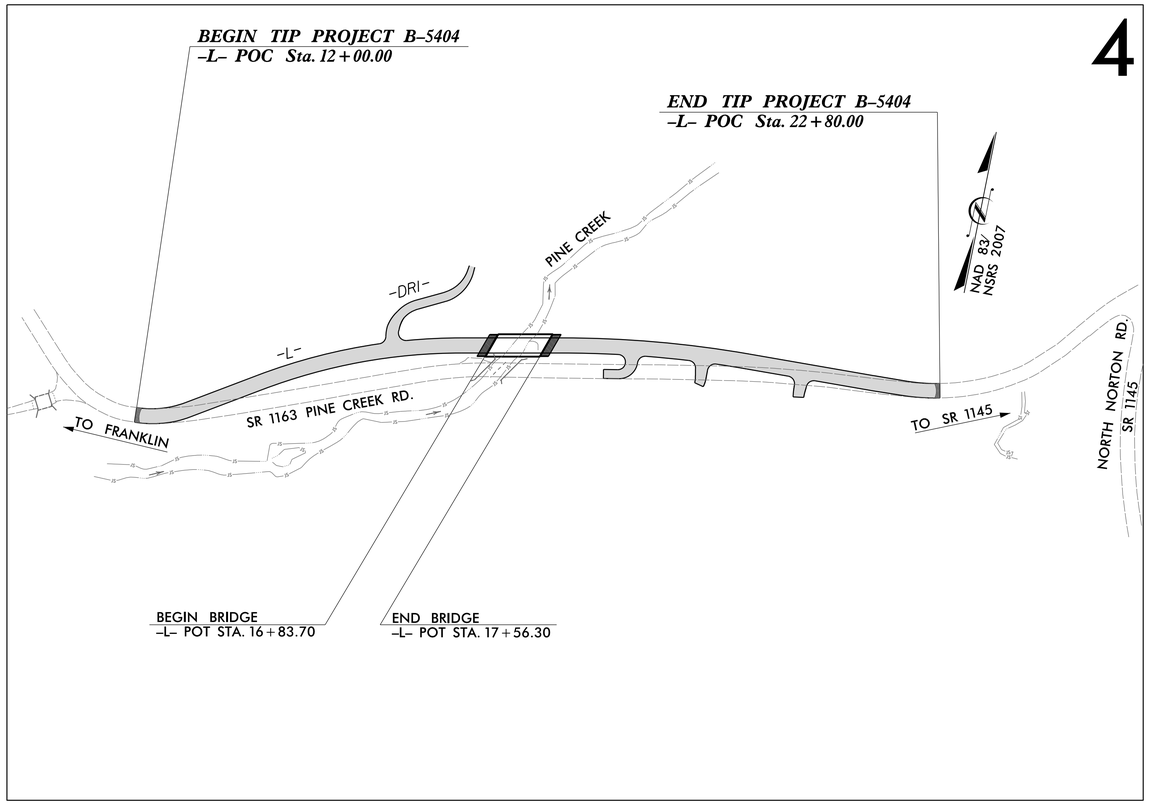
JACKSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5404	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46119.1.1	BRZ–1163 (10)	P.E.
46119.2.FD1	BRZ–1163 (10)	ROW, UTIL
46119.3.FD1	BRZ–1163 (10)	CONST.

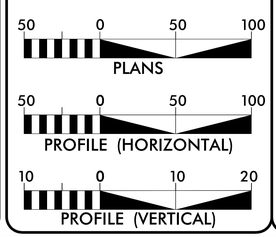
LOCATION: BRIDGE NO. 136 OVER PINE CREEK ON SR 1163 (PINE CREEK ROAD)

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



NCDOT CONTACT: REKHA PATEL, P.E.

GRAPHIC SCALES



DESIGN DATA

ADT 2016 = 1,020
ADT 2036 = 1,500
K = 12 %
D = 70 %
T = 7 % *
V = 40 MPH
* TTST = 1% DUAL 6%
FUNC CLASS = RURAL LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5404 = 0.191 MILES
LENGTH STRUCTURE TIP PROJECT B–5404 = 0.014 MILES
TOTAL LENGTH TIP PROJECT B–5404 = 0.205 MILES

PLANS PREPARED FOR NCDOT BY:

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 20, 2015

LETTING DATE:
JANUARY 19, 2016

DENNIS J. MORY, P.E.
PROJECT ENGINEER

RICKY E. STATON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: Cameron M. Long 885B1CE5A4CB4CF...
11/11/2015
P.E.
NORTH CAROLINA PROFESSIONAL SEAL 034333 ENGINEER CAMERON M. LONG
SIGNATURE:

ROADWAY DESIGN ENGINEER

DocuSigned by: Dennis J. Mory D5EC0F7684FC4B6...
11/11/2015
P.E.
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY
SIGNATURE:

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

11/11/2015 1:48:15 PM
USER: rstaton
...\Roadway\Proj\B5404_Rdy_tsh.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-5404	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER DENNIS J. MORY

DocuSigned by: Dennis J. Mory
D5EC0F7684FC4B6... 11/11/2015

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
1D-1	CENTERLINE COORDINATE LIST
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1	DETAIL FOR GUARDRAIL ANCHOR UNIT TYPE TEMPORARY W BEAM RETROFIT
2C-2	DETAIL OF GUARDRAIL ANCHOR UNIT TYPE III
2G-1	STANDARD TEMPORARY SHORING
3B-1	GUARDRAIL SUMMARY, SUMMARY OF EARTHWORK, SHOULDER BERM GUTTER SUMMARY, AND PAVEMENT REMOVAL SUMMARY
3D-1	SUMMARY OF DRAINAGE QUANTITIES
3G-1	SUMMARY OF GEOTECHNICAL QUANTITIES
4 THRU 6	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLAN
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
SIGN-1 THRU SIGN-2	SIGNING PLANS
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS
X-0	CROSS-SECTION SUMMARY
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-14	STRUCTURE PLANS

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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
310.10	Driveway Pipe Construction
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 8 - INCIDENTALS	
815.02	Subsurface Drain
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
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
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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 POWER - POWER (DISTRIBUTION)

FRONTIER - TELEPHONE

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 OTHERS.

ROCK

ROCK IS ANTICIPATED BETWEEN -L- STA. 12+10 - 13+80 AND 19+50 - 21+00. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
B-5404	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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5404	1C-1
Location and Surveys	

SURVEY CONTROL SHEET B-5404 -FINAL-

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	548041.0207	750314.8896	3546.20	11+81.24	16.02 RT
2	BL-2	548220.6347	750780.0240	3541.34	16+82.28	19.01 RT
3	BL-3	548278.4225	751094.3847	3544.65	20+03.79	6.21 RT
4	BL-4	548333.8747	751484.1689	3544.36	23+97.50	13.81 RT

BM1 ELEVATION = 3546.27
N 548082 E 750376
L STATION 12+48.84 16.13' LEFT
8" SPIKE SET IN BASE OF A 24" PINE TREE

BM2 ELEVATION = 3541.68
N 548402 E 750669
L STATION 16+15.97 181.50' LEFT
8" SPIKE SET IN BASE OF A 29" PINE TREE

BM3 ELEVATION = 3547.53
N 548289 E 751112
L STATION 20+21.63 3.67' LEFT
8" SPIKE SET IN BASE OF A 36" MAPLE TREE

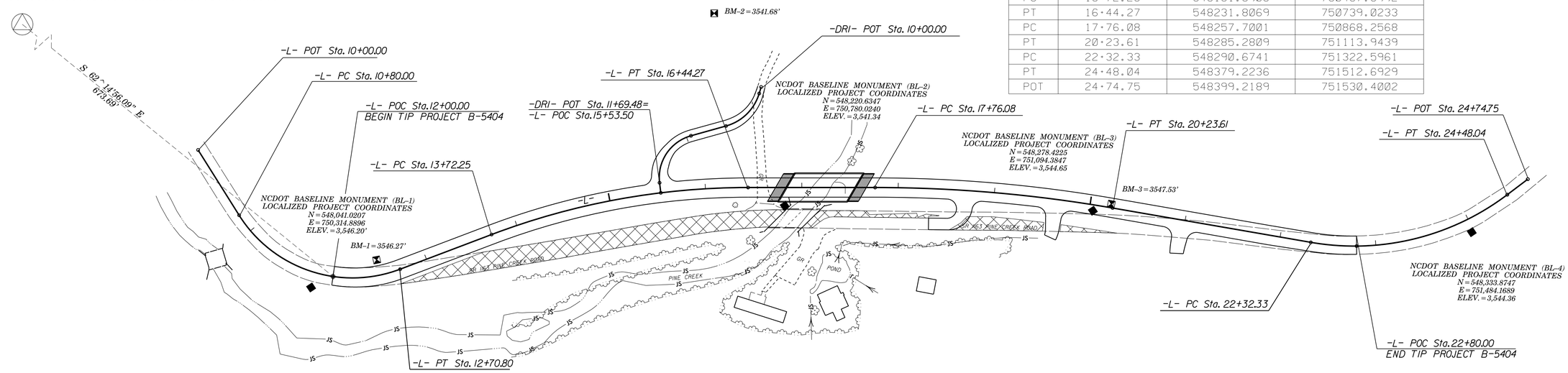
NC GRID
NAD 83/NSRS 2007

-FINAL- ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-30.21	548086.8487	750333.4335
L	12+70.80	-66.00	548133.6639	750366.6793
L	13+72.25	-62.00	548184.2061	750454.7429
L	16+44.27	-47.00	548277.8910	750729.7899
L	17+76.08	-47.00	548303.7842	750859.0234
L	20+23.61	-61.00	548346.2606	751112.3677
L	21+90.00	-27.05	548316.6213	751279.5785
L	22+48.40	30.00	548261.6928	751341.2401
L	21+28.24	36.75	548251.2467	751219.4877
L	19+81.23	52.15	548231.4922	751074.4805
L	16+85.06	62.59	548178.4493	750791.3107
L	15+72.14	68.07	548149.1082	750688.8054
L	14+51.63	67.88	548109.2640	750586.8439
L	12+87.19	39.65	548052.8898	750436.7238
L	12+76.71	37.36	548049.2588	750426.6297
L	12+42.13	30.41	548036.6030	750386.6343
L	12+29.87	29.76	548032.6719	750372.2385

FINAL -L-

TYPE	STATION	NORTH	EAST
POT	10+00.00	548157.9425	750171.9570
PC	10+80.00	548099.8782	750226.9892
PT	12+70.80	548077.7603	750401.7619
PC	13+72.25	548131.6906	750487.6992
PT	16+44.27	548231.8069	750739.0233
PC	17+76.08	548257.7001	750868.2568
PT	20+23.61	548285.2809	751113.9439
PC	22+32.33	548290.6741	751322.5961
PT	24+48.04	548379.2236	751512.6929
POT	24+74.75	548399.2189	751530.4002



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT B-5404 (G102) WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 548370.370(ft) EASTING: 749738.774(ft) ELEVATION: 3551.09'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999707899
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "G102" TO -L- STATION 12+00.00 IS S62°14"56.09'E 673.69
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GEOIDAL MODEL: G09NC
NOTE: DRAWING NOT TO SCALE

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS: B5404_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.

11/10/2015 4:49:43 PM
C:\Projects\B5404_ls_1c-1.dgn
User: dgray

PROJECT REFERENCE NO.	SHEET NO.
B–5404	1D–1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	10+00.00	548157.9425	750171.9570
2	L	11+00.00	548086.4003	750241.7424
3	L	12+00.00	548056.6781	750334.9768
4	L	13+00.00	548093.2836	750426.4981
5	L	14+00.00	548146.0009	750511.4679
6	L	15+00.00	548190.0737	750601.1495
7	L	16+00.00	548221.8332	750695.8940
8	L	17+00.00	548242.7546	750793.6635
9	L	18+00.00	548262.2051	750891.7527
10	L	19+00.00	548276.7904	750990.6630
11	L	20+00.00	548284.4774	751090.3470
12	L	21+00.00	548287.2548	751190.3075
13	L	22+00.00	548289.8387	751290.2741
14	L	23+00.00	548301.0576	751389.2732
15	L	24+00.00	548346.3614	751477.7473
16	L	24+74.75	548399.2189	751530.4002
17	DR1	9+85.00	548351.7156	750733.2315
18	DR1	10+00.00	548336.7821	750731.8212
19	DR1	11+00.00	548270.3859	750666.1263
20	DR1	12+00.00	548179.6586	750660.8773
21	DR1	12+08.84	548171.2671	750663.6467

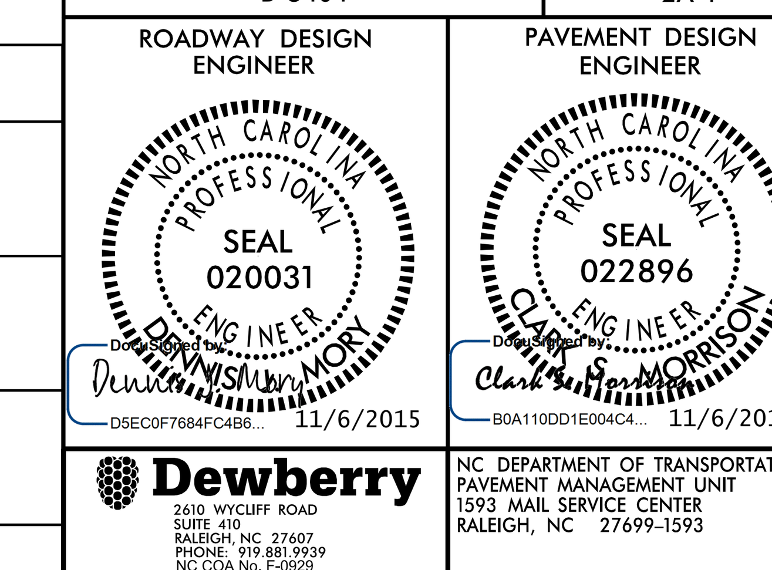
Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

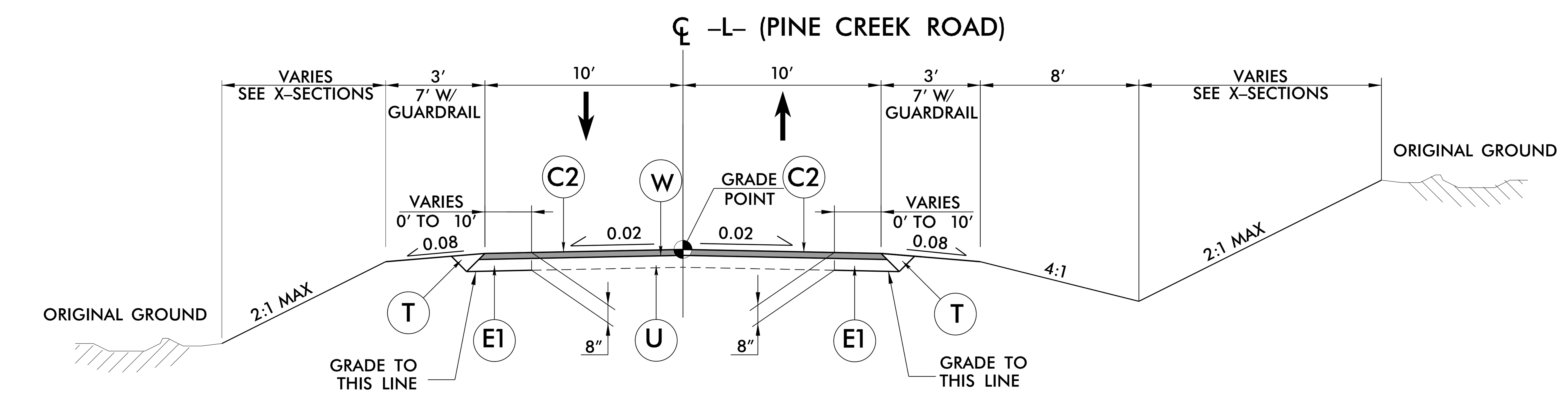
PROJECT REFERENCE NO.	SHEET NO.
B-5404	2A-1



FINAL PAVEMENT SCHEDULE

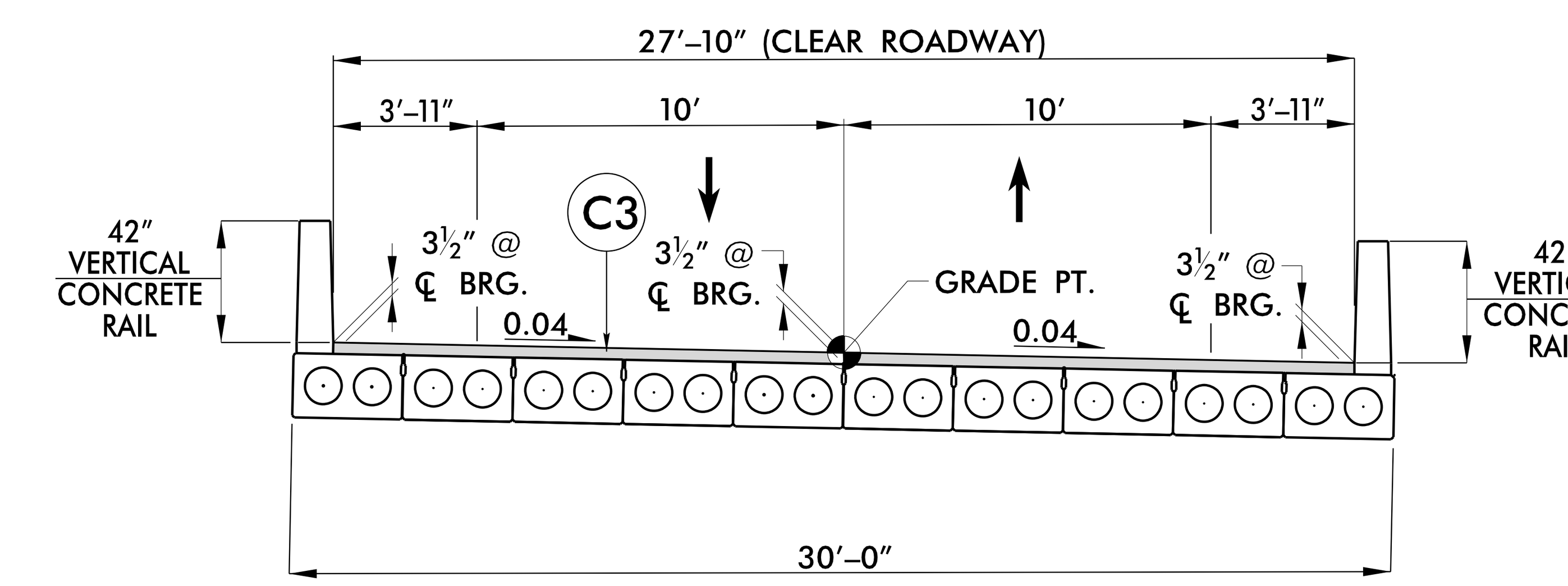
ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROPOSED APPROXIMATE 1.25" ASPHALT SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.50 LBS /SY.	E2	PROP. VAR. DEPTH ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBSSY PER 1" DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH.	V	INCIDENTAL MILLING	T	EARTH MATERIAL
C2	PROPOSED APPROXIMATE 2.5" ASPHALT SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.50 LBS /SY. IN EACH OF TWO LAYERS.	J1	PROP. 4" AGGREGATE BASE COURSE	R1	SHOULDER BERM GUTTER	U	EXISTING PAVEMENT
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS /SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.	J2	PROP. 8" AGGREGATE BASE COURSE	W	WEDGING		
E1	PROP. APPROX. 5.5" ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS /SY.	J3	PROP. 3" AGGREGATE BASE COURSE				

NOTE: PAVEMENT EDGES ARE 1:1 UNLESS OTHERWISE NOTED.



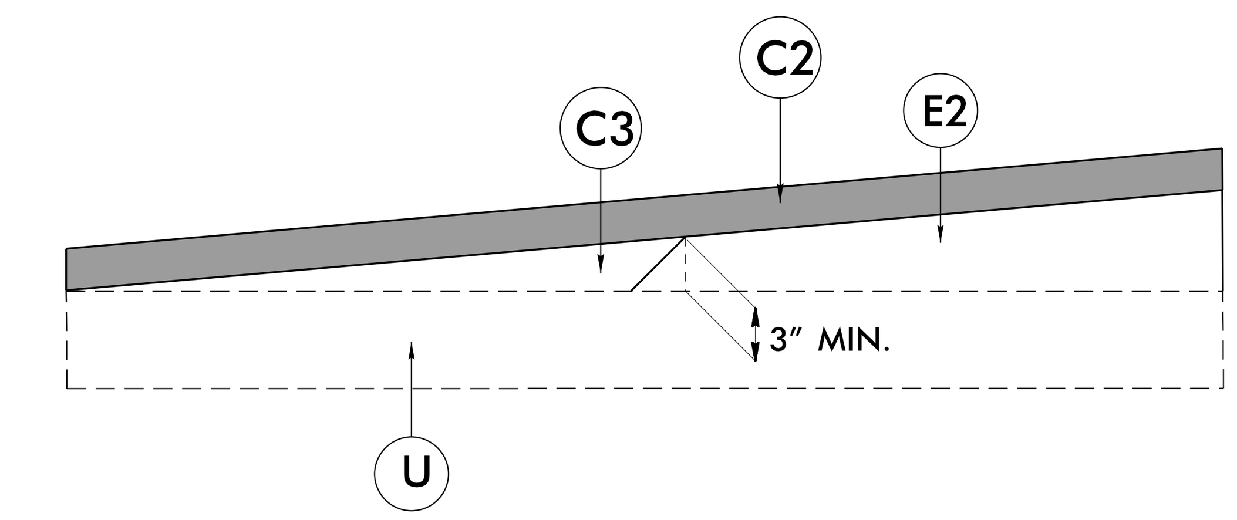
TYPICAL SECTION NO. 1

-L- STA. 12+25.00 TO STA. 13+38.75
-L- STA. 20+01.80 TO STA. 22+55.00

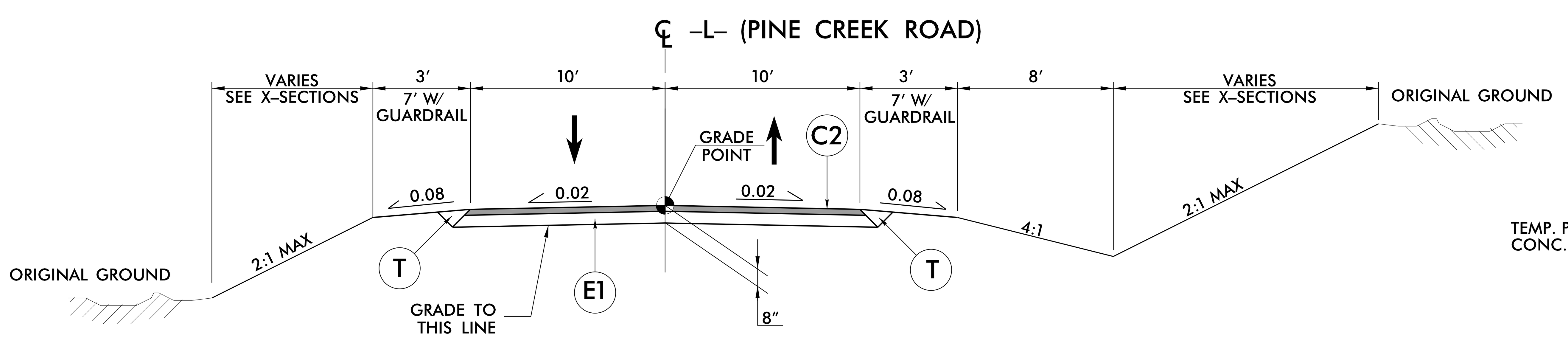


TYPICAL SECTION ON STRUCTURE

-L- STA. 16+83.70 (BEGIN BRIDGE) TO -L- STA. 17+56.30 (END BRIDGE)

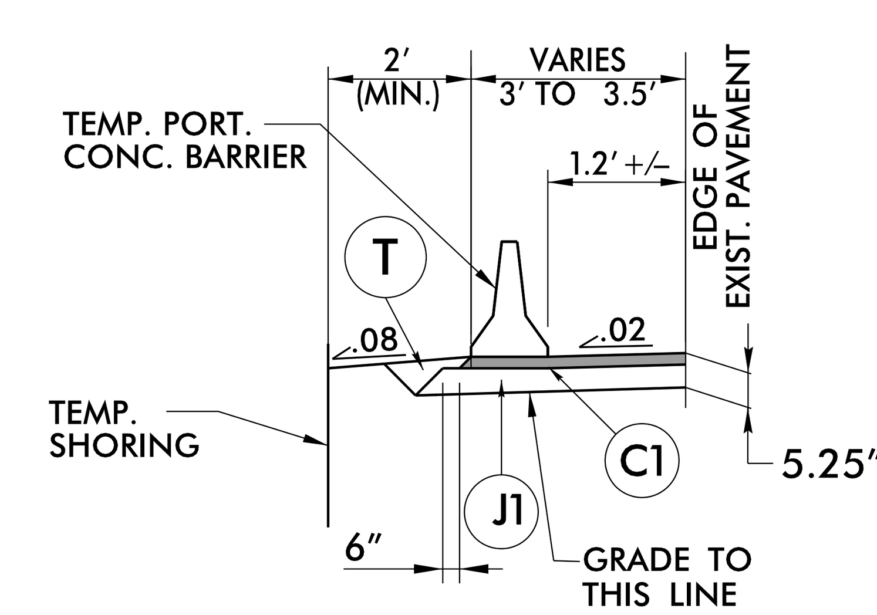


WEDGING DETAIL FOR RESURFACING



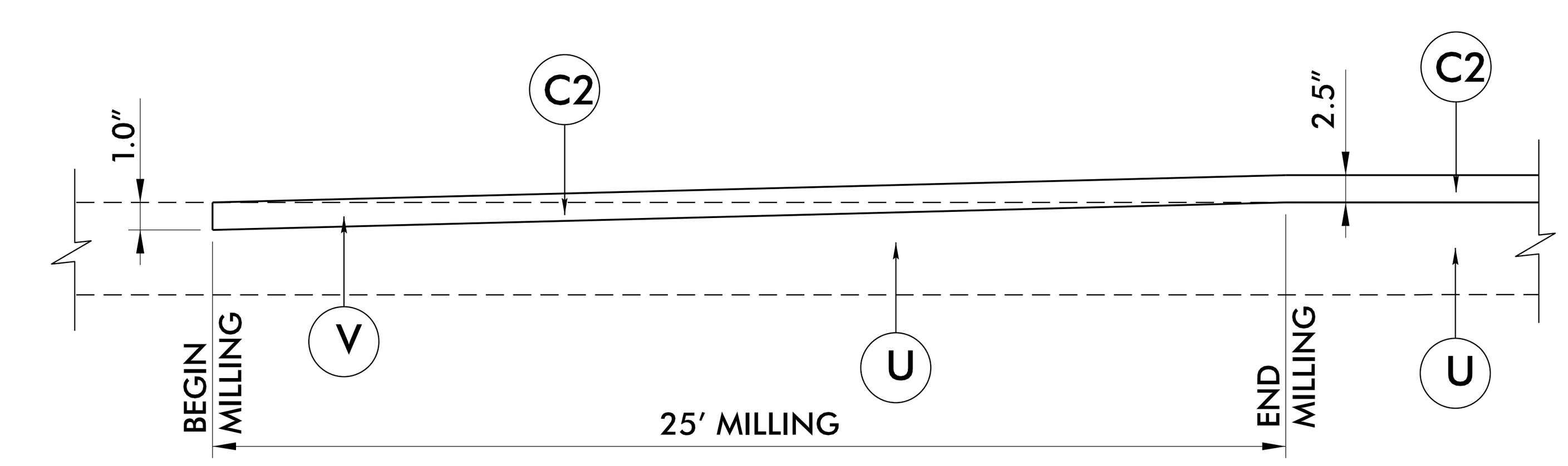
TYPICAL SECTION NO. 2

-L- STA. 13+38.75 TO STA. 16+83.70 (BEGIN BRIDGE)
-L- STA. 17+56.30 (END BRIDGE) TO STA. 20+01.80



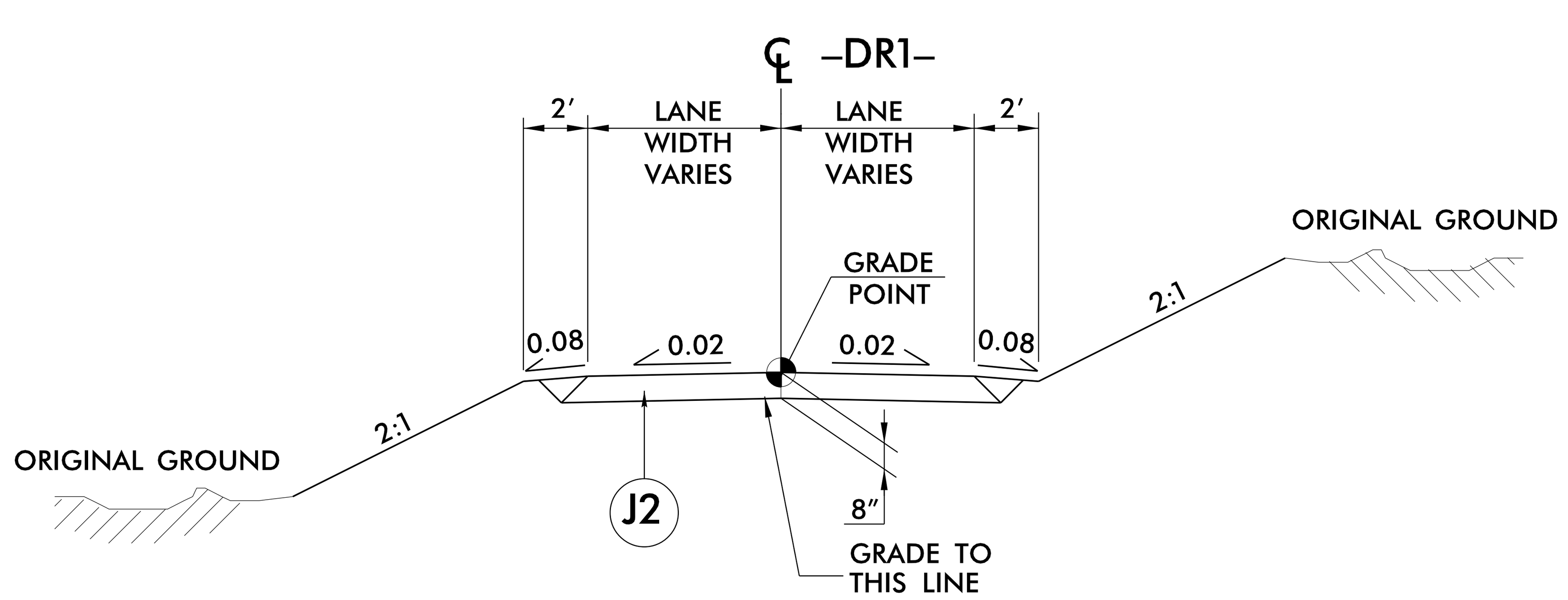
PAVED SHOULDER DETAIL @ TEMP. CONC. BARRIER

NOT TO SCALE



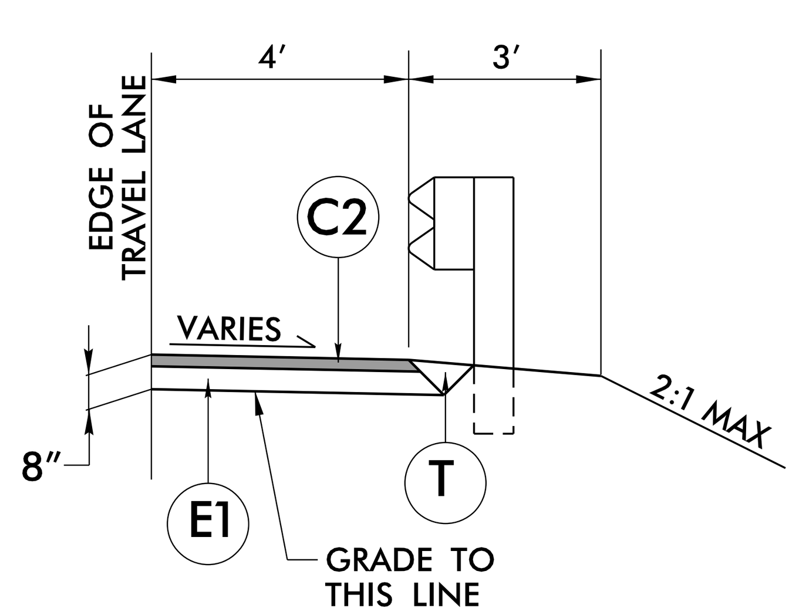
PROFILE KEY-IN DETAIL (VIEW ALONG ROAD ℄)

NOT TO SCALE
-L- STA. 12+00.00 TO STA. 12+25.00
-L- STA. 22+55.00 TO STA. 22+80.00



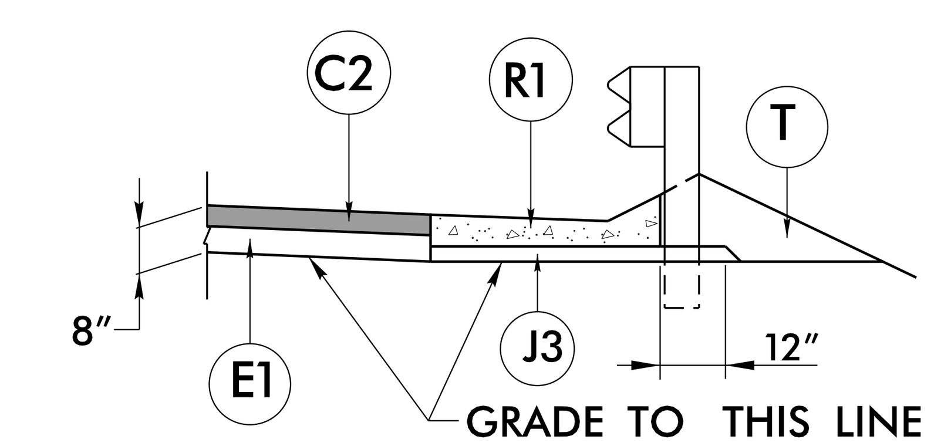
TYPICAL SECTION NO. 3

-DR1- STA. 10+00.00 TO STA. 10+50.00 (LANE WIDTH VARIES FROM EXISTING TO 6')
-DR1- STA. 10+50.00 TO STA. 11+20.00 (6' LANE WIDTH)
-DR1- STA. 11+20.00 TO STA. 11+40.00 (LANE WIDTH VARIES FROM 6' TO 8')
-DR1- STA. 11+79.48 TO STA. 11+99.40 (8' LANE WIDTH - TEMPORARY DRIVEWAY)



FULL DEPTH PAVED SHOULDER DETAIL

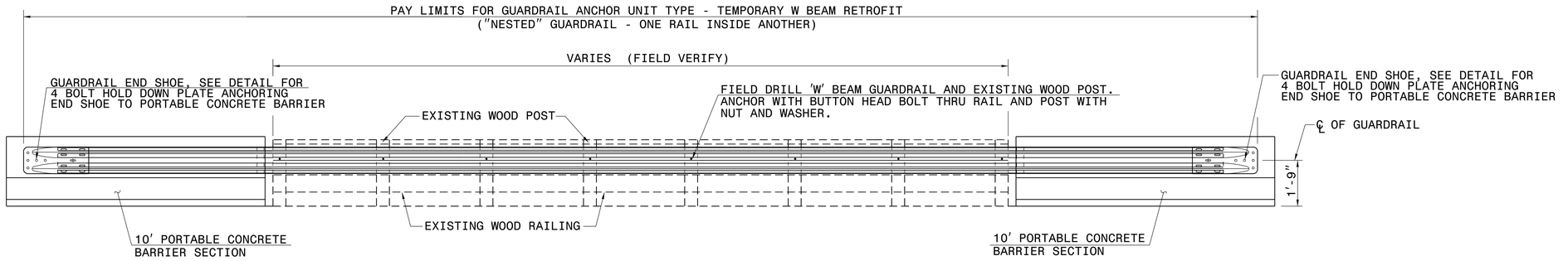
NOT TO SCALE



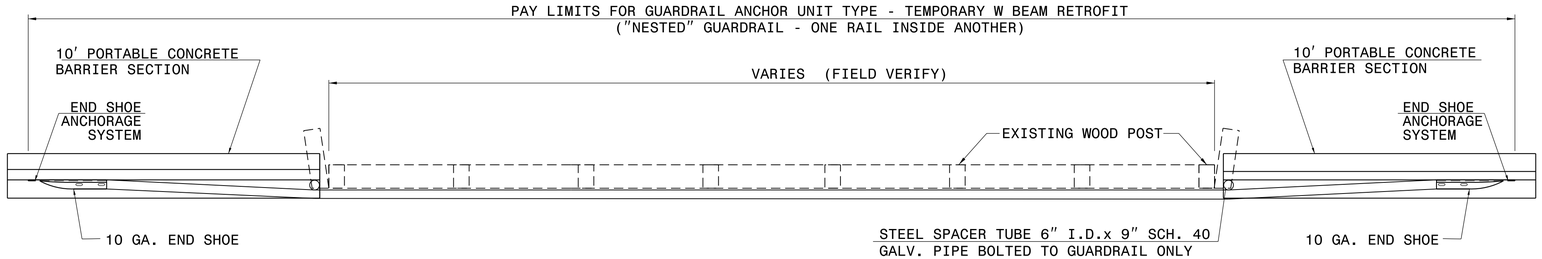
DETAIL SHOWING SHOULDER BERM GUTTER (SBG) ON TOP OF SUBGRADE

-L- STA. 16+48.00 TO -L- STA. 16+64.65 (END APPROACH SLAB - RT.)

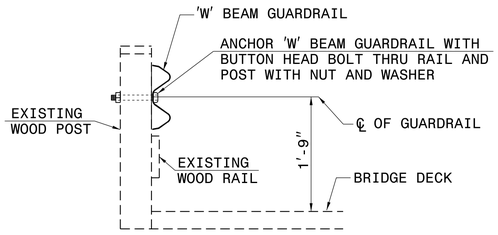
PROJECT REFERENCE NO.	SHEET NO.
B-5404	2C-1



ELEVATION VIEW



PLAN VIEW



SECTION VIEW

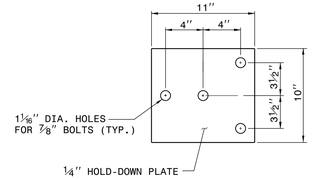
GUARDRAIL ATTACHMENT TO WOOD POST

NOTES FOR 4 BOLT HOLD DOWN PLATE

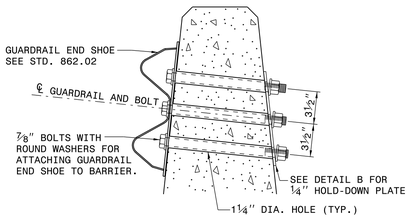
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 4 - ⅞" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1¼" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



4 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER OR RAIL

THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F... 11/12/2015

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

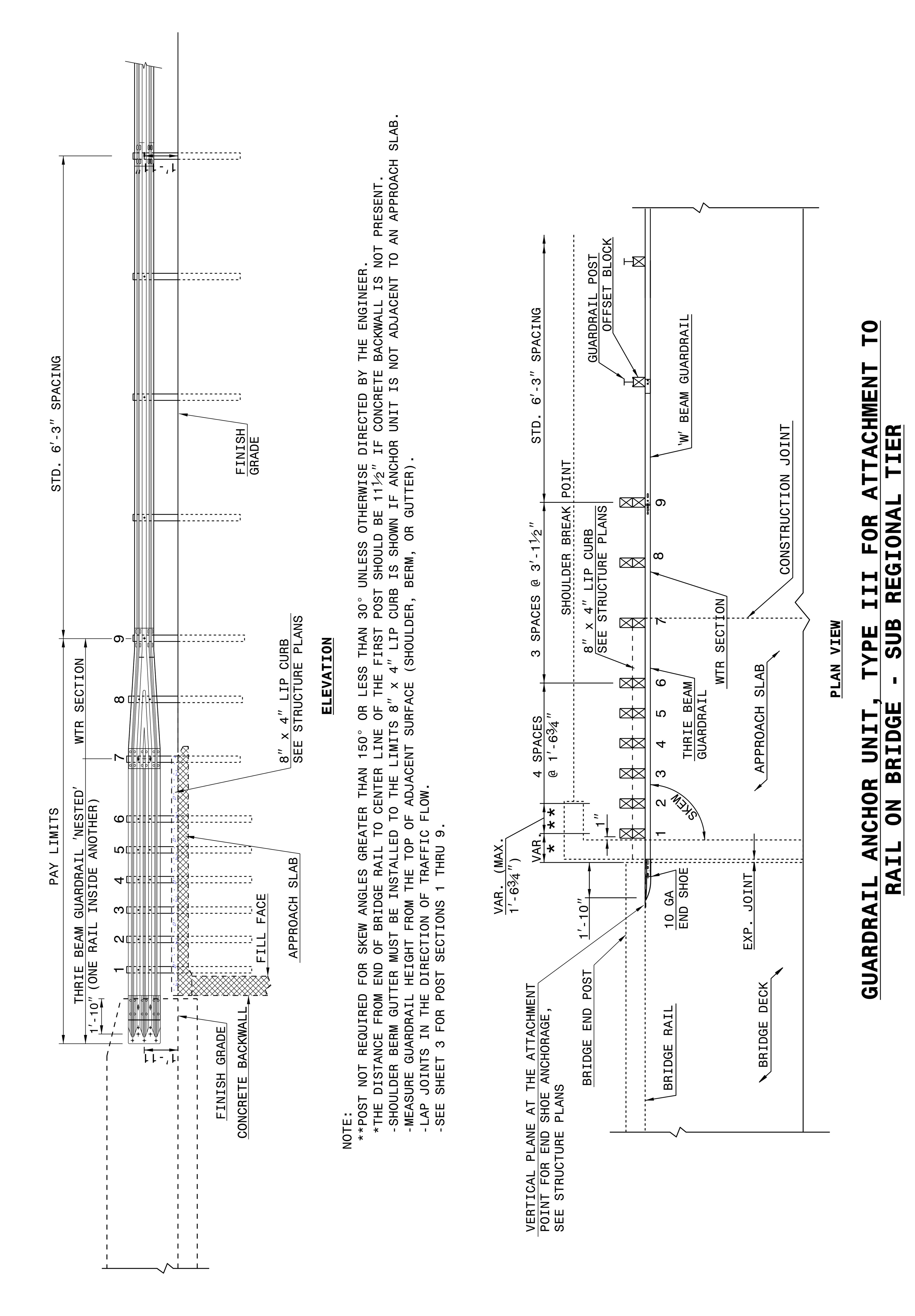
DETAIL OF GUARDRAIL ANCHOR UNIT TYPE TEMPORARY W BEAM RETROFIT

ORIGINAL BY: E.E. WARD DATE: 04-05
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: usr/details/stand/862stds/anc.dgn

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$SCENARIO$$$$
$$$$SCENARIO$$$$
$$$$SCENARIO$$$$
$$$$SCENARIO$$$$
$$$$SCENARIO$$$$
$$$$SCENARIO$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5404	2C-2

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

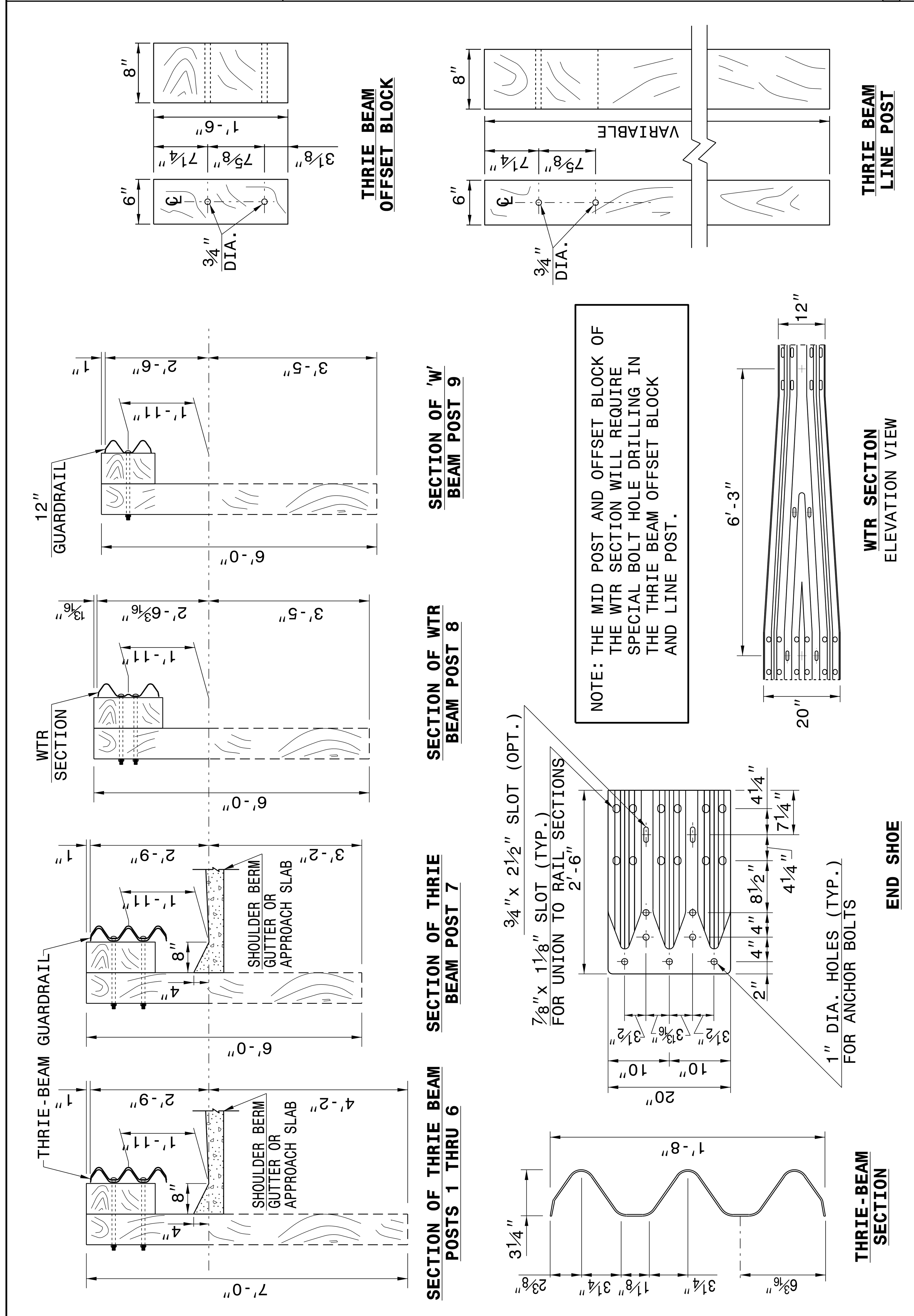


STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III 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 SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F... 11/12/2015

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.:

PROJECT REFERENCE NO.	SHEET NO.
B-5404	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 10/23/2015 F760CAEB96FC4D3...

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

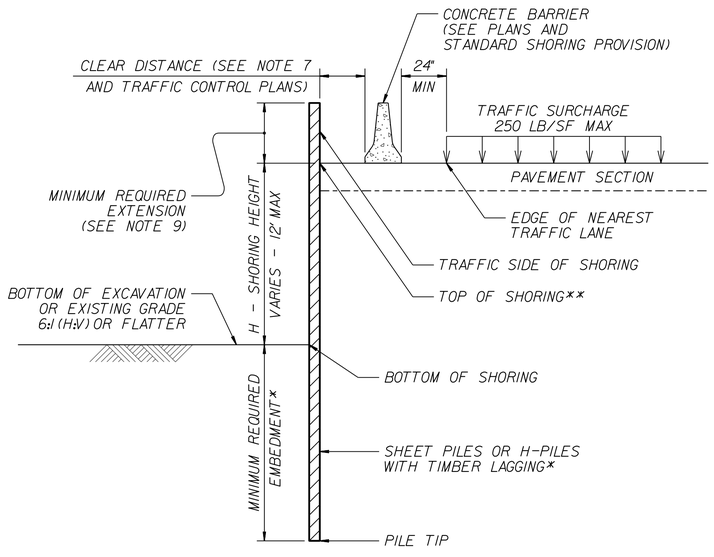
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

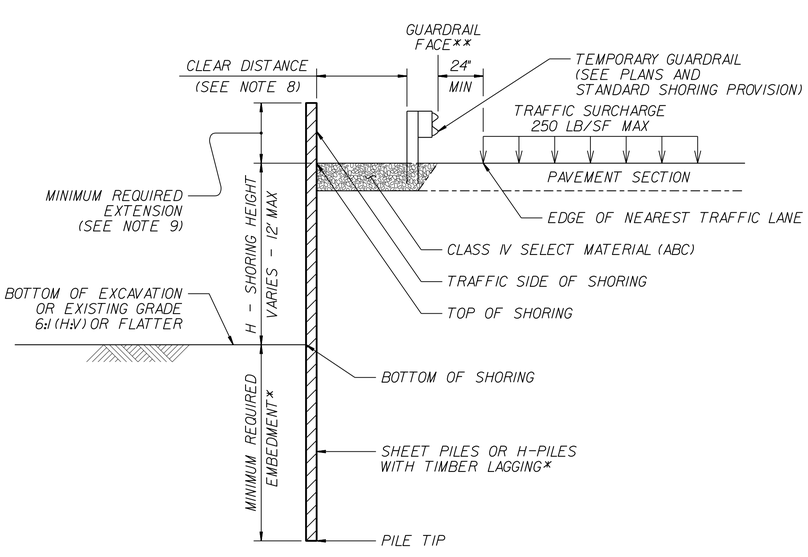
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



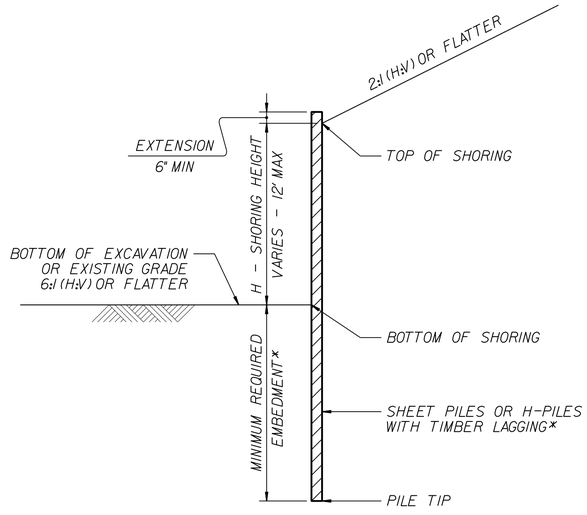
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)

*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

COMPUTED BY: RES	DATE: 12-14
CHECKED BY: DJM	DATE: 1-15

PROJECT REFERENCE NO.	SHEET NO.
B-5404	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

"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

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350 TL-2	M-350	TYPE III	CAT-1	VI MOD	TEMP. W BEAM	TERM. END SECT.	G	NG				
-L-	16+18.03	16+93.03	LT.	75.00				16+93.03	4	7		50.00		1.00			1		1										
-L-	16+01.96	16+76.96	RT.	75.00			16+76.96		4	7	50.00		1.00				1		1										
-L-	17+63.04	20+00.54	LT.	237.50			19+25.00	17+63.04	4	7	50.00		1.00				1		1										
-L-	17+46.97	18+21.97	RT.	75.00				17+46.97	4	7		50.00		1.00			1		1										
-L-	17+02.50	17+20.63	RT.	25.00																			2						LOCATED AT END OF ROAD - RT. OF PROP. BRIDGE
			SUBTOTAL	487.50													4		4				2						
		ANCHOR UNIT DEDUCTION																											
		GRAU350 TL-2: 4 @ 25.00 = 100.00																											
		TYPE III: 4 @ 18.75 = 75.00																											
		TOTAL:		175.00																									
			TOTAL	312.50													4		4				2						
			SAY	325.00																									
		ADDITIONAL GUARDRAIL POSTS		5																									
-L-	16+93.00	CENTER OF EXIST BRIDGE - RT.																				1							

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- STA. 12+00.00	-L- STA. 16+83.70 (BRIDGE)	962	876	0	86
-DR1- STA. 10+00.00	-DR1- STA. 11+59.48	13	89	76	0
SUBTOTALS:		975	965	76	86
-L- STA. 17+56.30 (BRIDGE)	-L- STA. 22+80.00	782	2102	1320	425
SUBTOTALS:		782	2102	1320	425
PROJECT TOTALS:		1757	3067	1396	511
SHOULDER CONSTRUCTION			58	58	
LOSS DUE TO CLEARING & GRUBBING		-100		100	
ADDITIONAL UNDERCUT			115	115	100
EARTH WASTE TO REPLACE BORROW				-86	-86
SELECT GRANULAR MATERIAL, CLASS III			-489	-489	
PROJECT TOTALS:		1657	2751	1094	525
EST, 5% TO REPLACE TOP SOIL ON BORROW PIT				55	
GRAND TOTALS:		1657	2751	1149	525
SAY:		**1700**		**1200**	
EST. DDE = 31 CUBIC YARDS					
SELECT GRANULAR MATERIAL, CLASS III = 425 CY					
CONTINGENCY ITEMS:					
SHALLOW UNDERCUT = 100 CY					

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.

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

SHOULDER BERM GUTTER SUMMARY

LINE	Station	Station	LENGTH
-L-	16+48.00	16+64.65	16.65
		TOTAL:	16.65
		SAY:	17

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	12+21.90	16+83.50	RT.	788.7			
-L-	17+00.14	22+55.00	RT.	650.6			
REMOVE TEMP SHORING PAVEMENT							
-L-	15+79.00	16+85.00	RT.	35.3			
-L-	17+21.00	20+70.00	RT.	135.7			
		TOTAL:		1610.3			
		SAY:		1620			

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

5/28/99

COMPUTED BY: RES DATE: 12-14
CHECKED BY: DJM DATE: 1-15

PROJECT REFERENCE NO.	SHEET NO.
B-5404	3D-1

STATE OF NORTH CAROLINA
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)

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS R.C.P.	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A (5.0' THRU 10.0')	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") 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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.G.D.I. STD. 840.35	T.B.D.I. FRAME WITH TWO GRATES STD. 840.29	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
								12" 15" 18" 24" 30" 36" 42" 48"	DO NOT USE RCP	12" 15" 18" 24" 30" 36" 42" 48"	.064 .064 .064 .079 .079 .109 .109	12" 15" 18" 24" 30" 36" 42" 48"	12" 15" 18" 24" 30" 36" 42" 48"																																		
									DO NOT USE CSP																																						
									DO NOT USE CAAP																																						
									DO NOT USE HDPE																																						
-L- 15+54	LT.	402			3537.90	3536.94											52																										
-L- 16+54	RT.	403		3541.59																		1																				
		403	404		3538.42	3537.75				12																																
-L- 17+17	RT.	405			3537.63	3535.06												44																									
-L- 18+69	RT.	406			3540.67	3540.25											28																										
-L- 19+64	RT.	407			3542.30	3541.80											24																										
-L- 20+95	RT.	408			3547.08	3547.00											24																										
-L- 21+58	LT.	409																																								
-L- 15+53	LT.	410			3539.47	3539.15				40																																
SHEET TOTALS										52							128	44				1																				

ABBREVIATIONS

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

COMPUTED BY: RES	DATE: 12-14
CHECKED BY: DJM	DATE: 1-15

PROJECT REFERENCE NO.	SHEET NO.
B-5404	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

***UD = Underdrain**
***BD = Blind Drain**
***SD = Subsurface Drain**

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			ASU		100	200	150		
				TOTAL CY/TONS/SY:	100	200	150		

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.**

5/28/99

11/10/2015 4:58:10 PM
N:\Projects\B5404\Roadway\SUM_03G-1.dgn
USER: dmac

PROJECT REFERENCE NO.	SHEET NO.
B-5404	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER
DocuSigned by: Dennis Hemphill
D5EC0F7684FC4B8...
11/11/2015

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER
DocuSigned by: Cameron Kelly Long
885B1CE5A4C8BEF...
11/11/2015

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9539
NC COA No. P-0929

CURVE DATA FOR -DRI-

PI Sta 10+34.58
△ = 57° 42' 47.3" (RT)
D = 114° 35' 29.6"
L = 50.36'
T = 27.55'
R = 50.00'

PI Sta 11+33.75
△ = 81° 22' 21.6" (LT)
D = 127° 19' 26.2"
L = 63.91'
T = 38.69'
R = 45.00'

CURVE DATA FOR -L-

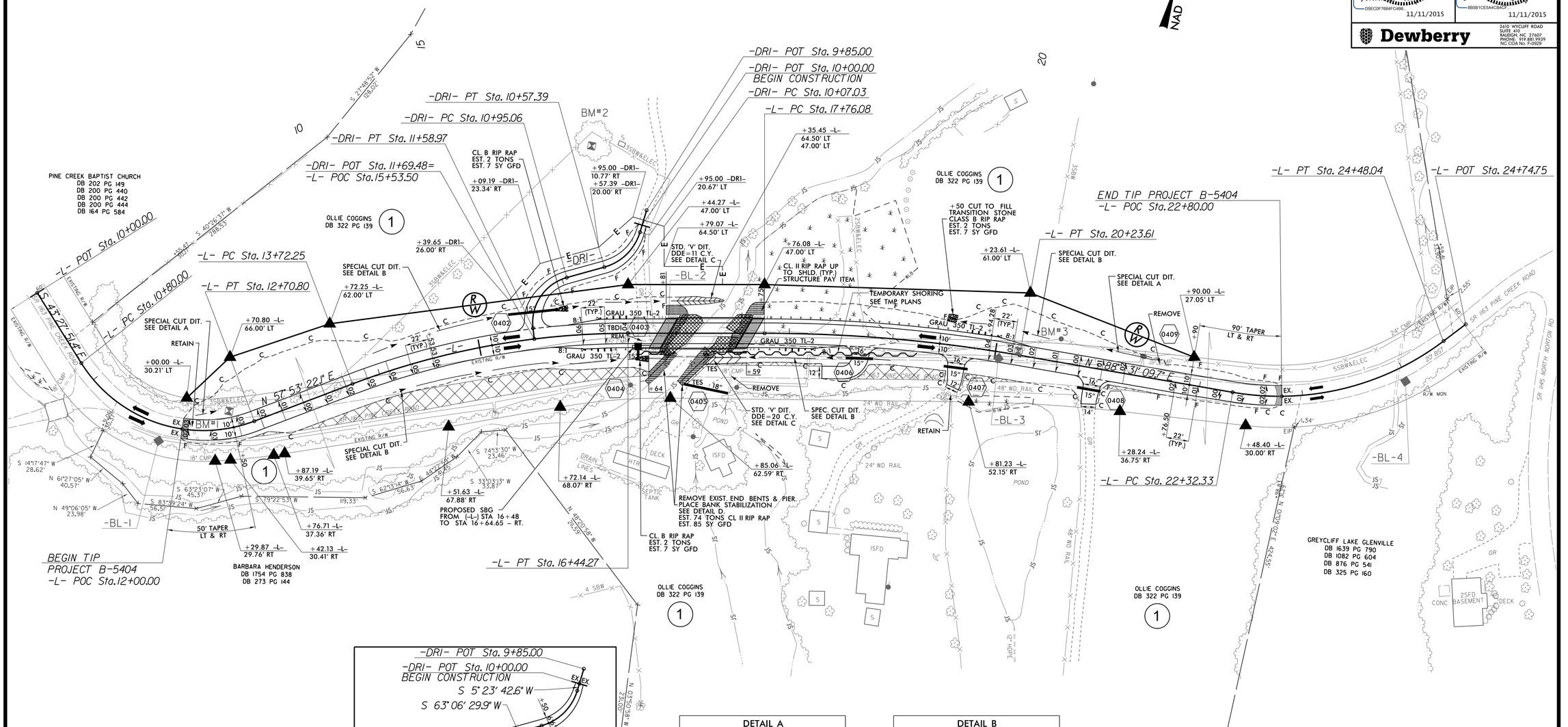
PI Sta 11+93.86
△ = 78° 38' 46.5" (LT)
D = 41° 13' 11.9"
L = 190.80'
T = 113.86'
R = 139.00'
SE = MATCH EXIST.

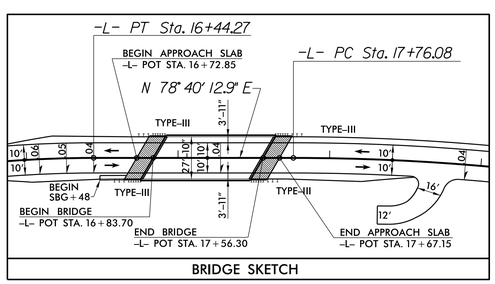
PI Sta 15+09.77
△ = 20° 46' 50.8" (RT)
D = 7° 38' 22.0"
L = 272.02'
T = 137.52'
R = 750.00'
SE = .06
RUNOFF = 132.00'

PI Sta 19+00.15
△ = 9° 50' 56.8" (RT)
D = 3° 58' 43.9"
L = 247.54'
T = 124.07'
R = 1,440.00'
SE = .04
RUNOFF = 88.00'

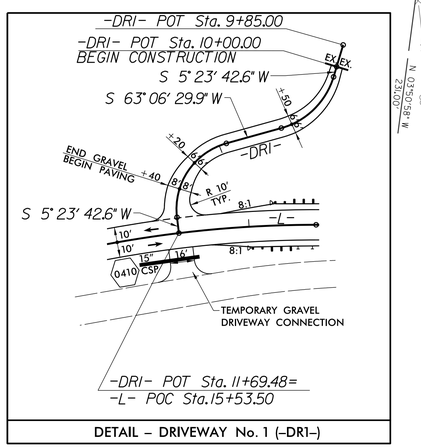
PI Sta 23+46.67
△ = 46° 59' 31.6" (LT)
D = 21° 47' 07.7"
L = 215.70'
T = 114.33'
R = 263.00'
SE = MATCH EXIST.

NAD 83/NSRS 2007



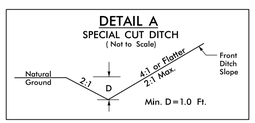


BRIDGE SKETCH



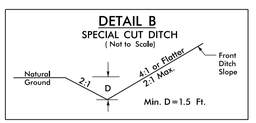
DETAIL – DRIVEWAY No. 1 (–DR1–)

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



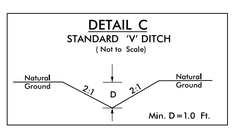
TRANSITION DITCH
FROM (–L–) STA. 12+10 TO STA. 12+50 – LEFT
FROM (–L–) STA. 21+00 TO STA. 21+50 – LEFT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



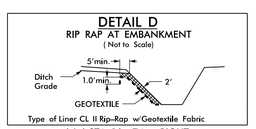
FROM (–L–) STA. 14+00 TO STA. 16+84 – LEFT
FROM (–L–) STA. 14+00 TO 16+74 (–L–) – RIGHT
FROM (–L–) STA. 17+59 TO STA. 19+00 (–L–) – RIGHT
FROM (–L–) STA. 19+50 TO STA. 20+50 (–L–) – LEFT

DETAIL C
STANDARD 'V' DITCH
(Not to Scale)



FROM (–L–) STA. 16+84 TO STA. 17+36 – LEFT
FROM (–L–) STA. 17+19 TO STA. 17+59 – RIGHT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)



(–L–) STA. 16+74 – RIGHT
(–L–) STA. 17+19 – RIGHT

NOTE:
ALL DRIVEWAY RADII ARE 10'
UNLESS OTHERWISE NOTED

SEE SHEET 5 FOR –L– PROFILE
SEE SHEET 6 FOR –DR1– PROFILE
SEE SHEETS S–1 THRU S–14 FOR BRIDGE PLANS
SEE SHEET TMP–4 FOR TEMPORAY –DR1– CONNECTION

11/11/2015 1:48:24 PM
B-5404_ROY_PSH_04.dgn
USER: cklong

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5404	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020031 ENGINEER
DENNIS RAY MOYER
DocuSigned by: Dennis Ray Moyer
D5EC0F7684FC486...
11/11/2015

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034333 ENGINEER
CAMERON WAYNE LONG
DocuSigned by: Cameron Wayne Long
885B1CE5A4CB4CF...
11/11/2015

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

–L–

BM #1
–L– STA 12+48.84
16.13 LEFT
ELEV. 3546.27'
8" SPIKE SET IN
BASE OF A 24" PINE TREE

BM #2
–L– STA 16+15.97
181.50 LEFT
ELEV. 3541.68'
8" SPIKE SET IN BASE
OF A 29" PINE TREE

BM #3
–L– STA 20+21.63
3.67 LEFT
ELEV. 3547.53'
8" SPIKE SET IN BASE
OF A 36" MAPLE TREE

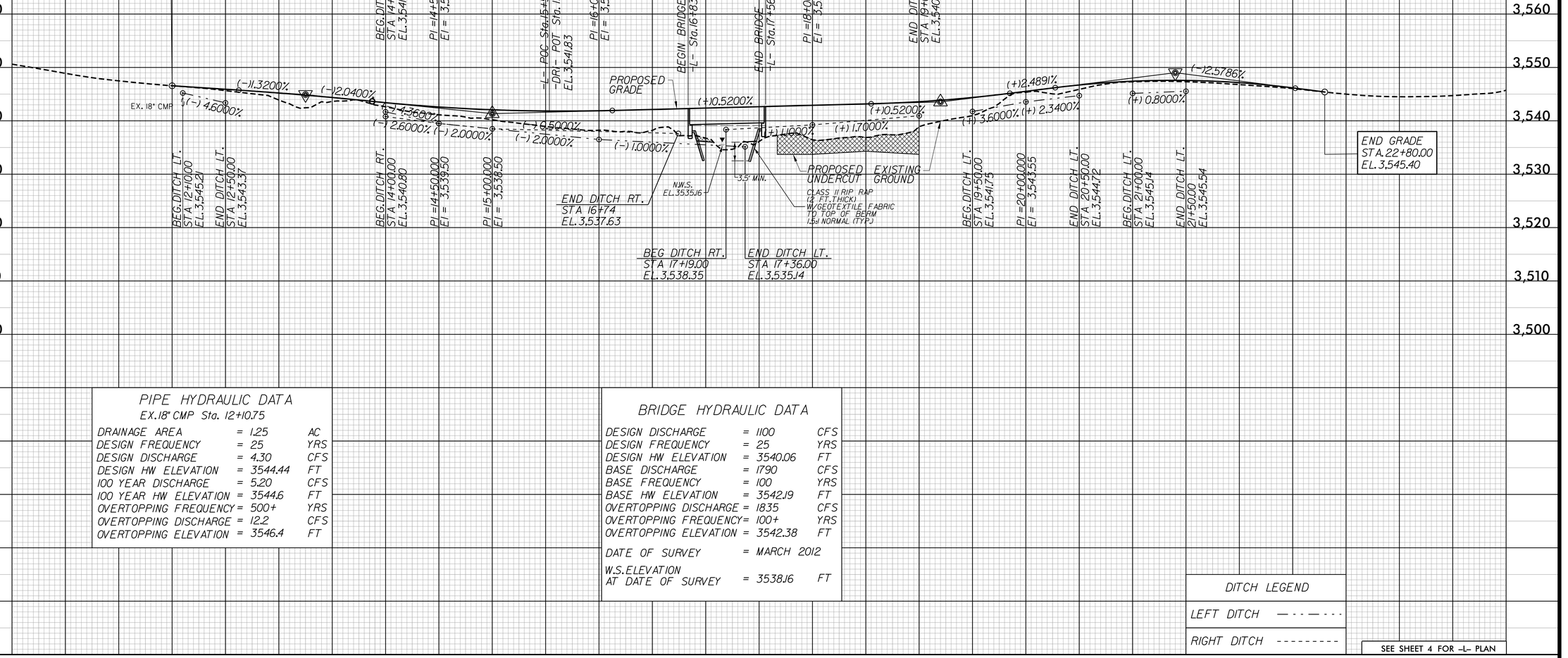
PI = 13+25.00
EL = 3,544.92'
VC = 125'
K = 174

PI = 15+00.00
EL = 3,541.35'
VC = 225'
K = 88

PI = 19+20.00
EL = 3,543.53'
VC = 130'
K = 66

PI = 21+40.00
EL = 3,549.01'
VC = 225'
K = 44

BEGIN GRADE
STA. 12+00.00
EL. 3,546.57



PIPE HYDRAULIC DATA
EX. 18" CMP Sta. 12+10.75

DRAINAGE AREA	= 1.25	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4.30	CFS
DESIGN HW ELEVATION	= 3544.44	FT
100 YEAR DISCHARGE	= 5.20	CFS
100 YEAR HW ELEVATION	= 3544.6	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 12.2	CFS
OVERTOPPING ELEVATION	= 3546.4	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 3540.06	FT
BASE DISCHARGE	= 1790	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3542.19	FT
OVERTOPPING DISCHARGE	= 1835	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 3542.38	FT
DATE OF SURVEY	= MARCH 2012	
W.S. ELEVATION AT DATE OF SURVEY	= 3538.16	FT

DITCH LEGEND
LEFT DITCH — · · — · · —
RIGHT DITCH ----------

SEE SHEET 4 FOR –L– PLAN

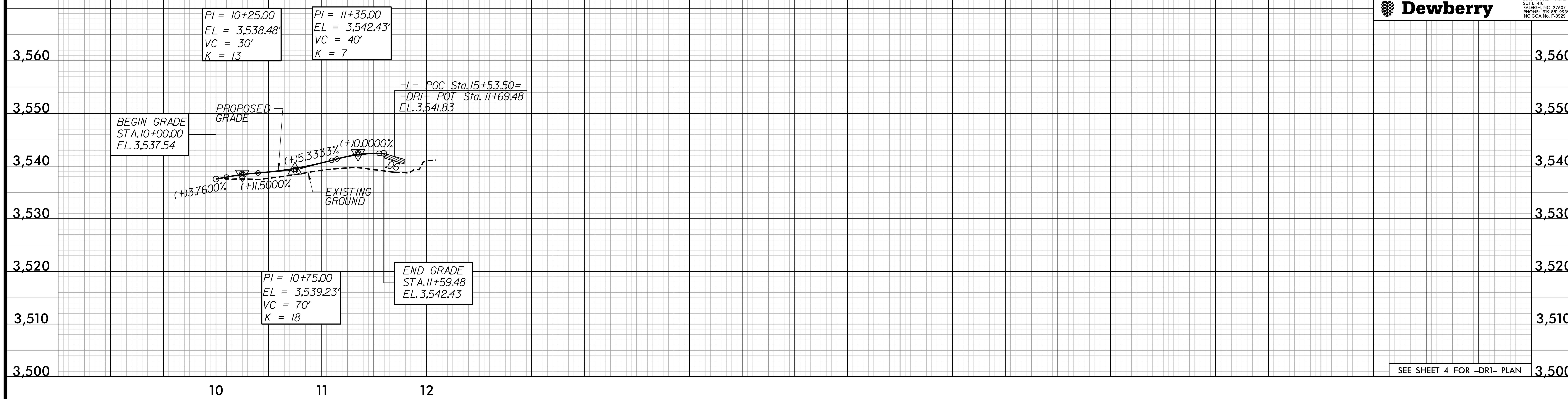
11/12/2015 4:48:28 PM
U:\Projects\B5404_RDY_PFL_05.dgn
USER: mlong

PROJECT REFERENCE NO.	SHEET NO.
B-5404	6

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 020031 DENNIS J. MORY	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034333 CAMERON M. LONG
DocuSigned by: Dennis J. Mory D5EC0F7684FC4B6... 11/11/2015	DocuSigned by: Cameron M. Long 8B5B1CE5A4CB4CF... 11/11/2015

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

-DR1-



SEE SHEET 4 FOR -DR1- PLAN