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

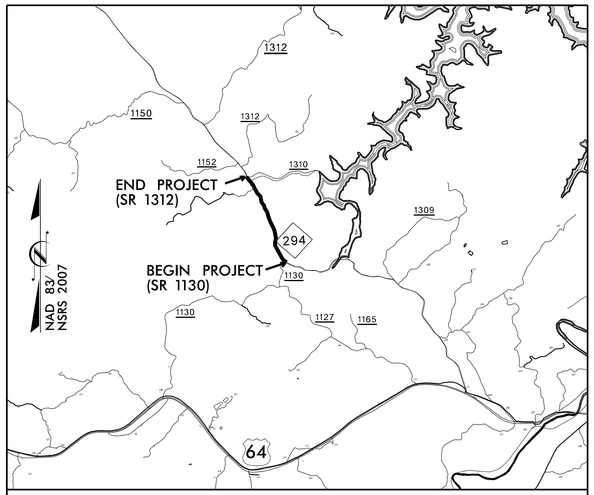
The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: R-3622B

CONTRACT: C203648

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3622B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38068.1.1		PE
38068.2.R3		R/W & UTILITIES
38068.3.R3		CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHEROKEE COUNTY

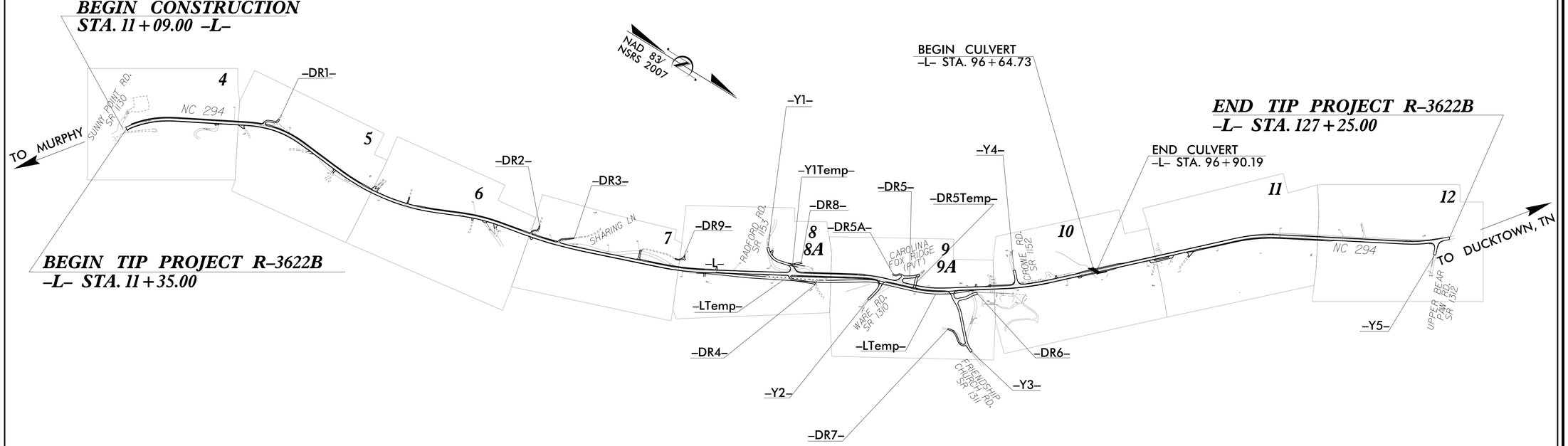
LOCATION: NC 294 FROM SR 1130 (SUNNY POINT ROAD) TO SR 1312 (UPPER BEAR PAW ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND CULVERT

Vaughn & Melton
Consulting Engineers

Asheville, North Carolina
828-253-2796

Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509



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 = 3,050
ADT = 6,000
DHV = — %
D = — %
T = 3 % *
V = 50 MPH
* TTST 3% DUAL—%
FUNC = MAJOR
CLASS COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3622B = 2.190 MILES
LENGTH STRUCTURE TIP PROJECT R-3622B = 0.005 MILES
TOTAL LENGTH OF TIP PROJECT R-3622B = 2.195 MILES

Prepared in the Office of:
VAUGHN & MELTON, INC.
1318-F PATTON AVENUE ASHEVILLE, NC 28806 PHONE(828) 253-2796

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 12, 2013

LETTING DATE:
JUNE 16, 2015

REECE SCHULER, P.E.
PROJECT ENGINEER

NICK ASARO, PLS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:
Aaron C. Carver
6AE722E35AE3457...
4/13/2015
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by:
Reece Schuler
168340D4C7B24FC...
4/13/2015
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER

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
1C-1 THRU 1C-4	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1	TRAFFIC BEARING DROP INLET DETAIL
2C-2	GUIDE FOR BERM DRAINAGE OUTLET DETAIL
2C-3	PIPE COLLAR DETAIL
2C-4	2-STRAND ELECTRIC WIRE FENCE DETAIL
2C-5	SLOTTED DRAIN DETAIL
2G-1 THRU 2G-3	STANDARD TEMPORARY WALL DETAIL SHEETS
2H-1	STOCKPILE CONTAINMENT DETAIL
3B-1	SUMMARY OF EARTHWORK & PAVEMENT REMOVAL SUMMARY
3B-2	GUARDRAIL SUMMARY, TEMPORARY GUARDRAIL SUMMARY
3D-1 THRU 3D-5	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY SHEET
3P-1	PARCEL INDEX SHEET
4 THRU 24	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-17	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-4	PAVEMENT MARKING PLANS
EC-1 THRU EC-23	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
SIGN-1 THRU SIGN-4	SIGNING PLANS
UO-1 THRU UO-10	UTILITIES BY OTHERS
X	CROSS-SECTION INDEX
X-A(1) THRU X-A(2)	CROSS-SECTION SUMMARY
X-1 THRU X-113	CROSS-SECTIONS
S-0 THRU S-17	STRUCTURE PLANS

GENERAL NOTES:

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

GRADING AND SURFACING:

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 AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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.

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS 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".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE FRONTIER COMMUNICATIONS AND BLUE RIDGE MOUNTAIN EMC.

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- 58+50-60+00, 64+50-68+00, & 78+50-82+50. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

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
225.06	Method of Grading Sight Distance at Intersections
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
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
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.41	Spring Box - Concrete or Brick
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
850.11	Guide for Berm Drainage Outlet - 24" and 30" Pipe
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.02	Woven Wire Fence - with Wood Post
866.04	Barbed Wire Fence with Wood Posts (2 - 7 Strands)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	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 Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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
- 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

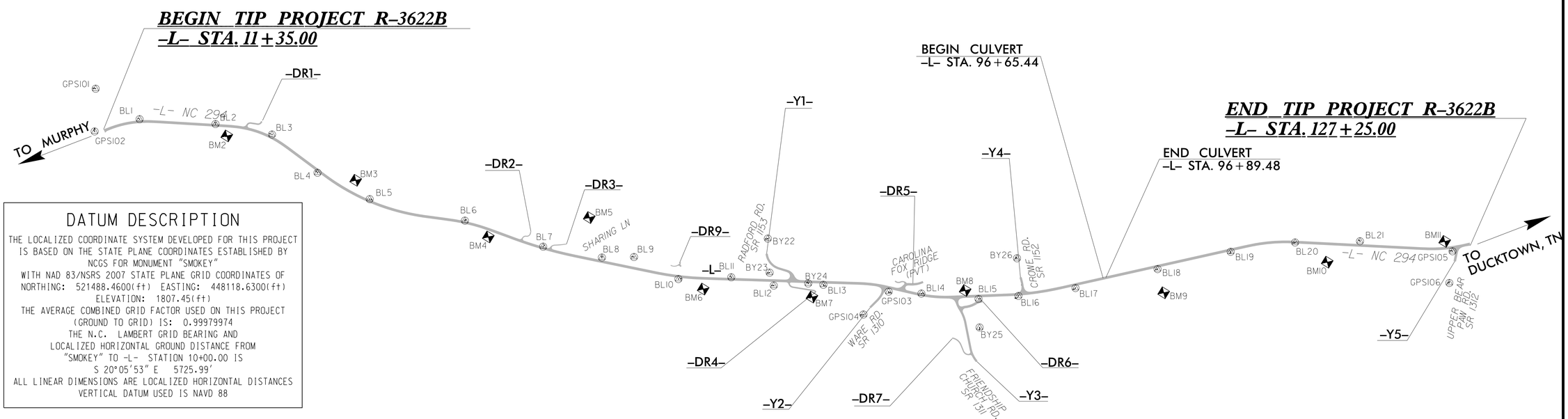
MISCELLANEOUS:

- 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
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	1C-1
Location and Surveys	

SURVEY CONTROL SHEET R-3622B



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "SMOKEY"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 521488.4600(ft) EASTING: 448118.6300(ft)
ELEVATION: 1807.45(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99979974
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SMOKEY" TO -L- STATION 10+00.00 IS S 20°05'53" E 5725.99'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS102	GPS-102	516120.3300	450019.6587	1591.51	10+60.94	28.34 LT
BL1	BL-1	516383.0242	449739.2084	1593.96	14+38.75	20.92 LT
BL2	BL-2	516937.1029	449445.4691	1596.64	20+63.50	10.33 LT
BL3	BL-3	517379.1091	449274.4887	1600.27	25+33.54	24.76 LT
BL4	BL-4	517864.0485	449346.5083	1600.69	30+19.45	17.77 RT
BL5	BL-5	518344.5709	449306.1925	1610.80	35+02.11	16.00 LT
BL6	BL-6	519105.9806	449045.6393	1641.91	43+12.91	14.96 LT
BL7	BL-7	519768.0565	448890.2807	1663.23	49+92.28	11.80 LT
BL8	BL-8	520227.6549	448712.7440	1695.54	54+86.06	32.59 LT
BL9	BL-9	520450.8535	448570.4003	1716.30	57+44.41	90.33 LT
BL10	BL-10	520857.8514	448533.1796	1742.84	61+38.13	21.75 RT
BL11	BL-11	521221.4639	448292.3159	1769.05	65+71.69	16.00 LT
BL12	BL-12	521555.8558	448166.7511	1786.35	69+24.32	40.86 RT
BL13	BL-13	521900.7454	447947.0865	1768.73	73+32.76	21.22 RT
GPS103	GPS-103	522388.7173	447712.7217	1791.89	78+81.02	34.04 RT
BL14	BL-14	522627.3231	447585.1054	1788.81	81+48.35	9.91 LT
BL15	BL-15	523051.4142	447375.8733	1764.29	86+21.51	24.14 RT
BL16	BL-16	523319.1122	447182.0673	1742.86	89+51.31	13.73 RT
BL17	BL-17	523685.3381	446880.2061	1716.39	94+23.50	27.79 RT
BL18	BL-18	524180.4464	446392.4640	1695.20	101+18.48	23.38 RT
BL19	BL-19	524618.7361	445954.8748	1692.37	107+37.77	15.31 RT
BL20	BL-21	525030.8359	445611.0944	1690.00	112+78.48	2.85 RT
BL21	BL-21	525481.2416	445321.8763	1677.90	118+12.45	34.61 LT
GPS105	GPS-105	526174.4484	444992.4680	1663.74	125+74.02	31.71 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
BY22	BY-22	521310.9585	447862.9603	1825.74	OUTSIDE PROJECT LIMITS	
BY23	BY-23	521470.7095	448094.3653	1809.90	11+22.73	65.46 RT
BY24	BY-24	521788.7651	448002.9957	1774.15	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
GPS104	GPS-104	522310.7687	447982.42074	1779.69	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
BY25	BY-25	523182.3779	447571.4893	1793.82	12+90.34	107.32 LT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
BY26	BY-26	523146.1893	446923.7991	1730.91	OUTSIDE PROJECT LIMITS	

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
GPS106	GPS-106	526289.1314	445228.9723	1663.87	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

BM2 ELEVATION = 1606.54
N 517068 E 449480
L3 STATION 21+63.00 82 RIGHT
RR SPIKE IN 30" POPLAR

BM3 ELEVATION = 1599.76
N 518165 E 449234
L3 STATION 33+24.00 105 LEFT
RR SPIKE IN 36" POPLAR

BM4 ELEVATION = 1659.11
N 519341 E 449059
L3 STATION 45+39.00 60 RIGHT
RR SPIKE IN 12" HICKORY

BM5 ELEVATION = 1677.38
N 519966 E 448487
L3 STATION 53+17.00 334 LEFT
RR SPIKE IN 14" PINE

BM6 ELEVATION = 1765.73
N 521075 E 448496
L3 STATION 63+44.00 89 RIGHT
RR SPIKE IN 15" WHITE OAK

BM7 ELEVATION = 1780.91
N 521871 E 448082
L3 STATION 72+40.00 124 RIGHT
RR SPIKE IN 27" MAPLE

BM8 ELEVATION = 1764.92
N 522921 E 447374
L3 STATION 85+14.00 50 LEFT
RR SPIKE IN 18" POPLAR

BM9 ELEVATION = 1702.98
N 524326 E 446532
L3 STATION 101+25.00 225 RIGHT
RR SPIKE IN 36" TRIPLE POPLAR

BM10 ELEVATION = 1673.73
N 525342 E 445611
L3 STATION 115+52.00 152 RIGHT
RR SPIKE IN 24" CHERRY

BM11 ELEVATION = 1665.59
N 526077 E 444957
L3 STATION 125+19.00 56 LEFT
RR SPIKE IN 24" CHERRY

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: R-3622B_LS_CONTROL_DATE.HTML

   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)
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$FILENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	1C-2
Location and Surveys	

SURVEY CONTROL SHEET R–3622B

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	516111.1520	450086.2481
TS	10+51.03	516138.7810	450043.3421
SC	11+95.03	516220.1699	449924.6068
CS	14+73.69	516424.0382	449736.5434
ST	16+17.69	516548.9414	449664.9792
TS	21+19.62	516991.4530	449428.0961
SC	22+63.62	517120.2694	449363.8421
CS	26+01.99	517449.4892	449296.4338
ST	27+45.99	517593.1928	449304.8888
TS	30+30.31	517876.4205	449329.7570
SC	31+40.31	517986.0876	449338.2489
CS	39+28.81	518757.5609	449209.9387
ST	40+38.81	518858.5754	449166.4067
TS	41+38.15	518949.3940	449126.1544
SC	42+58.15	519059.7280	449078.9910
CS	44+67.94	519259.4860	449015.4442
ST	45+87.94	519376.7902	448990.1916
TS	47+08.18	519494.6607	448966.4461
SC	47+80.18	519565.1929	448951.9839
CS	52+26.77	519994.9124	448831.5258
ST	52+98.77	520062.6850	448807.2188
TS	58+96.92	520625.0183	448603.3434
SC	59+92.92	520715.0383	448569.9960
CS	62+90.84	520985.2184	448444.9564
ST	63+86.84	521068.9004	448397.9142
TS	75+74.90	522100.4647	447808.5353
SC	77+13.90	522222.6365	447742.2980
CS	77+79.46	522282.4670	447715.5263
ST	79+18.46	522413.2661	447668.5698
TS	80+40.69	522529.1965	447629.8436
SC	81+79.69	522659.9956	447582.8871
CS	83+19.22	522785.1581	447521.4509
ST	84+58.22	522902.3135	447446.6984
TS	88+21.47	523204.1106	447244.5357
SC	89+17.47	523283.4944	447190.5556
CS	92+26.89	523524.2298	446996.5396
ST	93+22.89	523593.8441	446930.4375
TS	108+29.63	524673.9040	445879.8486
SC	109+54.63	524764.7943	445794.0516
CS	112+06.39	524967.0490	445644.7051
ST	113+31.39	525075.7948	445583.0891
TS	122+83.69	525911.2787	445126.1034
SC	124+17.69	526027.5647	445059.5584
CS	125+77.71	526157.0232	444965.7128
ST	127+11.71	526256.4380	444875.8943
POT	128+32.59	526344.5577	444793.1444

Y1

TYPE	STATION	NORTH	EAST
PC	10+00.00	521367.8801	447974.6732
PT	11+65.78	521516.4853	448024.6128
PC	12+40.85	521589.2023	448005.9357
PT	13+43.86	521677.4989	448043.2826
POT	13+49.86	521680.4762	448048.4935

Y2

TYPE	STATION	NORTH	EAST
PC	10+00.00	522339.4953	447693.7888
PT	11+32.31	522346.2645	447824.1179
PC	12+14.81	522327.0944	447904.3684
PT	12+77.19	522321.3236	447966.2646

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "SMOKEY"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 521488.4600(ft) EASTING: 448118.6300(ft)
ELEVATION: 1807.45(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99979974
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SMOKEY" TO -L- STATION 10+00.00 IS
S 20°05'53" E 5725.99'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	522884.8765	447458.3660
PC	10+06.67	522888.5785	447463.9175
PRC	11+03.38	522960.8721	447526.3760
PT	12+32.32	523064.2812	447602.0928
PC	14+47.65	523210.9283	447759.7706
PT	15+66.83	523310.5524	447822.7413
POT	16+16.24	523357.6777	447837.6149

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	523195.4930	446994.9147
PC	10+80.73	523257.5618	447046.5368
PT	11+36.01	523296.7869	447085.3871
POT	12+13.51	523346.9154	447144.4966

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	526190.6981	444936.5748
POT	12+60.00	526281.0433	445180.3735

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	517251.3092	449186.5000
PC	10+50.55	517250.7245	449237.0501
PT	10+85.40	517232.3449	449264.3620
PC	11+40.88	517181.1954	449285.8479
PT	11+86.24	517164.5192	449323.4777
POT	12+07.77	517171.6767	449343.7884

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	519613.1147	448827.4588
PC	10+26.84	519621.3162	448853.0156
PRC	10+71.35	519604.3695	448889.8414
PT	11+05.27	519586.0147	448916.2289
POT	11+36.86	519584.6756	448947.7905

DR3

TYPE	STATION	NORTH	EAST
PC	10+00.00	519940.1189	448754.2298
PRC	10+18.73	519925.7477	448766.2311
PRC	11+22.41	519843.4222	448829.1120
PT	11+79.98	519824.8526	448879.5211
POT	11+86.52	519826.7014	448885.7928

DR4

TYPE	STATION	NORTH	EAST
POT	10+00.00	521643.0501	448069.8767
PC	10+09.49	521647.7564	448078.1139
PT	10+67.18	521697.7219	448095.2558
PC	12+41.34	521858.7474	448028.9281
PT	12+62.91	521879.0640	448031.9698
POT	12+68.15	521883.1097	448035.2951

DR5

TYPE	STATION	NORTH	EAST
PC	10+00.00	522589.3124	447496.6237
PT	10+95.28	522520.4443	447561.3281
PC	11+23.99	522495.7012	447575.9013
PT	11+92.04	522473.6520	447634.8259
POT	12+04.91	522477.7306	447647.0356

DR5A

TYPE	STATION	NORTH	EAST
PC	10+00.00	522388.2642	447610.7397
PRC	10+48.25	522430.5773	447594.3455
PT	11+10.64	522485.7887	447583.5608

DR6

TYPE	STATION	NORTH	EAST
POT	10+00.00	522964.1411	447527.9460
PC	10+04.62	522966.1627	447523.7936
PRC	10+50.34	522994.7238	447488.5965
PRC	11+42.90	523052.3262	447417.2092
PT	12+06.80	523095.9241	447371.9820
POT	12+65.36	523147.7575	447344.7176

DR7

TYPE	STATION	NORTH	EAST
POT	10+00.00	522990.5861	447785.0449
PC	10+50.23	523036.4837	447764.6470
PT	11+44.23	523125.7871	447773.9718
PC	12+01.72	523172.3641	447807.6675
PT	12+71.85	523234.8709	447798.0331
POT	12+84.44	523242.3773	447787.9228

DR8

TYPE	STATION	NORTH	EAST
POT	10+00.00	521687.0651	447927.9499
PC	10+68.12	521637.7369	447974.9338
PT	10+92.64	521626.0966	447996.0767
POT	11+01.72	521624.3222	448004.9764

DR9

TYPE	STATION	NORTH	EAST
POT	10+00.00	520801.0035	448381.9844
PC	10+25.16	520802.1000	448407.1237
PT	11+19.90	520744.2805	448469.7007
POT	11+55.84	520708.3636	448470.9726

LTEMP

TYPE	STATION	NORTH	EAST
PC	62+39.88	520945.2577	448478.6311
PT	64+39.35	521121.7177	448385.7422
PC	66+62.66	521323.3140	448289.6864
PT	67+05.67	521361.7332	448270.3561
PC	72+98.38	521885.3481	447992.6359
PT	74+29.50	521998.3580	447926.2131
PC	76+84.69	522212.4962	447787.4172
PT	78+35.69	522348.1529	447722.0132
PC	81+02.95	522601.5578	447637.0754
PRC	85+34.62	522972.1746	447421.5874
PT	87+93.03	523176.1387	447263.2730
POT	88+26.70	523204.1106	447244.5357

Y1TEMP

TYPE	STATION	NORTH	EAST
POT	12+40.85	521589.2023	448005.9357
PC	13+97.49	521734.6882	447947.8934
PT	14+73.24	521804.5927	447962.7170
POT	15+26.24	521841.6088	448000.6419

DR5TEMP

TYPE	STATION	NORTH	EAST
PC	10+00.00	522589.3124	447496.6237
PT	10+46.99	522583.6802	447541.5506
POT	11+43.15	522616.2181	447632.0422

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	1C-3

Location and Surveys

SURVEY CONTROL SHEET R-3622B

-L- FINAL NEW R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.18	-45.86	516187.2360	449892.2549
L	12+59.30	30.00	516283.6601	449895.4746
L	13+58.75	30.00	516352.0756	449828.4002
L	14+36.38	36.66	516414.6290	449787.4007
L	14+37.69	26.74	516409.8822	449778.5991
L	14+46.10	-42.74	516376.6548	449716.9879
L	20+19.85	-37.25	516885.9120	449442.3414
L	20+20.06	32.74	516919.1394	449503.9526
L	20+57.00	33.89	516952.2462	449487.5270
L	20+61.55	-35.96	516923.2870	449423.7981
L	21+53.40	-30.00	517007.2288	449385.6842
L	22+63.62	-30.00	517108.4150	449336.2836
L	22+81.30	42.56	517152.5369	449396.5124
L	22+81.76	52.56	517156.6739	449405.6166
L	23+34.00	-67.00	517164.9378	449275.2834
L	23+43.81	47.85	517209.9238	449381.4192
L	23+52.87	-33.62	517194.1554	449300.9876
L	25+67.72	30.00	517416.4286	449327.0754
L	26+01.99	30.00	517449.4548	449326.4338
L	27+45.99	30.00	517590.5690	449334.7738
L	28+07.59	30.00	517651.9365	449340.1621
L	28+13.19	-30.00	517662.4586	449280.7972
L	29+48.09	56.44	517789.5793	449378.7856
L	30+30.31	-30.00	517879.0445	449299.8720
L	30+47.37	66.72	517887.6293	449397.7106
L	31+40.31	-30.00	517987.7870	449308.2971
L	31+57.19	70.35	517999.6319	449409.3922
L	31+88.61	65.67	518032.4006	449405.9760
L	35+31.09	42.95	518382.5026	449359.9358
L	35+31.41	32.96	518381.1988	449350.0212
L	36+31.02	39.09	518482.1298	449336.7482
L	37+96.13	38.13	518644.6085	449291.5963
L	39+17.04	-30.00	518735.5304	449186.4715
L	42+14.42	-30.19	519007.4963	449067.8281
L	42+15.04	29.80	519031.4875	449122.8229
L	45+13.37	29.90	519310.1188	449034.5046
L	45+14.06	-30.10	519298.0487	448975.7313
L	48+19.67	-30.00	519597.2123	448914.2927
L	49+82.71	36.82	519771.7035	448939.7100
L	50+00.00	-48.50	519765.5978	448852.8730
L	50+00.00	-30.00	519770.5734	448870.6913
L	50+63.30	-49.06	519825.3999	448835.0018
L	50+76.34	30.00	519860.6341	448906.9613
L	52+09.14	-79.26	519952.4055	448762.3977
L	52+26.77	30.00	520004.8493	448859.8323
L	52+98.77	30.00	520072.9103	448835.4224
L	53+04.85	-82.62	520040.2429	448727.4778
L	54+45.22	-67.06	520177.5148	448694.2534
L	55+35.28	-74.45	520259.6578	448656.6111
L	56+74.30	-113.54	520377.0322	448572.4751
L	58+96.92	30.00	520635.2436	448631.5470
L	59+18.20	-110.62	520607.2127	448492.1268
L	59+91.63	30.00	520724.6333	448598.4497
L	60+59.71	30.00	520788.5996	448572.6838
L	60+70.82	-61.24	520763.2222	448484.3573
L	62+59.48	-40.75	520938.5898	448423.6974
L	62+71.05	48.50	520990.6098	448497.1407
L	63+52.62	30.00	521053.9853	448440.9522
L	63+53.53	39.17	521059.3149	448448.4767
L	63+86.84	30.00	521083.7829	448423.9625
L	63+97.05	-55.53	521050.2184	448344.6306
L	64+68.97	-56.53	521112.1737	448308.0863
L	65+59.95	30.00	521234.0907	448338.0848
L	67+42.04	62.73	521408.4350	448276.1665
L	67+43.43	42.78	521399.7435	448258.1538
L	68+34.93	-31.05	521442.5632	448148.6661
L	70+69.35	85.52	521703.9334	448133.5820
L	72+75.62	-71.12	521805.3311	447895.2524
L	72+77.23	-30.00	521827.1209	447930.1576
L	74+50.27	54.74	522019.4121	447917.8926
L	74+52.80	74.58	522031.4459	447933.8672

-L- FINAL NEW R/W MONUMENTS

L	75+61.74	-30.00	522074.1546	447789.0161
L	76+28.62	-38.74	522128.3206	447748.2128
L	76+43.11	30.00	522174.3304	447801.3007
L	77+13.90	30.00	522235.7706	447769.2701
L	78+65.86	-44.79	522348.8410	447643.0518
L	80+21.00	37.69	522522.4708	447671.8296
L	82+81.91	-35.54	522735.8703	447508.1098
L	82+82.16	-30.00	522738.6797	447512.8950
L	82+84.68	30.00	522769.0840	447564.6821
L	82+84.85	34.39	522771.3109	447568.4751
L	83+19.22	-30.00	522770.1403	447495.4804
L	83+19.22	30.00	522800.1525	447547.4348
L	83+55.00	30.00	522831.6310	447528.6045
L	84+58.22	-30.00	522885.6175	447421.7736
L	85+40.06	30.00	522987.0092	447426.0727
L	88+21.47	-30.00	523187.4011	447219.6170
L	88+21.47	30.00	523220.8067	447269.4604
L	88+97.00	-30.00	523249.6654	447177.5230
L	89+17.47	30.00	523300.7086	447215.1254
L	90+90.00	-30.00	523401.9536	447063.1483
L	92+26.89	-30.00	523503.8710	446974.5051
L	92+26.89	30.00	523544.5824	447018.5798
L	93+22.89	30.00	523614.7619	446951.9421
L	93+22.89	-30.00	523573.0357	446908.8265
L	95+49.00	50.00	523790.7761	446808.6317
L	95+49.00	30.00	523776.8439	446794.2827
L	95+64.00	50.00	523801.5284	446798.1728
L	95+64.00	30.00	523787.5962	446783.8238
L	96+00.00	-55.00	523754.1347	446697.7928
L	96+00.00	-30.00	523771.5661	446715.7133
L	97+00.00	-30.00	523843.2480	446645.9874
L	97+00.00	-55.00	523825.8165	446628.0669
L	108+29.63	-30.00	524652.9862	445858.3440
L	108+29.63	30.00	524694.8218	445901.3532
L	109+54.63	-30.00	524744.8507	445771.6406
L	109+54.63	30.00	524784.7244	445816.4746
L	112+06.39	-30.00	524951.4841	445619.0587
L	112+06.39	30.00	524982.6138	445670.3514
L	113+31.39	30.00	525090.1912	445609.4091
L	113+31.39	-30.00	525061.3984	445556.7690
L	121+84.75	-44.38	525803.1586	445134.6528
L	121+84.75	-30.00	525810.0807	445147.2614
L	122+83.69	30.00	525925.6750	445152.4234
L	124+17.69	30.00	526043.4564	445085.0035
L	125+20.46	30.00	526130.2871	445025.2712
L	125+31.89	-38.49	526097.7976	444963.9105
L	127+01.42	30.21	526269.6129	444904.9650

-Y1- FINAL NEW R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+00.00	22.06	521350.6041	447988.3880
Y1	10+00.00	-22.94	521385.8484	447960.4088
Y1	10+00.00	30.00	521344.3838	447993.3260
Y1	10+00.00	-30.00	521391.3763	447956.0205
Y1	10+46.53	30.00	521385.7854	448030.9974
Y1	10+87.01	-30.00	521447.4546	447994.1961

-Y2- FINAL NEW R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+03.10	-46.43	522397.3990	447800.3650
Y2	11+32.31	30.00	522317.0854	447817.1477
Y2	11+59.65	-30.00	522369.0898	447857.6863
Y2	12+14.81	22.50	522305.2101	447899.1407
Y2	12+14.81	30.00	522297.9154	447897.3982
Y2	12+14.81	-22.50	522348.9787	447909.5961
Y2	12+14.81	-30.00	522356.2734	447911.3386

-Y3- FINAL NEW R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+03.38	65.00	522933.0449	447585.1182
Y3	11+24.00	-30.00	522993.6888	447509.4785
Y3	12+32.32	90.00	522998.3782	447663.3855
Y3	12+32.32	-30.00	523086.2489	447581.6620
Y3	13+47.28	-30.00	523164.5410	447665.8431
Y3	14+47.65	90.00	523145.0252	447821.0633
Y3	14+47.65	-30.00	523232.8960	447739.3398
Y3	15+66.83	90.00	523283.4640	447908.5680
Y3	15+66.83	-30.00	523319.5819	447794.1324
Y3	15+66.83	-24.66	523317.9754	447799.2223
Y3	15+66.83	25.34	523302.9260	447846.9049

-Y4- FINAL NEW R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	10+80.73	30.00	523238.3786	447069.6020
Y4	10+80.73	-30.00	523276.7450	447023.4715
Y4	10+80.73	25.00	523241.5758	447065.7578
Y4	10+80.73	-25.00	523273.5478	447027.3157
Y4	11+12.00	30.00	523259.2304	447088.7522
Y4	11+23.00	-30.00	523310.2413	447055.3187

-Y5- FINAL NEW R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	10+80.09	-30.00	526246.6583	445001.2491
Y5	11+03.45	30.00	526198.5154	445044.0056

NOTE: DRAWING NOT TO SCALE

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	1C-4
Location and Surveys	

SURVEY CONTROL SHEET R-3622B

-L- FINAL PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+62.00	-43.02	516165.5141	449925.9828
L	11+62.00	-62.00	516150.0947	449914.8650
L	11+81.00	-62.00	516162.0363	449898.6246
L	11+81.00	-44.22	516176.2720	449909.2789
L	14+10.00	-46.60	516343.7450	449736.3363
L	14+50.00	-74.00	516362.2119	449688.9575
L	14+83.00	-72.00	516393.1864	449670.7723
L	14+83.00	-39.08	516410.8684	449698.5362
L	15+03.00	-71.00	516411.9589	449660.2734
L	15+03.00	-37.79	516429.2097	449688.6446
L	16+55.00	-74.00	516546.9100	449582.1321
L	16+55.00	-36.12	516564.7867	449615.5268
L	16+75.00	-36.18	516582.3900	449606.0333
L	16+75.00	-74.00	516564.5425	449572.6931
L	19+50.00	-82.00	516803.2142	449435.8544
L	19+50.00	-37.03	516824.4352	449475.4964
L	19+70.00	-83.00	516820.3748	449425.5338
L	19+70.00	-37.10	516842.0384	449466.0028
L	22+30.00	-93.21	517049.8647	449293.3605
L	22+30.00	-28.94	517077.2794	449351.4856
L	22+50.00	-95.13	517068.9495	449282.4672
L	22+50.00	-29.42	517095.7825	449342.4509
L	23+95.00	-126.00	517213.7459	449199.6190
L	25+48.00	-90.00	517389.8094	449208.3045
L	25+48.00	-39.12	517393.0467	449259.0823
L	25+67.00	-40.04	517412.8737	449257.1217
L	25+67.00	-88.00	517410.9147	449209.2030
L	27+65.00	-37.37	517615.3993	449269.3237
L	27+65.00	-86.97	517619.7372	449219.9184
L	27+95.00	-33.18	517644.9180	449276.1194
L	27+95.00	-88.06	517649.7176	449221.4568
L	29+40.00	-30.00	517789.0839	449291.9732
L	29+40.00	-94.00	517794.6226	449228.8923
L	29+87.00	-96.00	517841.6765	449230.3381
L	29+87.00	-55.00	517838.0904	449271.1810
L	30+55.00	113.00	517891.3123	449444.4873
L	30+67.00	-58.00	517917.8511	449275.1308
L	30+67.00	-30.33	517915.5260	449302.6996
L	30+88.00	67.56	517928.5700	449401.9844
L	30+94.00	106.00	517931.7112	449440.7930
L	33+29.00	-92.00	518170.1554	449247.0550
L	33+32.00	-51.00	518175.0870	449287.8581
L	35+00.00	-82.03	518332.9315	449241.1632
L	35+00.69	-30.00	518341.1411	449292.5441
L	35+22.73	-30.00	518362.5590	449289.2638
L	35+40.00	-87.05	518369.7814	449230.2617
L	36+50.00	-96.35	518470.2088	449200.5517
L	36+50.00	-30.00	518485.3131	449265.1581
L	36+60.00	41.22	518511.4828	449332.1509
L	36+60.00	50.00	518513.5295	449340.6890
L	36+80.00	-97.75	518497.4409	449192.4955
L	36+80.00	-30.00	518513.9751	449258.2020
L	36+90.00	42.39	518541.5628	449325.8804
L	36+90.00	50.00	518543.4605	449333.2466
L	39+60.00	63.88	518811.3162	449256.7673
L	39+60.00	29.15	518797.7468	449224.7919
L	39+69.00	-30.93	518782.4590	449165.9992
L	39+69.00	-45.00	518776.9175	449153.0640
L	39+90.00	55.66	518836.1548	449237.1110
L	39+90.00	29.00	518825.5046	449212.6816
L	39+90.00	-47.00	518795.1306	449143.0096
L	39+90.00	-31.00	518801.5272	449157.6820
L	40+98.00	-30.46	518900.3461	449114.5717
L	40+98.00	-61.00	518887.9731	449086.6553
L	41+18.00	-61.00	518906.2577	449078.5513
L	41+18.00	-30.35	518918.6780	449106.5745
L	42+80.00	-89.00	519048.4986	448987.8846
L	42+88.63	-48.00	519071.1872	449022.7601
L	42+92.45	-30.56	519081.1380	449038.0560
L	42+98.00	-88.00	519066.7013	448982.1619
L	43+05.00	50.00	519120.5202	449109.4308
L	43+05.00	29.41	519113.5303	449090.0678
L	43+08.31	-47.00	519090.8004	449017.0366
L	43+12.60	-30.60	519100.4575	449031.0038
L	43+25.00	29.38	519132.0093	449083.5028
L	43+25.14	50.00	519138.8769	449102.9412
L	44+30.00	-44.79	519211.0654	448981.6277

-L- FINAL PERMANENT EASEMENT

L	44+30.00	-84.80	519200.6383	448942.9998
L	44+30.00	-30.54	519214.7798	448995.3881
L	44+35.00	29.48	519235.1548	449052.0574
L	44+35.00	40.00	519237.8639	449062.2272
L	44+55.00	29.54	519254.1520	449047.1971
L	44+55.00	40.00	519256.7106	449057.3401
L	45+30.00	57.14	519331.8320	449057.7199
L	45+30.00	30.03	519326.2326	449031.1965
L	45+72.00	111.93	519383.3489	449103.0568
L	46+00.00	106.00	519409.5479	449091.7230
L	46+00.00	29.95	519394.5290	449017.1706
L	47+66.00	29.45	519557.3290	448983.7367
L	47+66.00	65.00	519564.5811	449018.5346
L	47+85.00	-30.45	519563.5479	448921.2063
L	47+85.00	-73.00	519554.6555	448879.5919
L	47+85.00	-113.00	519546.2964	448840.4751
L	47+86.00	65.00	519584.4114	449014.3487
L	47+86.00	29.56	519577.0745	448979.6805
L	49+52.00	-122.00	519701.1347	448794.2303
L	49+53.00	-82.00	519712.3043	448832.6514
L	51+06.00	-58.58	519862.8198	448813.6103
L	51+06.00	-89.00	519853.7500	448784.5747
L	51+26.00	-94.00	519870.8171	448773.9466
L	51+26.00	-62.85	519880.2770	448803.6307
L	52+03.00	30.00	519982.1987	448867.6934
L	52+03.00	56.00	519990.6400	448892.2861
L	52+22.94	52.00	520008.4674	448881.8765
L	52+23.00	30.00	520001.2596	448861.0897
L	60+60.00	-65.08	520752.0378	448484.9153
L	60+75.00	-115.00	520745.8154	448433.3294
L	60+90.00	-54.89	520782.9086	448482.7897
L	61+05.00	-115.00	520771.9430	448421.9458
L	62+65.00	49.25	520985.5015	448500.7026
L	62+65.00	65.00	520992.8704	448514.6189
L	62+85.00	65.00	521011.0029	448504.9163
L	62+85.00	46.73	521002.3155	448488.8495
L	64+87.00	-88.00	521112.2138	448271.8169
L	64+90.00	-55.07	521131.1567	448298.9246
L	65+15.00	60.00	521209.9462	448386.4322
L	65+15.00	30.00	521195.0637	448360.3839
L	65+34.01	-52.00	521170.8866	448279.7560
L	66+33.00	35.09	521300.0434	448306.2624
L	66+33.00	60.00	521312.4026	448327.8942
L	68+38.30	-79.50	521421.4585	448104.9222
L	68+41.12	-120.00	521403.8150	448068.3573
L	70+80.00	86.23	521713.5329	448128.9178
L	71+96.00	90.23	521816.2362	448074.8436
L	72+83.00	169.00	521930.8539	448100.0805
L	72+99.00	132.00	521926.3911	448060.0170
L	73+00.00	87.97	521905.4168	448021.2907
L	73+70.00	-95.00	521875.4275	447827.6967
L	73+75.00	100.00	521976.5053	447994.5298
L	74+05.00	-95.00	521905.8171	447810.3338
L	74+05.00	-30.00	521938.0626	447866.7716
L	74+50.00	110.00	522046.5871	447966.0072
L	75+00.00	112.00	522090.9930	447942.9395
L	75+97.00	-62.00	522088.9938	447743.6976
L	76+00.00	110.00	522176.6291	447891.7291
L	76+41.00	-40.37	522138.5325	447740.6846
L	76+50.00	100.00	522213.8174	447859.4832
L	77+42.60	69.88	522277.4085	447793.7869
L	79+15.00	-40.74	522397.0794	447631.0257
L	79+25.00	-90.00	522390.9566	447581.1347
L	80+25.00	-85.00	522487.3888	447554.1934
L	81+50.00	-125.00	522587.9155	447476.9649
L	81+85.00	-83.65	522632.7706	447503.6279
L	85+00.00	-61.00	522903.0788	447372.7645
L	85+76.76	30.00	523017.5006	447405.6489
L	86+16.98	30.00	523050.9131	447383.2658
L	86+56.00	96.41	523120.2906	447416.7233
L	86+85.00	30.00	523107.4263	447345.4110
L	87+30.00	-30.00	523111.4206	447270.5165
L	87+30.00	-65.28	523091.7876	447241.2074
L	88+15.00	30.00	523215.4328	447273.0601
L	88+15.00	40.00	523220.9982	447281.3684
L	88+35.00	40.00	523237.6274	447270.2268
L	88+35.00	29.91	523232.0074	447261.8449
L	88+62.00	45.00	523262.9351	447259.2401

-L- FINAL PERMANENT EASEMENT

L	88+62.00	29.76	523254.4110	447246.6112
L	88+82.00	45.00	523279.5720	447248.2799
L	88+82.00	29.73	523271.0589	447235.2891
L	88+90.00	-68.00	523222.4697	447150.1045
L	88+90.00	-30.05	523243.9234	447181.4063
L	91+23.00	-60.00	523407.6679	447019.3980
L	92+00.00	-30.00	523484.2768	446992.3879
L	94+93.00	50.85	523751.2270	446848.2876
L	94+93.00	30.00	523736.6898	446833.3426
L	95+90.00	45.00	523816.6931	446776.4481
L	98+50.00	45.00	524003.0653	446595.1599
L	98+50.00	30.00	523992.6064	446584.4076
L	100+75.00	-54.81	524094.7422	446366.7426
L	100+75.00	-30.00	524112.0428	446384.5285
L	100+90.00	30.00	524164.6429	446417.0653
L	100+90.00	121.00	524228.0936	446482.2958
L	101+10.00	123.00	524243.8244	446469.7843
L	101+10.00	30.00	524178.9793	446403.1201
L	101+10.00	-55.00	524119.7123	446342.1905
L	101+10.00	-30.00	524137.1438	446360.1110
L	105+90.00	30.00	524523.0524	446068.4356
L	105+90.00	-30.00	524481.2168	446025.4265
L	105+90.00	93.00	524566.9817	446113.5947
L	105+90.00	-50.00	524467.2716	446011.0901
L	106+10.00	78.00	524570.8592	446088.8972
L	106+10.00	-30.00	524495.5539	446011.4820
L	106+10.00	30.00	524537.3887	446054.4904
L	106+10.00	-50.00	524481.6080	445997.1449
L	107+85.00	-50.00	524607.0390	445875.1379
L	107+85.00	-30.00	524620.9842	445889.4743
L	107+95.00	55.00	524687.4194	445943.4313
L	107+95.00	30.00	524669.9879	445925.5108
L	108+15.00	-30.00	524642.4887	445868.5565
L	108+15.00	-50.00	524628.5435	445854.2201
L	108+25.00	55.00	524708.9240	445922.5135
L	108+25.00	30.00	524691.4925	445904.5931
L	109+97.00	60.00	524835.3513	445812.4411
L	109+97.00	30.00	524816.1137	445789.4212
L	110+02.00	-60.00	524762.4237	445717.0121
L	110+02.00	-30.00	524781.5773	445740.1005
L	110+22.00	-60.00	524778.4647	445703.8984
L	110+22.00	-30.00	524797.3956	445727.1689
L	110+27.00	30.00	524838.8381	445770.8433
L	110+27.00	60.00	524857.5737	445794.2722
L	111+90.00	-75.00	524913.4232	445589.6395
L	111+90.00	-30.00	524937.2224	445627.8311
L	112+30.00	-75.00	524949.4086	445567.9110
L	112+30.00	-29.47	524972.4284	445607.1908
L	113+86.00	60.00	525152.4988	445609.5231
L	113+86.00	30.00	525138.1025	445583.2030
L	113+86.00	-30.00	525109.3099	445530.5629
L	113+86.00	-50.00	525099.7123	445513.0161
L	114+06.00	60.00	525170.0455	445599.9255
L	114+06.00	30.00	525155.6492	445573.6054
L	114+06.00	-30.00	525126.8566	445520.9653
L	114+06.00	-50.00	525117.2598	445503.4194
L	119+42.00	30.00	525625.9011	445316.3912
L	119+74.00	30.00	525653.9758	445301.0351
L	120+00.00	190.00	525753.5669	445428.9320
L	120+28.00	180.00	525773.3336	445406.7221

-Y1- FINAL PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	12+00.00	-48.35	521537.6059	447969.2713

-Y3- FINAL PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	13+45.00	-83.62	523202.2548	447627.6545
Y3	13+48.00	-123.52	523233.5115	447602.6813

-Y5- FINAL PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	10+96.27	40.00	526186.6428	445040.7456
Y5	11+98.00	48.00	526214.4904	445138.9160
Y5	12+60.00	29.61	526253.2751	445190.6636
Y5	12+60.00	47.00	526236.9720	445196.7051

NOTE: DRAWING NOT TO SCALE

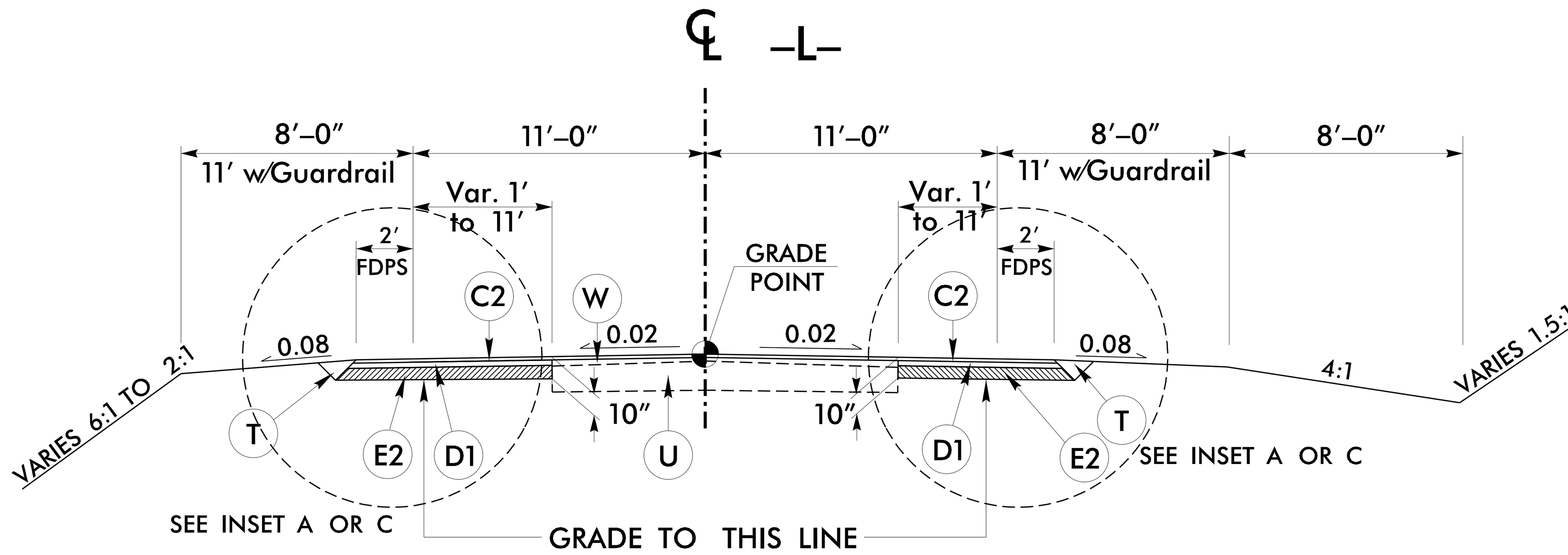
$$$$SYSTIME$$$$
$$$$SYSTIME$$$$
$$$$ISFILENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26960 — REECE M. SCHULER — Reece Schuler 4/10/2015

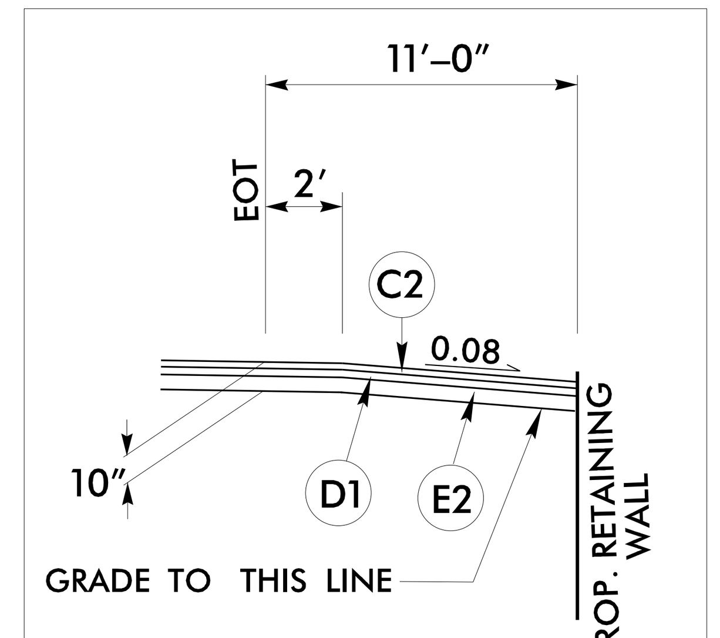
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20134 — ROBERT M. CRISP — Robert Crisp 4/10/2015

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828 253 2796
Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864 574 4775

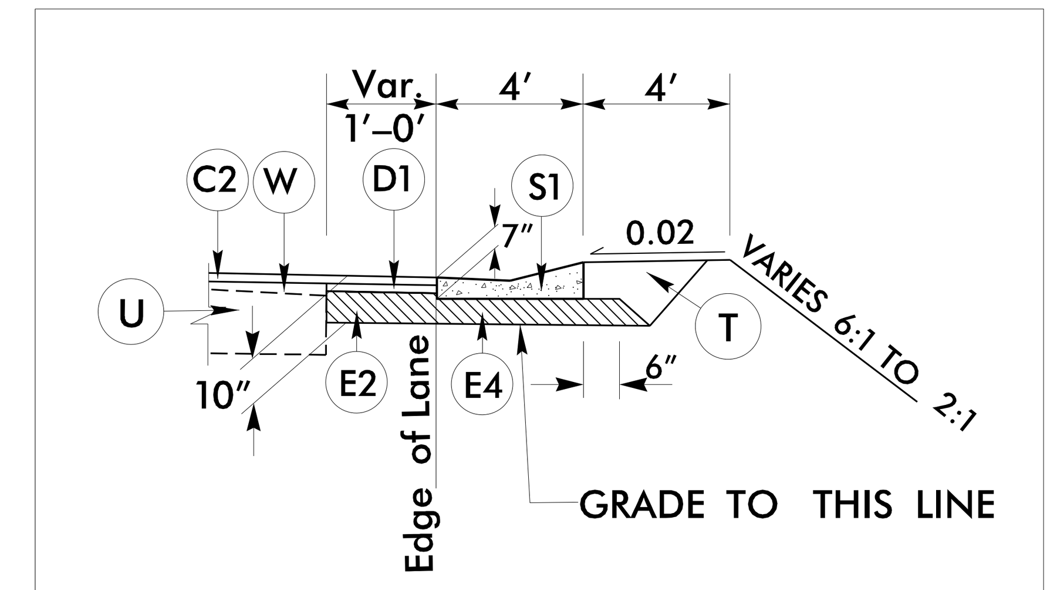


TYPICAL SECTION NO. 1

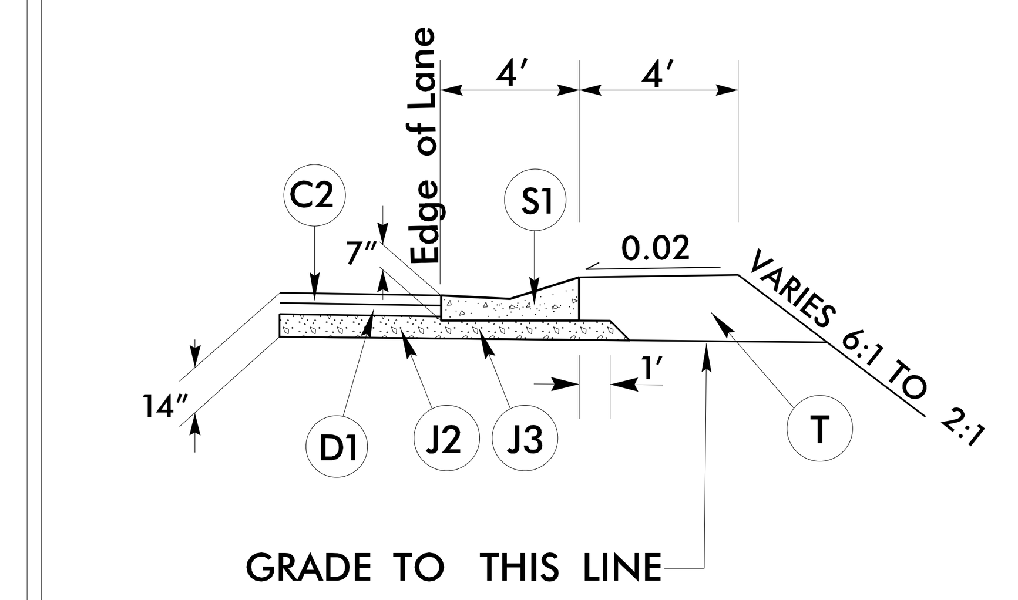
USE TYPICAL SECTION NO. 1
-L- STA. 11+35 TO 27+50
-L- STA. 32+50 TO 52+00
-L- STA. 60+00 TO 61+50
-L- STA. 62+50 TO 64+00
-L- STA. 86+00 TO 127+25



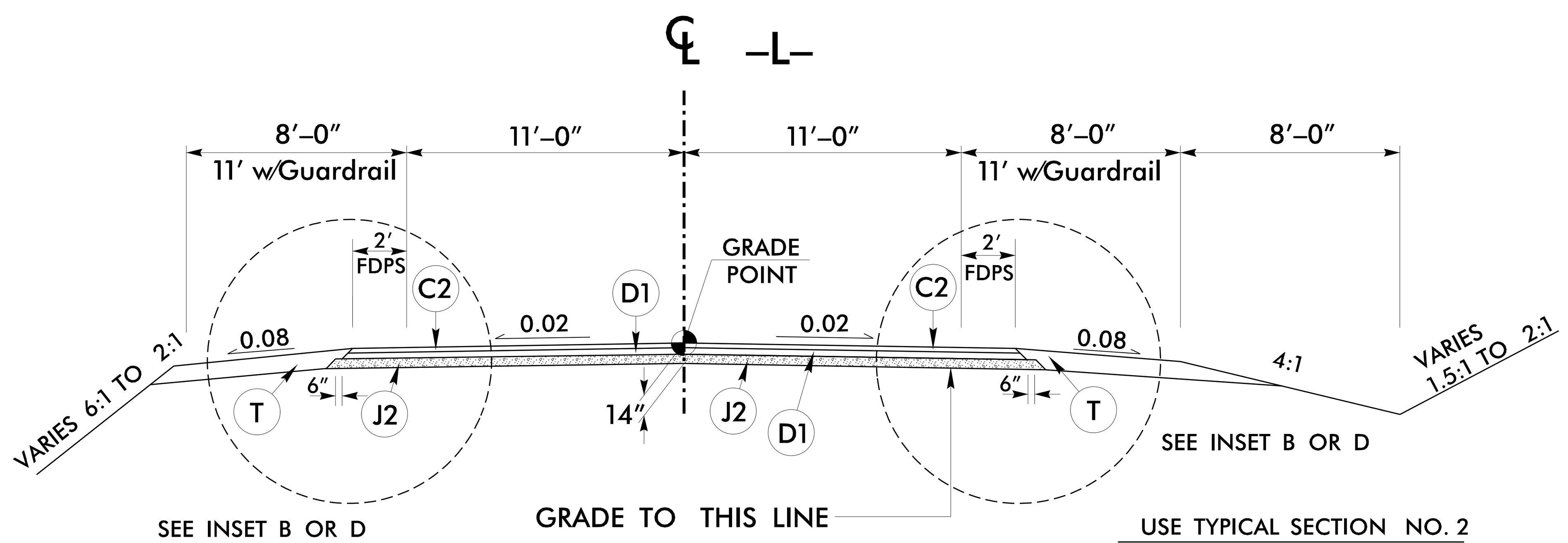
USE WITH TYPICAL NO. 1
-L- STA. 97+30.39 to 97+70.39 Rt.



USE INSET A
-L- STA 11+35 TO 20+50 RT
-L- STA 22+40 TO 27+50 RT
-L- STA 60+00 TO 60+50 RT
-L- STA 86+00 TO 92+70 RT
-L- STA 101+90 TO 103+05 RT
-L- STA 114+50 TO 126+25 LT

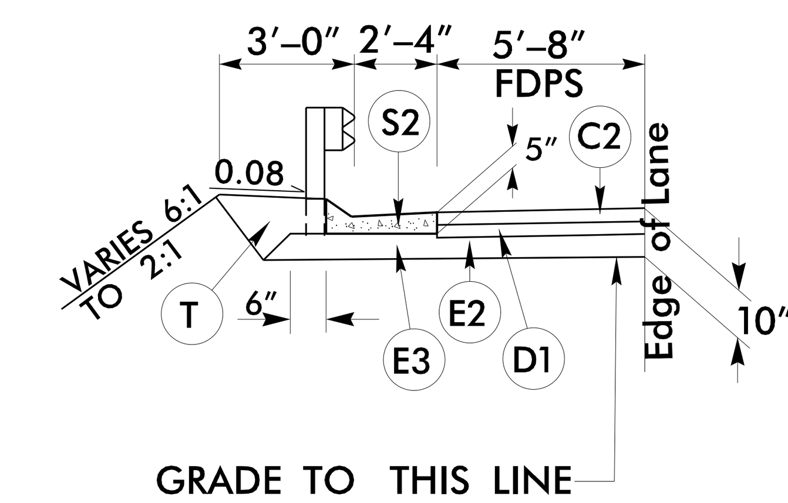


USE INSET B
-L- STA 52+10 TO 60+00 RT
-L- STA 84+77 TO 86+00 RT

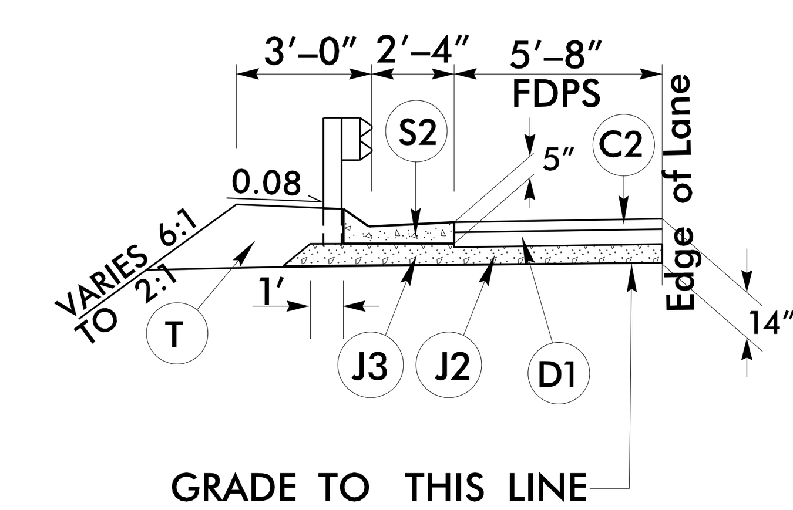


TYPICAL SECTION NO. 2

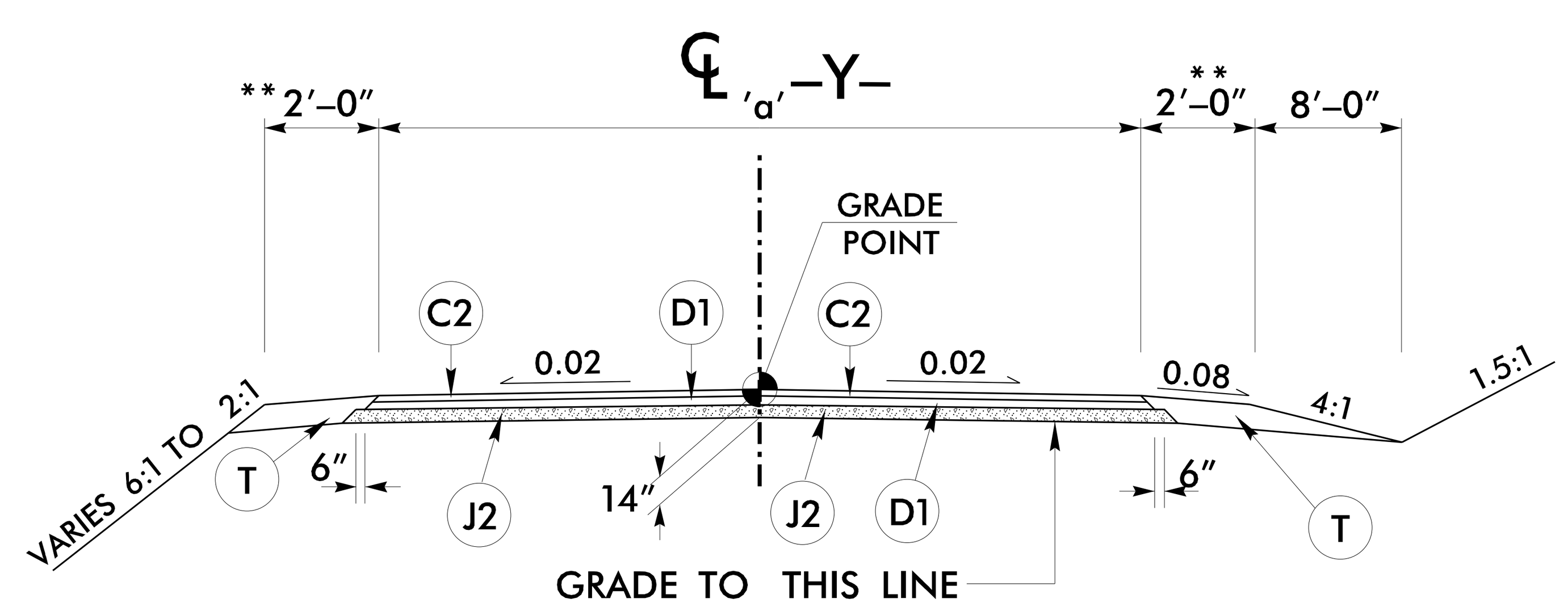
USE TYPICAL SECTION NO. 2
-L- STA. 27+50 TO 32+50
-L- STA. 52+00 TO 60+00
-L- STA. 61+50 TO 62+50
-L- STA. 64+00 TO 86+00



USE INSET C
-L- STA 11+82 TO 22+92 LT
-L- STA 32+50 TO 33+00 LT
-L- STA 38+75 TO 47+30 LT
-L- STA 49+00 TO 50+19 LT
-L- STA 60+00 TO 61+50 LT
-L- STA 62+50 TO 63+25 LT
-L- STA 106+00 TO 116+50 RT



USE INSET D
-L- STA 23+95 TO 32+50 LT
-L- STA 58+35 TO 60+00 LT
-L- STA 61+50 TO 62+50 LT
-L- STA 71+73 TO 76+25 LT
-L- STA 71+14 TO 77+80 RT



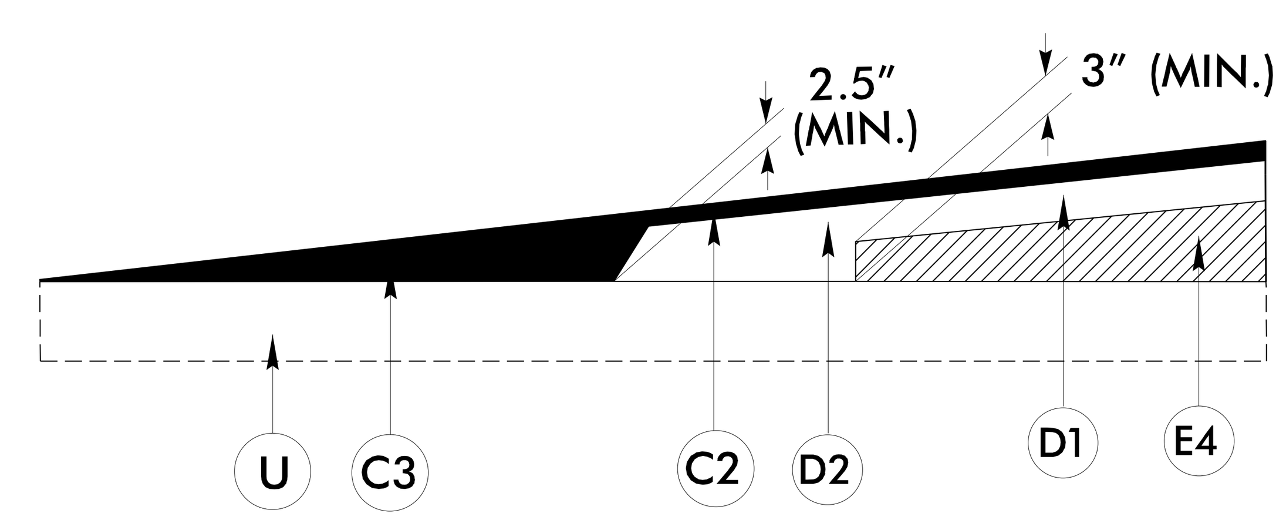
TYPICAL SECTION NO. 3

DIMENSION 'a'

LINE	WIDTH
-Y1-	18.0'
-Y2-	18.0'
-Y3-	18.0'
-Y4-	18.0'
-Y5-	20.0'
-DR1-	12.0'
-DR2-	8.0'
-DR3-	8.0'
-DR4-	12.0'
-DR5-	20.0'
-DR5A-	10.0'
-DR6-	20.0'
-DR7-	10.0'
-DR8-	12.0'

** TOTAL SHOULDER WIDTH TO BE INCREASED TO 7' WHERE GUARDRAIL IS USED.

USE TYPICAL SECTION NO. 3
-Y1- STA. 10+00 TO 13+38.56
-Y2- STA. 10+11 TO 12+15.00
-Y3- STA. 10+11 TO 15+65.00
-DR1- STA. 10+40 TO 11+96.77
-DR2- STA. 10+10 TO 11+25.49
-DR3- STA. 10+25 TO 11+75.51
-DR4- STA. 10+11 TO 12+60.00
-DR5- STA. 10+00 TO 11+93.91
-DR5A- STA. 10+00 TO 11+00.14
-DR6- STA. 10+09 TO 12+00.00
-DR7- STA. 10+50 TO 12+75.44
-DR8- STA. 10+05 TO 10+92.72



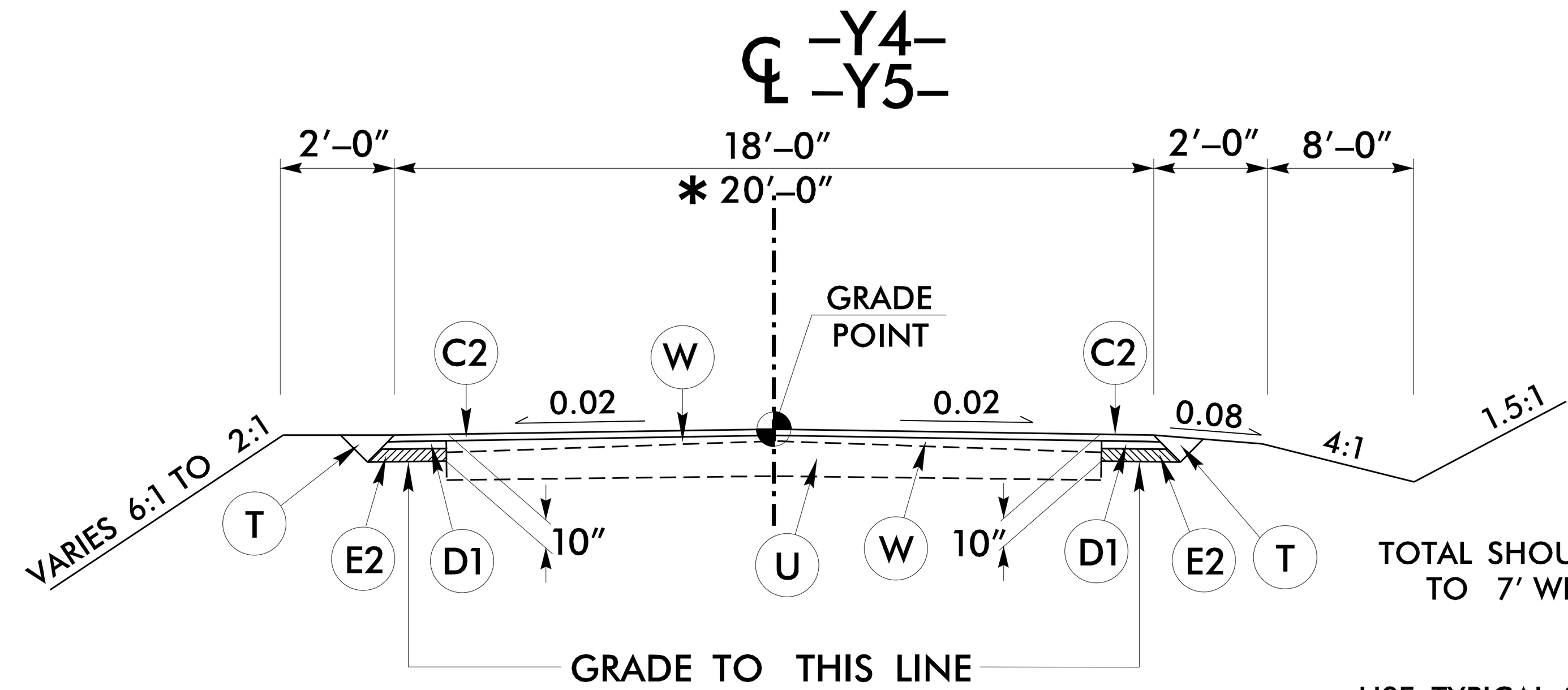
Wedging Detail

PAVEMENT SCHEDULE	
A	PROP. 6" JOINTED CONCRETE PAVEMENT WITH 4X4 W3 X W3 WIRE REINFORCEMENT
C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B AT AN AVGERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER.
C2	PROP. APPROX. 3.0" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP.VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B AT AN AVG. RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" NOR GREATER THAN 2.0" IN DEPTH
D1	PROP. APPROX. 3.0" IN ASPHALT CONC. INTERMEDIATE COURSE, TYPE 119.0B AT AN AVG. RATE OF 342 LBS PER SQ. YD.
D2	PROP.VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE 119.0B AT AN AVG. RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" NOR GREATER THAN 4.0" IN DEPTH
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E4	PROP.VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B AT AN AVG. RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3.0" NOR GREATER THAN 5.5" IN DEPTH
J1	4" AGGREGATE BASE COURSE
J2	8" AGGREGATE BASE COURSE
J3	VARIABLE DEPTH AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GALS. PER SQ. YD.
S1	EXPRESSWAY GUTTER (NCDOT STANDARD DWG 846.01)
S2	SHOULDER BERM GUTTER (NCDOT STANDARD DWG 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING (SEE DETAIL)

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 26960 — Reece M. Schuler — 4/10/2015	SEAL 20134 — Robert M. Crisp — 4/10/2015

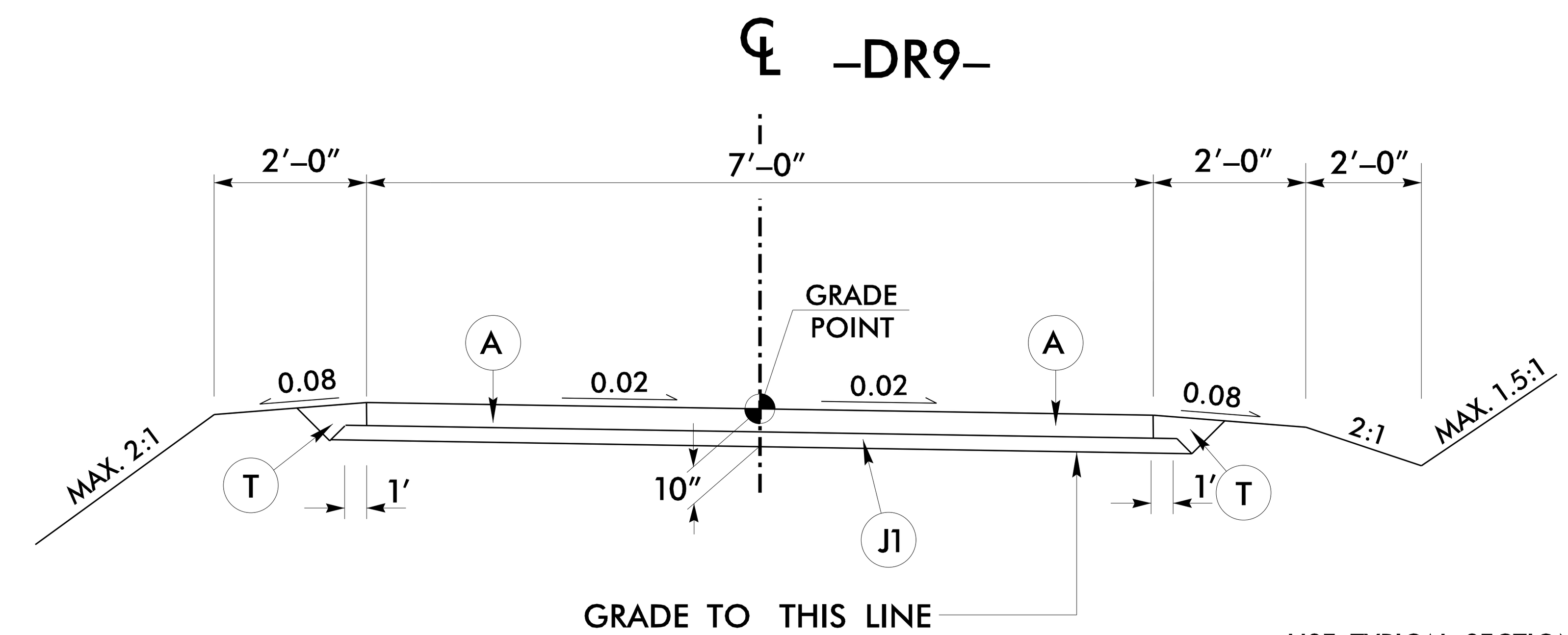
Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828 253 2796
Charlotte, North Carolina 704·357·0488
Tri-Cities, Tennessee 423·467·8401
Knoxville, Tennessee 865·546·5800
Middlesboro, Kentucky 606·248·6600
Spartanburg, South Carolina 864·574·4775



TYPICAL SECTION NO. 4

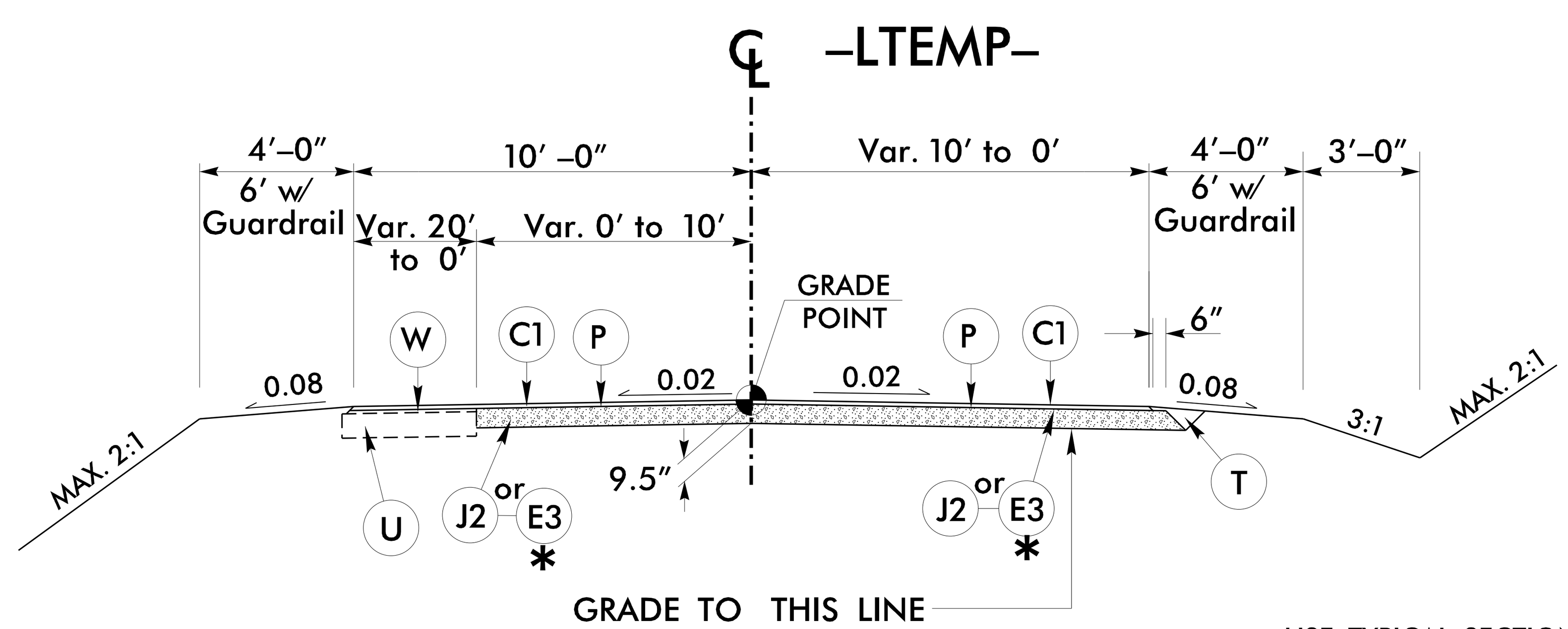
TOTAL SHOULDER WIDTH TO BE INCREASED TO 7' WHERE GUARDRAIL IS USED.

USE TYPICAL SECTION NO. 4
-Y4- STA. 10+75 TO 12+02.49
* -Y5- STA. 10+11 TO 11+25.00



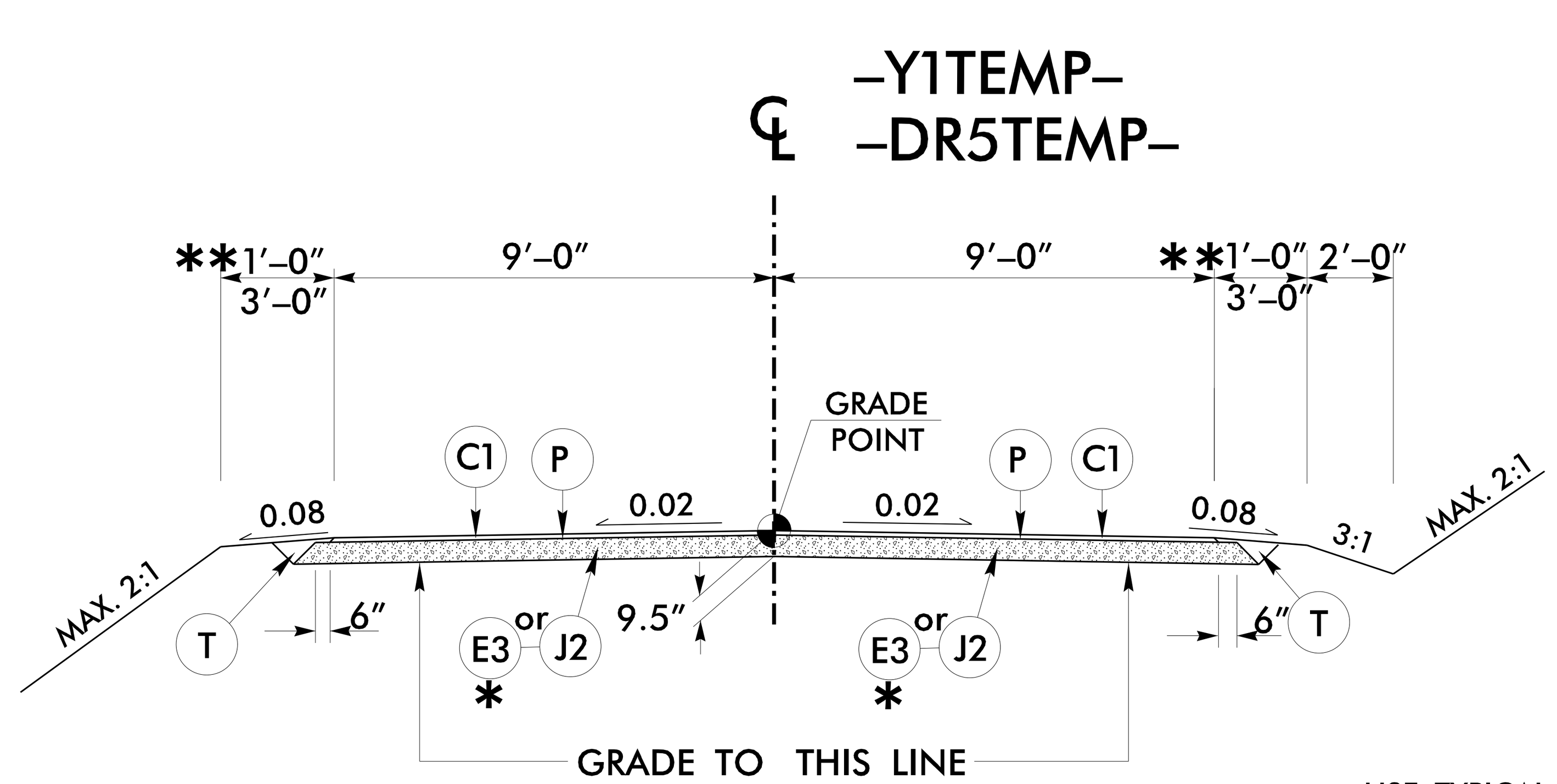
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
-DR9- STA. 10+25.00 TO 11+20.00



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
-LTEMP- STA. 62+54.82 to 87+30.89
* NOTE: Use 5" B25.0B (E3) in Lieu of ABC When Pavement Width is Less than 6'



TOTAL SHOULDER WIDTH TO BE INCREASED TO 6' WHERE GUARDRAIL IS USED.

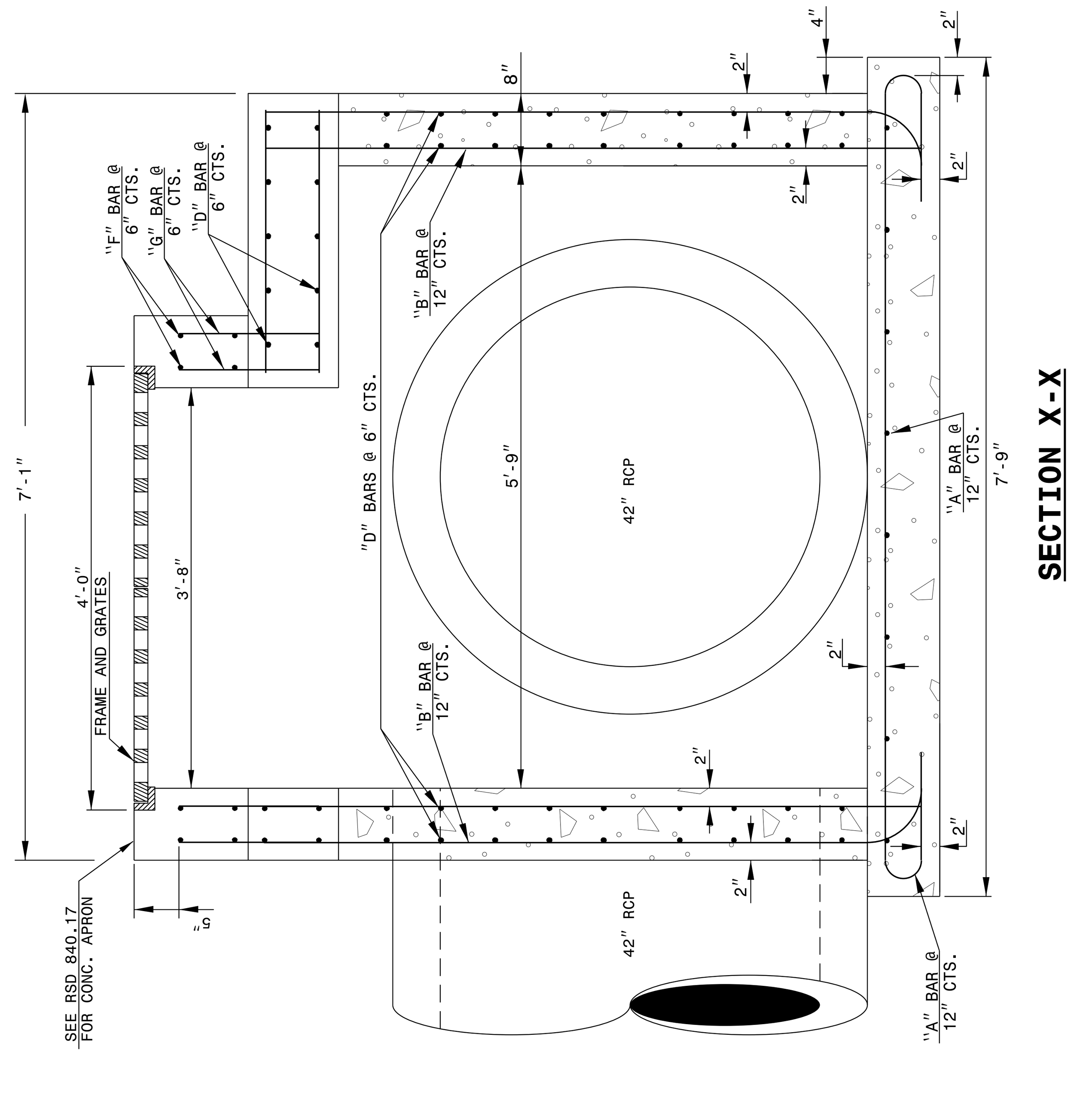
TYPICAL SECTION NO. 7

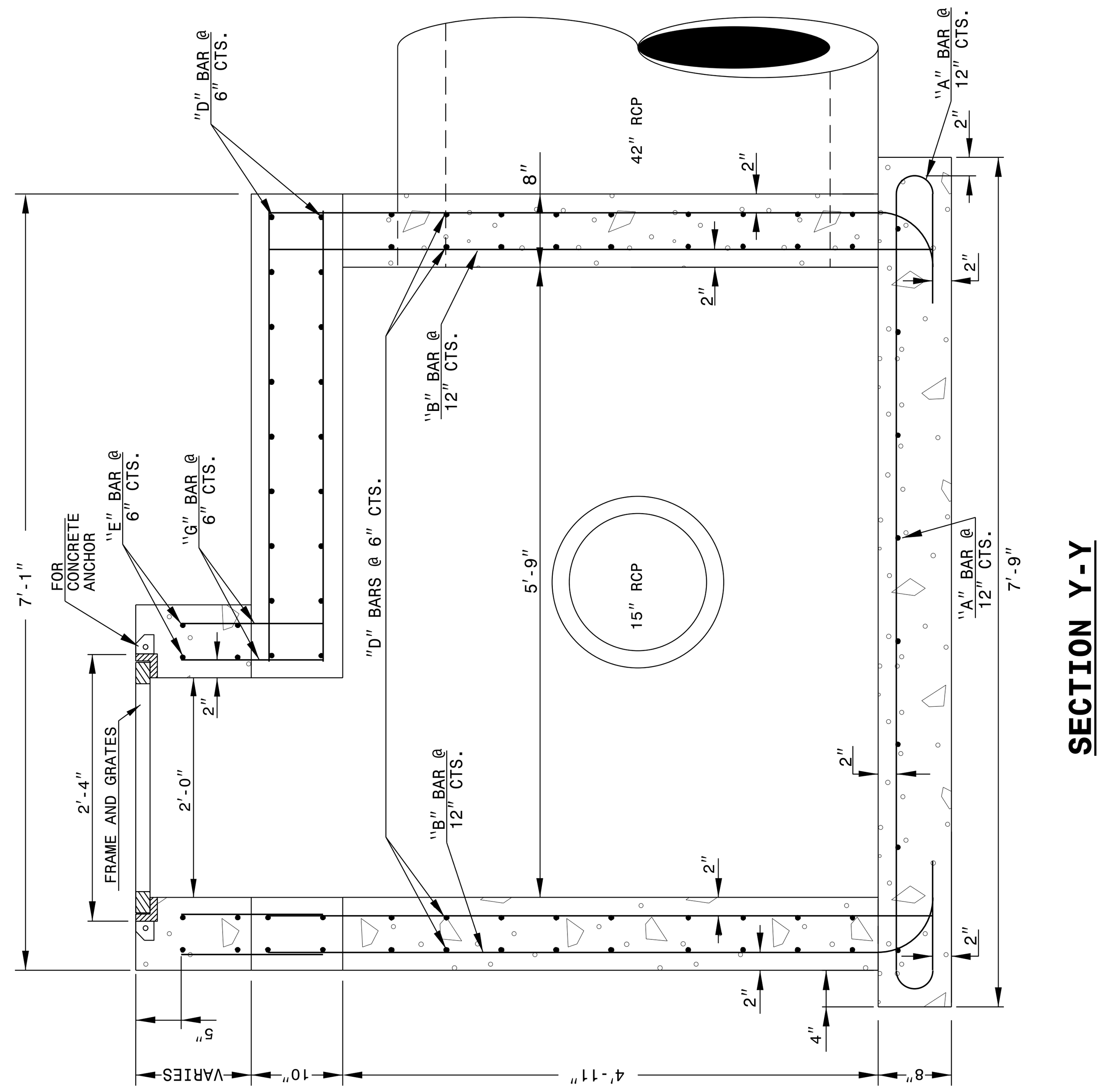
USE TYPICAL SECTION NO. 7
** -DR5TEMP- STA. 10+00.00 TO 11+11.83
-Y1TEMP- STA. 12+70.82 TO 13+52.08
* NOTE: Use 5" B25.0B (E3) in Lieu of ABC When Pavement Width is Less than 6'

A	6" JOINTED CONCRETE w/WIRE MESH
C1	1.5" S9.5B
C2	3" S9.5B
C3	VARIABLE DEPTH S9.5B
D1	3" I19.0B
D2	VARIABLE DEPTH I19.0B
E1	3" B25.0B
E2	4" B25.0B
E3	5" B25.0B
E4	VARIABLE DEPTH B25.0B
J1	4" ABC
J2	8" ABC
J3	VARIABLE DEPTH ABC
S1	EXPRESSWAY GUTTER
S2	SHOULDER BERM GUTTER
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	ASPHALT WEDGING

6/2/99
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2C-1

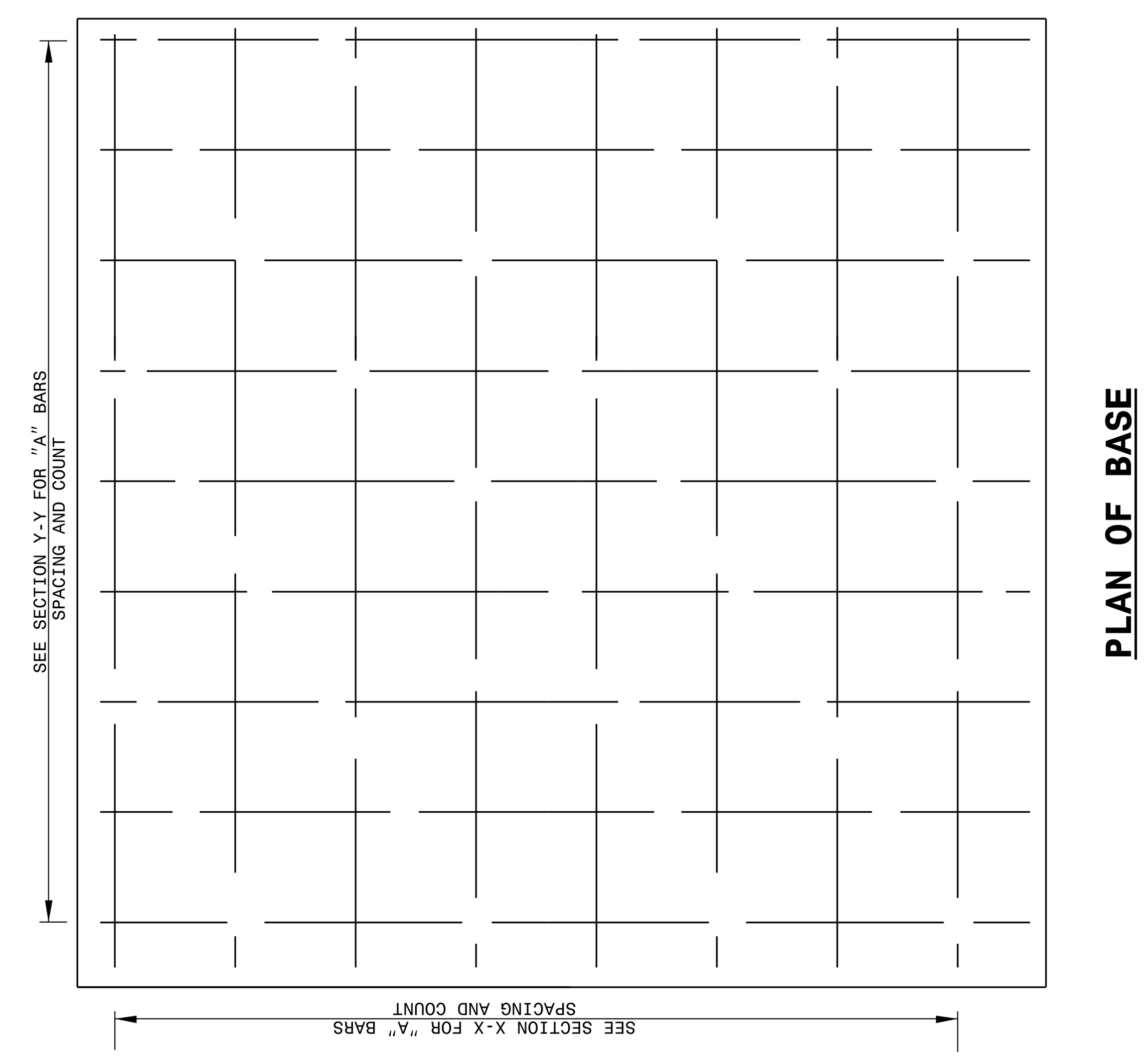




GENERAL NOTES:
- CHAMFER ALL EXPOSED CONCRETE CORNERS 3".
- USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- IF PIPES ARE SET IN THE BASE, FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
- PRECAST UNITS MADE OF CLASS "AA" CONCRETE MAY BE USED IN LIEU CAST IN PLACE CONCRETE.
- REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
- PROVIDE DROP INLETS OVER 3'-6" DEEP WITH STEPS AS DIRECTED BY STD. DWG. 840.66.
- FRAME AND GRATES SHALL BE SEPARATE CONTRACT ITEM.

NOTES:
- HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
- ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.

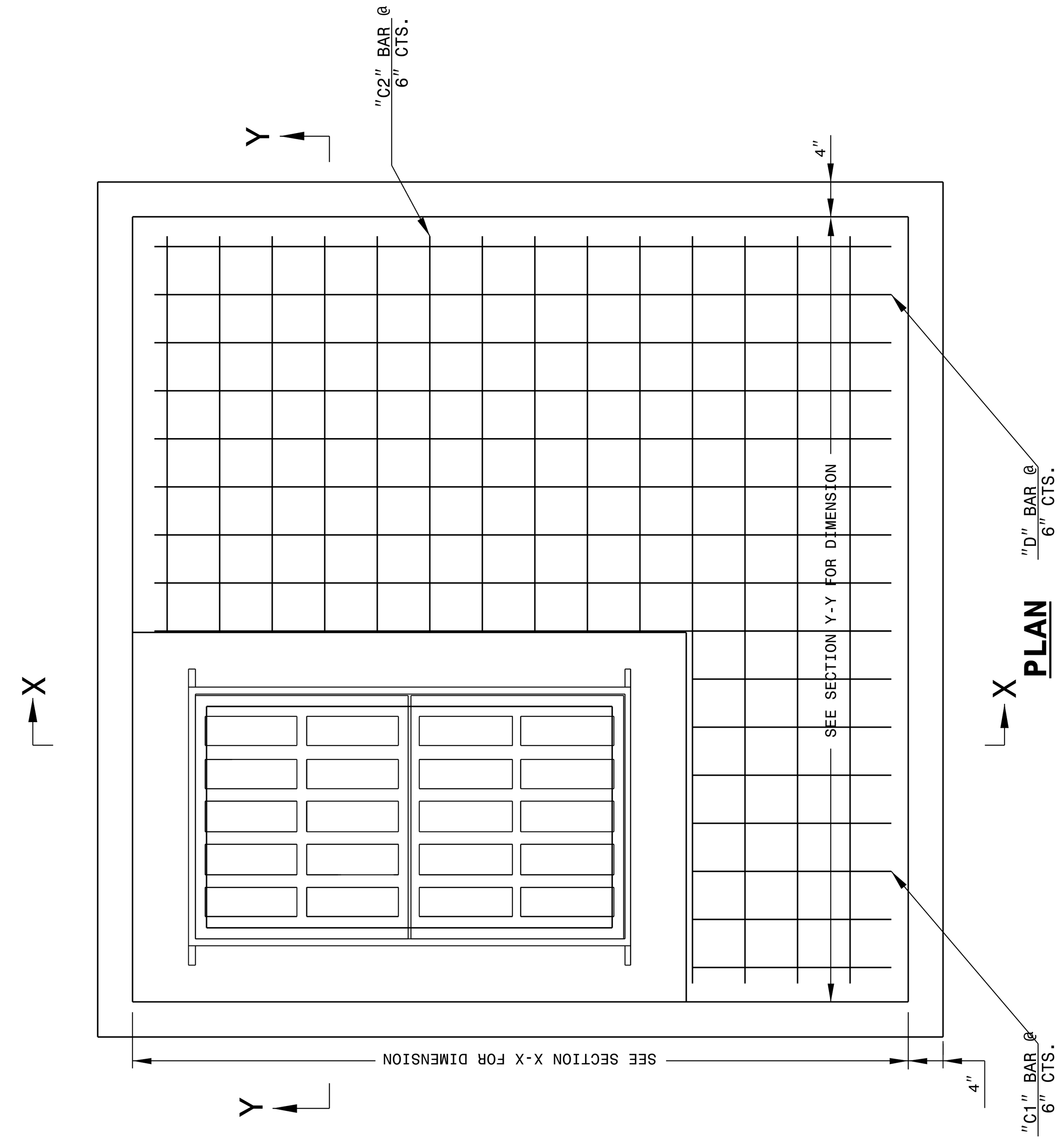
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **TRAFFIC BEARING DROP INLET** FOR FRAME AND GRATES	SHEET 1 OF 2 **840D35**

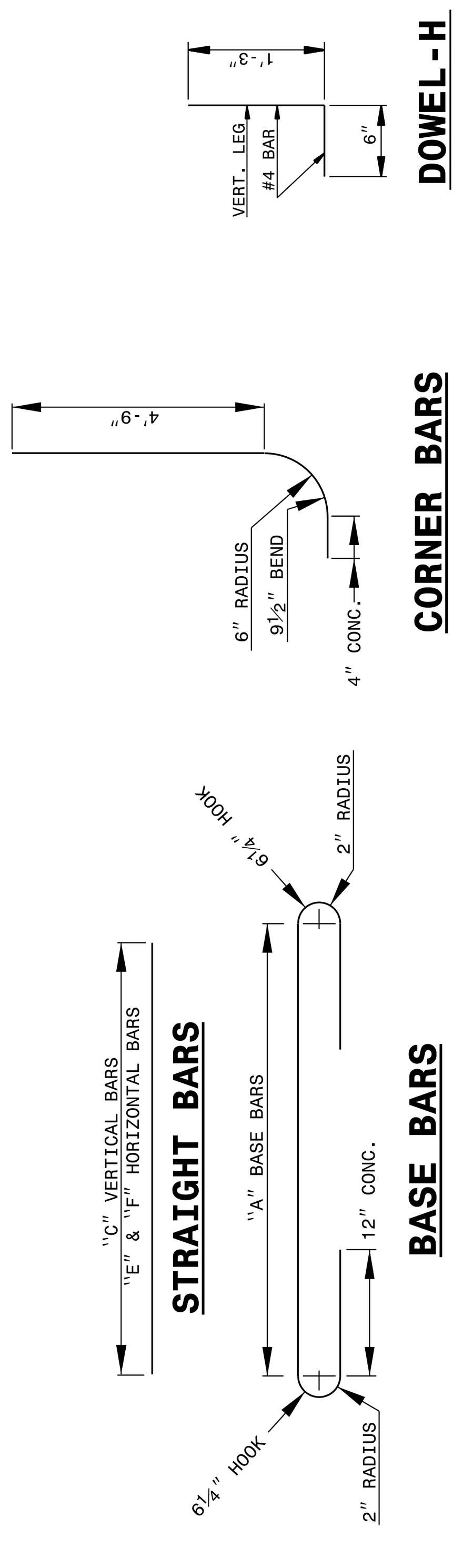


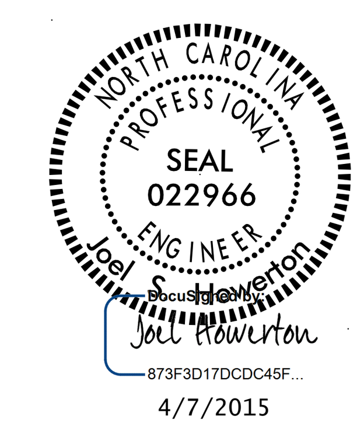
BILL OF MATERIALS

BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#5	10'-5"	16	174
B	#5	5'-11"	64	395
C1	#5	3'-1"	12	39
C2	#5	4'-10"	18	91
D	#5	6'-9"	96	676
E	#5	4'-8"	8	39
F	#5	3'-0"	8	25
G	#5	1'-8"	42	73
REINF. STEEL (TOTAL WEIGHT LBS.)				1512
CONCRETE TOTAL (CU.YDS.)				5.03
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES				

FOR EVERY 1 FOOT OF RISER USE 0.41 CU.YDS CONCRETE AND 390 LBS STEEL.







STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **TRAFFIC BEARING DROP INLET** FOR FRAME AND GRATES	SHEET 2 OF 2 **840D35**

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

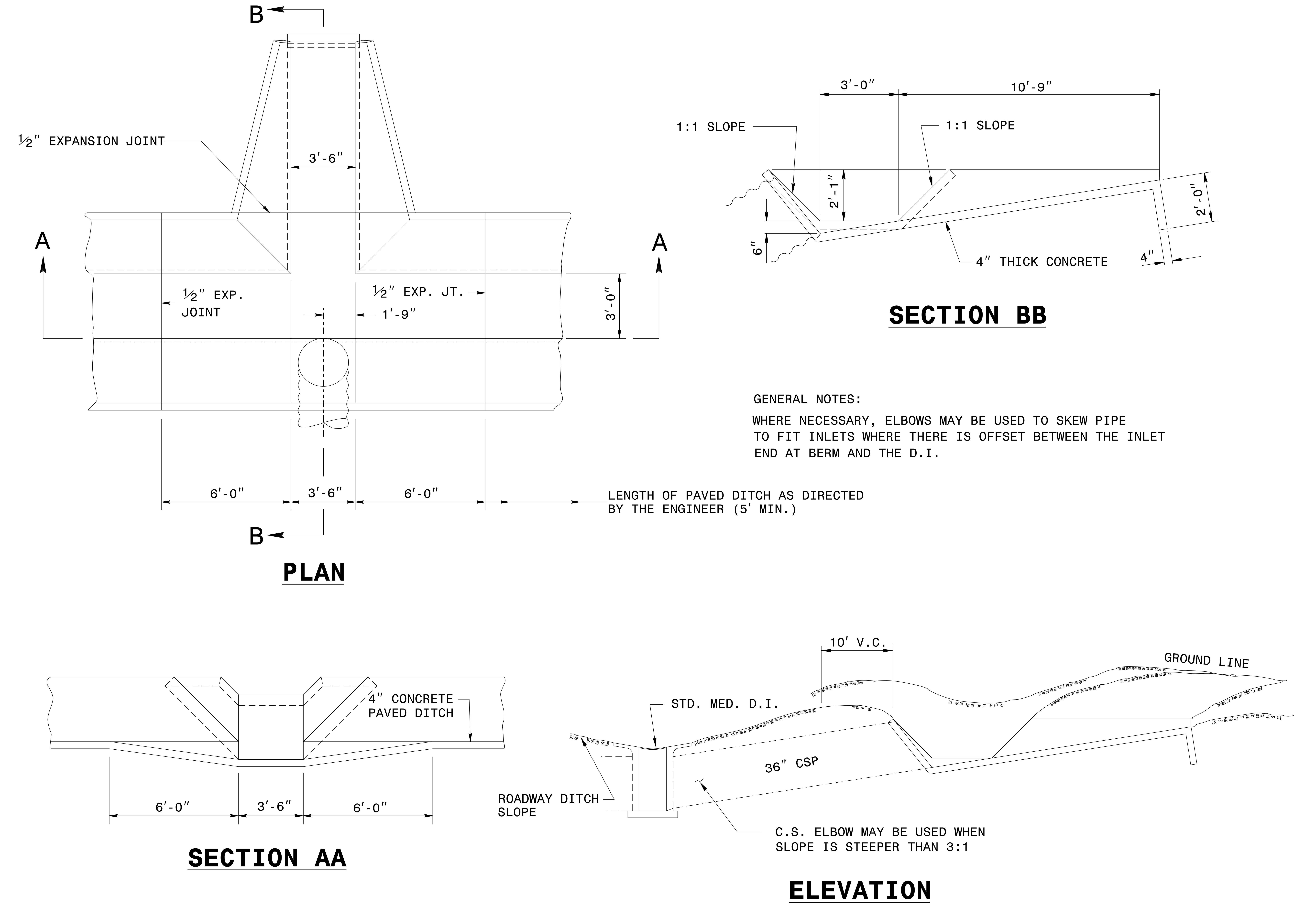
SEE PLATE FOR TITLE

ORIGINAL BY: K. KEMPF DATE: 03-03-2015
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:details\kkempf\english\R3622B_840d35_42_TB2GI.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2C-2

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

ENGLISH DETAIL DRAWING FOR
GUIDE FOR BERM DRAINAGE OUTLET
36″ PIPE



SHEET 1 OF 1
850D11

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

ENGLISH DETAIL DRAWING FOR
GUIDE FOR BERM DRAINAGE OUTLET
36″ PIPE

SHEET 1 OF 1
850D11

SEAL 022966 — NORTH CAROLINA PROFESSIONAL ENGINEER
4/7/2015

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STANDARDS DATE: 01-15-02
MODIFIED BY: E.E. WARD DATE: 10-26-04
CHECKED BY: DATE:
FILE SPEC.: usr/details/stand/850d01.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2C-3

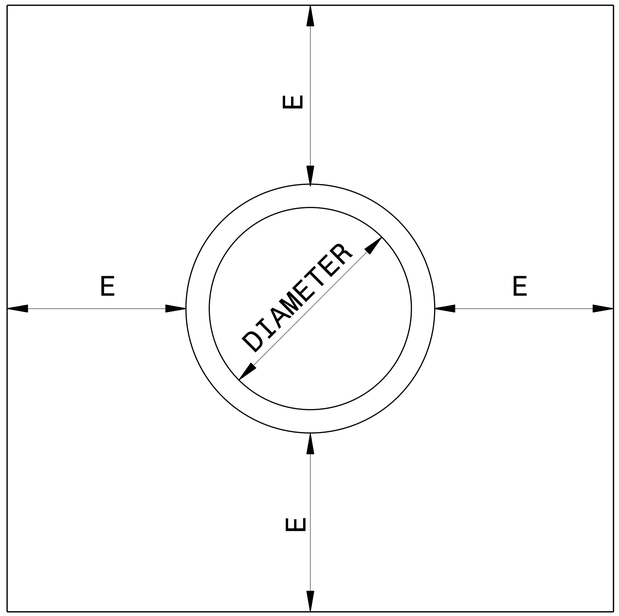
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

PIPE COLLAR

SHEET 1 OF 1

840D72



ELEVATION

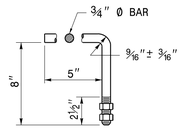
GENERAL NOTES:

USE PIPE COLLAR FOR EXTENDING EXISTING CONCRETE PIPE CULVERTS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER. THIS INCLUDES EXTENDING EXISTING PIPES WITH PIPES OF DIFFERENT MATERIALS.

CONSTRUCT THE PIPE COLLAR WITH CLASS "B" OR BETTER CONCRETE.

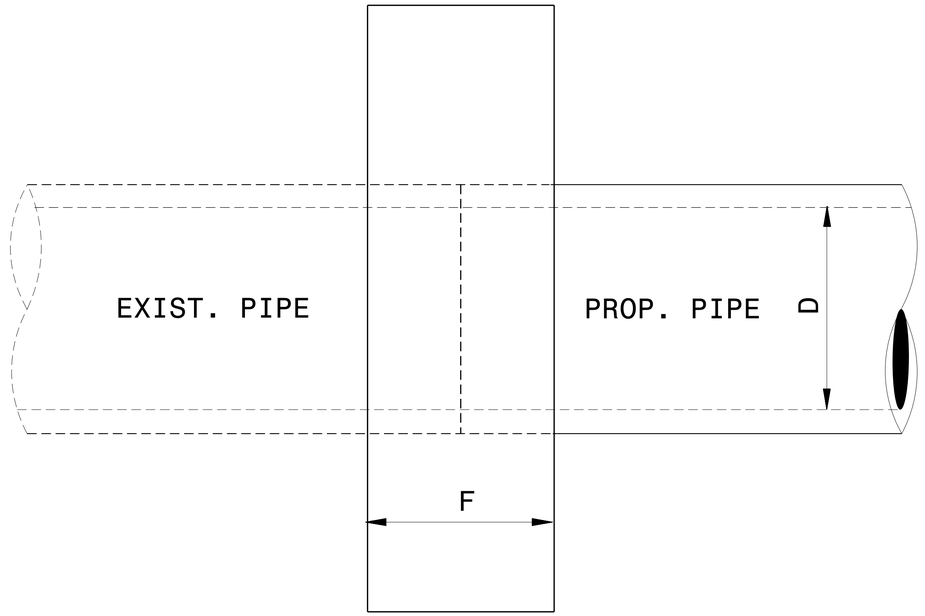
OBSERVE ALL REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.

USE HOOK BOLTS TO ANCHOR CSP TO THE CONCRETE COLLAR.



HOOK BOLT

HOOK BOLTS (INSTALL ANCHORS AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE CSP). EMBED THE HOOK BOLTS IN THE CONCRETE COLLAR 8" IN DEPTH. THE GALVANIZED ¾" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.



SIDE ELEVATION

DIA.	E	F	CU. YD.
8"	12"	12"	0.2634
12"	12"	12"	0.3528
15"	12"	12"	0.3990
18"	12"	12"	0.4465
24"	12"	12"	0.5526
30"	12"	12"	0.6560
36"	12"	12"	0.7640
42"	12"	12"	0.8856
48"	12"	12"	1.0126
54"	18"	18"	2.5793
60"	18"	18"	2.8506
66"	18"	18"	3.1307
72"	18"	18"	3.4176
84"	18"	18"	3.9914
96"	18"	18"	4.5652

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

ENGLISH DETAIL DRAWING FOR

PIPE COLLAR

SHEET 1 OF 1

840D72

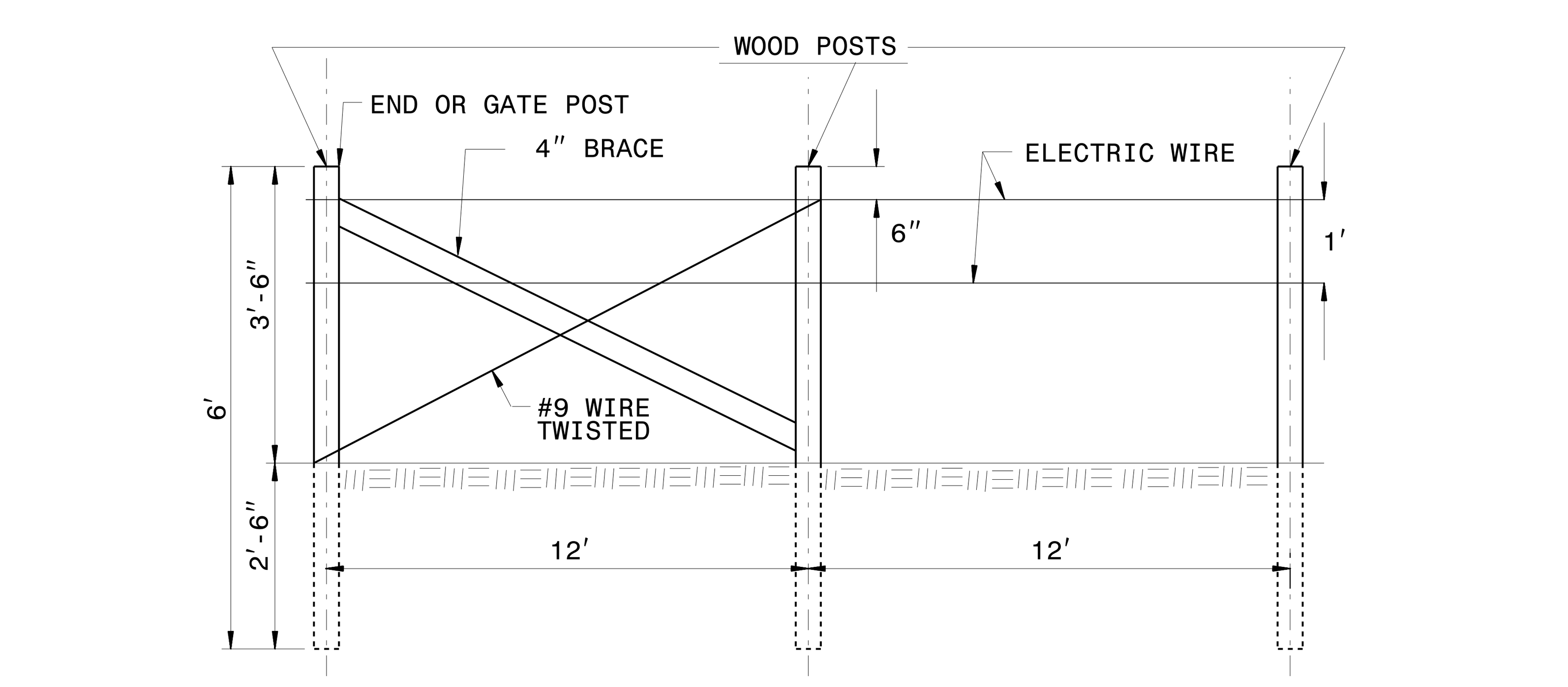
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Jay L. Howerton
873F3D17DCDC45F...
4/7/2015

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

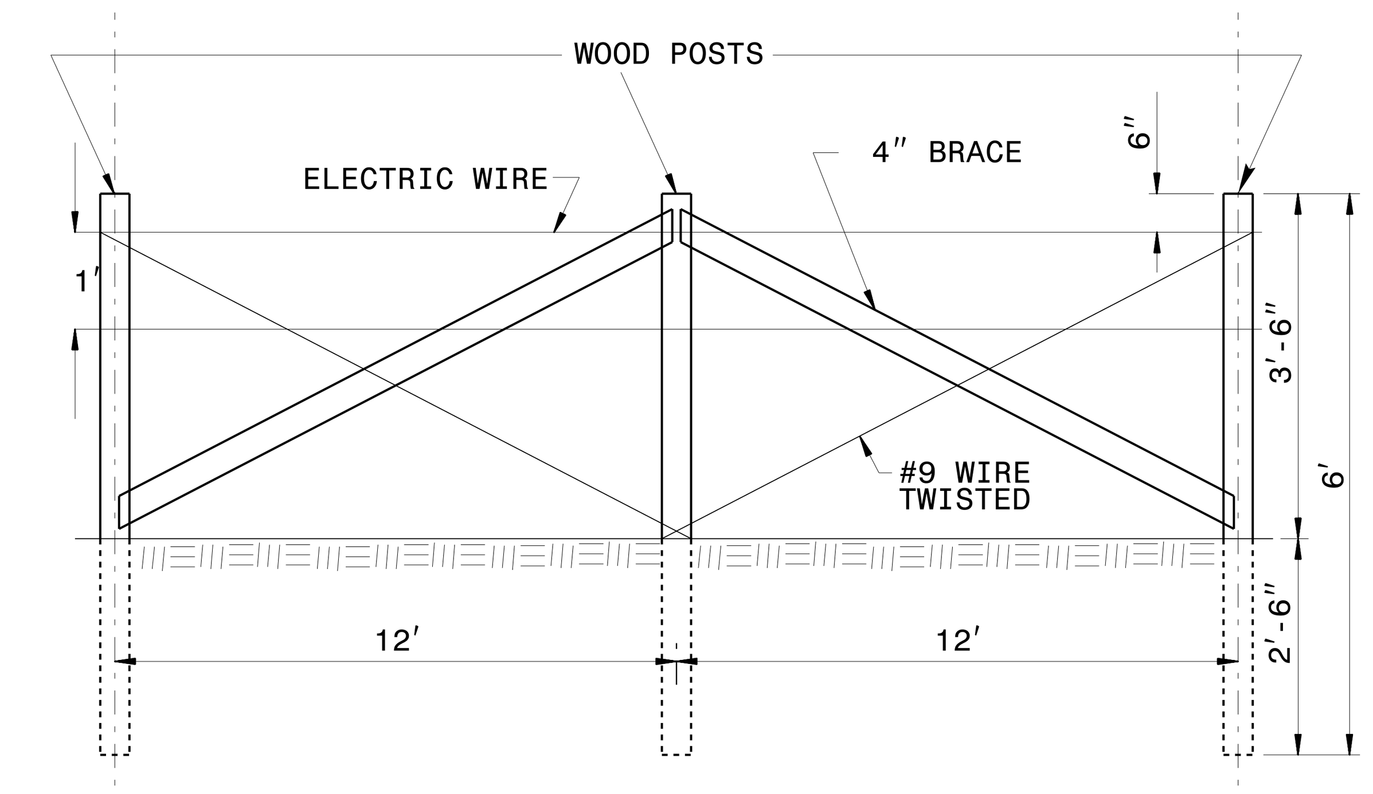
SEE PLATE FOR TITLE

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: nbritt DATE: 03-29-04
CHECKED BY: _____ DATE: _____
FILE SPEC.: details/nbritt/english/urban/u3612pipecollar.dgn

$$$$SYSTIME$$$$
$$$$SYSDIMENSIONS$$$$
$$$$USERNAME$$$$



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.

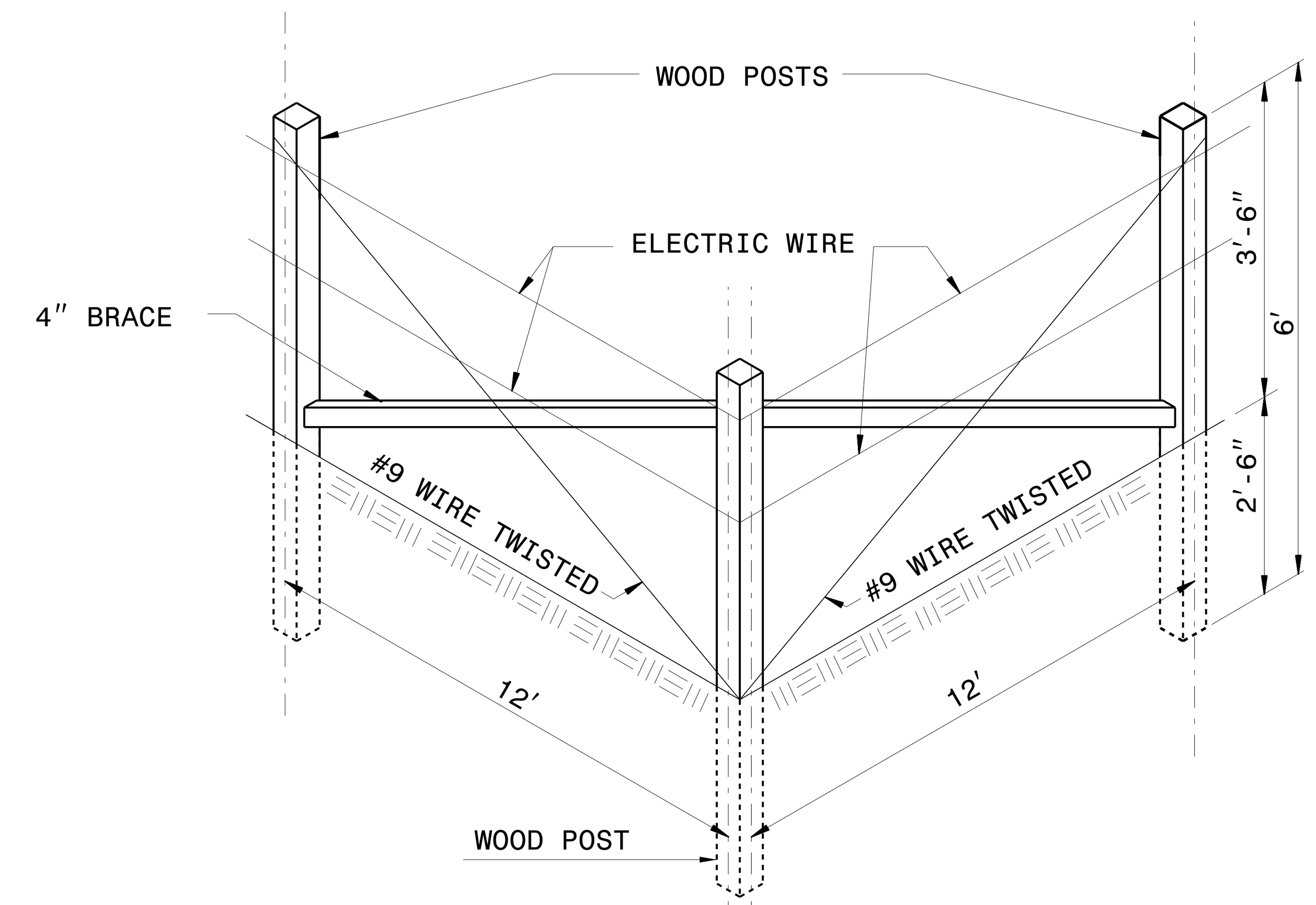
THE FENCE SHALL BE INSTALLED FACING THE PROPERTY OWNER EXCEPT ON HORIZONTAL CURVES GREATER THAN 3 DEGREES WHERE THE FENCE SHALL BE INSTALLED AS TO PULL AGAINST ALL POSTS.

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.

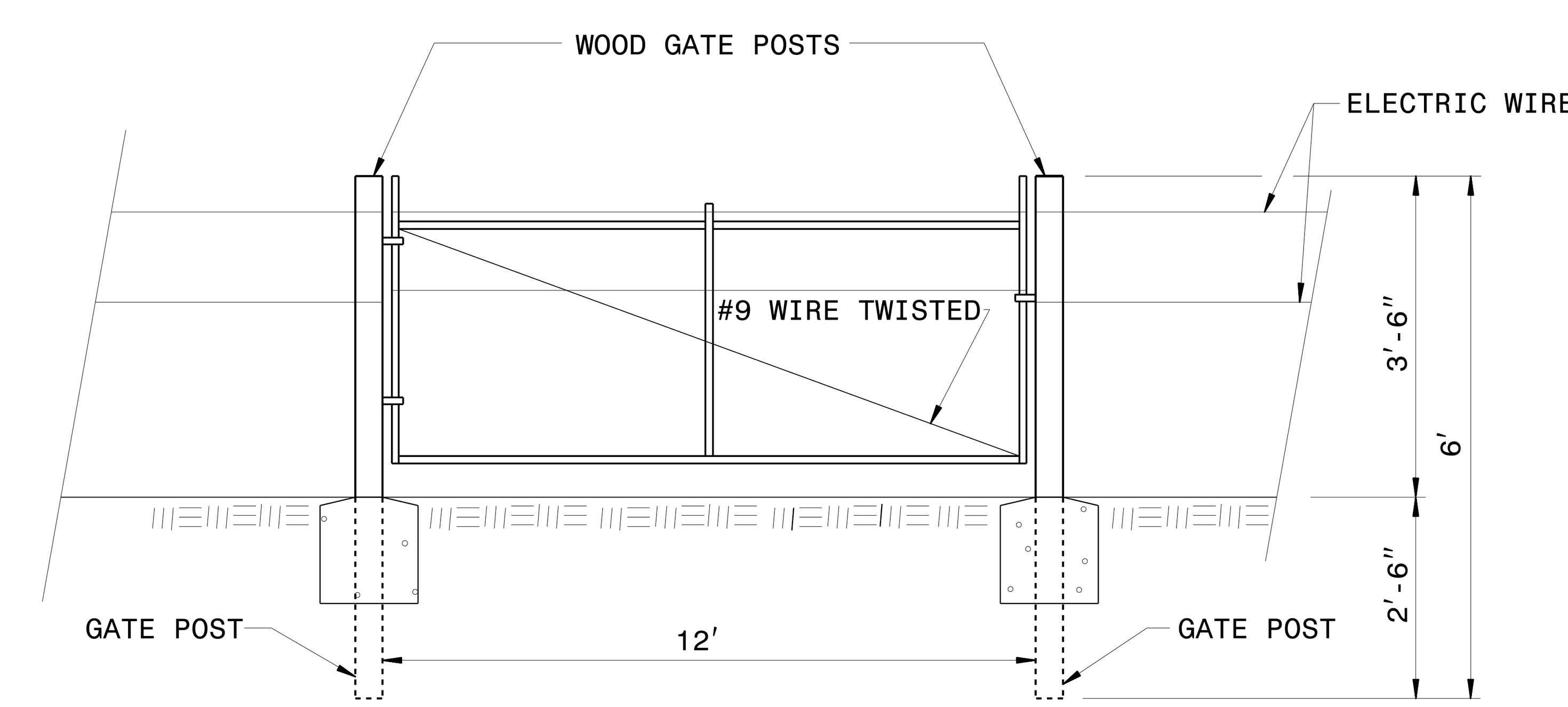
THE BRACE WIRE IS TO BE PLACED AROUND POSTS WITH ONE WIRE ON EACH SIDE OF THE BRACE. ALL BRACE WIRES TO BE TIGHTENED BY TWISTING BETWEEN BRACE AND EACH POST.

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.

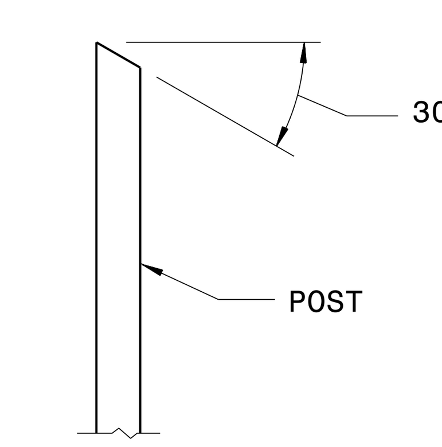


FENCE CORNER

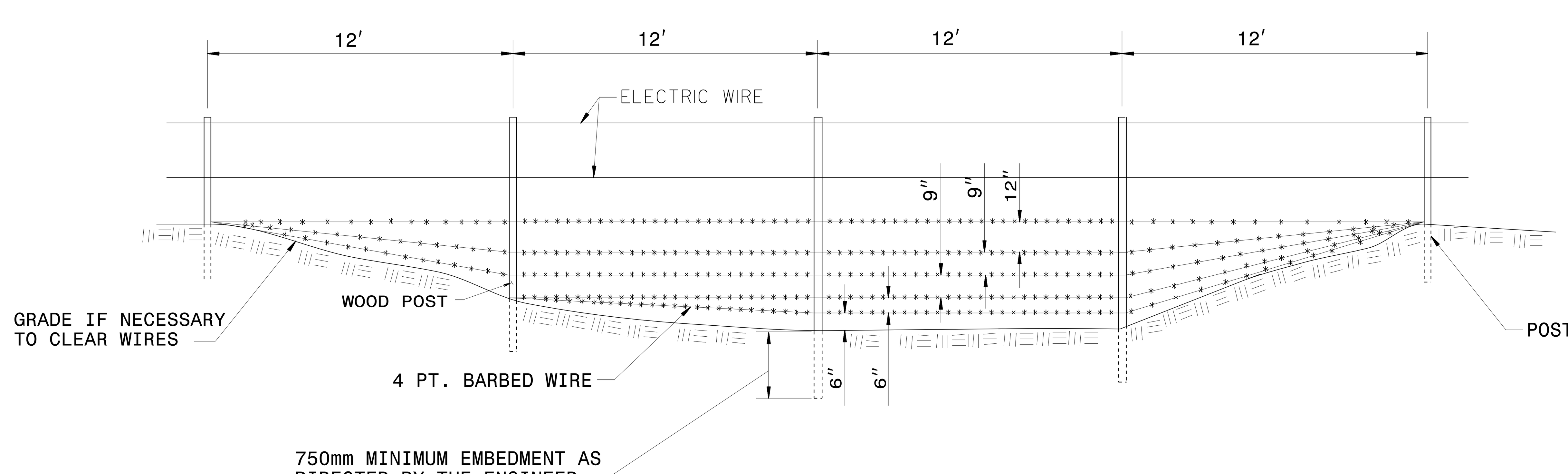
TO BE USED WHEN CORNER ANGLE IS 15° OR GREATER



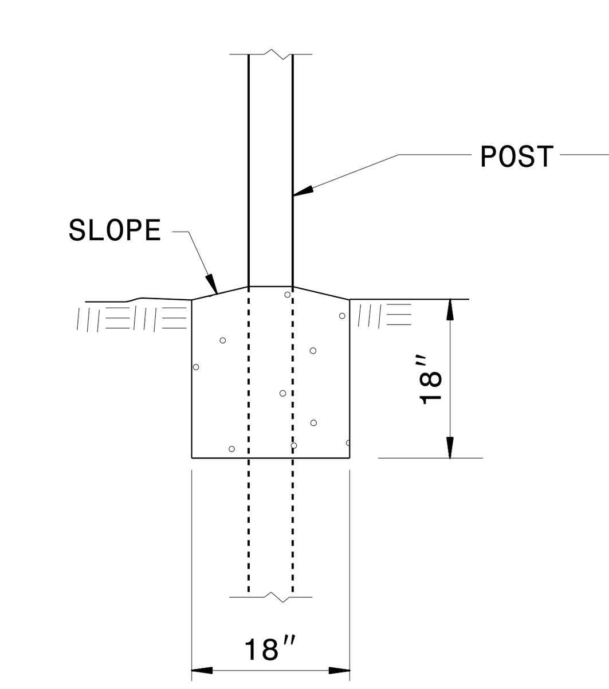
GATE



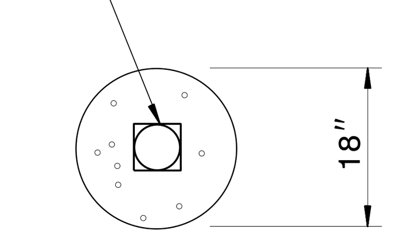
DETAIL SHOWING METHOD OF CUTTING POST TOPS



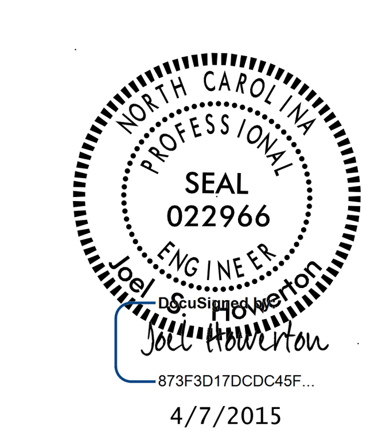
DETAIL OF DITCH CROSSING



DETAIL OF POST ANCHOR



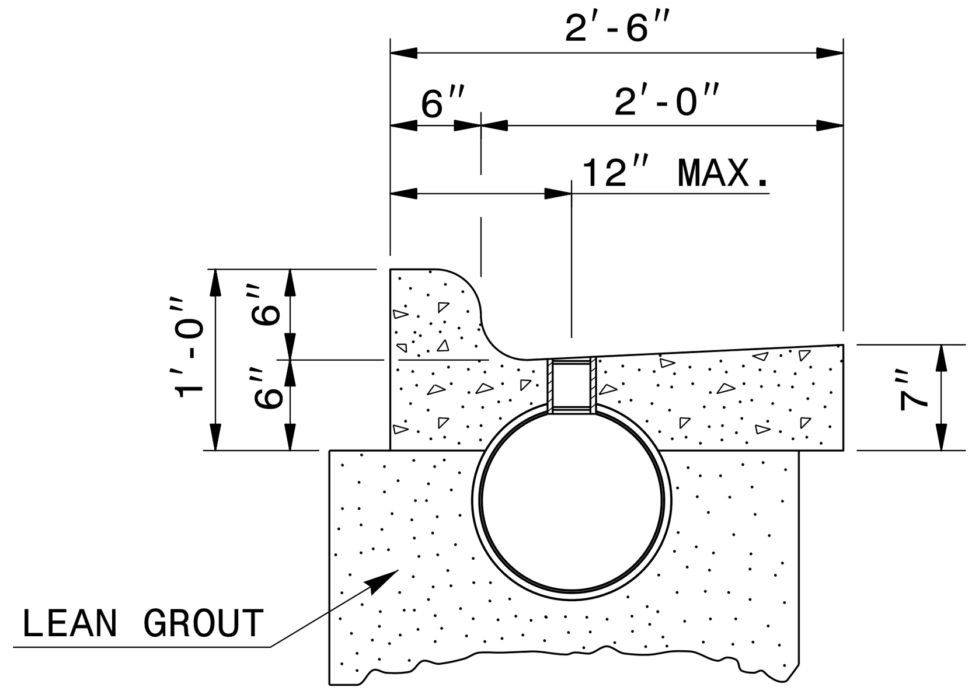
SECTION PLAN



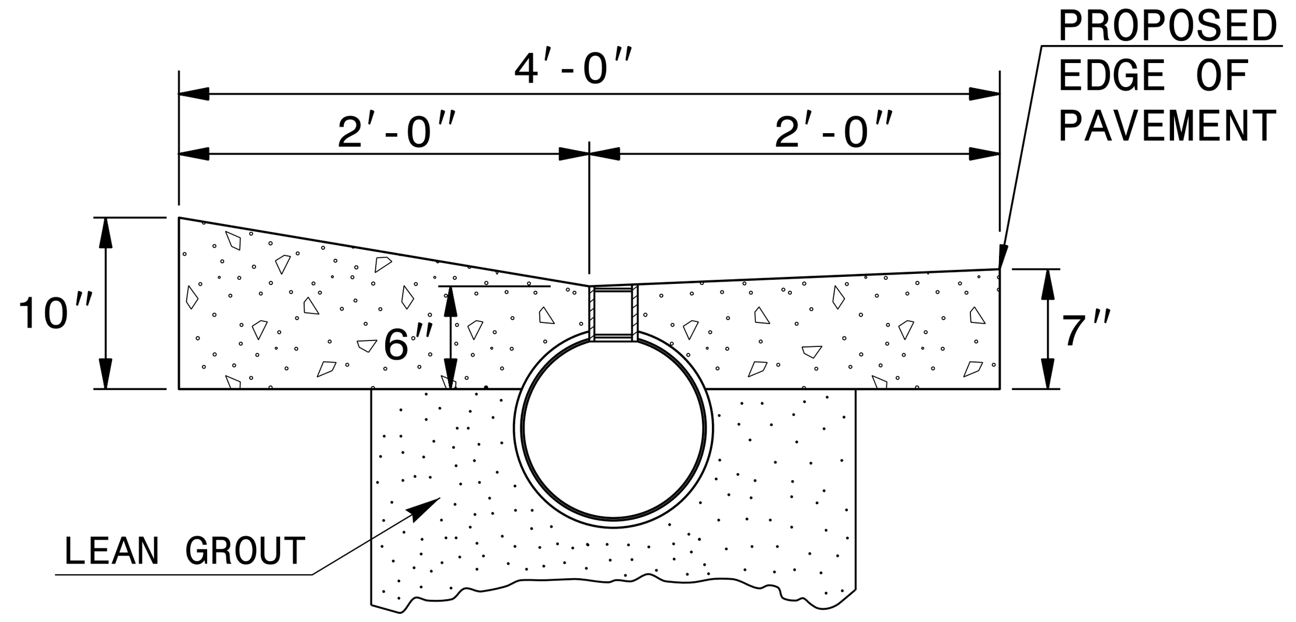
CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-707-6950 FAX 919-250-4119

2 STRAND ELECTRIC WIRE FENCE

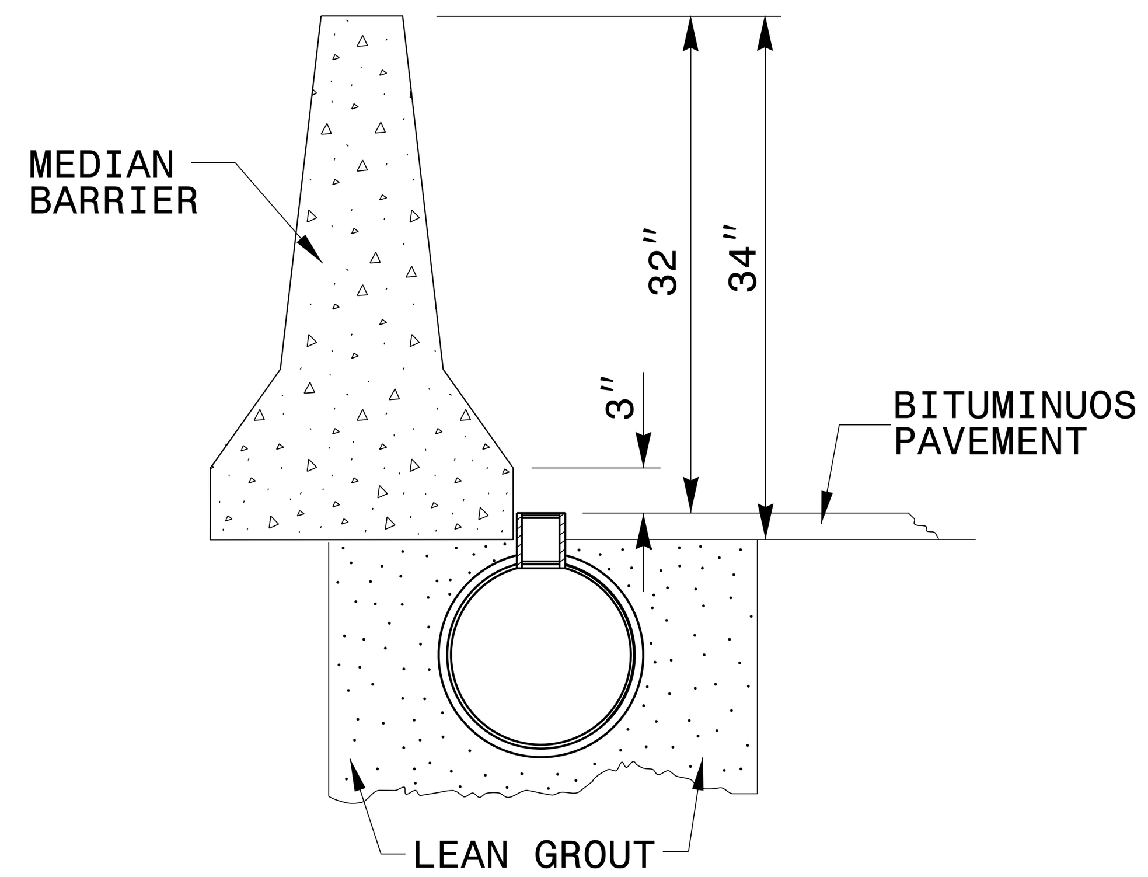
ORIGINAL BY: DATE:
MODIFIED BY: rnbritt DATE: 10-14-04
CHECKED BY: DATE:
FILE SPEC.: details/nbritt/metric/misc/electricfence.dgn



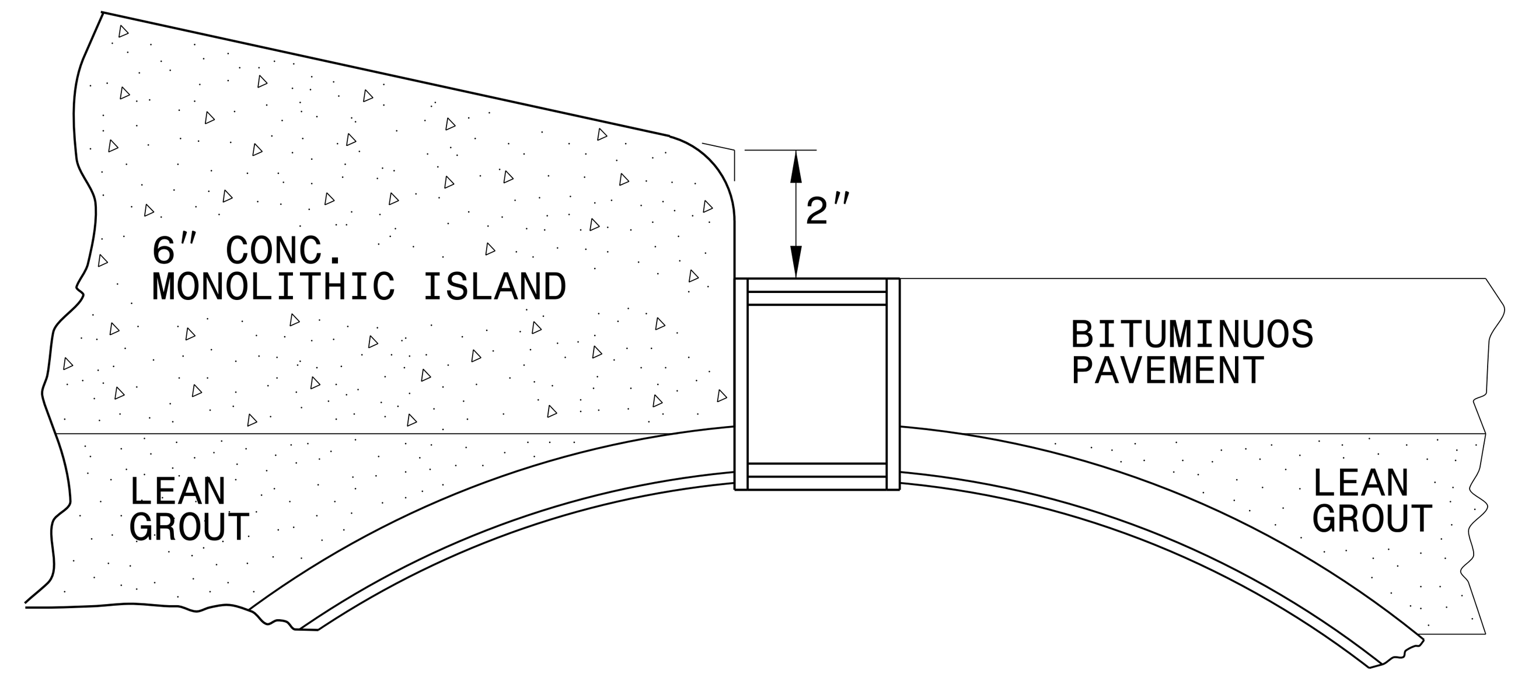
ALTERNATE NO.1



ALTERNATE NO.2



ALTERNATE NO.3



ALTERNATE NO.4

NOTES:

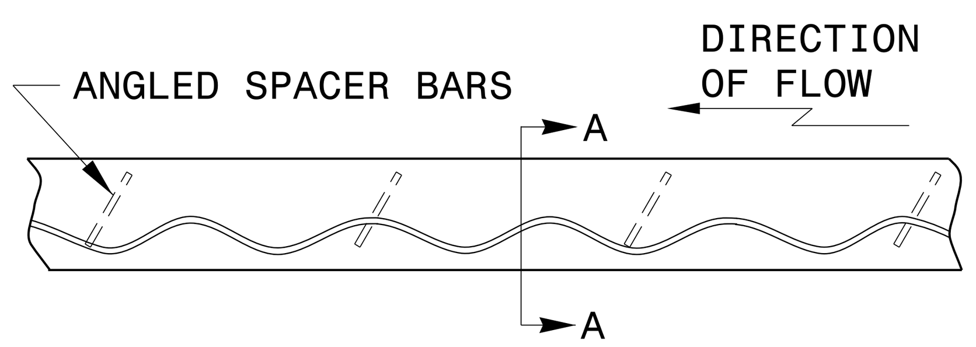
USE GRATE ASSEMBLIES FABRICATED FROM STRUCTURAL STEEL MEETING THE REQUIREMENTS OF ASTM A 570, GRADE 36 OR ASTM A 36.

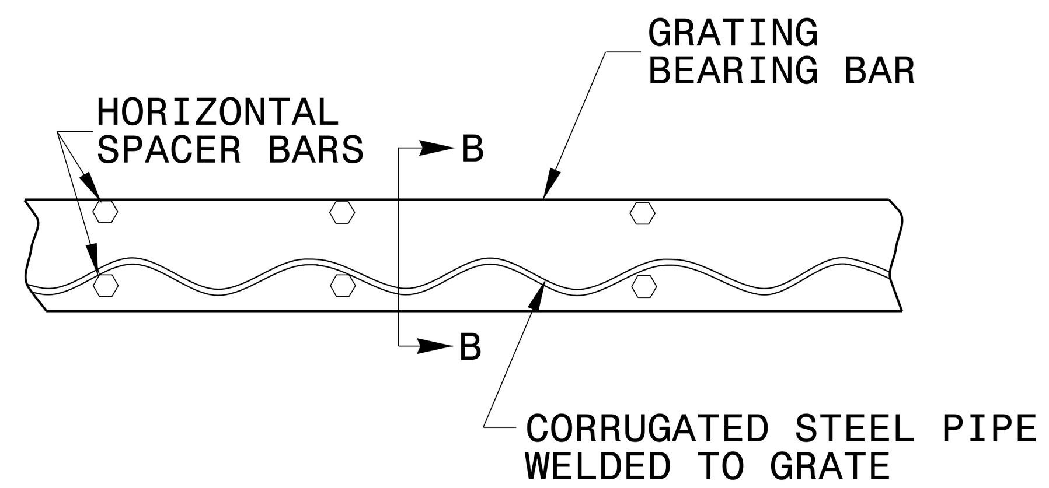
HOT-DIP GALVANIZE GRATES AFTER FABRICATION TO MEET ASTM A123.

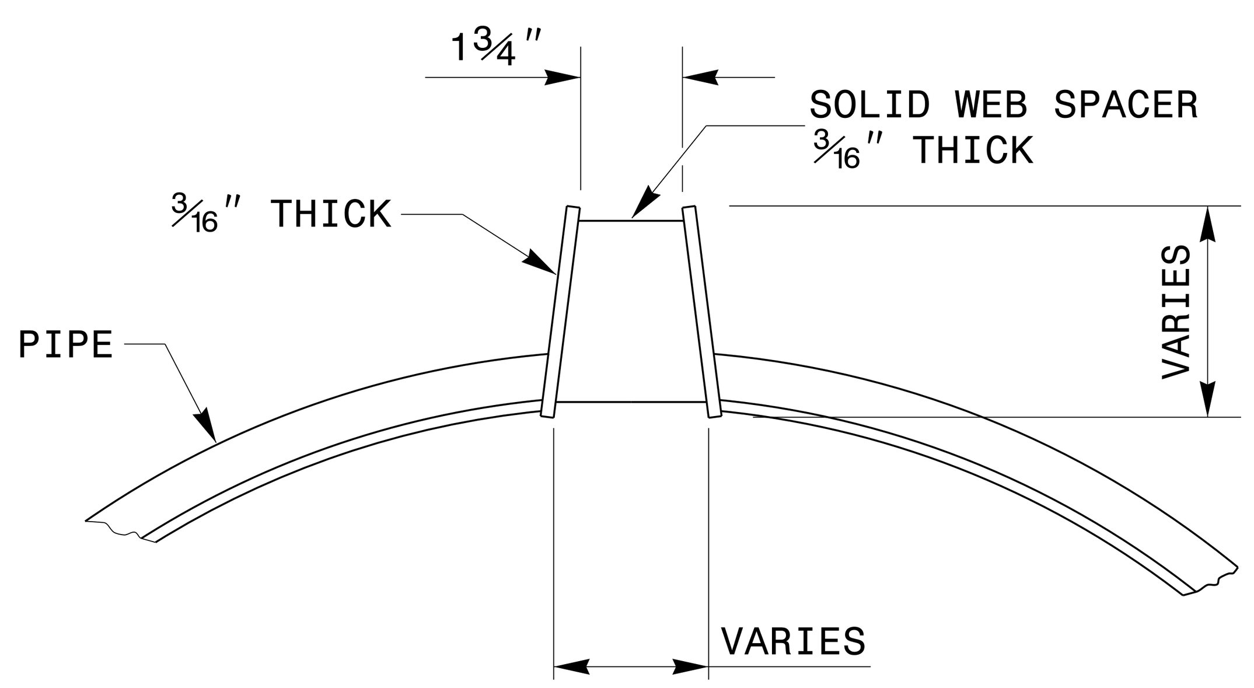
USE SLOTTED DRAIN PIPE THAT IS ADEQUATE FOR AASHTO H20 LOADING WHEN INSTALLED AS SHOWN.

USE SLOTTED DRAIN PIPE FABRICATED FROM ALUMINIZED CORRUGATED STEEL PIPE MEETING THE REQUIREMENTS OF AASHTO M274 TYPE 2.

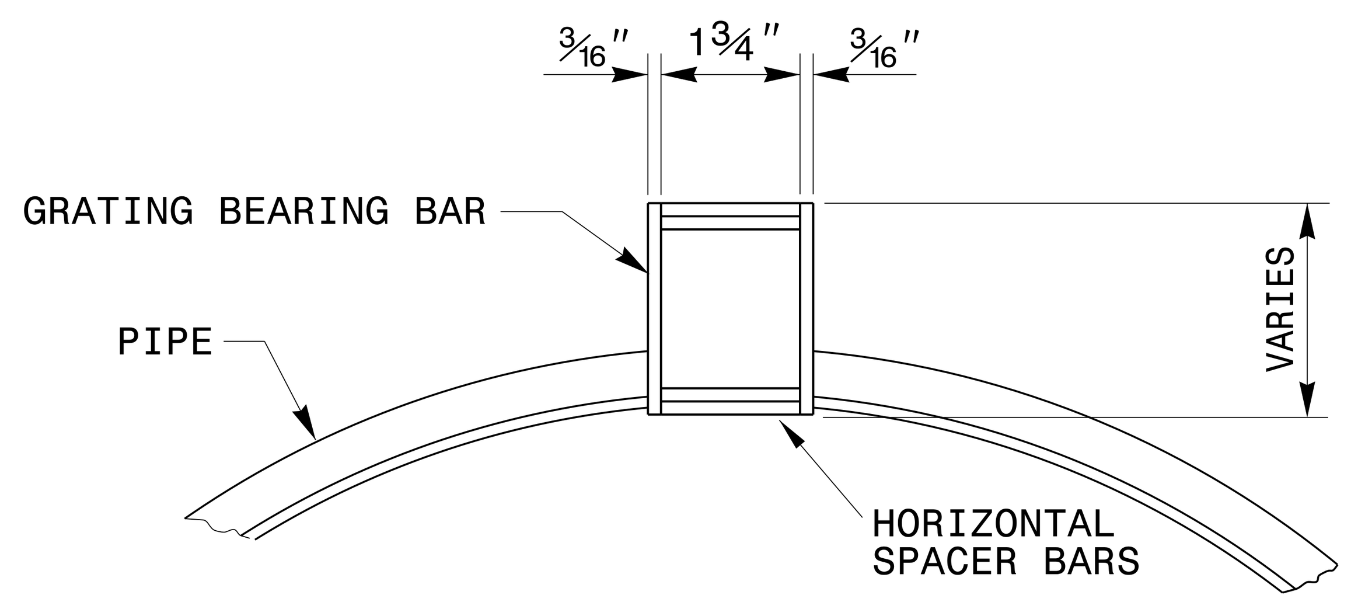
NCDOT ALLOWS THE USE OF SIMILAR GRATE CONFIGURATIONS MEETING THE REQUIREMENTS OF THIS DETAIL, THE REQUIREMENTS OF THE SPECIAL PROVISIONS, AND THE APPROVAL OF THE ENGINEER.





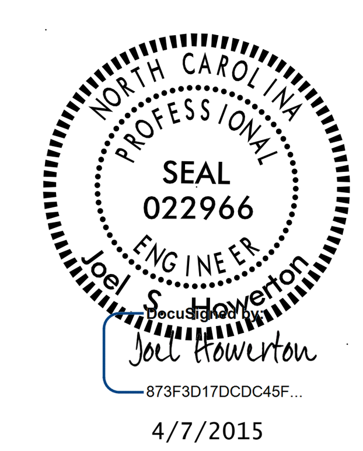


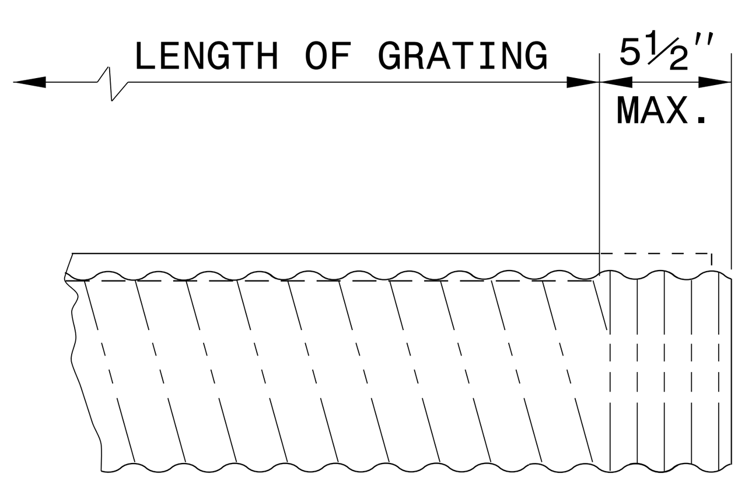
SECTION A-A



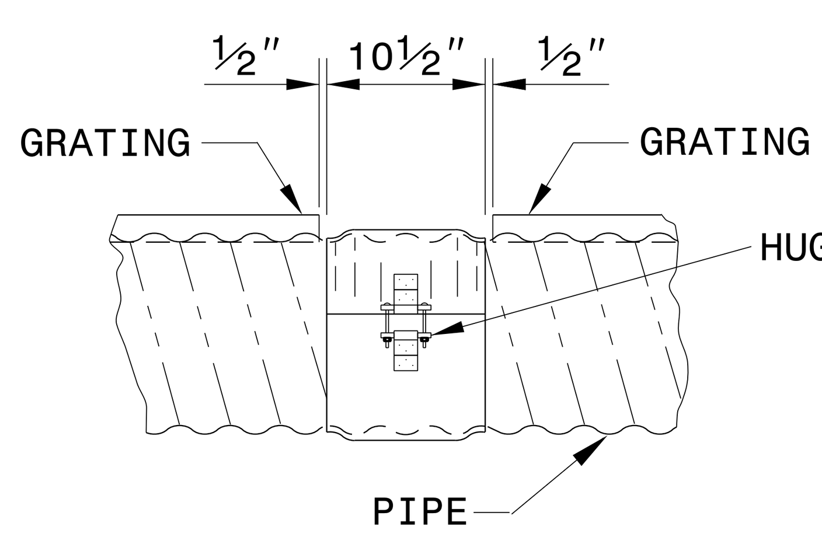
SECTION B-B

TYPICAL GRATE DETAILS

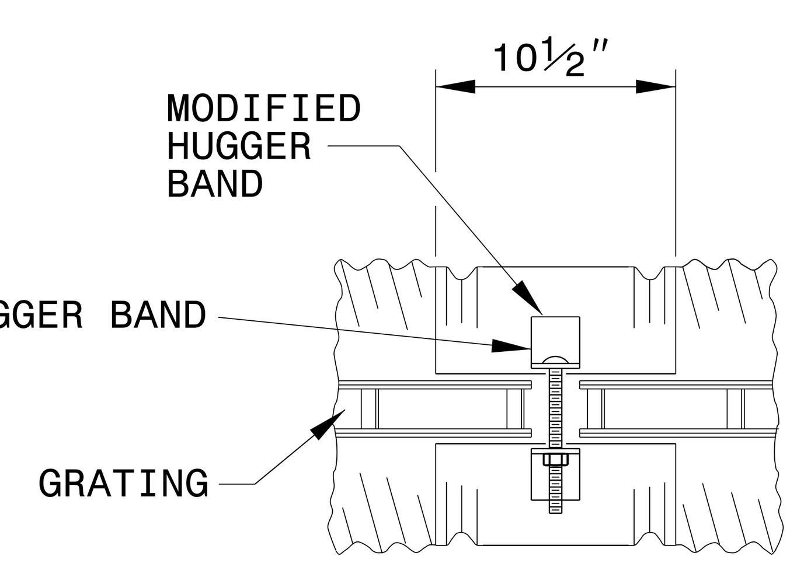




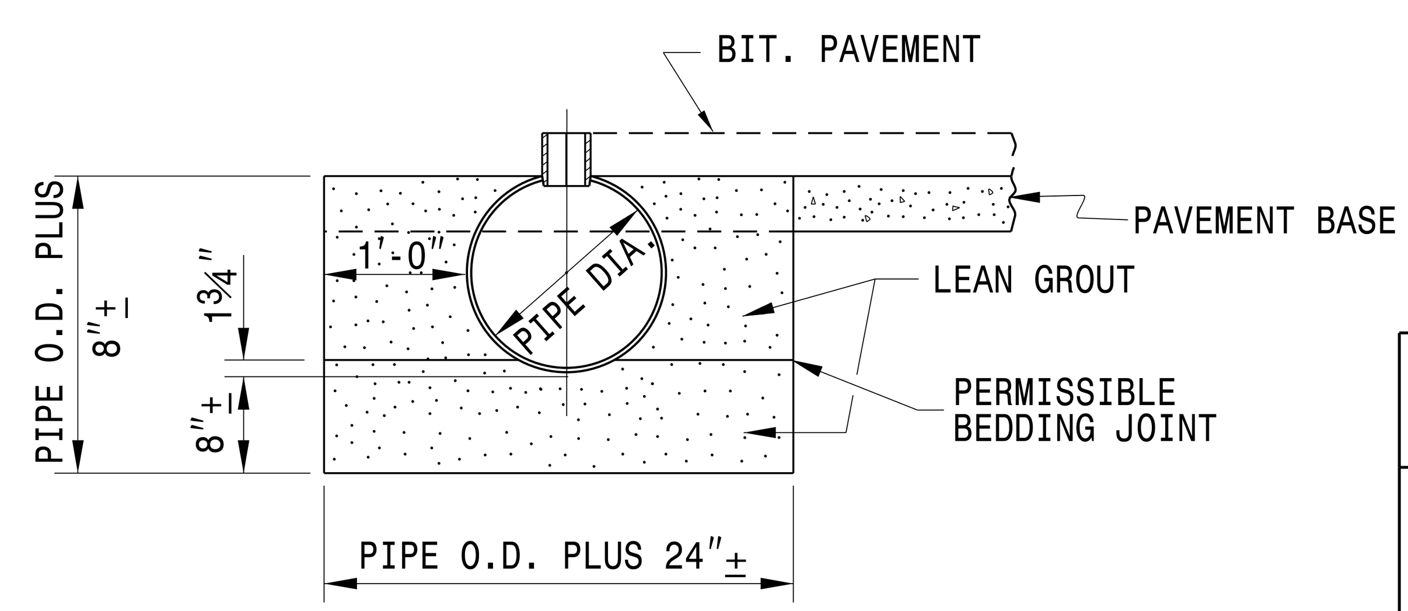
DETAIL AT END OF PIPE



TYPICAL COUPLING BAND



MODIFIED COUPLING BAND



SLOTTED DRAIN PIPE INSTALLATION

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

DETAILS OF SLOTTED DRAIN 12" THRU 36" DIAMETER PIPE

ORIGINAL BY: T.Spell DATE: 5-21-99
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:usr\details\stand\slottdrain.dgn

$$$$$$SYSTIME$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2G-1

GEOTECHNICAL ENGINEER

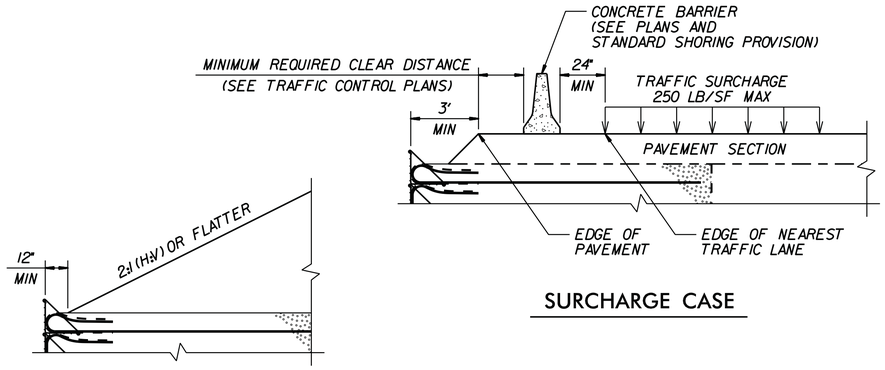
NORTH CAROLINA PROFESSIONAL SEAL 033758 ENGINEER W. PATRICK ALTON

DocuSigned by: W. Patrick Alton

SIGNATURE DATE

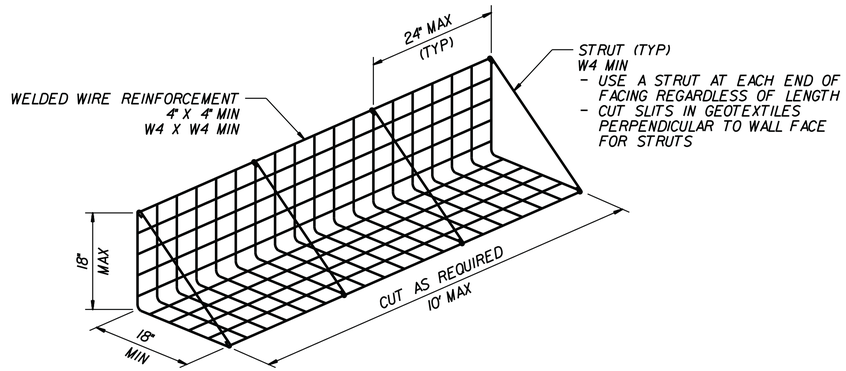
ENGINEER

SIGNATURE DATE

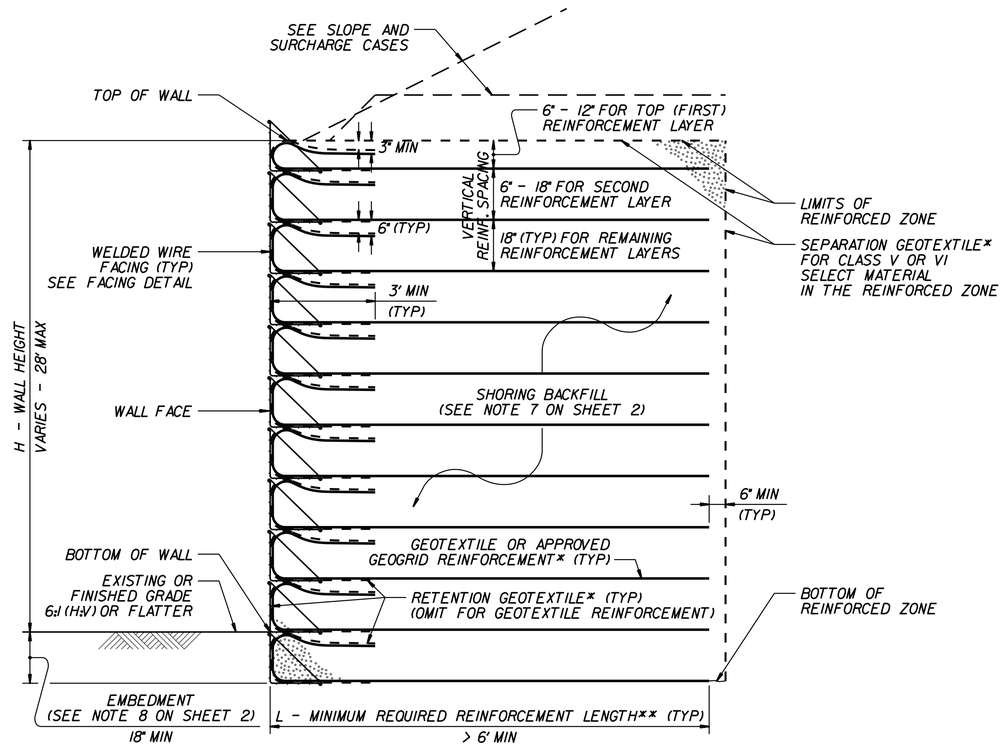


SURCHARGE CASE

SLOPE CASE

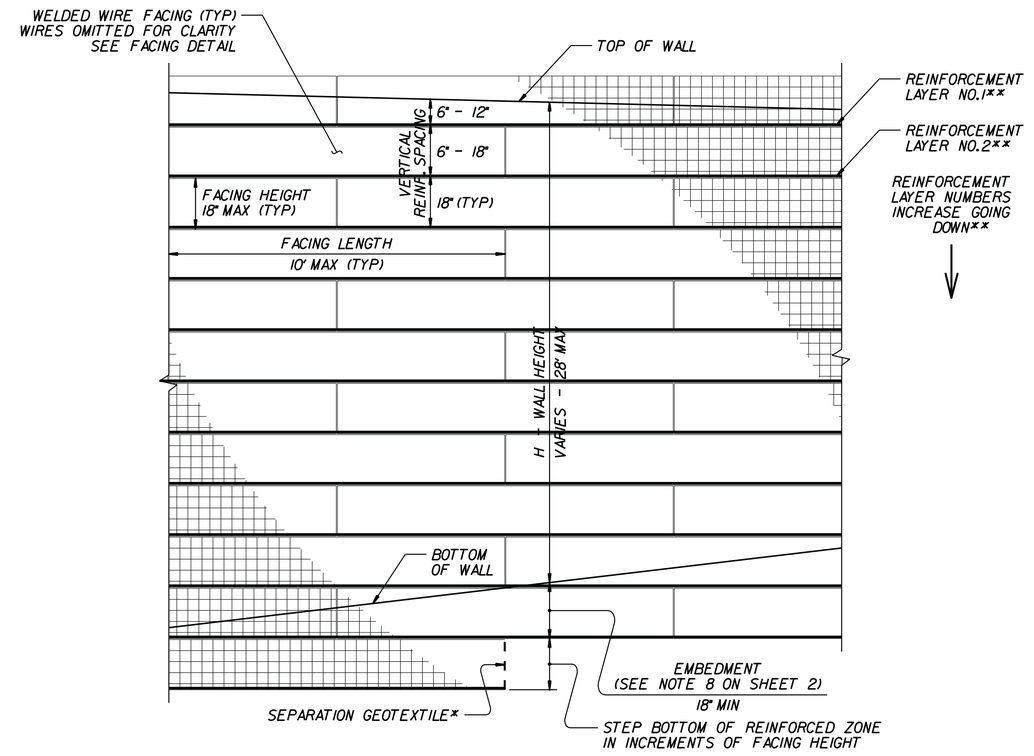


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 1 0F 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2G-2

GEOTECHNICAL ENGINEER

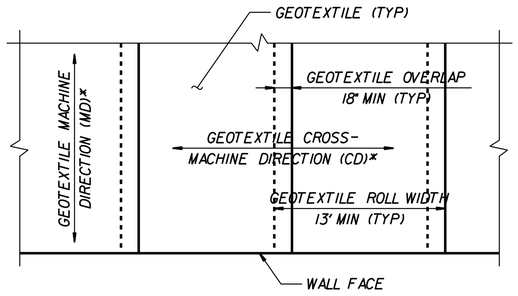
NORTH CAROLINA PROFESSIONAL SEAL 033758 ENGINEER W. PATRICK ALTON

DocuSigned by: W. Patrick Alton

SIGNATURE DATE

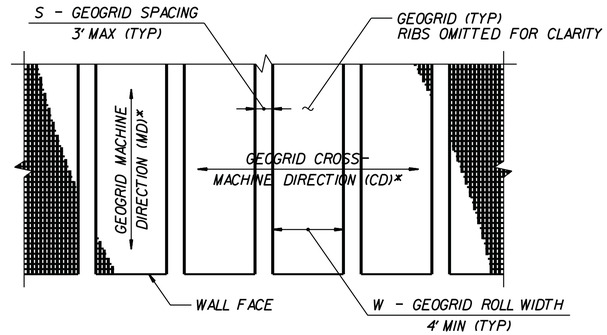
ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

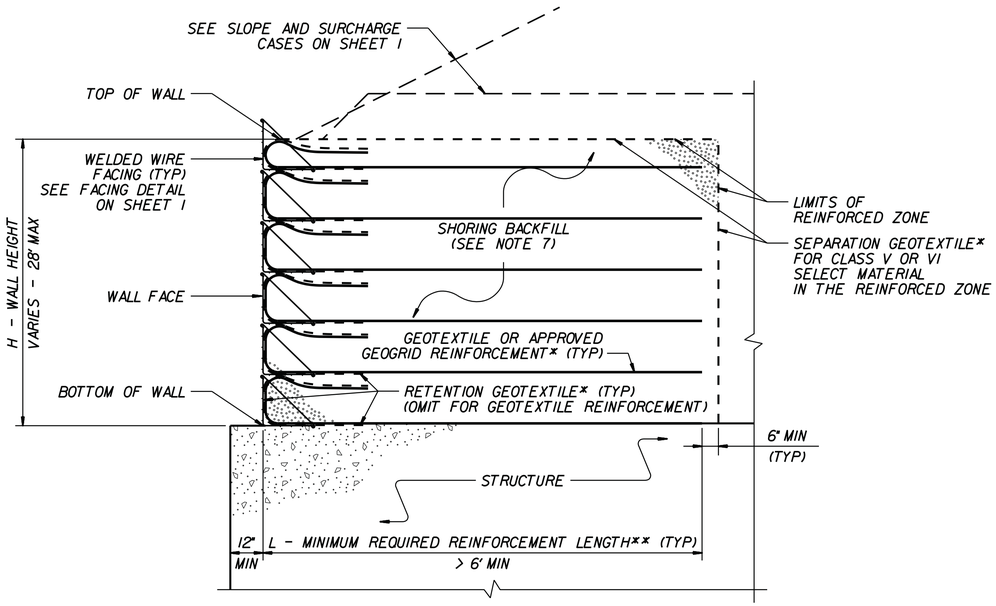


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE 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 WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

    IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033758 ENGINEER W. PATRICK ALTON

DocuSigned by: W. Patrick Alton A270EF793C5F442

DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																							
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT SHORT–TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)

*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 3 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET
R-3622B	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus Parker 8/19/2014 C96492AF5E824DF...

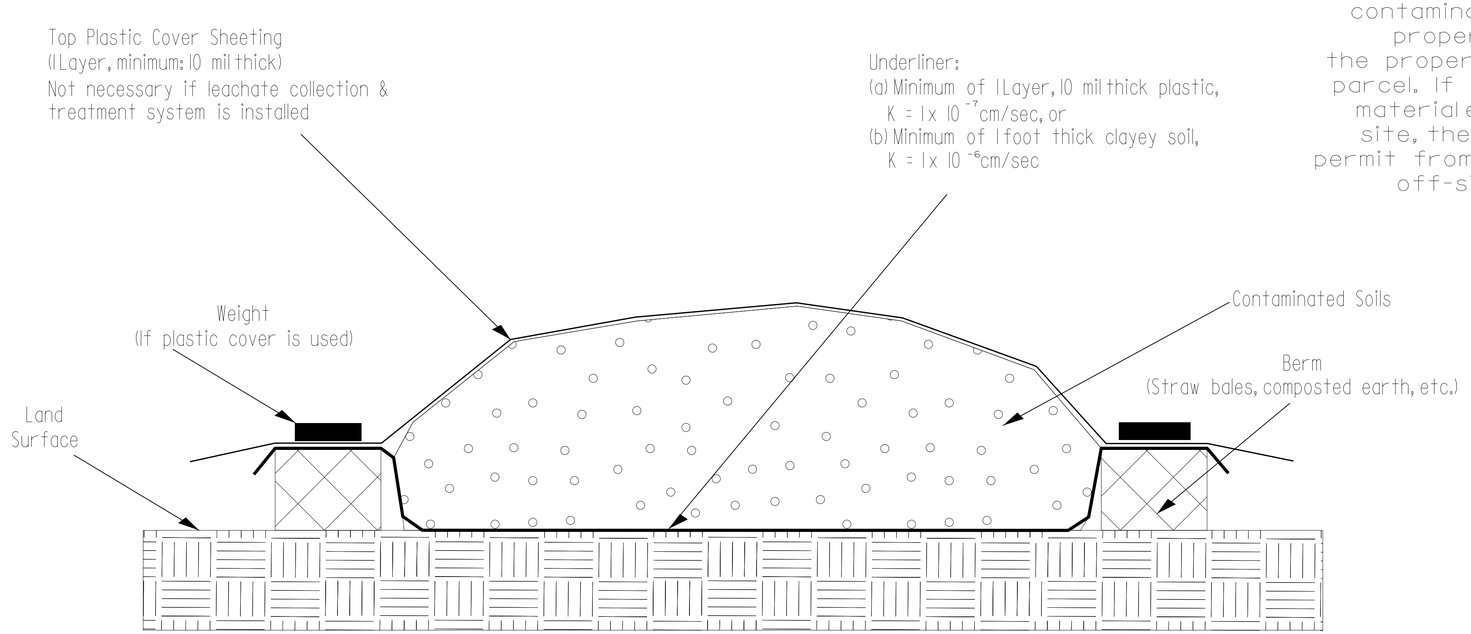
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

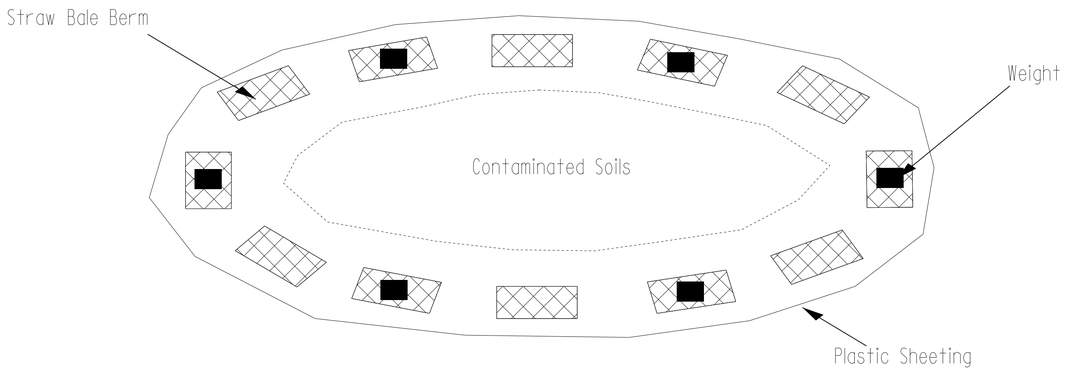
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.

Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☒ CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

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

COMPUTED BY: JCL DATE: 12/31/2014
CHECKED BY: PHS DATE: 1/7/2015

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3B-1

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– Sta. 11+35 TO –L– 41+35	6,169		17,521	11,352	
–DR1– Sta. 10+40 TO 11+96.77	12		2,233	2,221	
SUBTOTAL	6,181		19,754	13,573	
–L– Sta. 41+35 TO –L– 71+35	50,034		11,729		38,305
–DR2– Sta. 10+10 TO 11+25.49			531	531	
–DR3– Sta. 10+25 TO 11+75.51	78		499	421	
–DR4– Sta. 10+11 TO 11+19.65	130		5		125
–Y1– Sta. 10+00 TO 13+38.85	7,585				7,585
–Y1Temp– Sta. 12+70.82 TO 13+85	830				830
–Y1Temp– Removal Sta. 12+70.82 TO 13+85			955	955	
–DR8– Sta. 10+05 TO 10+72.13	434				434
–DR9– Sta. 10+20 TO 11+20	41		29		12
–LTemp– Sta. 62+39.88 TO 71+36.51	10,643		12		10,631
–LTemp– Removal Sta. 62+39.88 TO 71+36.51	15		3,160	3,145	
SUBTOTAL	69,790		16,920	5,052	57,922
–L– Sta. 71+35 TO –L– 101+35	11,797	1,014	38,905	27,108	1,014
–Y2– Sta. 10+11 TO 12+15	903		672		231
–DR4– Sta. 11+19.65 TO 12+68	40		16		24
–DR5– Sta. 10+00 TO 11+93.98	2,428				2,428
–DR5Temp– Sta. 10+00 TO 11+22.39	47		17		30
–DR5Temp– Removal Sta. 10+00 TO 11+22.39	15		54	39	
–DR5A– Sta. 10+00 TO 11+00	3,277				3,277
–Y3– Sta. 10+15.45 TO 15+65	19,198				19,198
–DR6– Sta. 10+09 TO 12+00	3,548		67		3,481
–DR7– Sta. 10+00 TO 12+75.44	978				978
–Y4– Sta. 10+75 TO 12+02.49	100		78		22
–LTemp– Sta. 71+36.51 TO 88+26.70	9,056		7,559		1,497
–LTemp– Removal Sta. 71+36.51 TO 88+26.70	800		4,901	4,101	
SUBTOTAL	52,187	1,014	52,268	31,248	32,180

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– Sta. 101+35 TO 127+25	1,600		14,860	13,260	
–Y5– Sta. 10+11.73 TO 11+25	164		39		125
SUBTOTAL	1,764		14,899	13,260	125
TOTAL	129,922	1,014	103,842	63,134	90,228
LOSS DUE TO CLEARING AND GRUBBING	–5,500				–5,500
ADDITIONAL UNDERCUT		3,850	4,428	4,428	3,850
ROCK WASTE TO OFFSET BORROW				–610	–610
ADJUST FOR ROCK WASTE			–92	–92	
WASTE IN LIEU OF BORROW				–66,860	–66,860
GRAND TOTAL	124,422	4,864	108,178	0	21,108
SAY	125,000	4,900			

EST. DDE = 710 CY
EST. SHALLOW UNDERCUT = 100 CY
EST. CLASS IV SUBGRADE STABILIZATION = 200 TONS
PAVEMENT STRUCTURE VOLUME = 3640 CY

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP
–L–	11+35	14+87	LT	265.0	
–L–	14+95	24+38	RT	447.4	
–L–	24+40	27+50	LT	311.0	
–L–	27+40	30+30	RT	727.4	
–L–	30+42	39+40	RT	1055.4	
–L–	48+06	50+76	RT	110.7	
–L–	50+73	61+10	LT	2374.1	
–L–	63+45	72+15	RT	1821.0	
–Y1–/–L–	10+00	72+20	LT	1025.6	
–L–	61+55	63+35	RT		286.6
–L–	70+70	78+25	C/L		1684.4
–L–	72+30	72+60	C/L		236.6
–L–	78+25	86+00	C/L	1915.7	
–Y2–	10+10	12+10	LT	584.8	
–DR5–	10+00	11+96	C/L	440.2	
–Y3–	10+25	15+05	LT	960.8	
–L–	86+95	107+85	RT	907.0	
–L–	108+43	127+25	LT	2454.0	
–LTEMP–	62+54	73+50	C/L	1810.2	
–LTEMP–	73+50	78+00	C/L		1000.0
–LTEMP–	78+00	87+31	C/L	1779.7	
–Y1TEMP–	12+70.82	13+52.08	C/L	162.5	
–DR5TEMP–	10+00	11+22.39	C/L	244.8	
			TOTAL	19,397.4	3,207.6
			SAY	19,400	3,210

COMPUTED BY: JCL DATE: 10/30/14
CHECKED BY: PHS DATE: 1/7/2015

"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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3B-2

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350						REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE 350	AT-1	CAT-1						NO.	PERMITTED G	PERMITTED NG				
-L-	11+35.00	10+87.56 -DR1-	LT	1212.5'	75'		11+00.00 -DR1-	11+50.00	8'	11'	50'		1'		1		1												
-L-	23+50.00	33+50.00	LT	1000'			23+50.00	32+50.00	8'	11'	50'	50'	1'	1'	2														
-L-	38+25.00	47+75.00	LT	950'			47+50.00	39+25.00	8'	11'		50'		1'	2														
-L-	48+30.00	50+50.00	LT	187.5'	25'		50+50.00	48+30.00	8'	11'		50'		1'	1	1													
-L-	57+80.00	63+80.00	LT	600'			63+80.00	57+80.00	8'	11'	50'	50'	1'	1'	2														
-L-	71+00.00	76+70.00	LT	525'	81.25'		75+50.00	71+00.00	8'	11'	50'		1'		1	1													
-L-	87+85.00	89+65.00	LT	162.5'	43.75'		89+25.00	88+50.00	8'	11'		50'		1'	1	1													
-L-	95+71.00	98+71.00	LT	300'			96+69.00	96+27.00	8'	11'	50'	50'	1'	1'	2														
-L-	70+63.00	11+30.00 -Y2-	RT	787.5'	50'		11+30.00 -Y2-	71+50.00	8'	11'	50'	50'	1'	1'	2														
-L-	95+60.00	98+23.00	RT	262.5'			96+80.00	97+70.00	8'	11'	50'	50'	1'	1'	2														
-L-	105+50.00	117+00.00	RT	1150'			106+00.00	116+00.00	8'	11'	50'	50'	1'	1'	2														
-DR7-	11+00.00	12+25.00	LT	125'			11+00.00	12+25.00	4'	7'							2												
			SUBTOTAL	7262.5'	275'										18	3	3												
		DEDUCTION FOR ANCHORS						ADDITIONAL GUARDRAIL POSTS + 10 EACH																					
			AT-1 3@ 6.25'		-18.75'																								
			GRAU-350 18@ 50'	-900'																									
			CAT-1 3@ 6.25'	-18.75'																									
			PROJECT TOTAL	6343.75'	256.25'																								
			SAY	6350'	275'																								

TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	STRAIGHT			APPROACH END WARRANT	TRAILING END WARRANT							TEMP. TYPE 350														
-L-	73+00.00	78+00.00	RT	500'			73+50.00	77+50.00							2														
-L-	95+75.00	98+50.00	LT	275'			95+75.00	98+50.00							2														
			SUBTOTAL	775'											4														
		LESS ANCHOR DEDICATION																											
			GRAU-350 4@50'	-200'																									
			PROJECT TOTAL	575'											4														
			SAY	600'																									

COMPUTED BY: JCL	DATE: 12/30/14
CHECKED BY: PHS	DATE: 1/8/15

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	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) 4"	6"	8"	12"	15"	18"	24"	30"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
11+74 -L-	RT	0402		1592.3'	1585.5'															
11+74 -L-	C/L	0402	0401		1585.5'	1580.0'														
14+86 -L-	RT	0405		1591.1'	1586.5'															
14+86 -L-	RT	0405	0404		1586.5'	1585.8'														
14+86 -L-	RT	0404		1589.8'	1585.8'															
14+86 -L-	C/L	0404	0403		1585.8'	1581.3'														
16+50 -L-	RT	0408A	0408		1595.8'	1591.8'														
16+55 -L-	RT	0408		1595.2'	1591.8'															
16+60 -L-	C/L	0408	0407		1591.8'	1591.6'														
16+65 -L-	LT	0407		1595.2'	1591.6'															
16+65 -L-	LT	0407	0406		1591.6'	1574.9'														
19+20 -L-	RT	0409			1596.0'															
19+60 -L-	RT	0412A	0412		1596.0'	1593.7'														
19+60 -L-	RT	0412		1597.1'	1593.7'															
19+60 -L-	C/L	0412	0411		1593.7'	1591.8'														
19+60 -L-	LT	0411		1597.0'	1591.8'															
19+60 -L-	LT	0411	0410		1591.8'	1586.6'														
21+35 -L-	RT	0501		1594.9'																
22+37 -L-	RT	0502	0503A		1593.0'	1592.8'														
22+40 -L-	RT	0503A		1598.5'	1592.8'															
22+40 -L-	C/L	0503A	0503		1592.8'	1579.7'														
25+57 -L-	RT	0510		1600.0'	1595.6'															
25+57 -L-	C/L	0510	0509		1595.6'	1595.4'														
25+57 -L-	LT	0509		1601.6'	1595.4'															
25+57 -L-	LT	0509	0508		1595.4'	1595.0'														
27+80 -L-	LT	0511A		1601.6'	1598.4'															
27+80 -L-	LT	0511A	0511		1598.4'	1595.0'														
29+75 -L-	C/L	0512	0513		1598.8'	1597.8'														
30+35 -L-	RT	0514			1600.8'	1601.0'														
30+65 -L-	LT	0515		1603.0'	1599.9'															
	LT	0515	0516		1599.9'	1593.8'														
35+00 -L-	RT	0601		1611.3'	1607.9'															
34+88 -L-	C/L																			
34+90 -L-	LT																			
35+05 -L-	C/L	0601	0602		1607.9'	1607.6'														
36+72 -L-	RT	0604A	0604		1620.9'	1612.1'														
36+70 -L-	RT	0604		1617.0'	1612.1'															
36+68 -L-	C/L	0604	0603		1612.1'	1611.7'														
36+78 -L-	LT	0605		1625.5'	1622.4'															
	LT	0605	0607		1622.4'	1622.0'														
39+79 -L-	LT	0607		1629.7'	1620.2'															
39+79 -L-	LT	0607	0606		1620.2'	1620.2'														
39+73 -L-	RT	0608A	0608		1637.6'	1623.6'														
39+79 -L-	RT	0608		1628.6'	1623.6'															
39+79 -L-	C/L	0608	0607		1623.6'	1620.2'														
41+10 -L-	LT	0609																		
PAGE TOTAL																				

STATION	C.S. PIPE 12" .064	C.S. PIPE 15" .064	C.S. PIPE 18" .064	C.S. PIPE 24" .064	C.S. PIPE 30" .079	C.S. PIPE 36" .109	C.S. PIPE 42" .109	R.C. PIPE (CLASS III) 15"	R.C. PIPE (CLASS III) 18"	R.C. PIPE (CLASS III) 24"	R.C. PIPE (CLASS III) 30"	R.C. PIPE (CLASS III) 36"	R.C. PIPE (CLASS III) 42"	WELDED STEEL PIPE 36" 0.5"	R.C. PIPE (CLASS IV) 36"	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.	ENDWALLS CU. YDS. C.S.P.
11+74 -L-																				
11+74 -L-									56'											
14+86 -L-																				
14+86 -L-									8'											
14+86 -L-																				
14+86 -L-										56'										
16+50 -L-			12'																	
16+55 -L-																				
16+60 -L-									32'											
16+65 -L-																				
16+65 -L-			36'																	
19+20 -L-			20'																	
19+60 -L-			8'																	
19+60 -L-																				
19+60 -L-									28'											
19+60 -L-																				
19+60 -L-			24'																	
21+35 -L-								72'												
22+37 -L-					24'															
22+40 -L-																				
22+40 -L-					76'															
25+57 -L-																				
25+57 -L-								32'												
25+57 -L-																				
25+57 -L-		16'																		
27+80 -L-																				
27+80 -L-		16'																		
29+75 -L-												128'							9.0	
30+35 -L-																		20'		
30+65 -L-																				
								88'												
35+00 -L-																				
34+88 -L-																				
34+90 -L-																				
35+05 -L-									64'											
36+72 -L-			12'																	
36+70 -L-																				
36+68 -L-									60'											
36+78 -L-																				
								96'												
39+79 -L-																				
39+79 -L-												20'								
39+73 -L-						24'														
39+79 -L-																				
39+79 -L-												44'								
41+10 -L-																				
PAGE TOTAL		32'	112'		100'	24'		288'	248'	56'		192'						20'	9.0	

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	T.B.D.I. STD. 840.35	SPECIAL T.B.D.I. (SEE SHEET 2C-1 FOR DETAIL)	G.D.I. TYPE "A" STD. 840.17 OR STD 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD 840.28	G.D.I. (W.X. FLAT) FRAME W/2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/GRATE STD 840.22	G.D.I. (W.S. SAG) FRAME W/2 GRATES STD 840.22	G.D.I. (N.S. SAG) FRAME W/2 GRATES STD 840.24	G.D.I. (N.S. SAG) FRAME W/GRATE STD 840.29	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29
11+74 -L-	1	1.8'		1										1
11+74 -L-														
14+86 -L-	1							1				1		
14+86 -L-														
14+86 -L-	1			1										1
14+86 -L-														
16+50 -L-														
16+55 -L-	1			1										1
16+60 -L-														
16+65 -L-	1			1										1
16+65 -L-														
19+20 -L-														
19+60 -L-														
19+60 -L-	1			1										1
19+60 -L-														
19+60 -L-	1	0.2'		1										1
19+60 -L-														
21+35 -L-														
22+37 -L-														
22+40 -L-	1	0.7'		1										1
22+40 -L-														
25+57 -L-	1			1										1
25+57 -L-														
25+57 -L-	1	1.2'		1										1
25+57 -L-														
27+80 -L-	1			1										1
27+80 -L-														
29+75 -L-														
30+35 -L-														
30+65 -L-	1			1										1
35+00 -L-	1							1				1		
34+88 -L-														
34+90 -L-														
35+05 -L-														
36+72 -L-														
36+70 -L-	1							1				1		
36+68 -L-														
36+78 -L-	1			1										1
39+79 -L-	1	4.5'		1										1
39+79 -L-														
39+73 -L-														
39+79 -L-	1						1					1		
39+79 -L-														
41+10 -L-	1													
PAGE TOTAL	18	8.4		13			1	3				4		13

STATION	G.D.I. (N.S.) WITH GRATE FOR DRIVEWAY STD 840.30	J.B. STD. 840.31 OR 840.32	T.B.J.B STD. 840.34	SPRING BOX STD 840.41	M.H. FRAME AND COVER STD. 840.54	18" CS SLOTTED DRAIN –SEE SHEET 2C–5 FOR DETAIL	8"X8"X15" HDPE TEE	15"X15"X15" HDPE TEE	##" DRAINAGE PIPE ELBOW	12" C.S. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 OR 850.11 (SY)	SPECIAL BERM DITCH OUTLET (SEE SHEET 2C–2)	CONC. COLLARS CL. "B" C.Y. (SEE SHEET 2C–3)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
11+74 -L-																					
11+74 -L-																					Remove Exist. 18" Pipe
14+86 -L-																					
14+86 -L-																					
14+86 -L-																					
14+86 -L-																				36'	
16+50 -L-																					
16+55 -L-																					
16+60 -L-																					
16+65 -L-																					
16+65 -L-												2									
19+20 -L-						24'															
19+60 -L-																					
19+60 -L-																					
19+60 -L-																					Remove Exist. 15" RCP
19+60 -L-																					
19+60 -L-												2									
21+35 -L-																					
22+37 -L-																					
22+40 -L-																					
22+40 -L-																					Remove Exist. 36" CMP
25+57 -L-																					
25+57 -L-																					
25+57 -L-																					
25+57 -L-											2										
27+80 -L-																					
27+80 -L-																					Preformed Score Hole at Outlet
29+75 -L-																				68'	Double 36" RCP w/Endwalls on both Ends
30+35 -L-																					
30+65 -L-																					
35+00 -L-																					
34+88 -L-																				40'	Remove Exist. 18" CMP
34+90 -L-																				52'	Remove Exist. 12" HDPE
35+05 -L-																					
36+72 -L-												2				11					18" BDO
36+70 -L-																					
36+68 -L-																					
36+78 -L-																					
39+79 -L-																					
39+79 -L-																					
39+73 -L-															2		32				36" BDO (SEE SHEET 2C–2 FOR DETAIL)
39+79 -L-																					
39+79 -L-																				32'	Remove Exist. 36" CMP
41+10 -L-				1																	
PAGE TOTAL				1		24'					2	6			2	11	32			228'	

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.)	GRATED 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 JUNCTION BOX

COMPUTED BY: JCL	DATE: 12/30/14
CHECKED BY: PHS	DATE: 1/8/15

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3D-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

SUB-REGIONAL & REGIONAL
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	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 4"	6"	8"	12"	15"	18"	24"	30"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
41+10 -L-	LT	0609	0609A									12'								
43+15 -L-	RT	0611A	0611		1644.1'	1635.1'														
43+15 -L-	RT	0611		1640.1'	1635.1'															
43+10 -L-	C/L	0611	0610		1635.1'	1633.0'														
43+65 -L-	C/L																			
44+47 -L-	RT	0613		1643.0'	1639.1'															
44+47 -L-	C/L	0613	0612		1639.1'	1535.4'														
45+47 -L-	RT	0615A	0615		1652.9'	1541.4'														
45+43 -L-	RT	0615		1644.8'	1536.4'															
45+43 -L-	C/L	0615	0614		1636.4'	1634.1'														
47+00 -L-	LT	0616		1651.2'	1648.1'															
	LT	0616	0618		1648.1'	1647.4'														
47+65 -L-	C/L																			
47+75 -L-	RT	0619A	0619		1652.9'	1646.8'														
47+75 -L-	RT	0619		1652.3'	1646.8'															
47+75 -L-	C/L	0619	0618		1646.8'	1646.6'														
47+75 -L-	LT	0618		1653.6'	1641.7'															
47+75 -L-	LT	0618	0617		1641.7'	1640.2'														
48+23 -L-	RT	0701A																		
49+05 -L-	LT	0701		1659.4'	1656.2'															
	LT	0701	0618		1656.2'	1647.4'														
51+50 -L-	LT	0703		1672.6'	1662.6'															
51+30 -L-	LT	0703	0702		1662.6'	1653.9'														
10+90 -DR3-	LT																			
51+85 -L-	C/L																			
52+13 -L-	LT	0704B		1677.1'	1672.1'															
	LT	0704B	0703		1672.1'	1667.9'														
52+13 -L-	RT	0704A	0704		1673.9'	1673.8'														
52+13 -L-	RT	0704		1680.2'	1671.1'															
52+13 -L-	C/L	0704	0704B		1671.1'	1673.1'														
53+35 -L-	RT	0705		1688.0'	1684.6'															
	RT	0705	0704		1684.6'	1676.8'														
54+26 -L-	RT	0706		1694.4'	1691.0'															
	RT	0706	0705		1691.0'	1684.6'														
55+47 -L-	RT	0708		1702.7'	1699.3'															
55+47 -L-	C/L	0708	0707		1699.3'	1685.1'														
55+55 -L-	LT																			
55+47 -L-	RT	0711		1716.5'	1713.0'															
55+42 -L-	C/L	0711	0709		1713.0'	1712.8'														
57+53 -L-	LT	0710																		
58+38 -L-	LT	0712		1722.6'	1719.5'															
	LT	0712	0709		1719.5'	1712.8'														
59+50 -L-	LT																			
60+67 -L-	LT	0714		1721.1'	1711.1'															
11+00 -DR9-	C/L	0714	0715		1711.1'	1709.8'														
60+65 -L-	LT	0713		1737.9'	1727.9'															
PAGE TOTAL												12'								

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .109	42" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	WELDED STEEL PIPE 36" 0.5"	R.C. PIPE (CLASS IV) 36"	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.	C.S.P.
41+10 -L-																				
43+15 -L-				12'																
43+15 -L-																				
43+10 -L-										72'										
43+65 -L-																				
44+47 -L-																				
44+47 -L-									72'											
45+47 -L-			16'																	
45+43 -L-																				
45+43 -L-									76'											
47+00 -L-																				
								72'												
47+65 -L-																				
47+75 -L-				12'																
47+75 -L-																				
47+75 -L-										44'										
47+75 -L-																				
47+75 -L-										32'										
48+23 -L-																	28'			
49+05 -L-																				
								128'												
51+50 -L-																				
51+30 -L-					72'															
10+90 -DR3-																				
51+85 -L-																				
52+13 -L-																				
											60'									
52+13 -L-											20'									
52+13 -L-																				
52+13 -L-											32'									
53+35 -L-																				
									120'											
54+26 -L-																				
									92'											
55+47 -L-																				
55+47 -L-			76'																	
55+55 -L-																				
55+47 -L-																				
55+42 -L-									44'											
57+53 -L-																	24'			
58+38 -L-																				
								108'												
59+50 -L-																				
60+67 -L-																				
11+00 -DR9-					56'															
60+65 -L-																				
PAGE TOTAL			92'	24'	128'			308'	404'	148'	112'						52'			

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	T.B.D.I. STD. 840.35	SPECIAL T.B.D.I. (SEE SHEET 2C-1 FOR DETAIL)	G.D.I. TYPE "A" STD. 840.17 OR STD 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD 840.28	G.D.I. (W.X. FLAT) FRAME W/2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/GRATE STD 840.22	G.D.I. (W.S. SAG) FRAME W/2 GRATES STD 840.22	G.D.I. (N.S. SAG) FRAME W/2 GRATES STD 840.24	G.D.I. (N.S. SAG) FRAME W/GRATE STD 840.29	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	G.D.I. (N.S.) WITH GRATE FOR DRIVEWAY STD 840.30	J.B. STD. 840.31 OR 840.32	T.B.J.B STD. 840.34	SPRING BOX STD 840.41	M.H. FRAME AND COVER STD. 840.54	18" CS SLOTTED DRAIN -SEE SHEET 2C-5 FOR DETAIL	8"X8"X15" HDPE TEE	15"X15"X15" HDPE TEE	##" DRAINAGE PIPE ELBOW	12" C.S. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 OR 850.11 (SY)	SPECIAL BERM DITCH OUTLET (SEE SHEET 2C-2)	CONC. COLLARS CL. "B" C.Y. (SEE SHEET 2C-3)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
41+10 -L-																																			
43+15 -L-																											2			31					24" BDO
43+15 -L-	1						1					1																							
43+10 -L-																																			
43+65 -L-																																		43'	Remove Exist. 18" CMP
44+47 -L-	1						1					1																							
44+47 -L-																																			Remove Exist. 24" CMP
45+47 -L-																										2				11					18" BDO
45+43 -L-	1	3.4'					1					1																							
45+43 -L-																																			Remove Exist. 18" CMP
47+00 -L-	1			1										1																					
47+65 -L-																																		36'	Remove Exist. 24" CMP
47+75 -L-																											2			31					24" BDO
47+75 -L-	1	0.5'					1					1																							
47+75 -L-																																			
47+75 -L-	1	5.0'	1.9'														1		1																
47+75 -L-																																			Preformed Scour Hole at Outlet
48+23 -L-																																			
49+05 -L-	1			1										1																					
51+50 -L-	1	5.0'				1						1																							
51+30 -L-																												2							Preformed Score Hole at Outlet
10+90 -DR3-																																		18'	Remove Exist. 24" CMP
51+85 -L-																																		85'	Remove Exist. 24" CMP
52+13 -L-	1					1						1																							
52+13 -L-																																			
52+13 -L-	1	4.1'		1										1																					
52+13 -L-																																			
53+35 -L-	1			1										1																					
54+26 -L-	1			1										1																					
55+47 -L-	1			1										1																					
55+47 -L-																																			
55+55 -L-																																		38'	Remove Exist. 18" CMP
55+47 -L-	1			1										1																					
55+42 -L-																																			
57+53 -L-																																			18" Pipe Under Driveway
58+38 -L-	1			1										1																					
59+50 -L-																																		35'	Remove Exist. 18" CMP
60+67 -L-	1	5.0'														1			1																
11+00 -DR9-																																			
60+65 -L-	1	5.0'			1									1																					Special TB 2GI
PAGE TOTAL	17	28.0	1.9'	8	1	2	4					6		9		1	1		2							2	4	2		73				255'	

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.)	GRATED 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 JUNCTION BOX

4/04/06

$$$$$$$$SYSTIME$$$$$$$$ $$$$$$$$DGN$$$$$$$$ $$$$$$$$USERNAME$$$$$$$$

COMPUTED BY: JCL DATE: 12/30/14
CHECKED BY: PHS DATE: 1/8/15

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3D-3

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUB–REGIONAL & REGIONAL
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	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 4"	6"	8"	12"	15"	18"	24"	30"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C.S. PIPE 12" .064	C.S. PIPE 15" .064	C.S. PIPE 18" .064	C.S. PIPE 24" .064	C.S. PIPE 30" .079	C.S. PIPE 36" .109	C.S. PIPE 42" .109	R.C. PIPE (CLASS III) 15"	R.C. PIPE (CLASS III) 18"	R.C. PIPE (CLASS III) 24"	R.C. PIPE (CLASS III) 30"	R.C. PIPE (CLASS III) 36"	R.C. PIPE (CLASS III) 42"	WELDED STEEL PIPE 36" 0.5"	R.C. PIPE (CLASS IV) 36"	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.	ENDWALLS CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	T.B.D.I. STD. 840.35	SPECIAL T.B.D.I. (SEE SHEET 2C–1 FOR DETAIL)	G.D.I. TYPE "A" STD. 840.17 OR STD 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD 840.28	G.D.I. (W.X. FLAT) FRAME W/2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/GRATE STD 840.22	G.D.I. (W.S. SAG) FRAME W/2 GRATES STD 840.22	G.D.I. (N.S. SAG) FRAME W/2 GRATES STD 840.24	G.D.I. (N.S. SAG) FRAME W/GRATE STD 840.29	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	G.D.I. (N.S.) WITH GRATE FOR DRIVEWAY STD 840.30	J.B. STD. 840.31 OR 840.32	T.B.J.B STD. 840.34	SPRING BOX STD 840.41	M.H. FRAME AND COVER STD. 840.54	18" CS SLOTTED DRAIN –SEE SHEET 2C–5 FOR DETAIL	8"X8"X15" HDPE TEE	15"X15"X15" HDPE TEE	##" DRAINAGE PIPE ELBOW	12" C.S. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 OR 850.11 (SY)	SPECIAL BERM DITCH OUTLET (SEE SHEET 2C–2)	CONC. COLLARS CL. "B" C.Y. (SEE SHEET 2C–3)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
	LT	0713	0714		1727.9'	1717.1'																			40'																																																		
62+30 -L-	C/L																																																																									99'	Remove Exist. 24" CMP
62+70 -L-	LT	0801		1751.9'	1735.6																																				1				1									1																					Special TB 2GI
	LT	0801	0713		1735.6'	1730.9'																									208'																																												
	C/L	0802	0801		1736.6'	1735.6'																									64'								2.3																																				Headwall required at 0802
65+15 -L-	C/L																																																																								40'	Remove Exist. 30" CMP
65+75 -L-	RT	0804A	0804		1781.8'	1760.8'																	32'																																															11					18" BDO
65+57 -L-	RT	0804		1765.2'	1760.8'																																				1						1					1																							
65+34 -L-	C/L	0804	0803		1760.8'	1760.3'																									72'																																												
12+65 -Y1-	LT	0805B																																							1							1				1																							
12+85 -Y1-	LT	0805B	0805A			1786.7'							52'																																																															
71+20 -L-	RT	0805		1786.7'	1783.5'																																				1			1										1																					
	RT	0805	0807		1783.5'																								60'																																														
71+84 -L-	RT	0807																																							1			1										1																					
71+84 -L-	C/L	0807	0806			1782.6'																							36'																																														
71+84 -L-	LT	0806		1787.8'	1780.7'																																				1	2.1'		1										1																					
71+95 -L-	LT	0806	0806A		1780.7'	1778.0'																28'																																											2										
72+45 -L-	RT																																																																									50'	Remove Exist. 18" CMP
72+40 -L-	LT																																																																										19'	Remove Exist. 18" CMP
12+60 -DR4-	RT	0808		1769.4'	1766.9'																																				1							1				1																							
12+60 -DR4-	C/L	0808	0808A		1766.9'	1766.7'							24'																																																														
73+07 -L-	RT	0809		1789.5'	1786.4'																																				1			1										1																					
73+07 -L-	RT	0809	0810		1786.4'	1766.4'																48'																																											2										
73+90 -L-	LT	0811	0811A		1763.4'	1761.0'																													80'				3.4																																		.7640			Collar attaches RCP to Welded Steel Pipe
73+90 -L-	C/L	0811A	0811B		1761.0'	1759.7'																												48'																																										24 LF in soil, 24 LF not in soil
73+90 -L-	RT	0811B	0812		1759.7'	1758.9'																													28'				3.4																																		.7640			Collar attaches RCP to Welded Steel Pipe
76+20 -L-	RT	0901		1790.9'	1787.7'																																				1			1										1																					
	RT	0901	0904		1787.7'	1782.4'																							144'																																														
77+38 -L-	C/L																																																																									41'	Remove Exist. 18" CMP
77+70 -L-	RT	0904		1788.9'	1782.4'																																				1	1.5'		1										1																					
77+60 -L-	C/L	0902	0904		1786.6'	1782.4'																									64'																																													
77+65 -L-	RT	0904	0903		1782.4'	1774.7'																		40'																																											2								
10+30 -Y2-	RT	0905						24'								X	X	X	X																						1																	1																		
78+50 -L-	LT																																																																									30'	Remove Exist. 12" CMP
79+05 -L-	RT																																																																									79'	Remove Exist. 18" CMP
11+78 -DR5-	C/L	0906			1783.2'	1781.5'																								56'																																													
10+18 -DR5-	C/L																																																																									133'	Remove Exist. 15" CMP
83+87 -L-	RT	0907		1770.0'	1766.1'																																				1					1						1																							
83+87 -L-	RT	0907	0907A		1766.1'	1787.5'																		36'																																														31					24" BDO
85+05 -L-	RT	0909		1765.6'	1761.7'																																				1				1									1																					Special TB 2GI
	RT	0907	0909		1766.1'	1761.7'																									120'																																													
12+67 -DR7-	C/L	0908			1816.2'	1813.7'																														32'																																								
11+00 -DR7-	LT																																																																										40'	Remove Exist. 18" CMP
86+05 -L-	RT																																																																									48'	Remove Exist. 18" CMP
86+56 -L-	RT	0910		1751.1'	1753.2'																																				1				1									1																					Special TB 2GI
	RT	0909	0910		1761.7'	1753.2'																									148'																																													
86+56 -L-	RT	0911	0910		1764.5'	1753.9'																	52'																																												2									
86+50 -L-	LT	0910B																																		36'																																								
87+98 -L-	RT	0912		1749.5'	1745.5'																																				1				1									1																					
PAGE TOTAL								24'					76'									76'	84'	76'	40'			240'	56'	332'	344'			48'	108'	68'			9.1		15	3.6		6	4	1	1	2				4		10				1							4	2	2			42		1.528		579'	

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.) GRATED 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 JUNCTION BOX

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

4/04/06

COMPUTED BY: JCL DATE: 12/30/14
CHECKED BY: PHS DATE: 1/8/15

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3D-4

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

SUB–REGIONAL & REGIONAL

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 | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 4" | 6" | 8" | 12" | 15" | 18" | 24" | 30" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C.S. PIPE 12" | 15" | 18" | 24" | 30" | 36" | 42" | R.C. PIPE (CLASS III) 15" | 18" | 24" | 30" | 36" | 42" | WELDED STEEL PIPE 36" | R.C. PIPE (CLASS IV) 36" | 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. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. *FT. A | B | PER EACH (0' THRU 5.0') | 5.0' THRU 10.0' | 10.0' AND ABOVE | T.B.D.I. STD. 840.35 | SPECIAL T.B.D.I. (SEE SHEET 2C–1 FOR DETAIL) | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD 840.28 | G.D.I. (W.S. FLAT) FRAME W/2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/GRATE STD 840.22 | G.D.I. (W.S. SAG) FRAME W/2 GRATES STD 840.22 | G.D.I. (N.S. SAG) FRAME W/2 GRATES STD 840.24 | G.D.I. (N.S. SAG) FRAME W/GRATE STD 840.29 | G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29 | G.D.I. (N.S.) WITH GRATE FOR DRIVEWAY STD 840.30 | J.B. STD. 840.31 OR 840.32 | T.B.J.B STD. 840.34 | SPRING BOX STD 840.41 | M.H. FRAME AND COVER STD. 840.54 | 18" CS SLOTTED DRAIN –SEE SHEET 2C–5 FOR DETAIL | 8"X8"X15° HDPE TEE | 15"X15"X15° HDPE TEE | ##" DRAINAGE PIPE ELBOW | 12" C.S. ELBOW | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | 36" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 OR 850.11 (SY) | SPECIAL BERM DITCH OUTLET (SEE SHEET 2C–2) | CONC. COLLARS CL. "B" C.Y. (SSE SHEET 2C–3) | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN.FT. | REMARKS |
|---|---|---

COMPUTED BY: JCL DATE: 12/30/14
CHECKED BY: PHS DATE: 1/8/15

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	3D-5

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

SUB–REGIONAL & REGIONAL
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	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 4"	DRAINAGE PIPE 6"	DRAINAGE PIPE 8"	DRAINAGE PIPE 12"	DRAINAGE PIPE 15"	DRAINAGE PIPE 18"	DRAINAGE PIPE 24"	DRAINAGE PIPE 30"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C.S. PIPE 12" .064	C.S. PIPE 15" .064	C.S. PIPE 18" .064	C.S. PIPE 24" .064	C.S. PIPE 30" .079	C.S. PIPE 36" .109	C.S. PIPE 42" .109	R.C. PIPE (CLASS III) 15"	R.C. PIPE (CLASS III) 18"	R.C. PIPE (CLASS III) 24"	R.C. PIPE (CLASS III) 30"	R.C. PIPE (CLASS III) 36"	R.C. PIPE (CLASS III) 42"	WELDED STEEL PIPE 36" 0.5"	R.C. PIPE (CLASS IV) 36"	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.	ENDWALLS CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	T.B.D.I. STD. 840.35	SPECIAL T.B.D.I. (SEE SHEET 2C–1 FOR DETAIL)	G.D.I. TYPE "A" STD. 840.17 OR STD 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD 840.28	G.D.I. (W.X. FLAT) FRAME W/2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/GRATE STD 840.22	G.D.I. (W.S. SAG) FRAME W/2 GRATES STD 840.22	G.D.I. (N.S. SAG) FRAME W/2 GRATES STD 840.24	G.D.I. (N.S. SAG) FRAME W/GRATE STD 840.29	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	G.D.I. (N.S.) WITH GRATE FOR DRIVEWAY STD 840.30	J.B. STD. 840.31 OR 840.32	T.B.J.B STD. 840.34	SPRING BOX STD 840.41	M.H. FRAME AND COVER STD. 840.54	18" CS SLOTTED DRAIN –SEE SHEET 2C–5 FOR DETAIL	8"X8"X15" HDPE TEE	15"X15"X15" HDPE TEE	##" DRAINAGE PIPE ELBOW	12" C.S. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 OR 850.11 (SY)	SPECIAL BERM DITCH OUTLET (SEE SHEET 2C–2)	CONC. COLLARS CL. "B" C.Y. (SEE SHEET 2C–3)	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
113+95 -L-	C/L	1107	1108		1684.0'	1675.1'																		84'																																																			Remove Exist. 24" CMP, Preformed Scour Hole at Outlet
117+30 -L-	LT	1201		1679.1'	1675.2'																																				1			1										1																					
	LT	1201	1202		1675.2'	1667.6'																						228'																																															
119+60 -L-	LT	1202		1671.6'	1667.6'																																				1			1										1																					
119+60 -L-	C/L	1202	1210		1667.6'	1667.5'																						28'																																														
119+60 -L-	RT	1210		1671.5'	1664.2'																																				1			1								1																							
119+60 -L-	RT	1210	1203		1664.2'	1663.9'																16'																	0.70																										2										Endwall on Outlet
121+90 -L-	RT	1203A							12'							X	X	X	X																						1																	1																		
121+90 -L-	LT	1204		1667.5'	1664.3'																																				1			1										1																					
	LT	1204	1204A		1664.3'	1663.6'																						92'																																														
122+85 -L-	LT	1204A		1666.8'	1661.4'																																				1	0.4'			1									1																					
122+85 -L-	LT	1204B	1204A		1665.3'	1661.4'																					16'												3.80																																						Endwall on Inlet
	LT	1204A	1205		1661.4'	1659.9'																											132'																																									
124+20 -L-	LT	1205		1665.3'	1659.9'																																				1	0.4'			1									1																					
	LT	1205	1207		1659.9'	1657.8'																											156'																																									
125+80 -L-	LT	1207		1664.2'	1657.8'																																				1	1.4'															1		1																
125+80 -L-	LT	1206	1207		1660.1'	1660.1'																									20'								2.30																																						Endwall on Inlet
125+77 -L-	C/L	1207	1208		1657.8'	1657.5'																											60'																																								Remove Exist. 24" CMP.
126+17 -L-	LT	1209		1664.1'	1660.9'																																				1			1										1																					
	LT	1209	1207		1660.9'	1657.8'																						36'																																														
PAGE TOTAL									12'													16'		84'			16'	384'			20'		348'						6.80		9	2.2'		5	2							1		6			1	1	1						2										
GRAND TOTAL								24'	100'	60'	20'	56'	76'								20'	160'	288'	268'	276'	24'	16'	1820'	740'	868'	632'	192'	348'	48'	108'	124'	52'	20'	27.70		70	42.2'	1.9'	35	8	3	9	8				20		43		1	3	3	4	24'	3	1		2	12	10	10	4	2	210	32	2.760		1349'	
																																										44.7'																														242					
SAY																																							28.00			45.0'																														250		3.0			
								TEMPORARY PIPE SUMMARY																																																																						
84+50 -LTemp-	RT	0914											48'																																																													48'	
86+00 -LTemp-	RT	0915											48'																																																													48'	
GRAND TOTAL													172'																																																														1445'	

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.)	GRATED 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 JUNCTION BOX

COMPUTED BY: PHS DATE: 3-19-15 CHECKED BY: JCL DATE: 3-19-15	(3-19-15)	PROJECT NO. R-3622B	SHEET NO. 3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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
L	28+75	33+24					1500		
L	96+30	96+56					100		
L	29+83						170		
L	73+89						360		
L	113+96						70		
CONTINGENCY					100	200	11000		
			TOTAL CY/TONS/SY:		100	200	13200*	0	0

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.**

PROJ. REFERENCE NO.	SHEET NO.
R-3622B	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

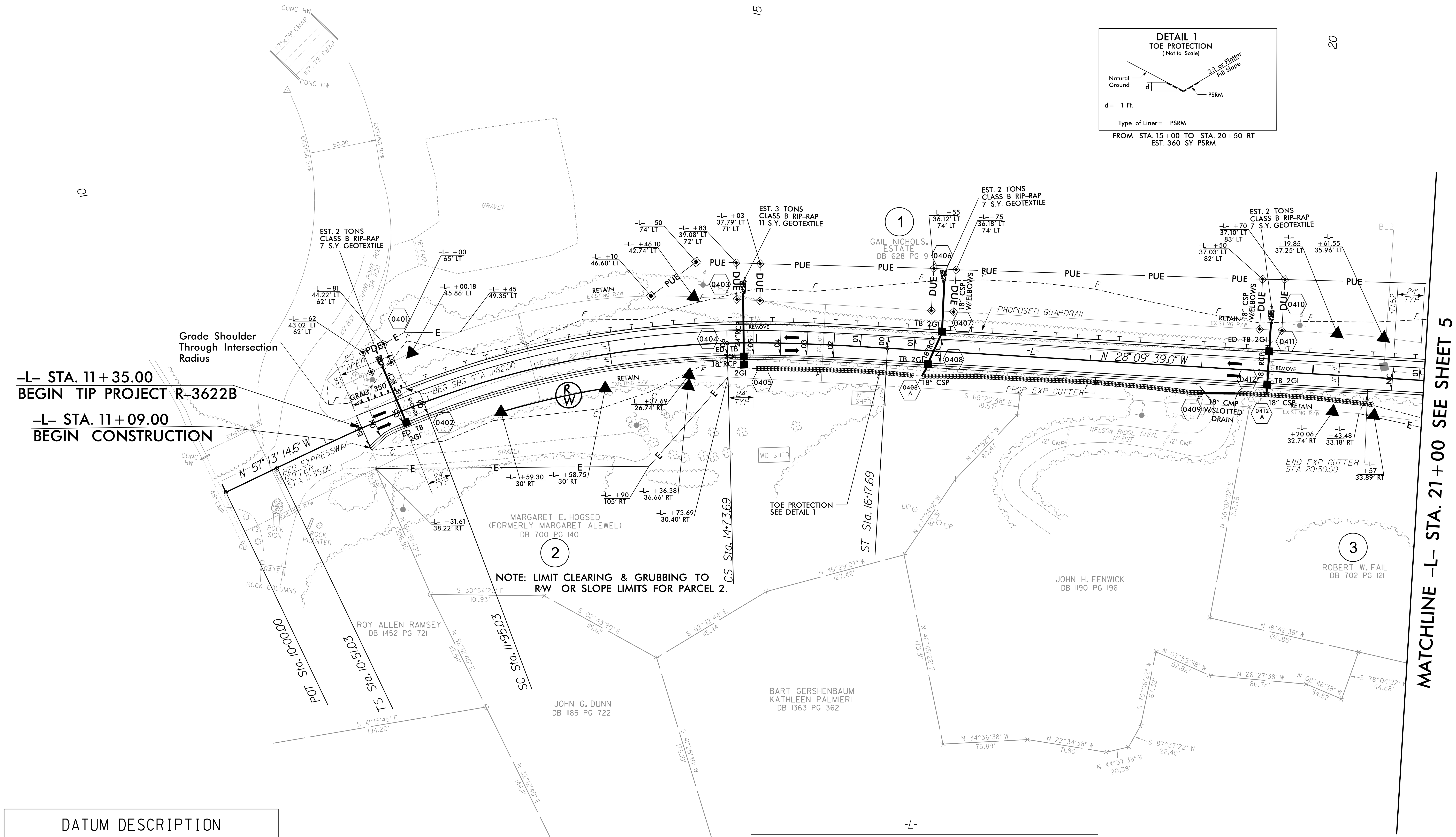
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4, 5	Gail Nichols
2	4	Margaret E Hogsed (Formerly Margaret Alewel)
3	4, 5	Robert W. Fail
4	5	Chadwick Wayne McNabb
5	5	Michael L. Bias
6	5	James L. Davis, Jr.
7	5, 6	Larry McNabb
8	5, 6	Gail W. Stansell
9		No Parcel
10	6	Helen M. Malinowski
11	6	Michael L. Wood
12	6, 7	Arlin Dean Hensley
13	6, 7	John W. Gladders and wife, Carol Gladders
14	7, 8, 9	T. L. McNabb, Jr.
15	5	Angell H. Davis and husband, James L. Davis, Jr.
16	7, 8	Karen Beth Westenberg
17	8, 9	Robert H. Gilbreath, Jr.
18	9	New Communications of the Carolinas, Inc.
19	9	Fox Ridge of Cherokee County, LLC
20	9	Robert P. Ware
21	9, 10	Marshall G. Simmons
22	9, 10	Friendship Baptist Church
23	10	Tammy Wood Wright
24	10	Kristie W. Harbin
25	10, 11	Stanley Wood, Jr.
26	11	Stanley Wood, Jr.
27	11	Crowe Developing, Inc.
28	11	Sharon L. Rhoton
29	11, 12	Stringer Family Trust
30	11	Linda J. Scullion
31	11, 12	David A. Badger
32	12	Kathleen K. Leach
33	12	Douglas O. Foster
34	12	Robert D. Truett
35	12	Crowe Developing, Inc.
36	12	Lisa Kay Keenum, Et. Al.
37	7	Verna Rae Wells Griffin
38	9	Michael J. Mansfield and wife, Christina M. Mansfield
39	9	Pamela McNabb Rollins
40	10	Terry Wood, James David Wood Jr. and Tammy Wood Wright
41	10, 11	Stanley Wood, Jr.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865 546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

REVISIONS



FROM STA. 15+00 TO STA. 20+50 RT
EST. 360 SY PSRM

-L-

PIs Sta 11+47.07	PI Sta 13+35.67	PIs Sta 15+21.73
θs = 4° 57' 01.3"	Δ = 19° 09' 33.1" (RT)	θs = 4° 57' 01.3"
Ls = 144.00'	D = 6° 52' 31.8"	Ls = 144.00'
LT = 96.04'	L = 278.66'	LT = 96.04'
ST = 48.03'	T = 140.64'	ST = 48.03'
	R = 833.33'	

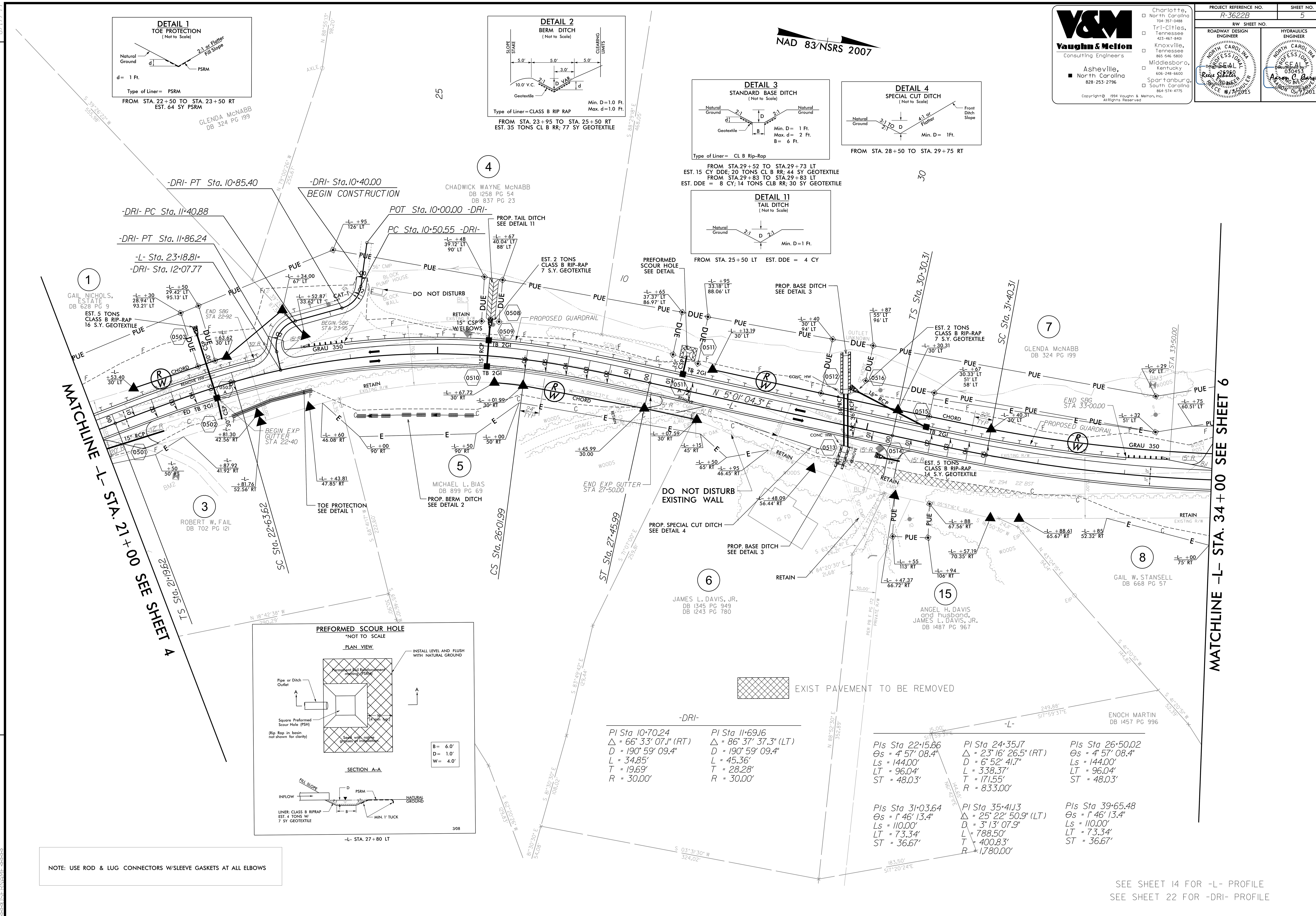
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "SMOKEY"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 521488.4600(ft) EASTING: 448118.6300(ft) ELEVATION: 1807.45(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99979974
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SMOKEY" TO -L- STATION 10+00.00 IS S 20°05'53" E 5725.99'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

SEE SHEET 13 FOR -L- PROFILE

$$$$SYSTIME$$$$ $$$$USERNAME$$$$DGN$$$$



PROJECT REFERENCE NO.	SHEET NO.
R-3622B	6
RW SHEET NO.	

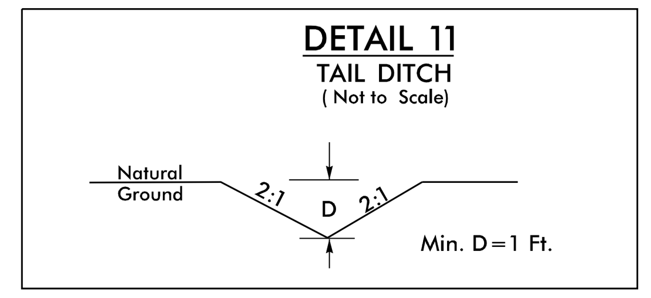
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER — DocuSigned by: Reese Schuler — M. 7/2015

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER — DocuSigned by: Aaron C. Carver — 5/7/2015

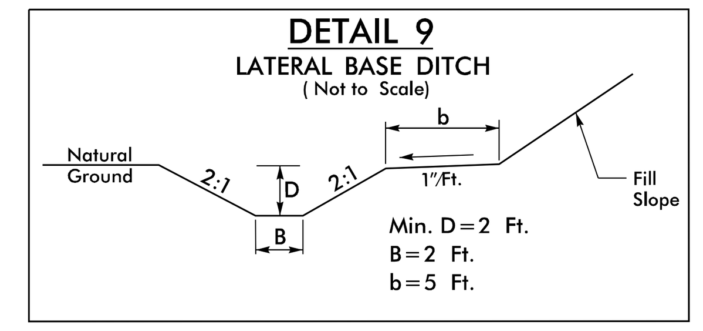
V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828·253·2796
Charlotte, North Carolina 704·357·0488 — Tri-Cities, Tennessee 423·467·8401 — Knoxville, Tennessee 865·546·5800 — Middlesboro, Kentucky 606·248·6600 — Spartanburg, South Carolina 864·574·4775

REVISIONS

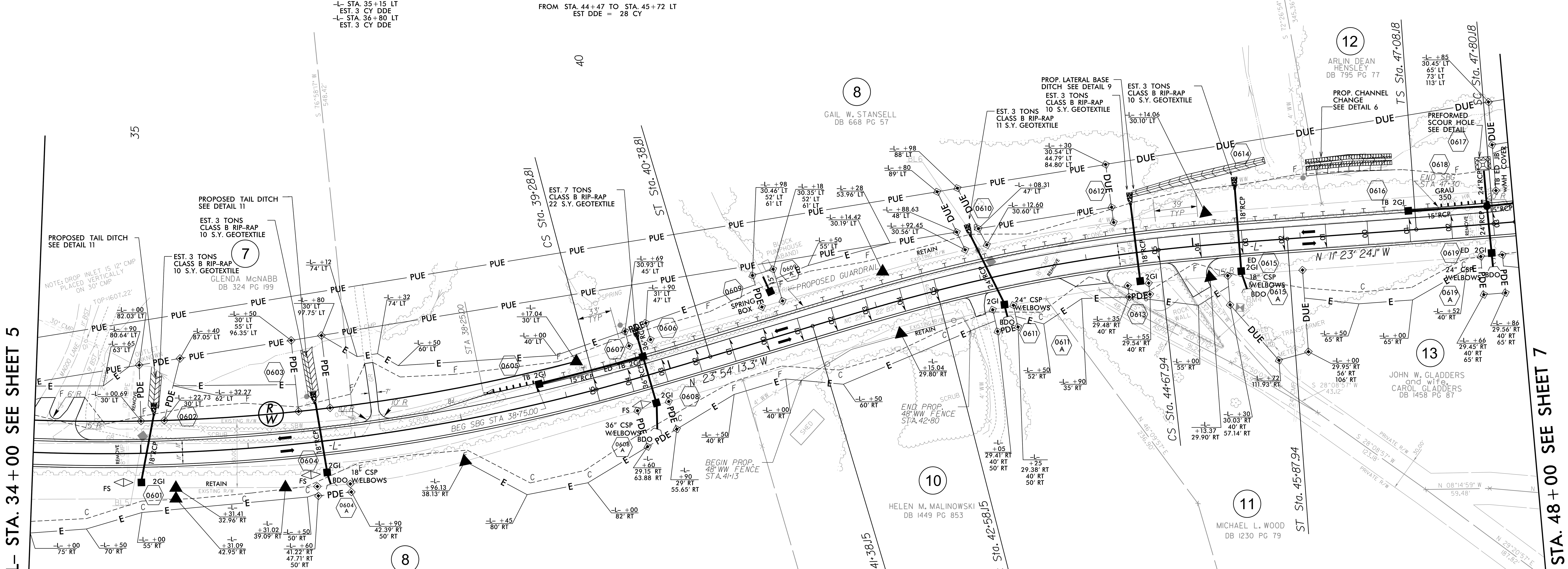
8/17/99



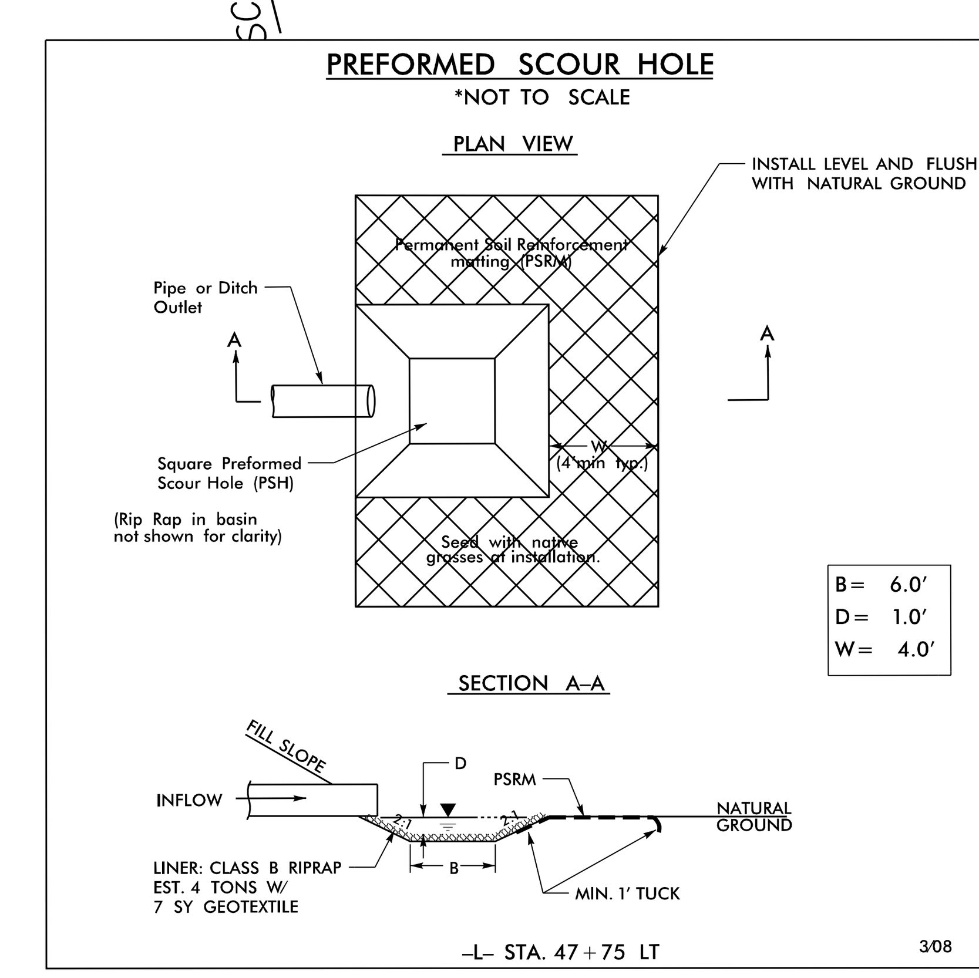
–L– STA. 35+15 LT
EST. 3 CY DDE
–L– STA. 36+80 LT
EST. 3 CY DDE

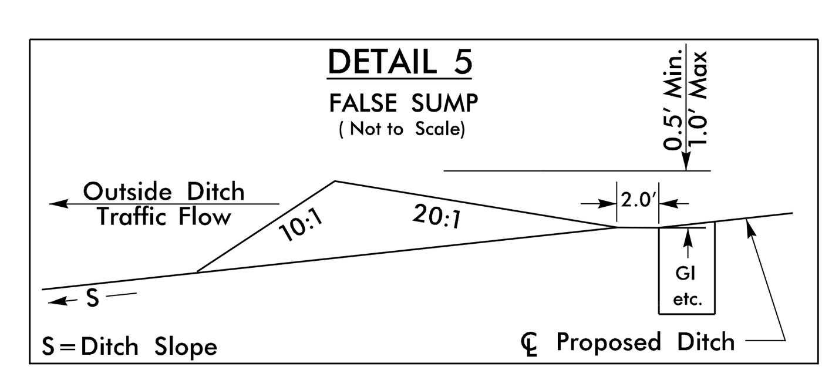


FROM STA. 44+47 TO STA. 45+72 LT
EST DDE = 28 CY



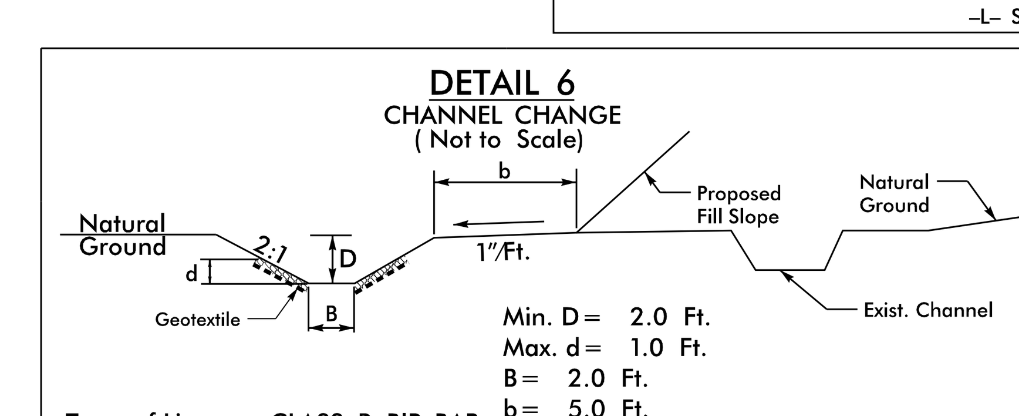
PIs Sta 31+03.64 Θs = 1° 46' 13.4" Ls = 110.00' LT = 73.34' ST = 36.67'	PI Sta 35+41.13 Δ = 25° 22' 50.9" (LT) D = 3° 13' 07.9" L = 788.50' T = 400.83' R = 1,780.00'	PIs Sta 39+65.48 Θs = 1° 46' 13.4" Ls = 110.00' LT = 73.34' ST = 36.67'
PIs Sta 42+18.15 Θs = 2° 16' 36.0" Ls = 120.00' LT = 80.01' ST = 40.01'	PI Sta 43+63.21 Δ = 7° 57' 37.3" (RT) D = 3° 47' 39.9" L = 209.79' T = 105.06' R = 1,510.00'	PIs Sta 45+07.94 Θs = 2° 16' 36.0" Ls = 120.00' LT = 80.01' ST = 40.01'
PIs Sta 47+56.18 Θs = 0° 35' 33.8" Ls = 72.00' LT = 48.00' ST = 24.00'	PI Sta 50+03.78 Δ = 7° 21' 10.1" (LT) D = 1° 38' 47.1" L = 446.59' T = 223.60' R = 3,480.00'	PIs Sta 52+50.77 Θs = 0° 35' 33.8" Ls = 72.00' LT = 48.00' ST = 24.00'





STA. 34+85 RT; STA. 36+55 RT; STA. 39+65 RT;

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS



FROM STA. 46+10 TO STA. 46+90
EST. 20 CY DDE; 18 TONS CL B RR; 40 SY GEOTEXTILE

SEE SHEET 15 FOR -L- PROFILE

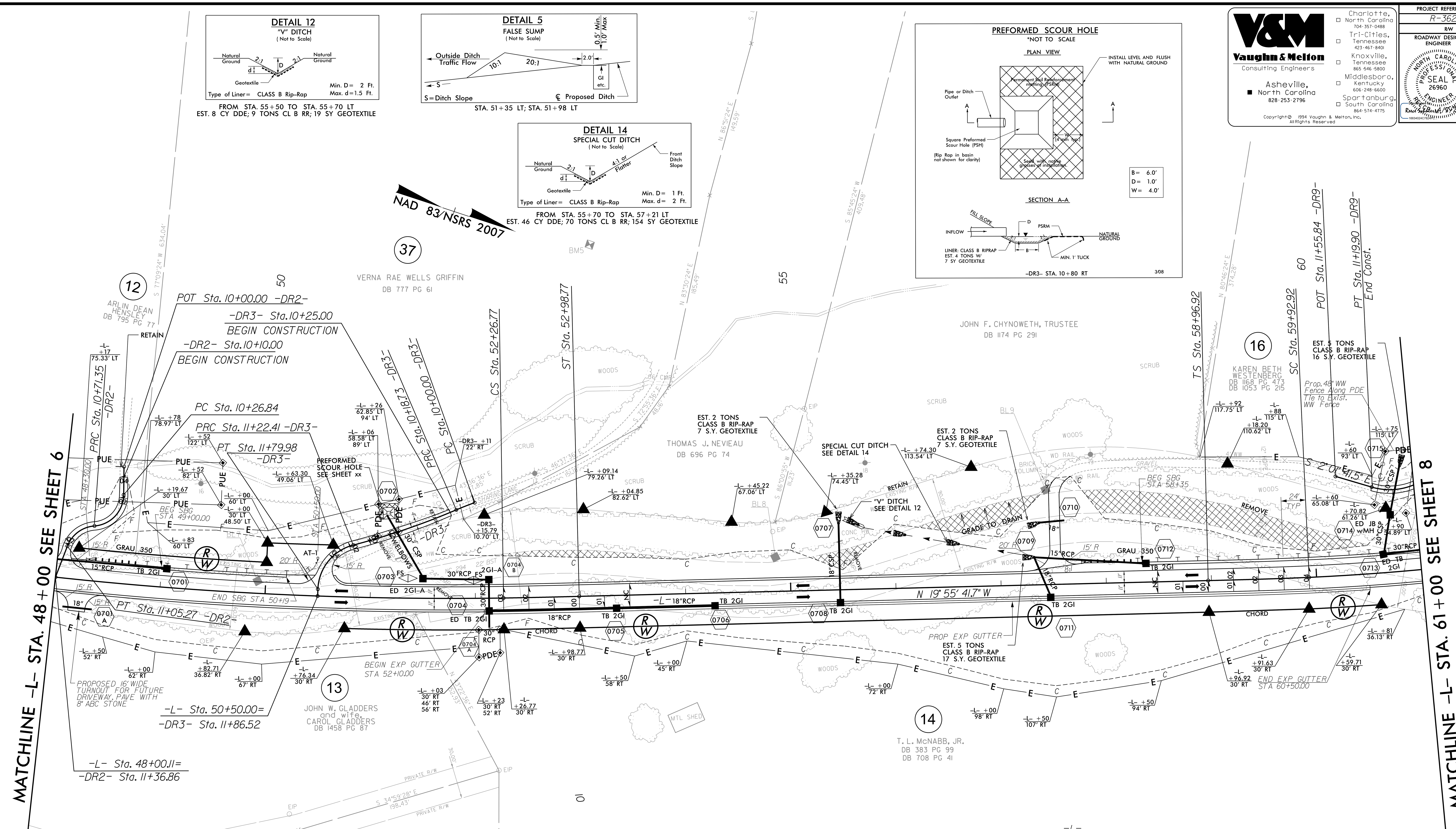
PROJECT REFERENCE NO.	SHEET NO.
R-3622B	7
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Charlotte, North Carolina 704-357-0488 · Tri-Cities, Tennessee 423-467-8401 · Knoxville, Tennessee 865 546 5800 · Middlesboro, Kentucky 606-248-6600 · Spartanburg, South Carolina 864-574-4775

REVISIONS

8/17/99



DETAIL 12
"V" DITCH
FROM STA. 55+50 TO STA. 55+70 LT
EST. 8 CY DDE; 9 TONS CL B RR; 19 SY GEOTEXTILE
DETAIL 5
FALSE SUMP
STA. 51+35 LT; STA. 51+98 LT
DETAIL 14
SPECIAL CUT DITCH
FROM STA. 55+70 TO STA. 57+21 LT
EST. 46 CY DDE; 70 TONS CL B RR; 154 SY GEOTEXTILE
PREFORMED SCOUR HOLE
-DR3- STA. 10+80 RT
NAD 83/NSRS 2007
MATCHLINE -L- STA. 48+00 SEE SHEET 6
MATCHLINE -L- STA. 61+00 SEE SHEET 8
VERNA RAE WELLS GRIFFIN DB 777 PG 61
ARLIN DEAN HENSLEY DB 795 PG 77
JOHN F. CHYNOWETH, TRUSTEE DB 1174 PG 291
THOMAS J. NEVIEAU DB 696 PG 74
KAREN BETH WESTENBERG DB 1168 PG 473 DB 1053 PG 215
JOHN W. GLADDERS and wife, CAROL GLADDERS DB 1458 PG 87
T. L. McNABB, JR. DB 383 PG 99 DB 708 PG 41
SCOTT W. PRESTON DB 1316 PG 827
POT Sta. 10+00.00 -DR2-
-DR3- Sta.10+25.00 BEGIN CONSTRUCTION
-DR2- Sta.10+10.00 BEGIN CONSTRUCTION
PC Sta. 10+26.84
PRC Sta. 11+22.41 -DR3-
PT Sta. 11+79.98 -DR3-
PT Sta. 11+05.27 -DR2-
-L- Sta. 50+50.00= -DR3- Sta. 11+86.52
-L- Sta. 48+00.11= -DR2- Sta. 11+36.86
N 19° 55' 41.7" W
POT Sta. 11+55.84 -DR9-
PT Sta. 11+19.90 -DR9- End Const.

-DR2-

PI Sta 10+54.33
△ = 85° 00' 24.2" (RT)
D = 190° 59' 09.4"
L = 44.51'
T = 27.49'
R = 30.00'

-DR3-

PI Sta 11+55.89	PI Sta 10+09.37	PI Sta 10+70.67
△ = 73° 17' 44.8" (LT)	△ = 3° 30' 09.2" (LT)	△ = 8° 29' 13.0" (RT)
D = 127° 19' 26.1"	D = 18° 42' 14.8"	D = 8° 11' 06.4"
L = 57.57'	L = 18.73'	L = 103.69'
T = 33.48'	T = 9.37'	T = 51.94'
R = 45.00'	R = 306.33'	R = 700.00'

-L-

PIs Sta 47+56.18	PI Sta 50+03.78	PIs Sta 52+50.77
θs = 0° 35' 33.8"	△ = 7° 21' 10.1" (LT)	θs = 0° 35' 33.8"
Ls = 72.00'	D = 1° 38' 47.1"	Ls = 72.00'
LT = 48.00'	L = 446.59'	LT = 48.00'
ST = 24.00'	T = 223.60'	ST = 24.00'
	R = 3,480.00'	

PIs Sta 59+60.92	PI Sta 61+42.09	PIs Sta 63+22.84
θs = 1° 11' 44.7"	△ = 7° 25' 17.6" (LT)	θs = 1° 11' 44.7"
Ls = 96.00'	D = 2° 29' 28.0"	Ls = 96.00'
LT = 64.00'	L = 297.92'	LT = 64.00'
ST = 32.00'	T = 149.17'	ST = 32.00'
	R = 2,300.00'	

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

EXIST PAVEMENT TO BE REMOVED

SEE SHEET 22 FOR -DR2- PROFILE
SEE SHEET 23 FOR -DR3- PROFILE
SEE SHEET 23 FOR -DR9- PROFILE
SEE SHEET 16 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	8
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828-253-2796
Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

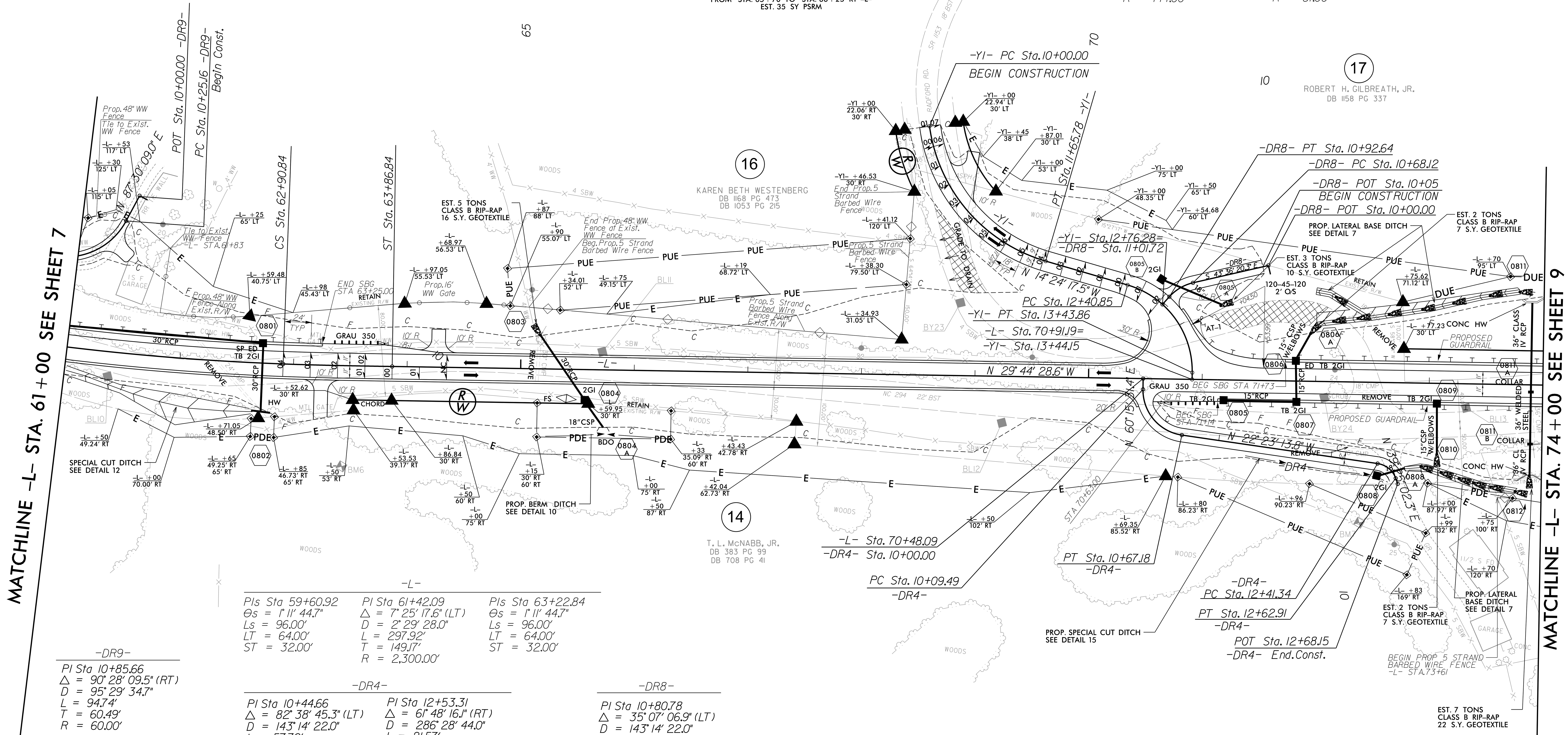
DETAIL 12
"V" DITCH (Not to Scale)
Type of Liner= CLASS B Rip-Rap. Min. D= 2 Ft. Max. d=1.5 Ft.
FROM STA. 61+00 TO STA. 62+65 RT
EST. 71 CY DDE; 49 TONS CL B RR; 109 SY GEOTEXTILE

DETAIL 5
FALSE SUMP (Not to Scale)
S=Ditch Slope — ℄ Proposed Ditch
STA. 65+40 RT

DETAIL 7
LATERAL BASE DITCH (Not to Scale)
*When B is < 6.0'
Type of Liner= Class "B" Rip-Rap. Min. D=1 Ft. Max. d=0.75 Ft. B=2 Ft. b=5 Ft.
FROM STA. 72+00 TO STA. 73+83 LT
EST 94 CY DDE; 62 TONS CL B RR; 52 SY GEOTEXTILE
FROM STA. 72+81 TO STA. 73+79 RT
EST. 20 CY DDE; 28 TONS CL B RR; 60 SY GEOTEXTILE

DETAIL 15
SPECIAL CUT DITCH (Not to Scale)
Min. D= 1Ft.
FROM STA. 11+25 TO STA. 12+42 RT DR4

DETAIL 10
BERM DITCH (Not to Scale)
Type of Liner= PSRM. Min. D= 1 Ft. Max. d= 1 Ft.
FROM STA. 65+15 TO STA. 65+60 RT -L-
EST. 21 SY PSRM
FROM STA. 65+70 TO STA. 66+25 RT -L-
EST. 35 SY PSRM



-Y1-

PI Sta 10+93.44	PI Sta 12+93.44
Δ = 65° 57' 36.5" (LT)	Δ = 66° 39' 05.0" (RT)
D = 39° 47' 19.4"	D = 70° 44' 07.9"
L = 165.78'	L = 94.23'
T = 93.44'	T = 53.26'
R = 144.00'	R = 81.00'

-L-

PIs Sta 59+60.92	PI Sta 61+42.09	PIs Sta 63+22.84
Θs = 1° 11' 44.7"	Δ = 7° 25' 17.6" (LT)	Θs = 1° 11' 44.7"
Ls = 96.00'	D = 2° 29' 28.0"	Ls = 96.00'
LT = 64.00'	L = 297.92'	LT = 64.00'
ST = 32.00'	T = 149.17'	ST = 32.00'
	R = 2,300.00'	

-DR9-

PI Sta 10+85.66
Δ = 90° 28' 09.5" (RT)
D = 95° 29' 34.7"
L = 94.74'
T = 60.49'
R = 60.00'

-DR4-

PI Sta 10+44.66	PI Sta 12+53.31
Δ = 82° 38' 45.3" (LT)	Δ = 61° 48' 16.1" (RT)
D = 143° 14' 22.0"	D = 286° 28' 44.0"
L = 57.70'	L = 21.57'
T = 35.17'	T = 11.97'
R = 40.00'	R = 20.00'

-DR8-

PI Sta 10+80.78
Δ = 35° 07' 06.9" (LT)
D = 143° 14' 22.0"
L = 24.52'
T = 12.66'
R = 40.00'

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

EXIST PAVEMENT TO BE REMOVED

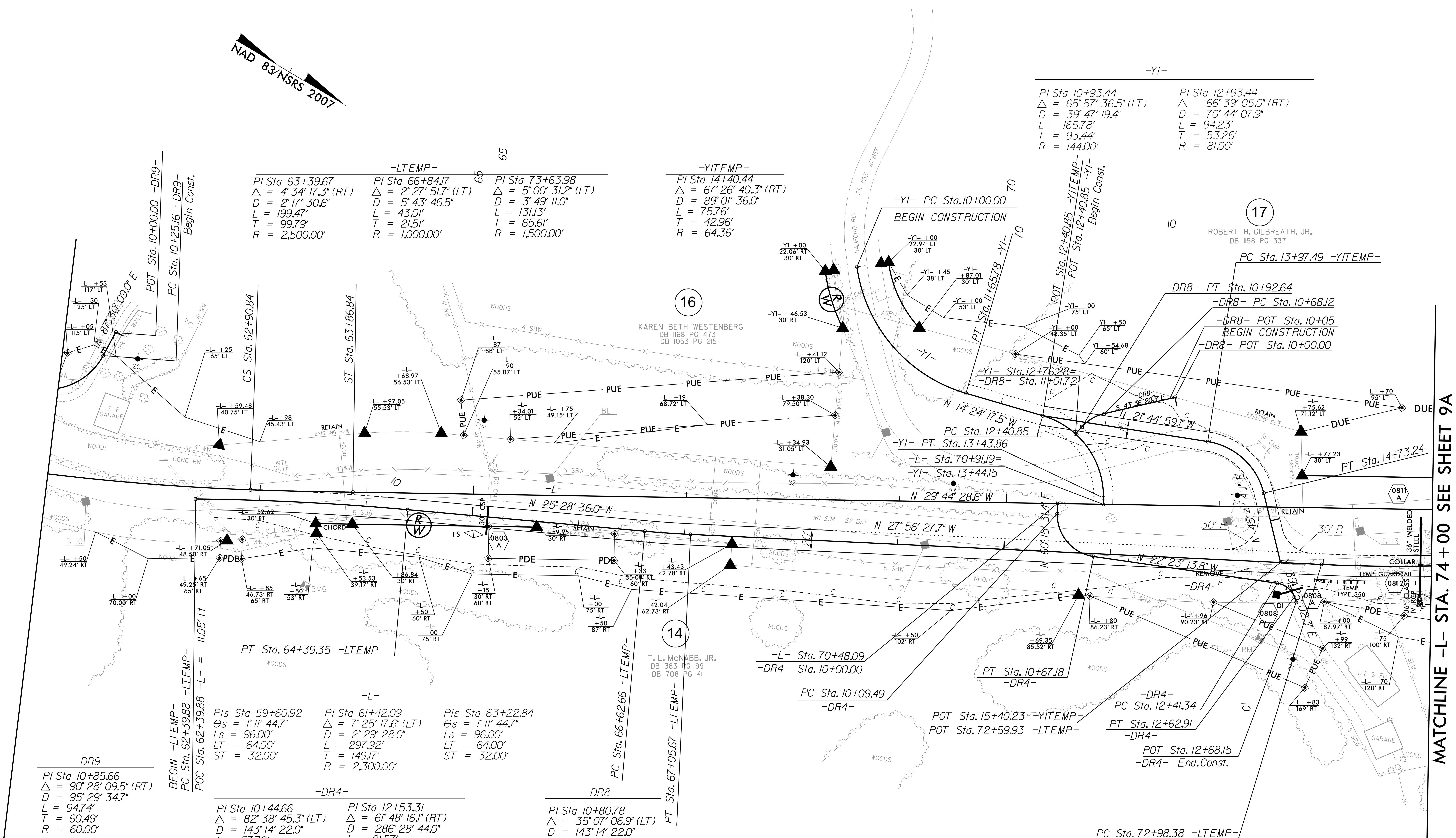
SEE SHEET 8A FOR TEMPORARY CONSTRUCTION
SEE SHEET 22 FOR -Y1- PROFILE
SEE SHEET 23 FOR -DR4- & -DR8- PROFILE
SEE SHEET 17 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	8A
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 26960

HYDRAULICS ENGINEER — SEAL 030453

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775



-LTEMP-

PI Sta 63+39.67	PI Sta 66+84.17	PI Sta 73+63.98
Δ = 4° 34' 17.3" (RT)	Δ = 2° 27' 51.7" (LT)	Δ = 5° 00' 31.2" (LT)
D = 2° 17' 30.6"	D = 5° 43' 46.5"	D = 3° 49' 11.0"
L = 199.47'	L = 43.01'	L = 131.13'
T = 99.79'	T = 21.51'	T = 65.61'
R = 2,500.00'	R = 1,000.00'	R = 1,500.00'

-Y1TEMP-

PI Sta 14+40.44
Δ = 67° 26' 40.3" (RT)
D = 89° 01' 36.0"
L = 75.76'
T = 42.96'
R = 64.36'

-Y1-

PI Sta 10+93.44	PI Sta 12+93.44
Δ = 65° 57' 36.5" (LT)	Δ = 66° 39' 05.0" (RT)
D = 39° 47' 19.4"	D = 70° 44' 07.9"
L = 165.78'	L = 94.23'
T = 93.44'	T = 53.26'
R = 144.00'	R = 81.00'

-L-

PIs Sta 59+60.92	PI Sta 61+42.09	PIs Sta 63+22.84
Θs = 1° 11' 44.7"	Δ = 7° 25' 17.6" (LT)	Θs = 1° 11' 44.7"
Ls = 96.00'	D = 2° 29' 28.0"	Ls = 96.00'
LT = 64.00'	L = 297.92'	LT = 64.00'
ST = 32.00'	T = 149.17'	ST = 32.00'
	R = 2,300.00'	

-DR9-

PI Sta 10+85.66
Δ = 90° 28' 09.5" (RT)
D = 95° 29' 34.7"
L = 94.74'
T = 60.49'
R = 60.00'

-DR4-

PI Sta 10+44.66	PI Sta 12+53.31
Δ = 82° 38' 45.3" (LT)	Δ = 61° 48' 16.1" (RT)
D = 143° 14' 22.0"	D = 286° 28' 44.0"
L = 57.70'	L = 21.57'
T = 35.17'	T = 11.97'
R = 40.00'	R = 20.00'

-DR8-

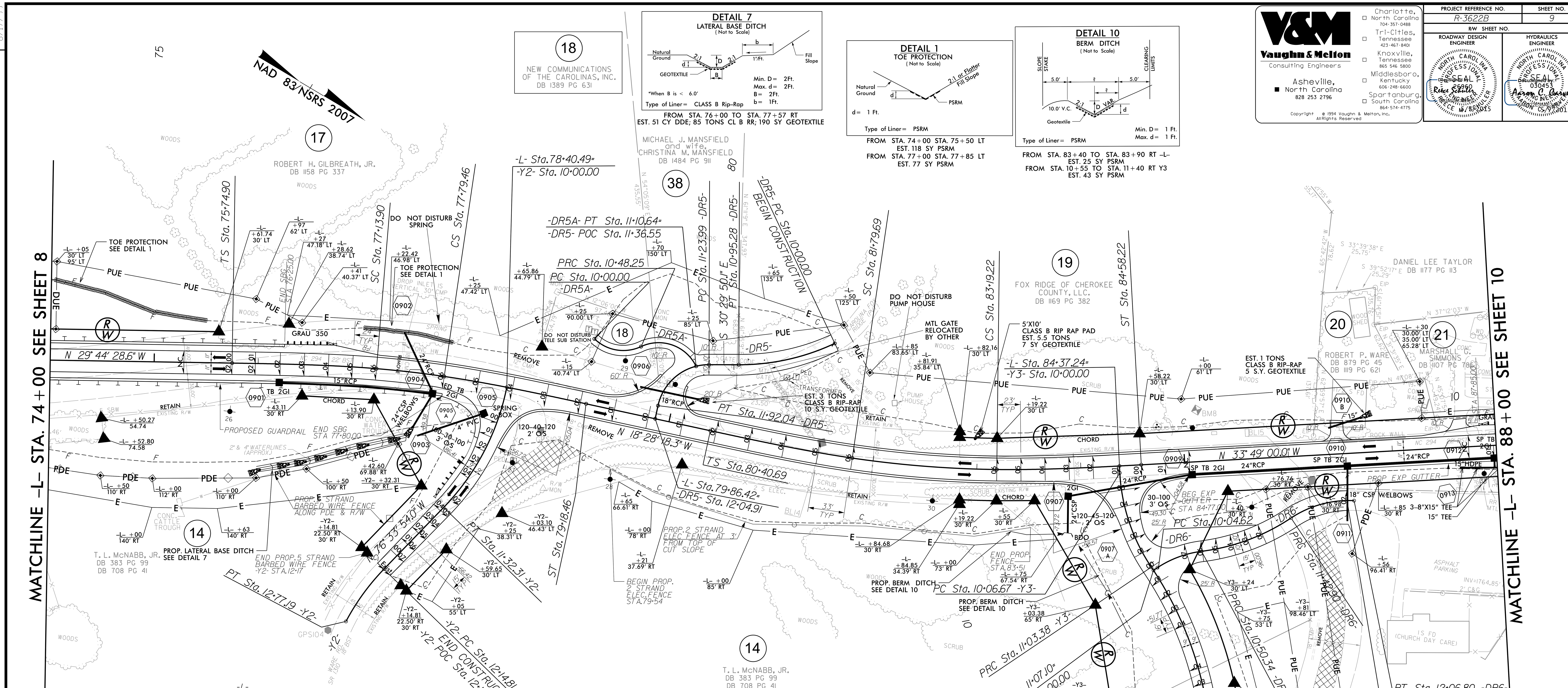
PI Sta 10+80.78
Δ = 35° 07' 06.9" (LT)
D = 143° 14' 22.0"
L = 24.52'
T = 12.66'
R = 40.00'

SEE SHEET 24 FOR -LTEMP- PROFILE
SEE SHEET 24 FOR -Y1TEMP- PROFILE

SHEET 8A TO BE USED ONLY FOR TEMPORARY CONSTRUCTION

PROJECT REFERENCE NO. R-3622B | SHEET NO. 9
RW SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828 253 2796
Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-8401
Knoxville, Tennessee 865 546 5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775



-L-

PIs Sta 76+67.59	PI Sta 77+46.69	PIs Sta 78+25.81
Θs = 3° 49' 44.0"	Δ = 3° 36' 42.2" (RT)	Θs = 3° 49' 44.0"
Ls = 139.00'	D = 5° 30' 33.2"	Ls = 139.00'
LT = 92.69'	L = 65.56'	LT = 92.69'
ST = 46.35'	T = 32.79'	ST = 46.35'
	R = 1,040.00'	
PIs Sta 81+33.37	PI Sta 82+49.56	PIs Sta 83+65.57
Θs = 3° 49' 44.0"	Δ = 7° 41' 13.6" (LT)	Θs = 3° 49' 44.0"
Ls = 139.00'	D = 5° 30' 33.2"	Ls = 139.00'
LT = 92.69'	L = 139.53'	LT = 92.69'
ST = 46.35'	T = 69.87'	ST = 46.35'
	R = 1,040.00'	

-DR5-

PI Sta 10+48.44	PI Sta 11+64.46
Δ = 25° 26' 04.8" (RT)	Δ = 77° 58' 28.2" (LT)
D = 26° 41' 44.4'	D = 114° 35' 29.6"
L = 95.28'	L = 68.05'
T = 48.44'	T = 40.47'
R = 214.63'	R = 50.00'

-DR5A-

PI Sta 10+27.55	PI Sta 10+87.81
Δ = 69° 06' 50.4" (LT)	Δ = 89° 21' 58.8" (RT)
D = 143° 14' 22.0"	D = 143° 14' 22.0"
L = 48.25'	L = 62.39'
T = 27.55'	T = 39.56'
R = 40.00'	R = 40.00'

-Y2-

PI Sta 10+68.02	PI Sta 12+46.21
Δ = 32° 48' 58.7" (RT)	Δ = 16° 13' 00.7" (LT)
D = 24° 48' 12.1"	D = 26° 00' 00.0"
L = 132.31'	L = 62.37'
T = 68.02'	T = 31.40'
R = 231.00'	R = 220.37'

-Y3-

PI Sta 10+56.24	PI Sta 11+68.63	PI Sta 15+08.60
Δ = 30° 57' 20.0" (LT)	Δ = 21° 43' 41.1" (RT)	Δ = 29° 33' 33.2" (LT)
D = 32° 00' 31.7"	D = 16° 51' 06.1"	D = 24° 48' 12.1"
L = 96.71'	L = 128.94'	L = 119.17'
T = 49.57'	T = 65.25'	T = 60.94'
R = 179.00'	R = 340.00'	R = 231.00'
SE = .05	SE = .04	SE = .06

-DR6-

PI Sta 10+27.89	PI Sta 10+97.46	PI Sta 11+75.98
Δ = 26° 11' 53.9" (RT)	Δ = 26° 30' 51.6" (LT)	Δ = 36° 36' 45.5" (RT)
D = 57° 17' 44.8"	D = 28° 38' 52.4"	D = 57° 17' 44.8"
L = 45.72'	L = 92.55'	L = 63.90'
T = 23.27'	T = 47.12'	T = 33.08'
R = 100.00'	R = 200.00'	R = 100.00'

-DR7-

PI Sta 11+02.03	PI Sta 12+46.16
Δ = 59° 50' 41.8" (RT)	Δ = 89° 17' 29.3" (LT)
D = 63° 39' 43.1"	D = 127° 19' 26.2"
L = 94.00'	L = 70.13'
T = 51.80'	T = 44.45'
R = 90.00'	R = 45.00'

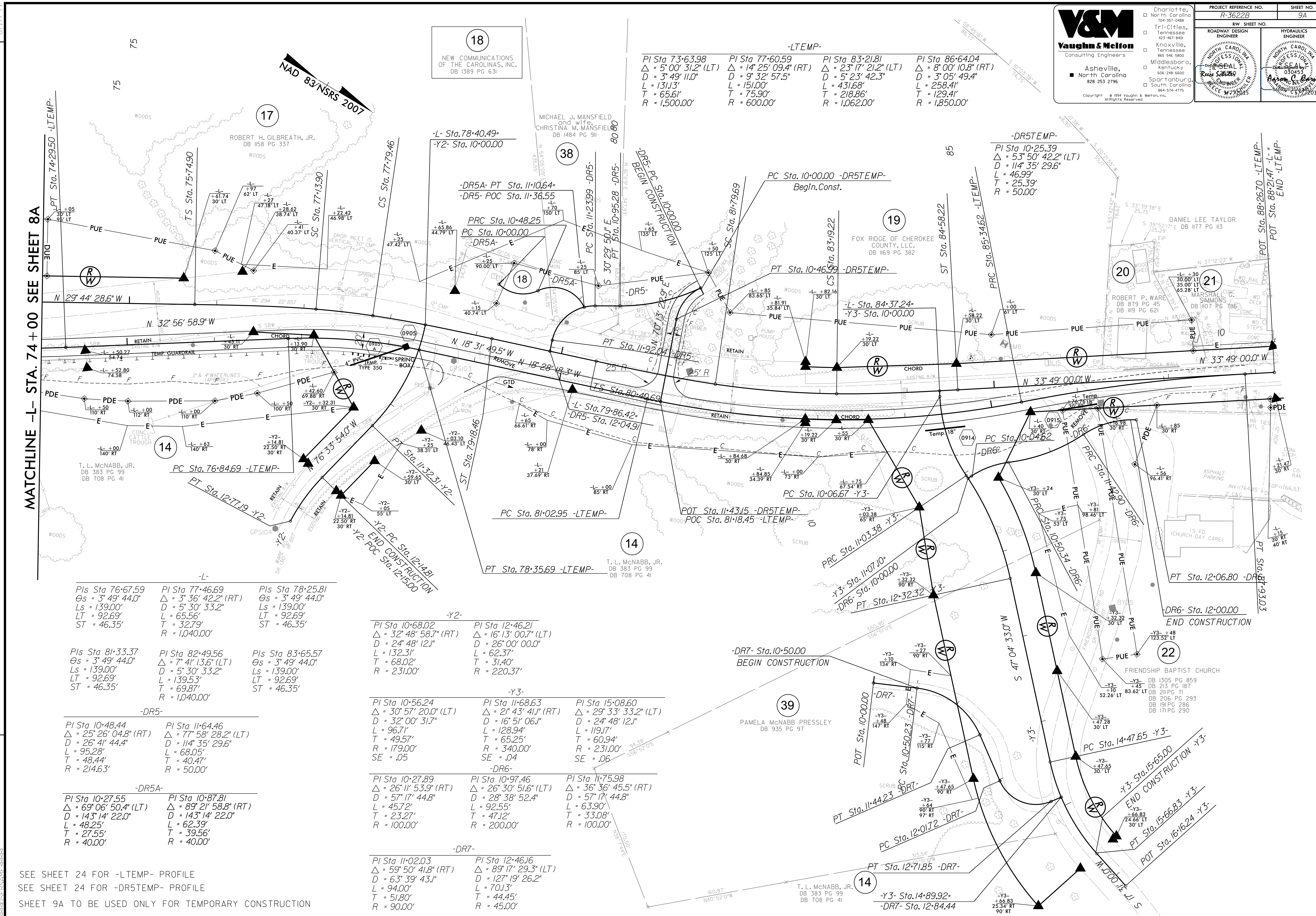
SEE SHEET 9A FOR TEMPORARY CONSTRUCTION
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 22 FOR -Y2- & -Y3- PROFILE
SEE SHEET 23 FOR -DR5-, -DR5A-, -DR6- & -DR7- PROFILE

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	9A
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

V&M Vaughn & Melton Consulting Engineers — Asheville, North Carolina 828 253 2796; Charlotte, North Carolina 704-357-0488; Tri-Cities, Tennessee 423-467-8401; Knoxville, Tennessee 865 546 5800; Middlesboro, Kentucky 606-248-6600; Spartanburg, South Carolina 864-574-4775



-LTEMP-

PI Sta 73+63.98	PI Sta 77+60.59	PI Sta 83+21.81	PI Sta 86+64.04
Δ = 5° 00' 31.2" (LT)	Δ = 14° 25' 09.4" (RT)	Δ = 23° 17' 21.2" (LT)	Δ = 8° 00' 10.8" (RT)
D = 3° 49' 11.0"	D = 9° 32' 57.5"	D = 5° 23' 42.3"	D = 3° 05' 49.4"
L = 131.13'	L = 151.00'	L = 431.68'	L = 258.41'
T = 65.61'	T = 75.90'	T = 218.86'	T = 129.41'
R = 1,500.00'	R = 600.00'	R = 1,062.00'	R = 1,850.00'

-DR5TEMP-

PI Sta 10+25.39
Δ = 53° 50' 42.2" (LT)
D = 114° 35' 29.6"
L = 46.99'
T = 25.39'
R = 50.00'

-L-

PIs Sta 76+67.59	PI Sta 77+46.69	PIs Sta 78+25.81
Θs = 3° 49' 44.0"	Δ = 3° 36' 42.2" (RT)	Θs = 3° 49' 44.0"
Ls = 139.00'	D = 5° 30' 33.2"	Ls = 139.00'
LT = 92.69'	L = 65.56'	LT = 92.69'
ST = 46.35'	T = 32.79'	ST = 46.35'
	R = 1,040.00'	

PIs Sta 81+33.37	PI Sta 82+49.56	PIs Sta 83+65.57
Θs = 3° 49' 44.0"	Δ = 7° 41' 13.6" (LT)	Θs = 3° 49' 44.0"
Ls = 139.00'	D = 5° 30' 33.2"	Ls = 139.00'
LT = 92.69'	L = 139.53'	LT = 92.69'
ST = 46.35'	T = 69.87'	ST = 46.35'
	R = 1,040.00'	

-DR5-

PI Sta 10+48.44	PI Sta 11+64.46
Δ = 25° 26' 04.8" (RT)	Δ = 77° 58' 28.2" (LT)
D = 26° 41' 44.4"	D = 114° 35' 29.6"
L = 95.28'	L = 68.05'
T = 48.44'	T = 40.47'
R = 214.63'	R = 50.00'

-DR5A-

PI Sta 10+27.55	PI Sta 10+87.81
Δ = 69° 06' 50.4" (LT)	Δ = 89° 21' 58.8" (RT)
D = 143° 14' 22.0"	D = 143° 14' 22.0"
L = 48.25'	L = 62.39'
T = 27.55'	T = 39.56'
R = 40.00'	R = 40.00'

-Y2-

PI Sta 10+68.02	PI Sta 12+46.21
Δ = 32° 48' 58.7" (RT)	Δ = 16° 13' 00.7" (LT)
D = 24° 48' 12.1"	D = 26° 00' 00.0"
L = 132.31'	L = 62.37'
T = 68.02'	T = 31.40'
R = 231.00'	R = 220.37'

-Y3-

PI Sta 10+56.24	PI Sta 11+68.63	PI Sta 15+08.60
Δ = 30° 57' 20.0" (LT)	Δ = 21° 43' 41.1" (RT)	Δ = 29° 33' 33.2" (LT)
D = 32° 00' 31.7"	D = 16° 51' 06.1"	D = 24° 48' 12.1"
L = 96.71'	L = 128.94'	L = 119.17'
T = 49.57'	T = 65.25'	T = 60.94'
R = 179.00'	R = 340.00'	R = 231.00'
SE = .05	SE = .04	SE = .06

-DR6-

PI Sta 10+27.89	PI Sta 10+97.46	PI Sta 11+75.98
Δ = 26° 11' 53.9" (RT)	Δ = 26° 30' 51.6" (LT)	Δ = 36° 36' 45.5" (RT)
D = 57° 17' 44.8"	D = 28° 38' 52.4"	D = 57° 17' 44.8"
L = 45.72'	L = 92.55'	L = 63.90'
T = 23.27'	T = 47.12'	T = 33.08'
R = 100.00'	R = 200.00'	R = 100.00'

-DR7-

PI Sta 11+02.03	PI Sta 12+46.16
Δ = 59° 50' 41.8" (RT)	Δ = 89° 17' 29.3" (LT)
D = 63° 39' 43.1"	D = 127° 19' 26.2"
L = 94.00'	L = 70.13'
T = 51.80'	T = 44.45'
R = 90.00'	R = 45.00'

SEE SHEET 24 FOR -LTEMP- PROFILE
SEE SHEET 24 FOR -DR5TEMP- PROFILE

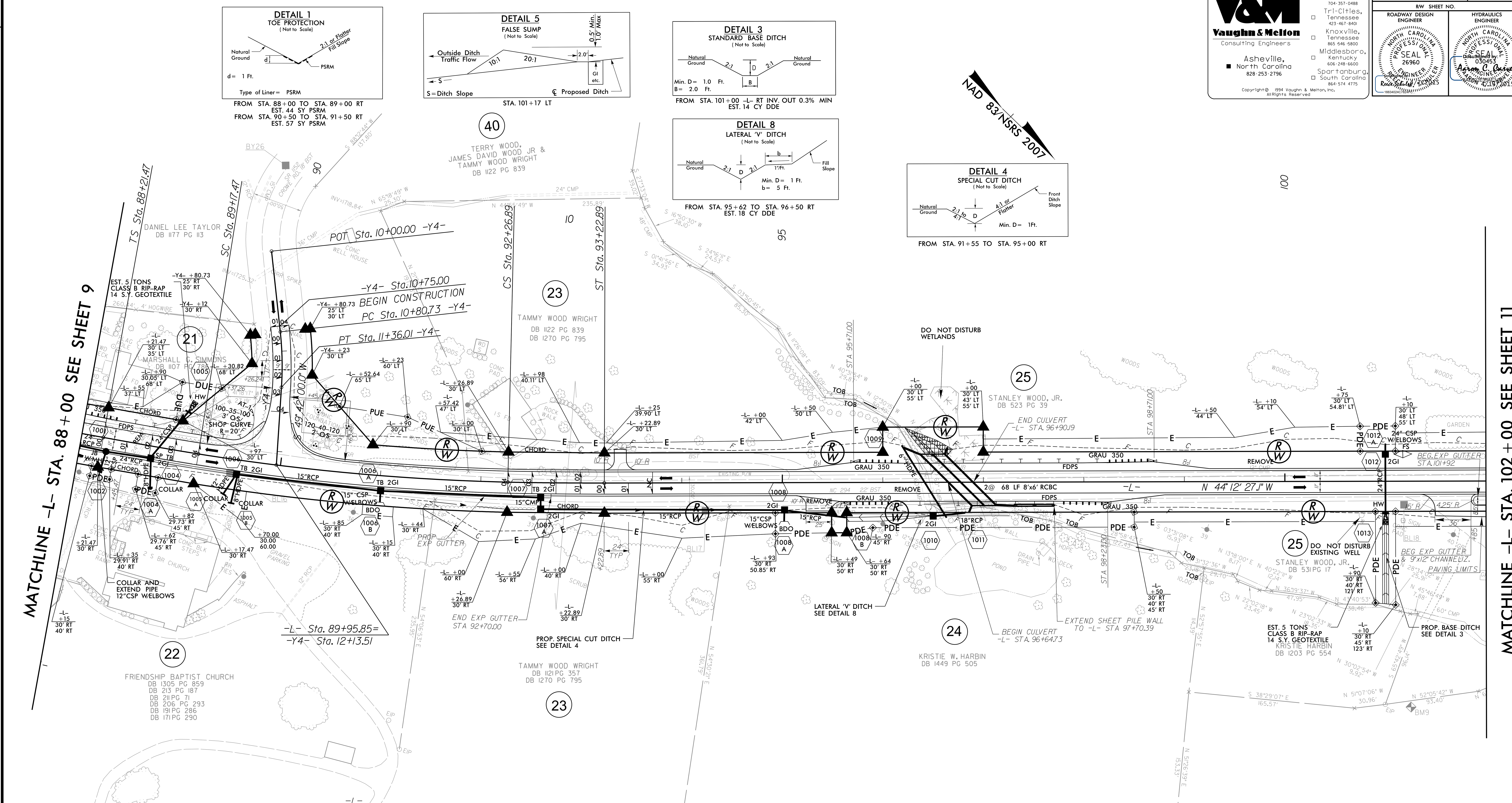
SHEET 9A TO BE USED ONLY FOR TEMPORARY CONSTRUCTION

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	10

V&M Vaughn & Melton Consulting Engineers — Asheville, North Carolina 828-253-2796

Copyright © 1994 Vaughn & Melton, Inc. All Rights Reserved



DETAIL 1
TOE PROTECTION
(Not to Scale)
FROM STA. 88+00 TO STA. 89+00 RT
EST. 44 SY PSRM
FROM STA. 90+50 TO STA. 91+50 RT
EST. 57 SY PSRM
DETAIL 5
FALSE SUMP
(Not to Scale)
STA. 101+17 LT
DETAIL 3
STANDARD BASE DITCH
(Not to Scale)
FROM STA. 101+00 -L- RT INV. OUT 0.3% MIN
EST. 14 CY DDE
DETAIL 8
LATERAL 'V' DITCH
(Not to Scale)
FROM STA. 95+62 TO STA. 96+50 RT
EST. 18 CY DDE
DETAIL 4
SPECIAL CUT DITCH
(Not to Scale)
FROM STA. 91+55 TO STA. 95+00 RT
NAD 83/NSRS 2007
MATCHLINE -L- STA. 88+00 SEE SHEET 9
MATCHLINE -L- STA. 102+00 SEE SHEET 11
TERRY WOOD, JAMES DAVID WOOD JR & TAMMY WOOD WRIGHT
DB 1122 PG 839
DANIEL LEE TAYLOR
DB 1177 PG 113
TAMMY WOOD WRIGHT
DB 1122 PG 839
DB 1270 PG 795
STANLEY WOOD, JR.
DB 523 PG 39
STANLEY WOOD, JR.
DB 531 PG 17
KRISTIE W. HARBIN
DB 1449 PG 505
KRISTIE HARBIN
DB 1203 PG 554
FRIENDSHIP BAPTIST CHURCH
TAMMY WOOD WRIGHT
DB 1121 PG 357
DB 1270 PG 795
POT Sta. 10+00.00 -Y4-
-Y4- Sta. 10+75.00 BEGIN CONSTRUCTION
PC Sta. 10+80.73 -Y4-
PT Sta. 11+36.01 -Y4-
-L- Sta. 89+95.85= -Y4- Sta. 12+13.51
2@ 68 LF 8'x6' RCBC
DO NOT DISTURB WETLANDS
END CULVERT -L- STA. 96+90.19
BEGIN CULVERT -L- STA. 96+64.73
EXTEND SHEET PILE WALL TO -L- STA 97+70.39
LATERAL 'V' DITCH SEE DETAIL 8
PROP. SPECIAL CUT DITCH SEE DETAIL 4
PROP. BASE DITCH SEE DETAIL 3
END EXP GUTTER STA 92+70.00
BEG EXP GUTTER STA 101+92
EST. 5 TONS CLASS B RIP-RAP 14 S.Y. GEOTEXTILE
COLLAR AND EXTEND PIPE 12"CSP W/ELBOWS
DO NOT DISTURB EXISTING WELL

-L-

PI Sta 88+85.47	PI Sta 90+72.41	PI Sta 92+58.89
Θs = 1° 11' 44.7"	△ = 7° 42' 28.8" (LT)	Θs = 1° 11' 44.7"
Ls = 96.00'	D = 2° 29' 28.0"	Ls = 96.00'
LT = 64.00'	L = 309.42'	LT = 64.00'
ST = 32.00'	T = 154.94'	ST = 32.00'
	R = 2,300.00'	

-Y4-

PI Sta 11+08.44
△ = 9° 57' 00.0" (RT)
D = 18° 00' 00.0"
L = 55.28'
T = 27.71'
R = 318.31'

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

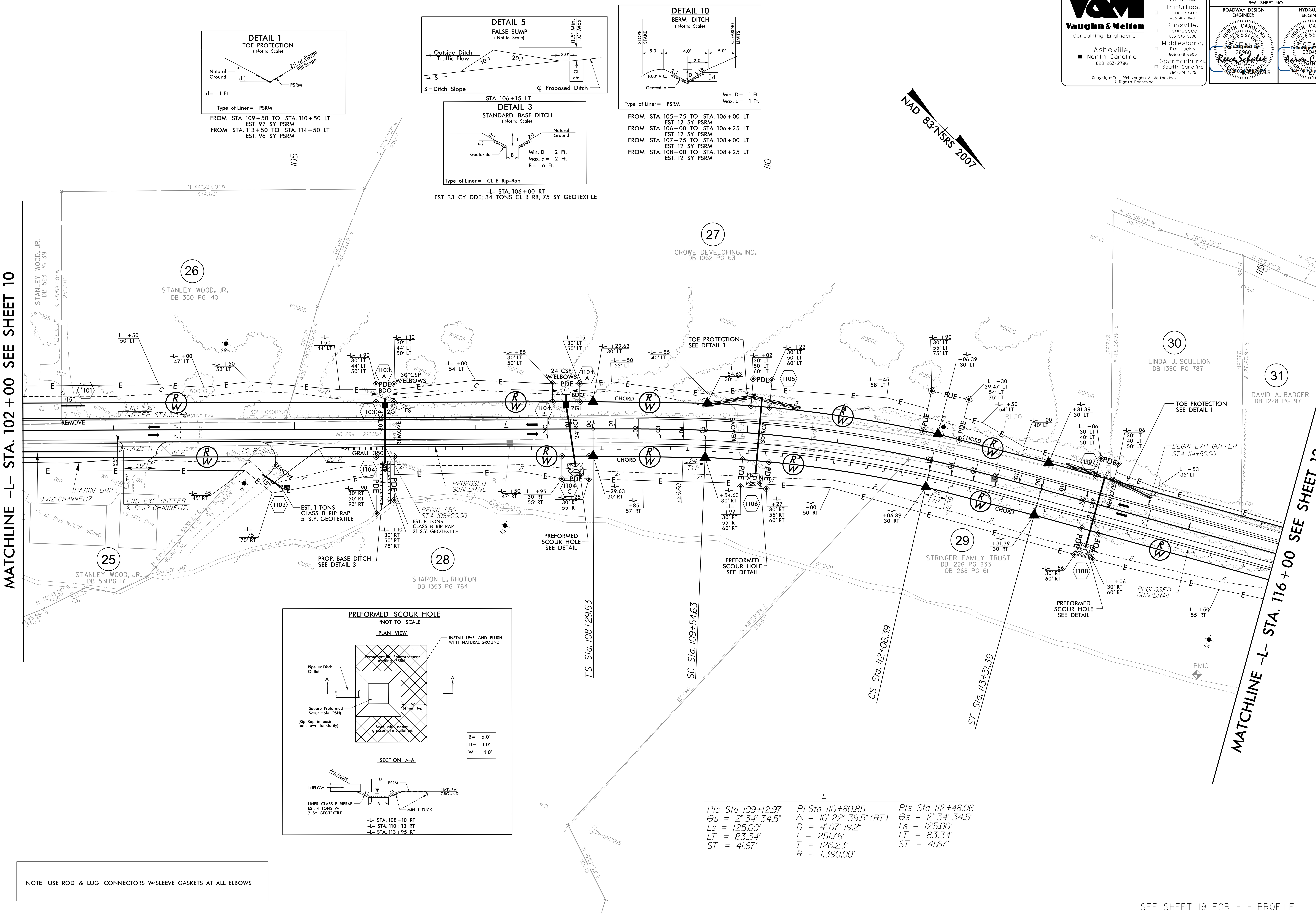
SEE SHEETS S-1 THRU S-17 FOR CULVERT PLANS
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 22 FOR -Y4- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	11
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

Vaughn & Melton Consulting Engineers — Asheville, North Carolina 828-253-2796 — Charlotte, North Carolina 704-357-0488; Tri-Cities, Tennessee 423-467-8401; Knoxville, Tennessee 865-546-5800; Middlesboro, Kentucky 606-248-6600; Spartanburg, South Carolina 864-574-4775

REVISIONS


DETAIL 1
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 or Flatter Fill Slope
PSRM
d= 1 Ft.
Type of Liner= PSRM
FROM STA. 109+50 TO STA. 110+50 LT
EST. 97 SY PSRM
FROM STA. 113+50 TO STA. 114+50 LT
EST. 96 SY PSRM
DETAIL 5
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
0.5' Min. 1.0' Max
S=Ditch Slope
Proposed Ditch
STA. 106+15 LT
DETAIL 3
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Geotextile
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 6 Ft.
Type of Liner= CL B Rip-Rap
-L- STA. 106+00 RT
EST. 33 CY DDE; 34 TONS CL B RR; 75 SY GEOTEXTILE
DETAIL 10
BERM DITCH
(Not to Scale)
SLOPE STAKE
CLEARING LIMITS
Geotextile
Min. D= 1 Ft.
Max. d= 1 Ft.
Type of Liner= PSRM
FROM STA. 105+75 TO STA. 106+00 LT
EST. 12 SY PSRM
FROM STA. 106+00 TO STA. 106+25 LT
EST. 12 SY PSRM
FROM STA. 107+75 TO STA. 108+00 LT
EST. 12 SY PSRM
FROM STA. 108+00 TO STA. 108+25 LT
EST. 12 SY PSRM
NAD 83/NSRS 2007
MATCHLINE -L- STA. 102+00 SEE SHEET 10
MATCHLINE -L- STA. 116+00 SEE SHEET 12
26 STANLEY WOOD, JR. DB 350 PG 140
27 CROWE DEVELOPING, INC. DB 1062 PG 63
25 STANLEY WOOD, JR. DB 531 PG 17
28 SHARON L. RHOTON DB 1353 PG 764
29 STRINGER FAMILY TRUST DB 1226 PG 833 DB 268 PG 61
30 LINDA J. SCULLION DB 1390 PG 787
31 DAVID A. BADGER DB 1228 PG 97
STANLEY WOOD, JR. DB 523 PG 39
TOE PROTECTION SEE DETAIL 1
PREFORMED SCOUR HOLE SEE DETAIL
PROP. BASE DITCH SEE DETAIL 3
EST. 1 TONS CLASS B RIP-RAP 5 S.Y. GEOTEXTILE
EST. 8 TONS CLASS B RIP-RAP 21 S.Y. GEOTEXTILE
BEGIN SBG STA 106+00.00
PROPOSED GUARDRAIL
BEGIN EXP GUTTER STA 114+50.00
END EXP GUTTER STA.103+04
END EXP GUTTER & 9'x12' CHANNELIZ.
9'x12' CHANNELIZ.
PAVING LIMITS
TS Sta. 108+29.63
SC Sta. 109+54.63
CS Sta. 112+06.39
ST Sta. 113+31.39
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
Pipe or Ditch Outlet
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
B= 6.0'
D= 1.0'
W= 4.0'
SECTION A-A
INFLOW
NATURAL GROUND
LINER: CLASS B RIPRAP EST. 4 TONS W/ 7 SY GEOTEXTILE
MIN. 1' TUCK
-L- STA. 108+10 RT
-L- STA. 110+13 RT
-L- STA. 113+95 RT
-L-
PIs Sta 109+12.97
Θs = 2° 34' 34.5"
Ls = 125.00'
LT = 83.34'
ST = 41.67'
PI Sta 110+80.85
Δ = 10° 22' 39.5" (RT)
D = 4° 07' 19.2"
L = 251.76'
T = 126.23'
R = 1,390.00'
PIs Sta 112+48.06
Θs = 2° 34' 34.5"
Ls = 125.00'
LT = 83.34'
ST = 41.67'

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

SEE SHEET 19 FOR -L- PROFILE

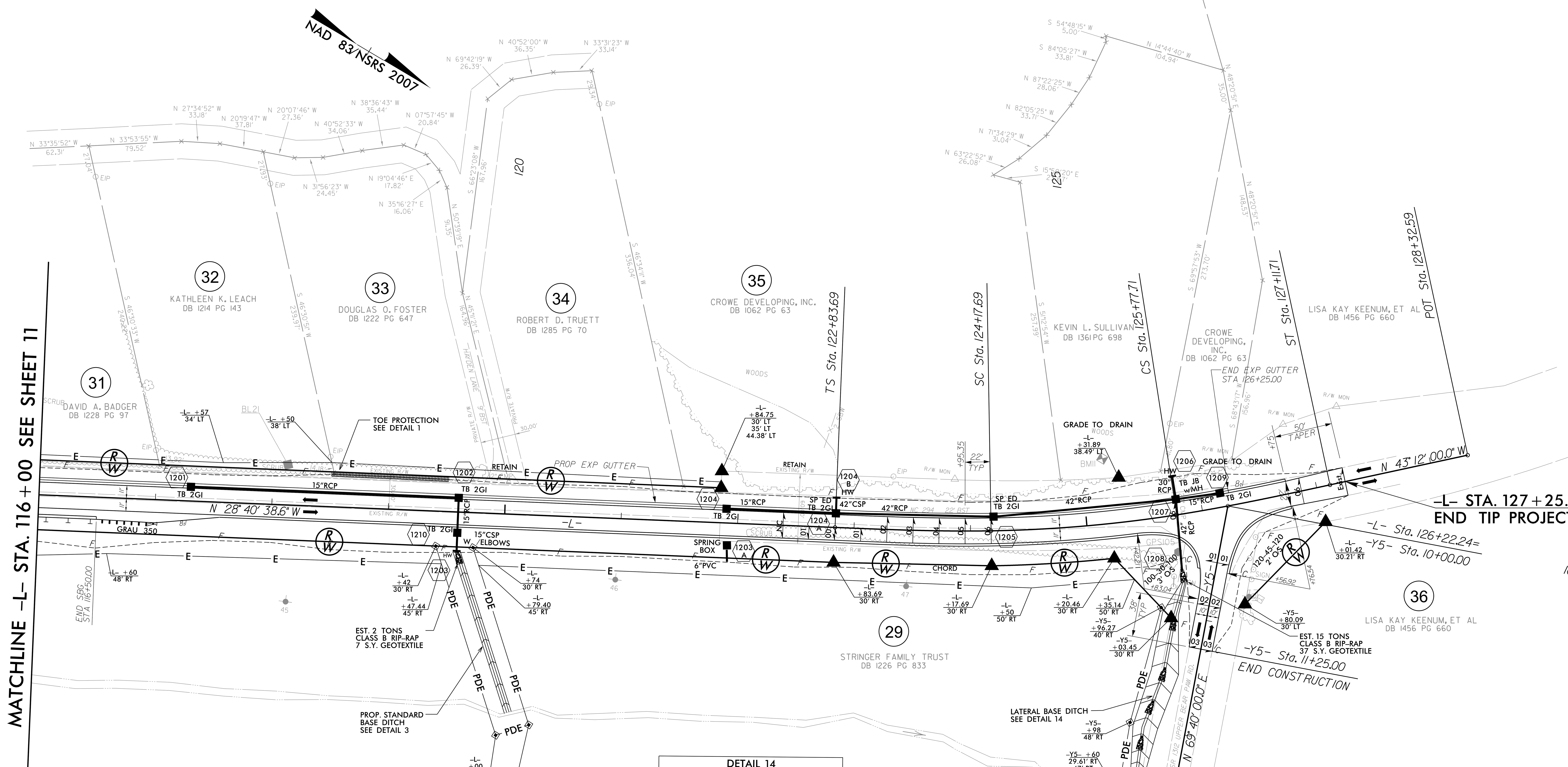
DocuSign Envelope ID: DA5EFA94-7C76-45CF-843F-731225A64996

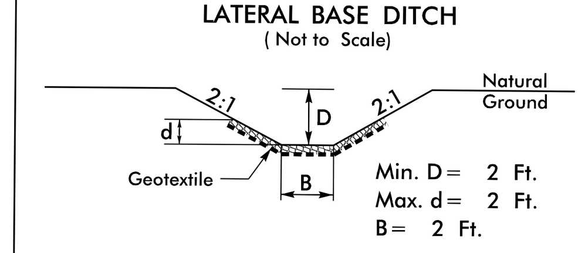
V&M
Vaughn & Melton
Consulting Engineers

■ Asheville, North Carolina 828·253·2796
□ Charlotte, North Carolina 704·357·0488
□ Tri-Cities, Tennessee 423·467·8401
□ Knoxville, Tennessee 865·546·5800
□ Middlesboro, Kentucky 606·248·6600
□ Spartanburg, South Carolina 864·574 4775

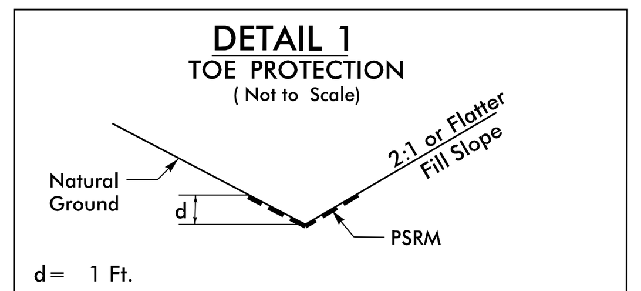
PROJECT REFERENCE NO.	SHEET NO.
R-3622B	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER — DocuSigned by: Reece Schuler 16634024C7824FC... 4/5/2015	NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER — DocuSigned by: Aaron C. Carver 6AE722E35AE3457... 4/13/2015

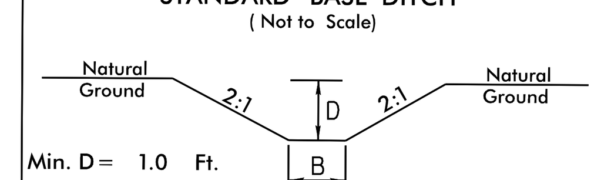

NAD 83/NSRS 2007
MATCHLINE -L- STA. 116+00 SEE SHEET 11
31 DAVID A. BADGER DB 1228 PG 97
32 KATHLEEN K. LEACH DB 1214 PG 143
33 DOUGLAS O. FOSTER DB 1222 PG 647
34 ROBERT D. TRUETT DB 1285 PG 70
35 CROWE DEVELOPING, INC. DB 1062 PG 63
KEVIN L. SULLIVAN DB 1361 PG 698
CROWE DEVELOPING, INC. DB 1062 PG 63
LISA KAY KEENUM, ET AL DB 1456 PG 660
29 STRINGER FAMILY TRUST DB 1226 PG 833
36 LISA KAY KEENUM, ET AL DB 1456 PG 660
TOE PROTECTION SEE DETAIL 1
PROP EXP GUTTER
N 28° 40' 38.6" W
TS Sta. 122+83.69
SC Sta. 124+17.69
CS Sta. 125+77.71
ST Sta. 127+11.71
POT Sta. 128+32.59
N 43° 12' 00.0" W
GRADE TO DRAIN
END EXP GUTTER STA 126+25.00
-L- STA. 127+25.00
END TIP PROJECT R-3622B
-L- Sta. 126+22.24= -Y5- Sta. 10+00.00
-Y5- Sta. 11+25.00 END CONSTRUCTION
N 69° 40' 00.0" E
POT Sta. 12+60.00 -Y5-
SPRING BOX
EST. 2 TONS CLASS B RIP-RAP 7 S.Y. GEOTEXTILE
EST. 15 TONS CLASS B RIP-RAP 37 S.Y. GEOTEXTILE
PROP. STANDARD BASE DITCH SEE DETAIL 3
LATERAL BASE DITCH SEE DETAIL 14
END SBG STA 116+50.00



FROM STA. 10+71 TO STA. 12+60 RT. (Y5)
EST. 295 CY DDE



FROM STA. 118+50 TO STA. 119+50 LT
EST. 70 SY PSRM



FROM STA. 119+60 TO STA. 120+10 -L- RT
EST. 22 CY DDE

NOTE: USE ROD & LUG CONNECTORS W/SLEEVE GASKETS AT ALL ELBOWS

-L-

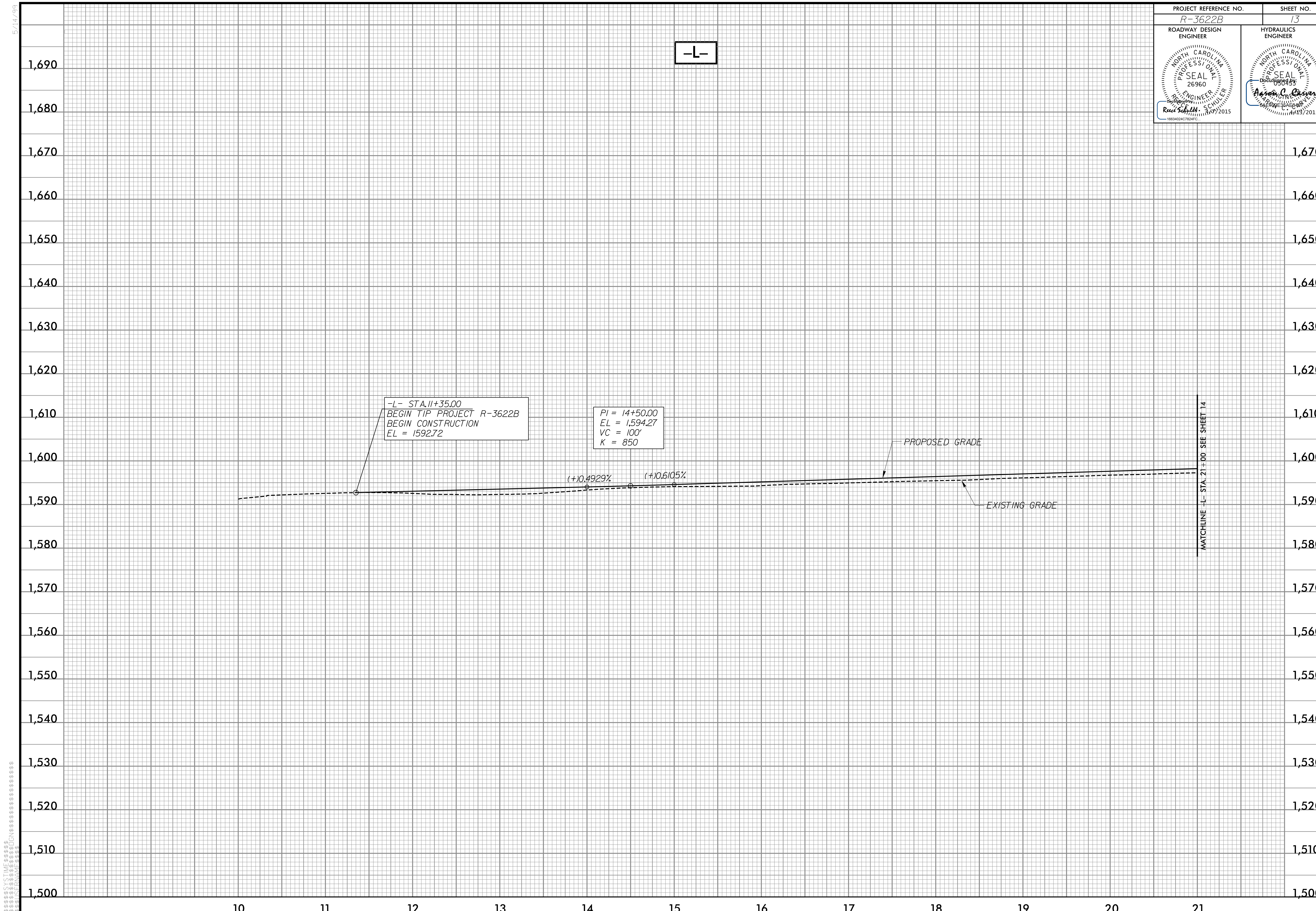
PIs Sta 123+73.04	PI Sta 124+97.82	PIs Sta 126+22.39
θs = 3° 18' 33.6"	Δ = 7° 54' 14.2" (LT)	θs = 3° 18' 33.6"
Ls = 134.00'	D = 4° 56' 21.4"	Ls = 134.00'
LT = 89.35'	L = 160.02'	LT = 89.35'
ST = 44.68'	T = 80.14'	ST = 44.68'
	R = 1,160.00'	

SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 22 FOR -Y5- PROFILE

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	13

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER; DocuSigned by: Reece Schuler 16634024C7824FC... 4/7/2015	NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER; DocuSigned by: Aaron C. Carver 6AE72E35AE3467... 4/13/2015



PROJECT REFERENCE NO.	SHEET NO.
R-3622B	14

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER RICHARD M. SCHULER

Richard M. Schuler 4/13/2015

166340247B24FC

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. GRAVES

DocuSigned by: Aaron C. Graves 4/13/2015

5/14/99

-L-

BM#2: N 517,068.1438
E 449,479.8485
Elev. 1606.54' -L- Sta. 21+63.46
81.71' Rt.
RR SPIKE IN 30" POPLAR

PIPE HYDRAULIC DATA
36" RCP Sta. 29+75.75

DRAINAGE AREA	=	37.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	40	CFS
DESIGN HW ELEVATION	=	1600.77	FT
100 YEAR DISCHARGE	=	48.4	CFS
100 YEAR HW ELEVATION	=	1601.03	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	106.63	CFS
OVERTOPPING ELEVATION	=	1602.69	FT

RIGHT DITCH .....

BEGIN BERM DITCH GRADE
-L- STA. 23+95.00
EL = 1,619.93

END BERM DITCH GRADE
-L- STA. 25+00.00
EL = 1,623.03

(+) 3.7800%

(+) 2.0400%

PI = 23+00.00
EL = 1,599.46
VC = 100'
K = 10.33

PI = 24+50.000
EL = 1,622.01

PROPOSED GRADE

EXISTING GRADE

(+)0.6105%

(+)0.5137%

PI = 30+75.00
EL = 1,603.44
VC = 100'
K = 12.7

PI = 33+10.00
EL = 1,606.49
VC = 240'
K = 11.7

(+)0.5137%

(+)1.2975%

(+)1.2975%

(+)3.3556%

(-) 1.8900%

MATCHLINE -L- STA. 21+00 SEE SHEET 13

-L- STA. 23+18.81 = -DRI- STA. 12+07.77
EL 1,599.55'

BEGIN GRADE SPECIAL CUT DITCH
-L- STA. 28+50.00
EL = 1600.54

END GRADE SPECIAL CUT DITCH
-L- STA. 29+75.00
EL = 1598.18

BM#3: N 518,164.9929
E 449,234.4865
Elev. 1599.76' -L- Sta. 33+24.18
104.80' LT.
RR SPIKE IN 36" POPLAR

MATCHLINE -L- STA. 34+00 SEE SHEET 15

1,720 1,710 1,700 1,690 1,680 1,670 1,660 1,650 1,640 1,630 1,620 1,610 1,600 1,590 1,580 1,570

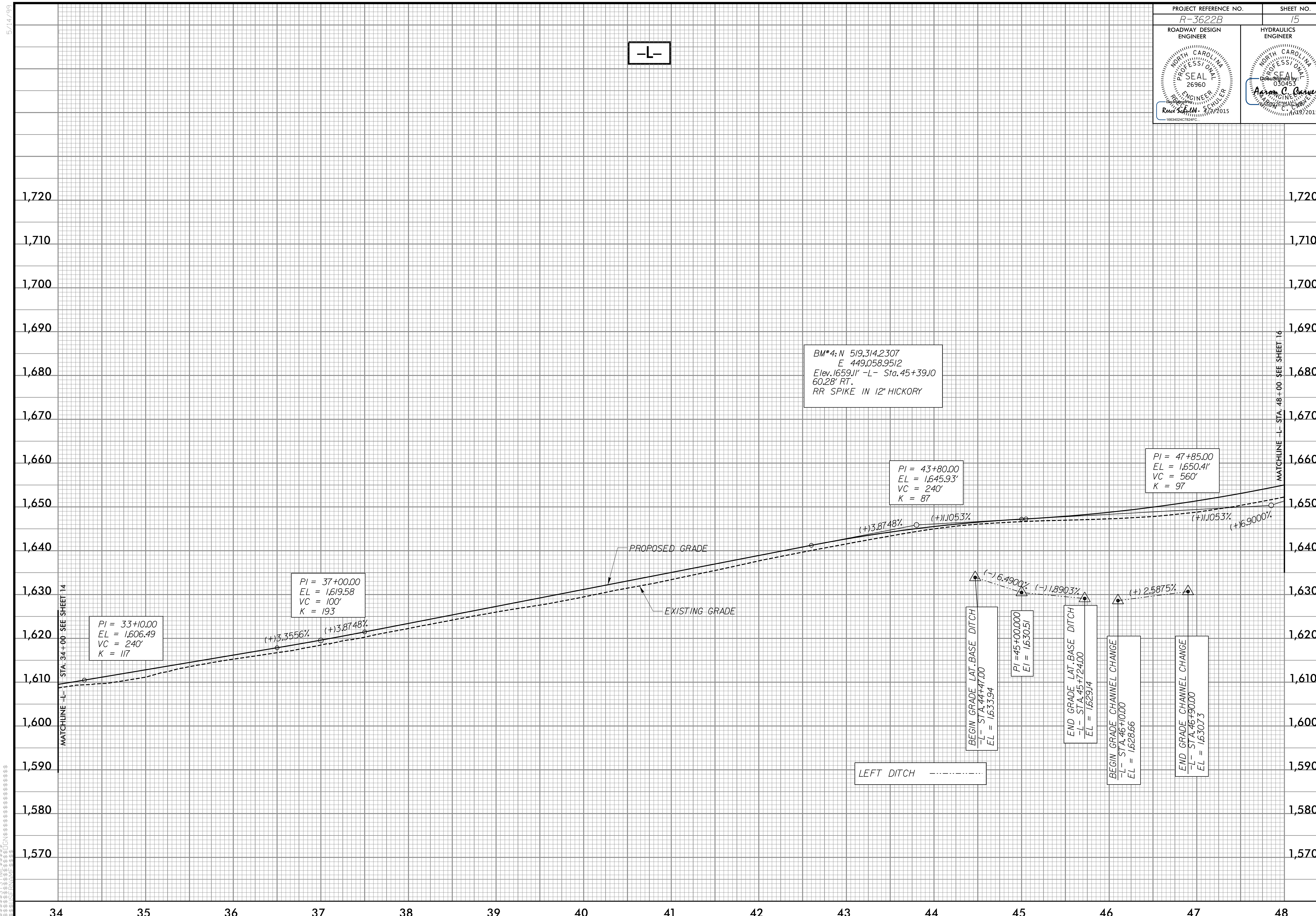
21 22 23 24 25 26 27 28 29 30 31 32 33 34

$$$$SYSTEM$$$$
$$$$DESIGN$$$$
$$$$ENGINEER$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	15

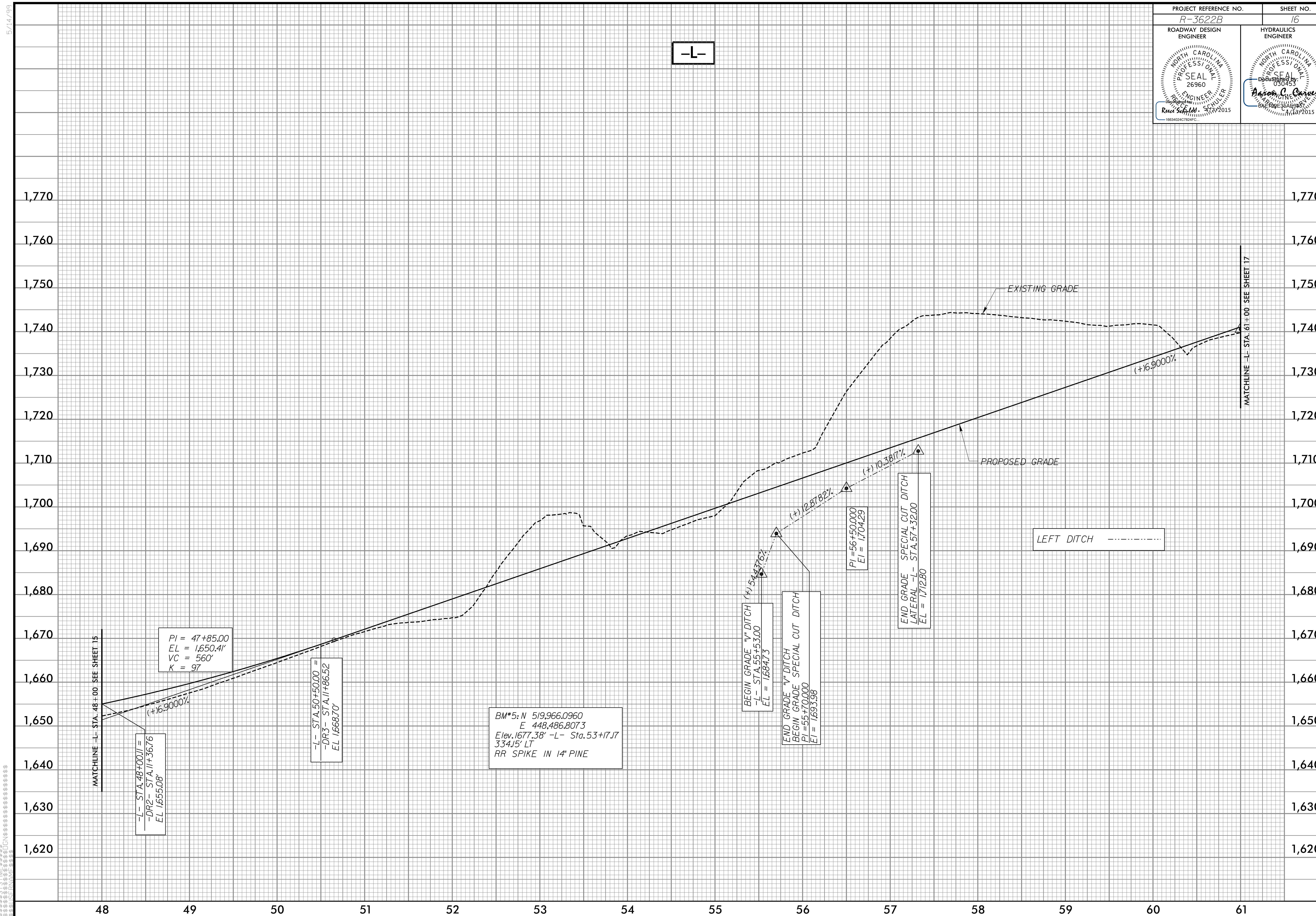
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER — DocuSigned by: Reece Schuler 16634024C7824FC... 4/7/2015

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER — DocuSigned by: Aaron C. Carver 6AE022E35AE3487... 4/13/2015



PROJECT REFERENCE NO.	SHEET NO.
R-3622B	16

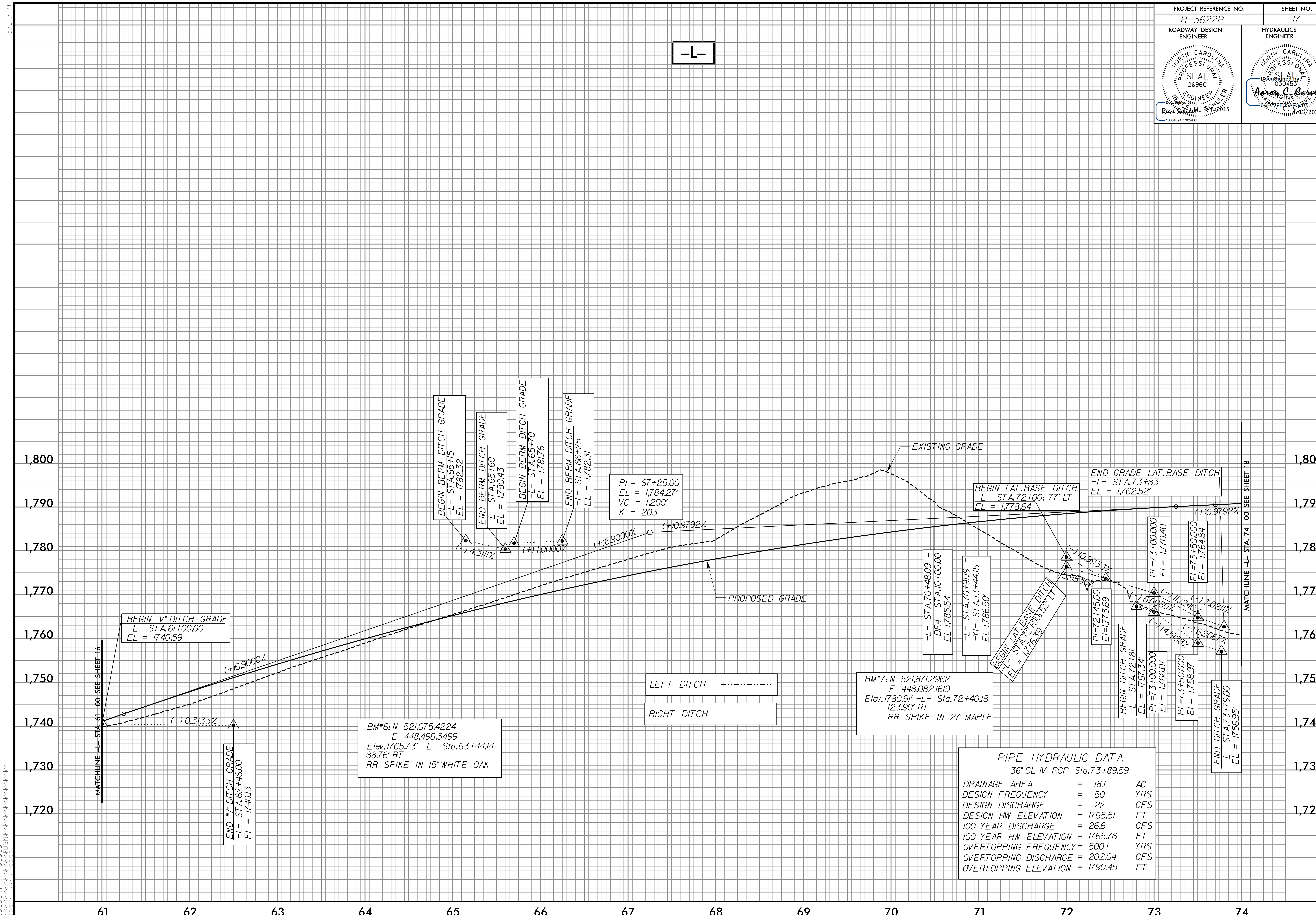
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER — DocuSigned by: Reece Schuler 16634024C7824FC... 4/7/2015	NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER — DocuSigned by: Aaron C. Carver 6AE72E35AE3457... 4/13/2015



PROJECT REFERENCE NO.	SHEET NO.
R-3622B	17

ROADWAY DESIGN ENGINEER — SEAL 26960, REECE M. SCHULER
HYDRAULICS ENGINEER — SEAL 030453, AARON C. GARVER — DocuSigned by: Aaron C. Garver

-L-



PIPE HYDRAULIC DATA

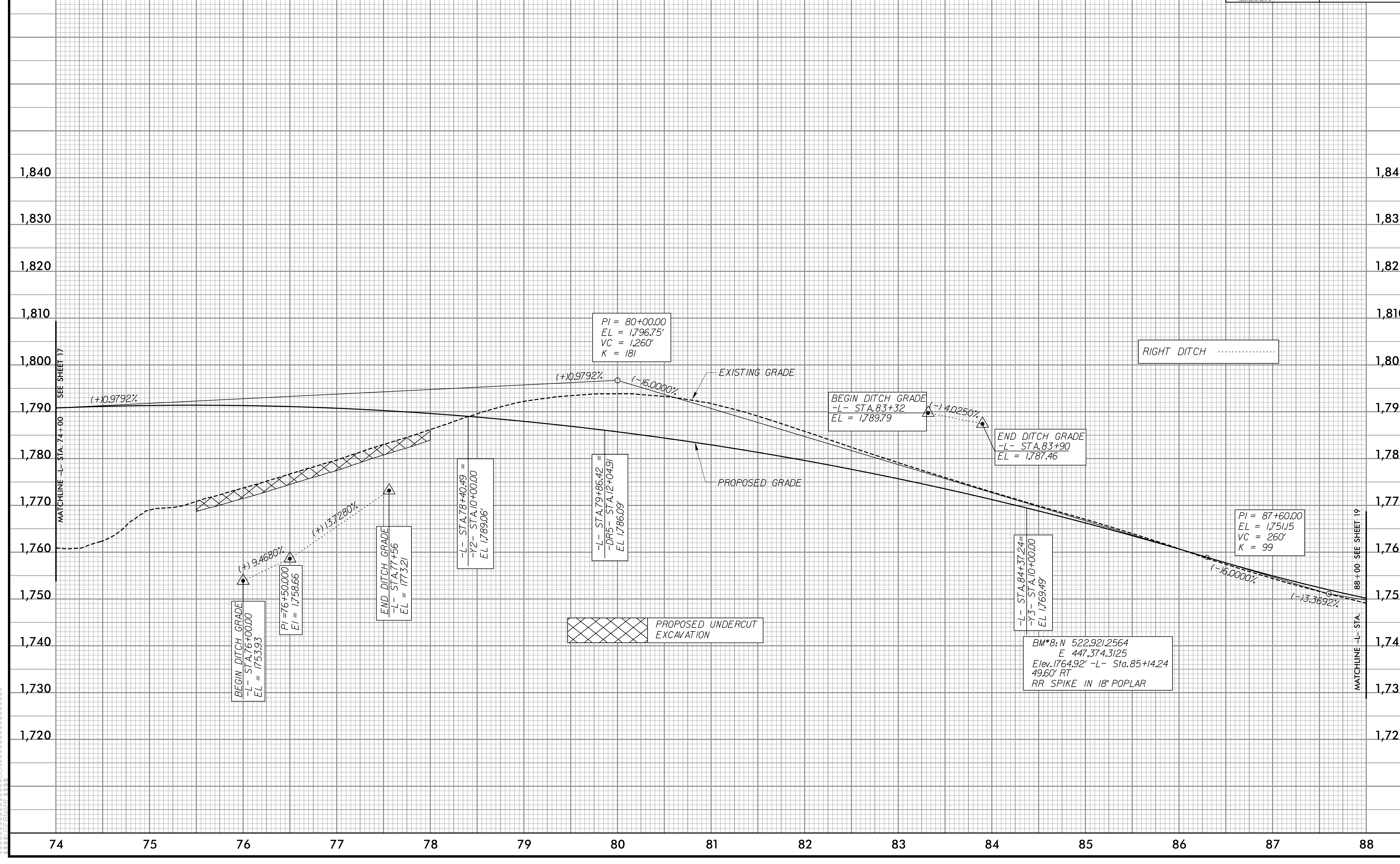
36" CL IV RCP Sta.73+89.59

DRAINAGE AREA	=	18.1	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	22	CFS
DESIGN HW ELEVATION	=	1765.51	FT
100 YEAR DISCHARGE	=	26.6	CFS
100 YEAR HW ELEVATION	=	1765.76	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	202.04	CFS
OVERTOPPING ELEVATION	=	1790.45	FT

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	18

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER — DocuSigned by: Reece Schuler 16634024C7824FC... 4/7/2015

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER — DocuSigned by: Aaron C. Carver 6AE722E35AE3487... 4/13/2015



PROJECT REFERENCE NO.	SHEET NO.
R-3622B	19

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER RICHARD L. SCHULER

DocuSigned by: Richard L. Schuler 6/4/2015

166340247C7824FC

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CRAVER

DocuSigned by: Aaron C. Craver 6/3/2015

5/14/99

-L-

MATCHLINE -L- STA. 88+00 SEE SHEET 18

PI = 87+60.00
EL = 1,751.15
VC = 260'
K = 99

(-)3.3692%

PI = 91+25.00
EL = 1,738.85'
VC = 460'
K = 139

(-)3.3692%

(-)6.6790%

-L- STA. 89+95.85=
-Y4- STA. 12+13.51
EL 1,742.84'

EXISTING GRADE

PROPOSED GRADE

REMOVE EXIST. CULVERT

PI = 97+00.00
EL = 1,700.45'
VC = 680'
K = 108

(-)6.6790%

(-)8.1250%

BEGIN DITCH GRADE
-L- STA. 95+62.00
EL = 1708.34

50YEAR W.S. EL 1703.1

100 YEAR W.S. EL 1703.38

NWSEL=1699.6 (11/4/11)

1' SILL

2' SILL

INV. = 1696.89

(-)10.4000%

RIGHT DITCH .....

END DITCH GRADE
-L- STA. 96+50.00
EL = 1,701.19

PROPOSED UNDERCUT EXCAVATION

BM#9: N 524,325.5455
E 446,532.2491
Elev. 1702.98' -L- Sta. 101+25.02
224.76' RT
RR SPIKE IN 36" TRIPLE POPLAR

MATCHLINE -L- STA. 102+00 SEE SHEET 20

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 400	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 1703.1	FT
BASE DISCHARGE	= 480	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1703.38	FT
OVERTOPPING DISCHARGE	= 550	CFS
OVERTOPPING FREQUENCY	= +/- 100	YRS
OVERTOPPING ELEVATION	= 1703.9	FT

1,800 1,790 1,780 1,770 1,760 1,750 1,740 1,730 1,720 1,710 1,700

88 89 90 91 92 93 94 95 96 97 98 99 100 101 102

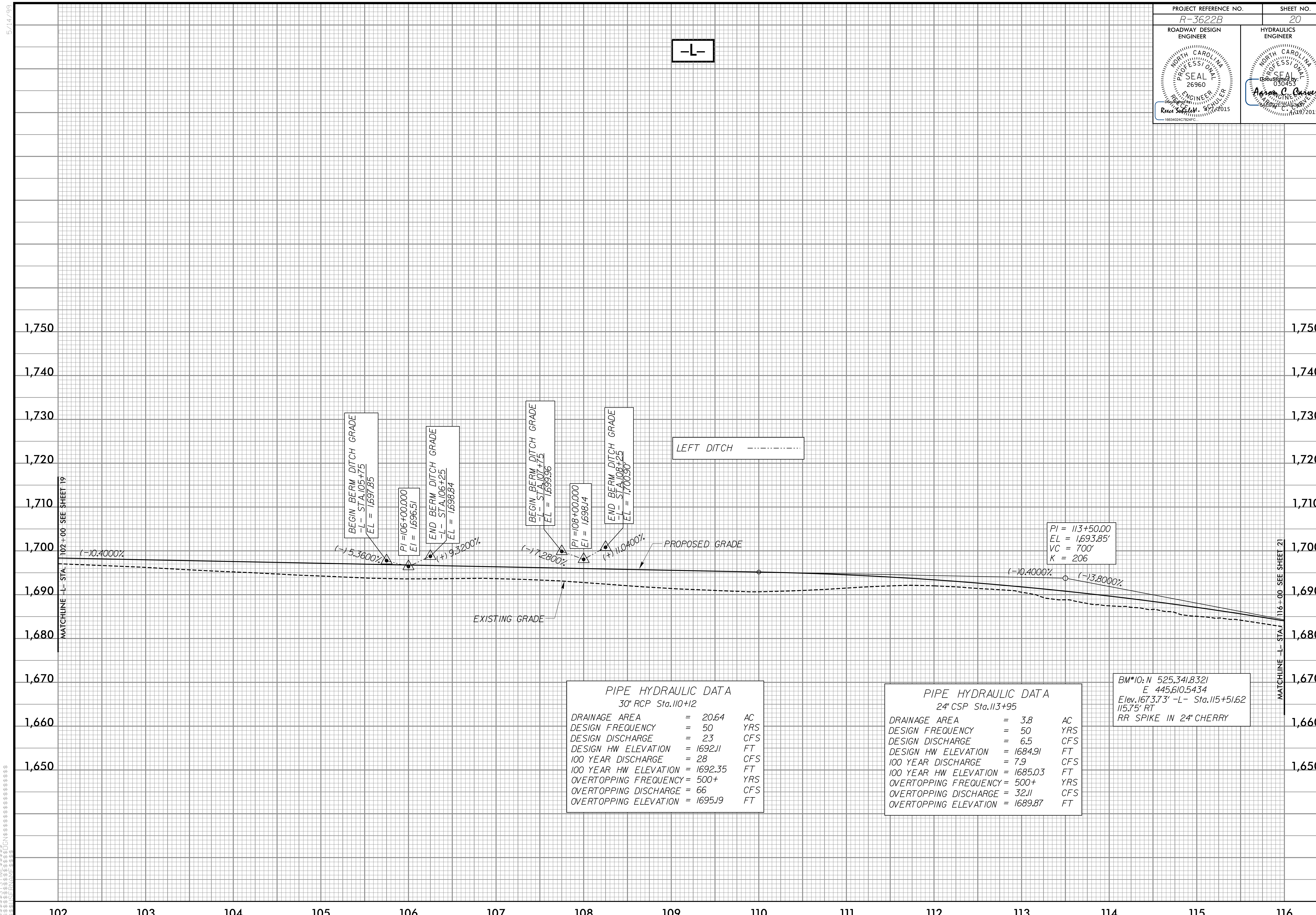
$$$$ SYSTIME $$$$
$$$$ DGN $$$$
$$$$ USERNAME $$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	20

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER — DocuSigned by: Reece Schuler 16634024C7824FC... 4/7/2015

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER — DocuSigned by: Aaron C. Carver 6AE072E35AE3457... 4/13/2015

-L-



PIPE HYDRAULIC DATA
30" RCP Sta.110+12

DRAINAGE AREA	=	20.64	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	23	CFS
DESIGN HW ELEVATION	=	1692.11	FT
100 YEAR DISCHARGE	=	28	CFS
100 YEAR HW ELEVATION	=	1692.35	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	66	CFS
OVERTOPPING ELEVATION	=	1695.19	FT

PIPE HYDRAULIC DATA
24" CSP Sta.113+95

DRAINAGE AREA	=	3.8	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.5	CFS
DESIGN HW ELEVATION	=	1684.91	FT
100 YEAR DISCHARGE	=	7.9	CFS
100 YEAR HW ELEVATION	=	1685.03	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	32.11	CFS
OVERTOPPING ELEVATION	=	1689.87	FT

PROJECT REFERENCE NO.	SHEET NO.
R-3622B	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER DocuSigned by: Reece Schuler 16634024C7824FC... 4/7/2015	NORTH CAROLINA PROFESSIONAL SEAL 030453 ENGINEER AARON C. CARVER DocuSigned by: Aaron C. Carver 6AE722E35AE3457... 4/13/2015