12/24/13

TIP PROJECT: U-2519CB

CONTRACT: C203398

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

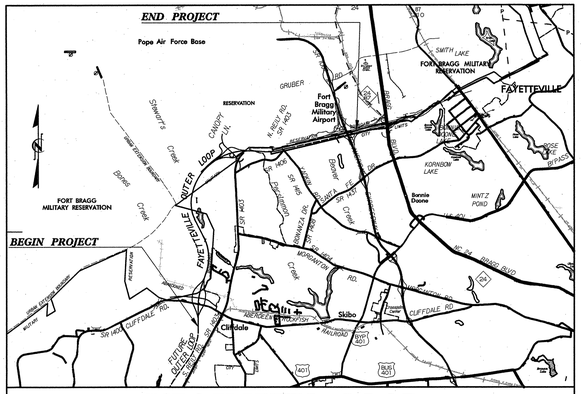
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519CB	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34817.1.2	NHF-DPR-0100(001)	P.E.
34817.2.8	NHF-DPR-0100(001)	R/W, UTL.
34817.3.S8		CONST.

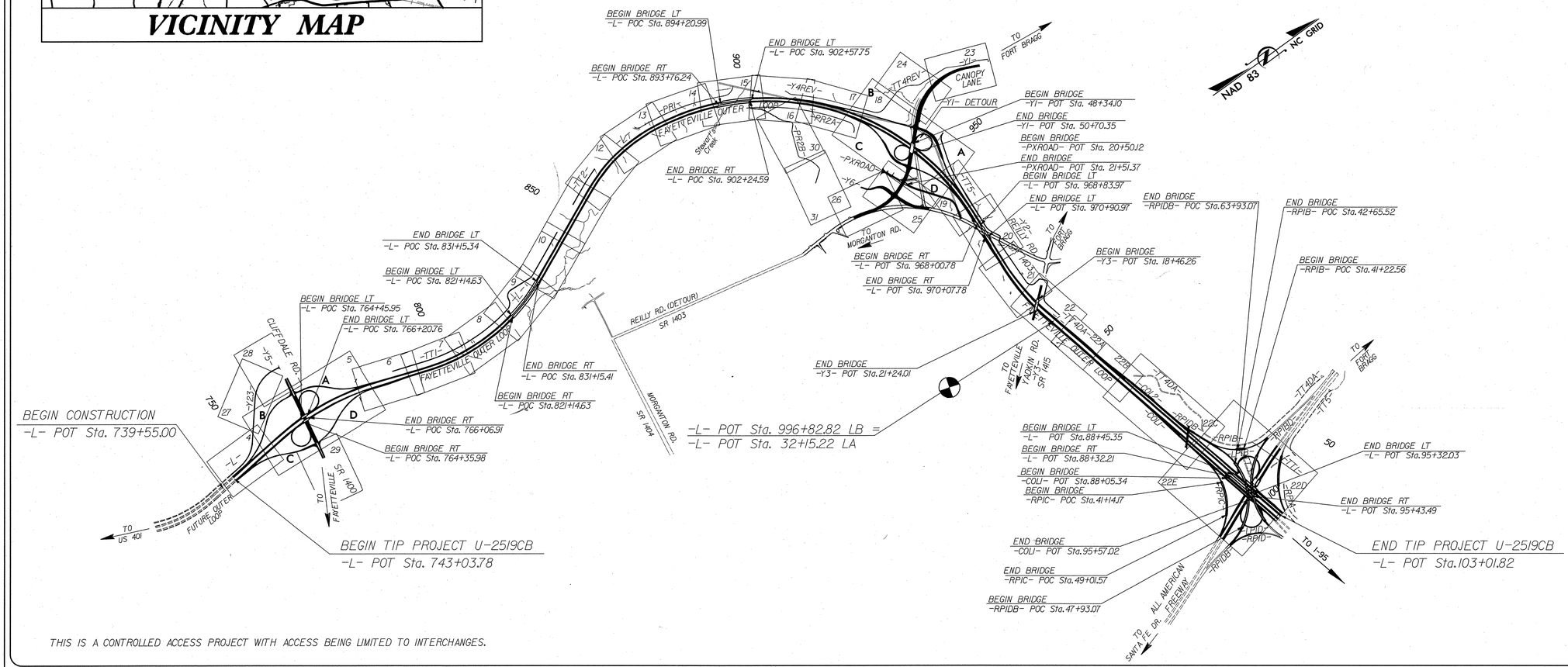
CUMBERLAND COUNTY

LOCATION: FAYETTEVILLE OUTER LOOP FROM SOUTH OF SR 1400 (CLIFFDALE ROAD) TO EAST OF ALL AMERICAN FREEWAY

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERT, RETAINING WALLS, SIGNALS & SIGNING



VICINITY MAP



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

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 2014 = 49,900
ADT 2034 = 70,300
DHV = 8 %
D = 55 %
T = 12 % *
V = 70 MPH
* (TTST=4 + DUAL=8)
FUNC CLASS : INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2519CB	=	5.592 MILES
LENGTH STRUCTURES TIP PROJECT U-2519CB	=	0.557 MILES
TOTAL LENGTH OF TIP PROJECT U-2519CB	=	6.149 MILES

Prepared In the Office of:
RS&H
ARCHITECTS-ENGINEERS-PLANNERS, INC.
8601 SIX FORKS RD, SUITE 260
RALEIGH, NC 27615
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 31, 2006

LETTING DATE:
AUGUST 19, 2014

KENNETH HERRING, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

BRENDA L. MOORE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER
SIGNATURE: James A. Byrd P.E. 5-7-14
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

ROADWAY DESIGN ENGINEER
SIGNATURE: J. Talley 5-7-14 P.E.
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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See Sheet 1-A For Index of Sheets
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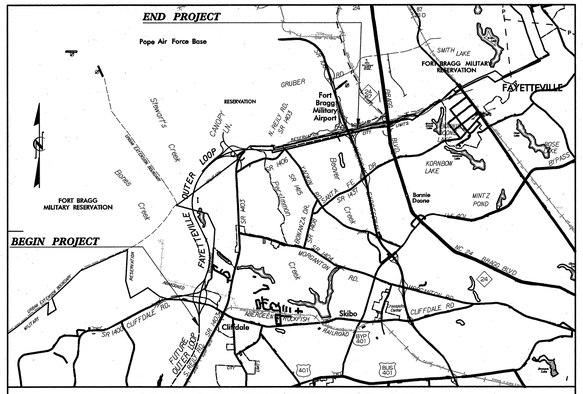
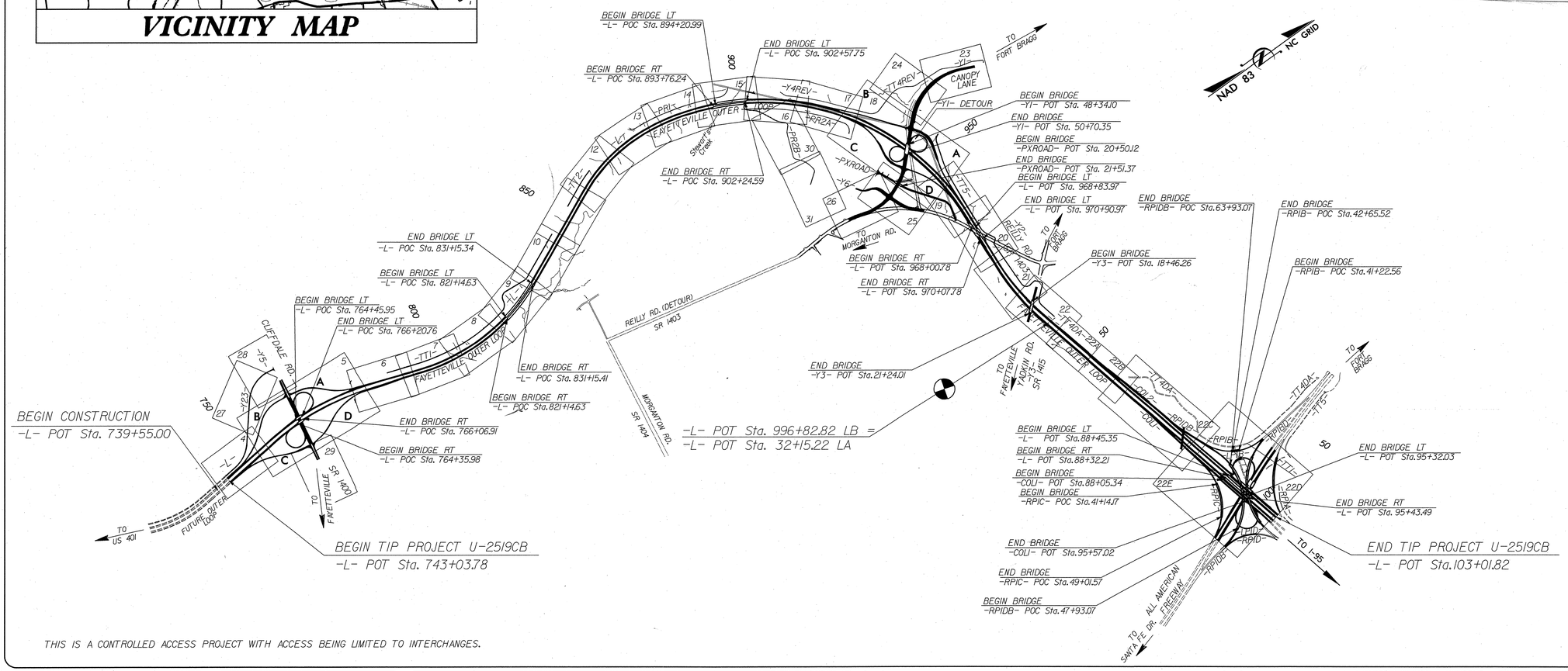
Part 1 of 3



VICINITY MAP



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

5/8/2014
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12/24/13

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 8-8-14

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	LOCATION SURVEY SHEETS
2 THRU 2-M	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAILS
2-N	GRADING PLAN CLIFFDALE ROAD
2-O1THRU 2-O2	CANOPY LANE GRADING PLAN
2-P1 THRU 2-P2	SHEAR POINT DIAGRAM
2-Q1 THRU 2-Q2	-Y1- DETOUR
2-R1 THRU 2-R2	-Y3- DETOUR
2-S THRU 2-U	BRIDGE SKETCHES
2-V	STRUCTURE ANCHOR UNITS TYPE III DETAILS
2-W	STRUCTURE ANCHOR UNITS B-77 DETAIL
2-X	DETAIL FOR TEMPORARY CONTAINMENT OF CONTAMINATED SOIL
2-Y	DRAINAGE DETAILS: PREFORMED SCOUR HOLE
2-Z	DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE
2-AA	CHAIN LINK FENCE WITH BARBED WIRE DETAIL
2-AB	DETAIL TO CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MAN HOLE
2-AC	DETAIL TO CONVERT EXISTING CATCH BASIN TO DROP INLET
2-AD	SIGN SUPPORT GUARDRAIL DETAIL
2-AE	MODIFIED CONCRETE FLUME DETAIL
2-AF	DETAIL OF SPECIAL JUNCTION BOX WITH MAN HOLE
2-AG	CB WITH 66" AND 48" PIPES
2-AH	DETAIL OF JB WITH SLAB LID, 66" PIPES
2-AI	DETAIL OF JB WITH SLAB LID, 72" PIPES
2-AJ	DETAIL OF JB WITH SLAB LID, 72" PIPES
2-AK	STANDARD TEMPORARY SHORING DETAIL
2-AL THRU 2-AU	NOISEWALL DETAILS
2-AV	ROCK PLATING DETAIL
2-AW	DETAIL OF SPECIAL CATCH BASIN
2-BA THRU 2-BP	ACP DETAILS FOR -Y1- CANOPY LANE AND -Y2- REILLY ROAD
2-BQ THRU 2-BU	VISUAL BARRIER WALL DETAILS
3-A THRU 3-Q	SUMMARY OF DRAINAGE QUANTITIES
3-R THRU 3-S	SUMMARY OF EARTHWORK
3-T THRU 3-V	SUMMARY OF ASPHALT PAVEMENT REMOVAL, SHOULDER BERM GUTTER SUMMARY, GUARDRAIL SUMMARY, GUIDERAIL SUMMARY, AND GEOTECH SUMMARIES
3-W	PARCEL INDEX SHEET
4 THRU 31	PLAN SHEETS
32 THRU 80	PROFILE SHEETS
TMP-1 THRU TMP-51	TRAFFIC MANAGEMENT PLANS
PM-1 THRU PM-36	PAVEMENT MARKING PLANS
E-1 THRU E-4	LIGHTING PLANS
EC-1 THRU EC-69	EROSION CONTROL PLANS
RF-1 THRU RF-2	REFORESTATION PLANS
SIGN-1 THRU SIGN-29	SIGNING PLANS
SIG-1 THRU SIG-48	ITS AND SIGNAL PLANS
UC-1 THRU UC-15	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-18-8	UTILITIES BY OTHERS
X-1A THRU X-1I	CROSS SECTION SUMMARY SHEETS
X-1 THRU X-533	CROSS SECTIONS
X-600 THRU X-615	CROSS SECTIONS FOR ACP
S-1 THRU S-856	STRUCTURE PLANS
W-1 THRU W-37	NOISE WALLS /VISUAL BARRIER WALLS DETAILS

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

SURFACING:

THE ROUGH GRADING AND STRUCTURES ON THIS PROJECT HAVE BEEN DONE OR ARE NOW BEING DONE UNDER A PREVIOUS CONTRACT. THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. 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 III.EXCEPT IN -TT- , -PR- AND -RPC2- LINE AREAS WHERE METHOD II IS TO BE USED.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 OR 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 OR 560.02

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.

SUBSURFACE DRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

PIEDMONT GAS, DUKE PROGRESS, SANDHILLS UTILITY

PUBLIC WORKS COMMISSION, OLD NORTH UTILITIES,

TIME WARNER CABLE AND CENTURYLINK

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.
UTILITIES BY OTHERS PLANS INCLUDED IN THE PROJECT.)
RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

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
200.03	Method of Clearing – Method III
225.01	Guide for Grading Subgrade – Interstate and Freeway
225.02	Guide for Grading Subgrade – Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation – Two Lane Pavement
225.05	Method of Obtaining Superelevation – Divided Highways
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 4 – MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
560.02	Method of Shoulder Construction – High Side of Superelevated Curve – Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 – ASPHALT BASES AND PAVEMENTS	
610.03	Guide for Paving Shoulders Under Bridges – Method III
665.01	Asphalt Shoulders – Milled Rumble Strips
DIVISION 7 – CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints – Construction and Contraction Joints
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
700.05	Tying Proposed Pavement to Existing
DIVISION 8 – INCIDENTALS	
815.02	Subsurface Drain
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
838.27	Reinforced Concrete Endwall – for Single 60" Pipe 90 Skew
838.39	Reinforced Concrete Endwall – for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall – Std. Dwg 838.21 thru 838.40
838.57	Reinforced Brick Endwall – for Single 60" Pipe 90 Skew
838.69	Reinforced Brick Endwall – for Single 72" Pipe 90 Skew
838.80	Precast Endwalls – 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin – 12" thru 54" Pipe
840.02	Concrete Catch Basin – 12" thru 54" Pipe
840.03	Frame, Grates and Hood – for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin – 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin – 12" thru 48" Pipe
840.13	Concrete Bridge Approach Drop Inlet – 12" thru 24" Pipe
840.14	Concrete Drop Inlet – 12" thru 30" Pipe
840.15	Brick Drop Inlet – 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates – for use with Std. Dwg 840.14 and 840.15
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
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide 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
840.36	Traffic Bearing Grated Drop Inlet – for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
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
848.01	Concrete Sidewalk
848.02	Driveway Turnout – Radius Type
848.04	Street Turnout
848.05	Curb Ramp – Proposed Curb & Gutter
848.06	Curb Ramp – Existing Curb & 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
852.01	Concrete Islands
852.02	Concrete Mountable Median – for Use with Rigid or Flexible Pavement
852.04	Method for Placement of Drop Inlets in Grassed Median – Using 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
854.02	Double Faced Concrete Barrier – Types 'T', 'T1' and 'T2'
857.01	Precast Reinforced Concrete Barrier – 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Details in Lieu of Standard Drawing as March 2013 Letting)
862.04	Anchoring End of Guardrail – B-77 and B-83 Anchor Units
865.01	Cable Guiderail
866.02	Woven Wire Fence – with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	1-B

12/05/11

Note: Not to Scale

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

STATE OF NORTH CAROLINA
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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
- Proposed Concrete Barrier

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:

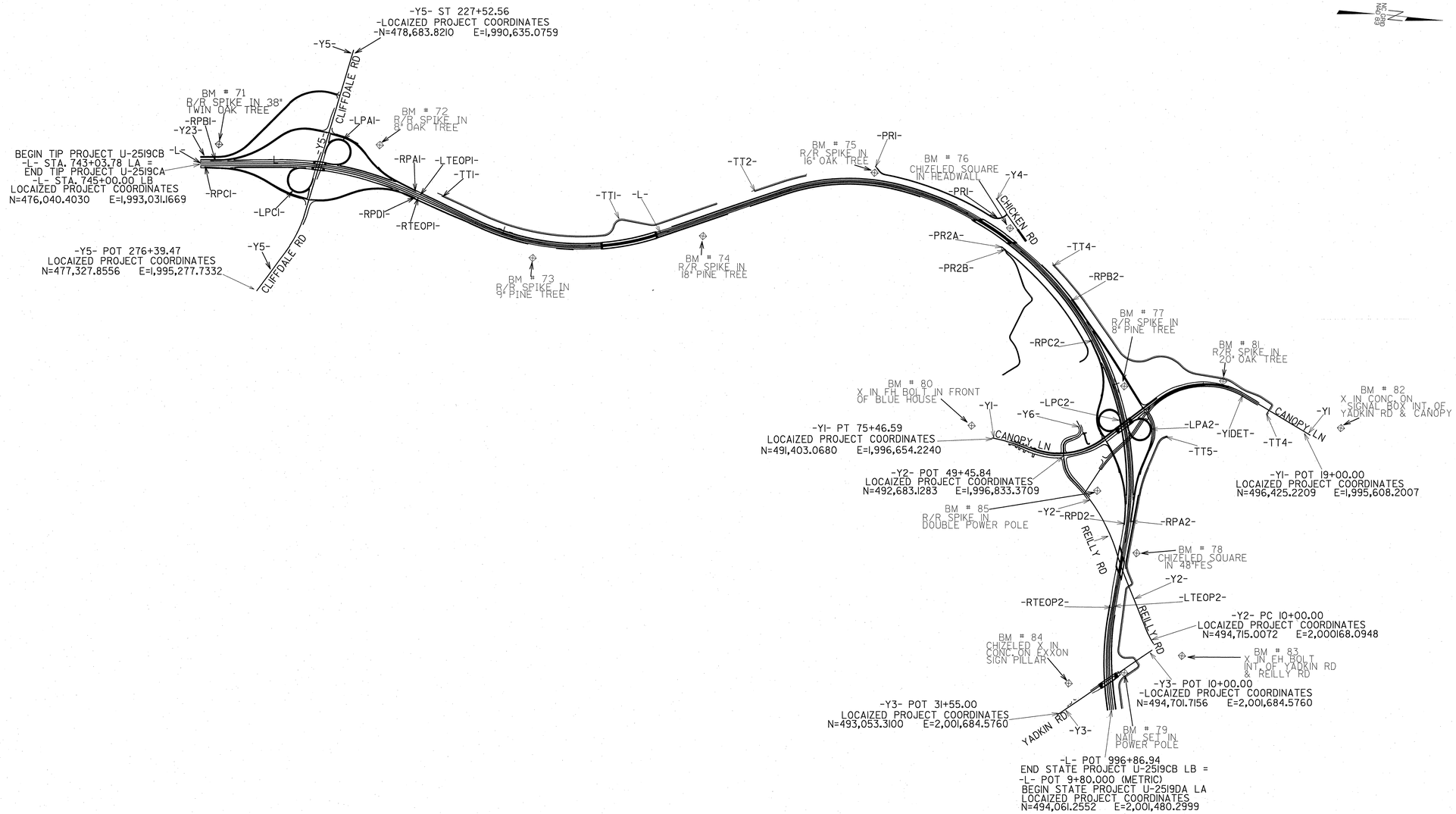
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
U-2519-CB	1C
Location and Surveys	

SURVEY CONTROL SHEET U-2519CB



DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "X2D8"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 507897.7244(ft) EASTING: 2051616.4709(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999874560
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"X2D8" TO -L- STATION 743+03.78 IS
66,686.63 FT S 61° 27' 50.41" W
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAD 83/NGVD 29

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

FILE NAME: u2519cb_ls_control_050318.txt

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

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

6/2/99
1/30/2014
10:38:38 AM
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519-CB	1D

Location and Surveys

SURVEY CONTROL SHEET U-2519CB

CONTROL DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL18		475907.6864	1992775.1504	233.68	741+97.72	268.32 LT
BL19		476657.1532	1992768.3336	237.98	749+43.91	197.95 LT
BL20		477407.3041	1992762.8497	240.24	756+90.64	126.18 LT
BL21		478257.4368	1992763.7112	243.89	765+27.63	83.40 LT
BL25204		479201.0130	1992880.7650	243.75	774+67.18	64.69 LT
BL22		479873.1132	1993067.3525	244.58	781+58.15	47.42 LT
BL23		480584.5301	1993309.8314	246.34	789+08.58	47.64 LT
BL24		481291.2512	1993555.0234	250.97	796+56.78	45.77 LT
BL25		482013.9816	1993753.9831	251.65	804+13.41	38.93 LT
BL26		482358.8087	1993811.3064	248.69	807+65.60	30.63 LT
BL27		483007.5129	1993844.9494	244.36	814+19.02	18.00 LT
BL28		483406.7456	1993818.3016	221.04	818+20.53	12.04 LT
BL29		483654.2903	1993782.8527	210.73	820+71.20	9.61 LT
BL30		483901.8152	1993733.9988	187.29	823+23.96	6.73 LT
BL31		484190.7759	1993658.9476	187.50	826+22.86	3.21 LT
BL32		484475.6644	1993568.5657	187.84	829+21.70	3.73 RT
BL33		484888.9795	1993390.2893	221.89	833+71.72	1.69 RT
BL34		485469.7318	1993098.6731	207.97	840+21.00	25.52 LT
BL35		485738.3316	1992964.6839	232.41	843+20.94	37.29 LT
BL36		486317.2850	1992669.5187	219.67	849+70.04	68.47 LT
BL37		486539.8714	1992555.4780	228.99	852+19.83	80.97 LT
BL38		487036.3589	1992319.6530	228.21	857+66.57	94.58 LT
BL39		487655.8331	1992126.6424	217.62	864+00.98	88.61 LT
BL40		488399.4515	1992040.4726	232.58	871+34.81	76.00 LT
BL41		489146.0193	1992099.0372	243.51	878+71.78	62.10 LT
BL42		489441.0609	1992157.6769	244.00	881+69.49	56.10 LT
BL43		489828.2664	1992255.3758	221.73	885+65.15	51.93 LT
BL44		490017.0619	1992315.3674	225.29	887+61.51	48.12 LT
BL45		490345.8486	1992439.3105	211.60	891+10.17	39.49 LT
BL46		490533.7654	1992515.3540	210.98	893+11.51	39.38 LT
BL47		490801.2953	1992645.5695	204.94	896+07.15	31.75 LT
BL48		491237.5204	1992888.7826	204.75	901+04.22	25.70 LT
BL49		491488.1965	1993053.4042	217.70	904+02.90	21.16 LT
BL50		491845.9652	1993326.1985	219.21	908+51.53	12.03 LT
BL51		492409.3158	1993819.3442	239.56	915+98.29	24.37 LT
BL52		492896.9988	1994458.9810	254.51	924+01.67	14.82 RT
BL53		493285.0678	1995100.0806	281.89	931+54.39	29.78 RT
BL54		493516.6546	1995598.8997	295.67	937+07.79	38.37 RT
BL55		493700.0070	1996116.7392	300.21	942+61.36	45.72 RT
BL56		493837.3591	1996698.9294	298.96	948+65.16	58.28 RT
BL57		493892.6467	1997047.4790	293.94	952+21.85	62.35 RT
BL58		493932.2949	1997544.7925	263.05	957+26.66	69.40 RT
BL59		493922.7010	1998094.9399	271.12	962+84.26	79.52 RT
BL60		493876.0236	1998792.7880	256.32	969+85.85	76.07 RT
BL61		493827.4908	1999541.3634	266.13	977+35.95	68.23 RT
BL62		493812.6291	1999790.6307	276.81	979+84.11	66.07 RT
BL63		493816.0595	2000240.7058	283.50	984+28.95	58.49 RT
BL64		493893.5110	2000935.8533	281.48	991+21.58	50.93 RT
BL65		494048.8553	2001669.5685	265.46	OUTSIDE PROJECT LIMITS	
BL66		494029.5730	2001976.0710	263.46	OUTSIDE PROJECT LIMITS	

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	-Y1- STATION	OFFSET
BY11		497225.1941	1995931.7823	366.70	10+38.47	49.32 RT
BY12		496603.8480	1995654.3886	346.48	17+18.77	34.58 RT
BY13		495530.8600	1995190.8037	307.83	28+75.46	60.54 RT
BY14		494619.7597	1995273.0839	278.50	37+45.40	126.71 RT
BY15		494004.9241	1995714.3397	293.79	44+65.51	159.63 RT
BY16		493735.9932	1996269.8564	299.15	50+41.34	62.50 LT
BY17		493488.9443	1996894.4419	292.59	55+97.09	368.05 LT
BY18		493205.5407	1997456.7322	279.43	59+67.04	738.48 LT

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	-Y2- STATION	OFFSET
BY21		494764.3588	2000295.4934	287.93	OUTSIDE PROJECT LIMITS	
BY22		494197.6488	1999163.6506	260.83	21+31.82	36.67 RT
BY23		493893.3119	1998539.9145	256.46	28+28.73	34.05 RT
BY24		493205.5407	1997456.7322	279.43	41+00.48	65.86 RT
BY25		492447.0142	1996927.0866	286.67	49+14.97	252.15 LT
BY26		491531.0850	1996631.4590	291.78	OUTSIDE PROJECT LIMITS	

BY3 POINT	DESC.	NORTH	EAST	ELEVATION	-Y3- STATION	OFFSET
123		494784.9260	2000305.4760	288.16	OUTSIDE PROJECT LIMITS	
124		494289.5080	2000733.3010	288.04	15+96.67	68.61 LT
126	(NOT SET)	493915.6477	2001040.4083	(NOT SET)	20+80.46	62.71 LT
125		493845.8690	2001097.7280	278.18	21+70.75	61.61 LT
116		493293.2860	2001446.8540	271.07	28+18.31	27.26 RT

BY4 POINT	DESC.	NORTH	EAST	ELEVATION	-Y4- STATION	OFFSET
BY41		491349.8288	1992623.0501	211.48	16+01.98	15.26 LT
BY42		492409.3158	1993819.3442	239.56	32+02.15	138.26 RT
BY43		492896.9988	1994458.9810	254.51	40+20.72	197.03 RT
BY44		493494.0028	1995074.8827	285.69	48+31.20	157.78 RT
BY45		494004.9241	1995714.3397	293.79	51+70.57	705.80 RT
BY46		494245.3955	1996310.8764	307.11	52+11.13	1336.93 RT
BY47		494015.2551	1997105.9559	281.90	51+36.32	2091.66 RT
BY48		493704.2771	1998154.0983	262.42	50+86.54	3136.18 RT

BM71 ELEVATION = 227.37
N 475807 E 1992583
-L- STATION 741+18 469 LEFT
R/R SPIKE IN 38"TWIN OAK TREE

BM72 ELEVATION = 243.53
N 479347 E 1992578
-L- STATION 775+49 389 LEFT
R/R SPIKE IN 8" OAK TREE

BM73 ELEVATION = 250.10
N 482143 E 1994154
-L- STATION 805+99 336 RIGHT
R/R SPIKE IN 9" PINE TREE

BM74 ELEVATION = 199.42
N 485442 E 1993395
-L- STATION 838+74 234 RIGHT
R/R SPIKE IN 18" PINE TREE

BM75 ELEVATION = 251.64
N 488669 E 1991889
-L- STATION 873+95 227 LEFT
R/R SPIKE IN 16" OAK TREE

BM78 ELEVATION = 254.56
N 494109 E 1998471
-L- STATION 966+48 132 LEFT
CHIZELED SQUARE IN 48"FES

BM76 ELEVATION = 212.82
N 491354 E 1992679
-Y4- STATION 16+47 19 RIGHT
CHIZELED SQUARE IN HEADWALL

BM77 ELEVATION = 301.90
N 493685 E 1995435
-Y4- STATION 50+23 428 RIGHT
R/R SPIKE IN 8" PINE TREE

BM79 ELEVATION = 286.48
N 494114 E 2000834
-Y3- STATION 17+96 32 LEFT
NAIL SET IN POWER POLE

BM84 ELEVATION = 274.63
N 493277 E 2001416
-Y3- STATION 28+10 61 RIGHT
CHIZELED X IN CONC. ON EXXON SIGN PILLAR

BM80 ELEVATION = 295.13
N 491176 E 1996599
-Y2- STATION 49+46
S 8° 50' 23.1" W DIST 1525.14
X IN FH BOLT IN FRONT OF BLUE HOUSE

BM83 ELEVATION = 289.20
N 494906 E 2000274
-Y2- STATION 10+00
N 29° 03' 42.5" E DIST 218.85
X IN FH BOLT INT. OF YADKIN RD & REILLY RD

BM85 ELEVATION = 288.80
N 493300 E 1997468
-Y2- STATION 40+29 125 RIGHT
R/R SPIKE IN DOUBLE POWER POLE

BM81 ELEVATION = 301.52
N 495529 E 1995131
-Y1- STATION 28+85 119 RIGHT
R/R SPIKE IN 20" OAK TREE

BM82 ELEVATION = 367.89
N 497346 E 1995945
-Y1- STATION 10+00
N 24° 08' 09.9" W DIST 116.92
X IN CONC. ON SIGNAL BOX INT. OF YADKIN RD & CANOPY LN

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "X2D8"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 507897.7244(ft) EASTING: 2051616.4709(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874560
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "X2D8" TO -L- STATION 743+03.78 IS
66,686.63 FT S 61° 27' 50.41" W
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAD83/NGVD29

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

FILE NAME: u2519cb_ls_control_050318.txt

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◎ *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 USER SERVICE (OPUS)

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

1/30/2014
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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	1-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	739+00.00	475639.1680	1993072.6924
2	L	740+00.00	475738.6367	1993062.3979
3	L	741+00.00	475838.1054	1993052.1035
4	L	742+00.00	475937.5741	1993041.8091
5	L	743+00.00	476037.0429	1993031.5147
6	L	744+00.00	476136.5116	1993021.2202
7	L	745+00.00	476235.9803	1993010.9258
8	L	746+00.00	476335.4490	1993000.6314
9	L	747+00.00	476434.9177	1992990.3369
10	L	748+00.00	476534.3864	1992980.0425
11	L	749+00.00	476633.8551	1992969.7481
12	L	750+00.00	476733.3238	1992959.4537
13	L	751+00.00	476832.7926	1992949.1592
14	L	752+00.00	476932.2613	1992938.8648
15	L	753+00.00	477031.7300	1992928.5704
16	L	754+00.00	477131.1987	1992918.2760
17	L	755+00.00	477230.6674	1992907.9815
18	L	756+00.00	477330.1361	1992897.6871
19	L	757+00.00	477429.6048	1992887.3927
20	L	758+00.00	477529.0837	1992877.1975
21	L	759+00.00	477628.6376	1992867.7686
22	L	760+00.00	477728.3244	1992859.8765
23	L	761+00.00	477828.1338	1992853.7252
24	L	762+00.00	477928.0353	1992849.3166
25	L	763+00.00	478027.9985	1992846.6523
26	L	764+00.00	478127.9930	1992845.7330
27	L	765+00.00	478227.9883	1992846.5590
28	L	766+00.00	478327.9540	1992849.1300
29	L	767+00.00	478427.8596	1992853.4452
30	L	768+00.00	478527.6746	1992859.5034
31	L	769+00.00	478627.3687	1992867.3027
32	L	770+00.00	478726.9116	1992876.8407
33	L	771+00.00	478826.2728	1992888.1145
34	L	772+00.00	478925.4221	1992901.1207
35	L	773+00.00	479024.3293	1992915.8553
36	L	774+00.00	479122.9643	1992932.3138
37	L	775+00.00	479221.2970	1992950.4912
38	L	776+00.00	479319.2976	1992970.3820
39	L	777+00.00	479416.9360	1992991.9801
40	L	778+00.00	479514.1827	1993015.2790
41	L	779+00.00	479611.0079	1993040.2715
42	L	780+00.00	479707.3821	1993066.9500
43	L	781+00.00	479803.2761	1993095.3064
44	L	782+00.00	479898.6607	1993125.3321
45	L	783+00.00	479993.5495	1993156.8908
46	L	784+00.00	480088.1524	1993189.2987
47	L	785+00.00	480182.7043	1993221.8556
48	L	786+00.00	480277.2561	1993254.4124
49	L	787+00.00	480371.8080	1993286.9692
50	L	788+00.00	480466.3599	1993319.5260
51	L	789+00.00	480560.9117	1993352.0828
52	L	790+00.00	480655.4636	1993384.6396
53	L	791+00.00	480750.0154	1993417.1964
54	L	792+00.00	480844.5673	1993449.7533
55	L	793+00.00	480939.1191	1993482.3101
56	L	794+00.00	481033.6710	1993514.8669
57	L	795+00.00	481128.2229	1993547.4237
58	L	796+00.00	481222.7778	1993579.9715
59	L	797+00.00	481317.4401	1993612.2054
60	L	798+00.00	481412.4285	1993643.4629
61	L	799+00.00	481507.9455	1993673.0628
62	L	800+00.00	481604.0731	1993700.6143
63	L	801+00.00	481700.7734	1993726.0833
64	L	802+00.00	481798.0011	1993749.4580
65	L	803+00.00	481895.7110	1993770.7275
66	L	804+00.00	481993.8575	1993789.8818
67	L	805+00.00	482092.3947	1993806.9120
68	L	806+00.00	482191.2767	1993821.8101
69	L	807+00.00	482290.4574	1993834.5693
70	L	808+00.00	482389.8906	1993845.1835
71	L	809+00.00	482489.5298	1993853.6478
72	L	810+00.00	482589.3285	1993859.9583
73	L	811+00.00	482689.2402	1993864.1120
74	L	812+00.00	482789.2184	1993866.1070
75	L	813+00.00	482889.2163	1993865.9424
76	L	814+00.00	482989.1874	1993863.6181
77	L	815+00.00	483089.0849	1993859.1354
78	L	816+00.00	483188.8623	1993852.4963
79	L	817+00.00	483288.4731	1993843.7038
80	L	818+00.00	483387.8707	1993832.7622
81	L	819+00.00	483487.0089	1993819.6764
82	L	820+00.00	483585.8413	1993804.4527
83	L	821+00.00	483684.3219	1993787.0981
84	L	822+00.00	483782.4047	1993767.6206
85	L	823+00.00	483880.0440	1993746.0295
86	L	824+00.00	483977.1943	1993722.3347
87	L	825+00.00	484073.8101	1993696.5474
88	L	826+00.00	484169.8465	1993668.6794
89	L	827+00.00	484265.2587	1993638.7439
90	L	828+00.00	484360.0021	1993606.7549
91	L	829+00.00	484454.0325	1993572.7271
92	L	830+00.00	484547.3061	1993536.6766
93	L	831+00.00	484639.7842	1993498.6314
94	L	832+00.00	484731.5618	1993458.9238
95	L	833+00.00	484822.8968	1993418.2068
96	L	834+00.00	484914.0706	1993377.1297
97	L	835+00.00	485005.2371	1993336.0362
98	L	836+00.00	485096.4036	1993294.9427
99	L	837+00.00	485187.5700	1993253.8492
100	L	838+00.00	485278.7365	1993212.7556
101	L	839+00.00	485369.9029	1993171.6621
102	L	840+00.00	485461.0694	1993130.5686
103	L	841+00.00	485552.2359	1993089.4751
104	L	842+00.00	485643.4023	1993048.3816
105	L	843+00.00	485734.5688	1993007.2881
106	L	844+00.00	485825.7352	1992966.1946
107	L	845+00.00	485916.9017	1992925.1011
108	L	846+00.00	486008.0682	1992884.0076
109	L	847+00.00	486099.2346	1992842.9140
110	L	848+00.00	486190.4011	1992801.8205
111	L	849+00.00	486281.5675	1992760.7270
112	L	850+00.00	486372.7340	1992719.6335
113	L	851+00.00	486463.9005	1992678.5400
114	L	852+00.00	486555.0669	1992637.4465
115	L	853+00.00	486646.2334	1992596.3530
116	L	854+00.00	486737.3998	1992555.2595
117	L	855+00.00	486828.5663	1992514.1659
118	L	856+00.00	486919.7838	1992473.1860
119	L	857+00.00	487011.3372	1992432.9637
120	L	858+00.00	487103.5605	1992394.3051
121	L	859+00.00	487196.7021	1992357.9173
122	L	860+00.00	487290.7642	1992323.9800
123	L	861+00.00	487385.6826	1992292.5167
124	L	862+00.00	487481.3920	1992263.5488
125	L	863+00.00	487577.8269	1992237.0962
126	L	864+00.00	487674.9212	1992213.1771
127	L	865+00.00	487772.6083	1992191.8078
128	L	866+00.00	487870.8214	1992173.0029
129	L	867+00.00	487969.4931	1992156.7754
130	L	868+00.00	488068.5557	1992143.1365
131	L	869+00.00	488167.9414	1992132.0953
132	L	870+00.00	488267.5821	1992123.6595
133	L	871+00.00	488367.4095	1992117.8349
134	L	872+00.00	488467.3551	1992114.6255
135	L	873+00.00	488567.3505	1992114.0335
136	L	874+00.00	488667.3271	1992116.0592
137	L	875+00.00	488767.2165	1992120.7013
138	L	876+00.00	488866.9501	1992127.9567
139	L	877+00.00	488966.4595	1992137.8202
140	L	878+00.00	489065.6874	1992150.2043
141	L	879+00.00	489164.6247	1992164.7333
142	L	880+00.00	489263.2832	1992181.0504
143	L	881+00.00	489361.6419	1992199.0868
144	L	882+00.00	489459.6708	1992218.8371
145	L	883+00.00	489557.3401	1992240.2953
146	L	884+00.00	489654.6201	1992263.4547
147	L	885+00.00	489751.4810	1992288.3084
148	L	886+00.00	489847.8934	1992314.8487
149	L	887+00.00	489943.8280	1992343.0677
150	L	888+00.00	490039.2554	1992372.9566
151	L	889+00.00	490134.1467	1992404.5064
152	L	890+00.00	490228.4729	1992437.7075
153	L	891+00.00	490322.2053	1992472.5497
154	L	892+00.00	490415.3154	1992509.0225
155	L	893+00.00	490507.7747	1992547.1147
156	L	894+00.00	490599.5552	1992586.8148
157	L	895+00.00	490690.6288	1992628.1106
158	L	896+00.00	490780.9678	1992670.9896
159	L	897+00.00	490870.5447	1992715.4387
160	L	898+00.00	490959.3323	1992761.4443
161	L	899+00.00	491047.3034	1992808.9925
162	L	900+00.00	491134.4312	1992858.0688
163	L	901+00.00	491220.6893	1992908.6582
164	L	902+00.00	491306.0514	1992960.7452
165	L	903+00.00	491390.4914	1993014.3142
166	L	904+00.00	491473.9837	1993069.3486
167	L	905+00.00	491556.5027	1993125.8318
168	L	906+00.00	491638.0234	1993183.7466
169	L	907+00.00	491718.5210	1993243.0752
170	L	908+00.00	491797.9709	1993303.7997
171	L	909+00.00	491876.3488	1993365.9016
172	L	910+00.00	491953.6310	1993429.3619
173	L	911+00.00	492029.7939	1993494.1612
174	L	912+00.00	492104.8143	1993560.2800
175	L	913+00.00	492178.6694	1993627.6979
176	L	914+00.00	492251.3366	1993696.3945
177	L	915+00.00	492322.7937	1993766.3489
178	L	916+00.00	492393.0192	1993837.5397
179	L	917+00.00	492461.9915	1993909.9453
180	L	918+00.00	492529.6896	1993983.5436
181	L	919+00.00	492596.0930	1994058.3122
182	L	920+00.00	492661.1813	1994134.2283
183	L	921+00.00	492724.9349	1994211.2688
184	L	922+00.00	492787.3341	1994289.4102
185	L	923+00.00	492848.3601	1994368.6287
186	L	924+00.00	492907.9943	1994448.9002
187	L	925+00.00	492966.2185	1994530.2002
188	L	926+00.00	493023.0149	1994612.5040
189	L	927+00.00	493078.3662	1994695.7865
190	L	928+00.00	493132.2557	1994780.0223
191	L	929+00.00	493184.6668	1994865.1858
192	L	930+00.00	493235.5836	1994951.2510
193	L	931+00.00	493284.9906	1995038.1918
194	L	932+00.00	493332.8728	1995125.9815
195	L	933+00.00	493379.2155	1995214.5936
196	L	934+00.00	493424.0047	1995304.0009
197	L	935+00.00	493467.2267	1995394.1763
198	L	936+00.00	493508.8684	1995485.0924
199	L	937+00.00	493548.9169	1995576.7213
200	L	938+00.00	493587.3603	1995669.0352
201	L	939+00.00	493624.1867	1995762.0059
202	L	940+00.00	493659.3849	1995855.6052
203	L	941+00.00	493692.9442	1995949.8046
204	L	942+00.00	493724.8544	1996044.5753
205	L	943+00.00	493755.1058	1996139.8885
206	L	944+00.00	493783.6891	1996235.7151
207	L	945+00.00	493810.5957	1996332.0259
208	L	946+00.00	493835.8173	1996428.7917
209	L	947+00.00	493859.3462	1996525.9830
210	L	948+00.00	493881.1754	1996623.5700
211	L	949+00.00	493901.2981	1996721.5232
212	L	950+00.00	493919.7082	1996819.8126
213	L	951+00.00	493936.4002	1996918.4084
214	L	952+00.00	493951.3688	1997017.2804
215	L	953+00.00	493964.6096	1997116.3987
216	L	954+00.00	493976.1186	1997215.7329
217	L	955+00.00	493985.8922	1997315.2529
218	L	956+00.00	493993.9274	1997414.9283
219	L	957+00.00	494000.2218	1997514.7287
220	L	958+00.00	494004.7735	1997614.6238
221	L	959+00.00	494007.5812	1997714.5831
222	L	960+00.00	494008.6438	1997814.5762
223	L	961+00.00	494007.9612	1997914.5726
224	L	962+00.00	494005.5335	1998014.5418
225	L	963+00.00	494001.3614	1998114.4535
226	L	964+00.00	493995.4751	1998214.2790
227	L	965+00.00	493988.3654	1998314.0257
228	L	966+00.00	493980.8640	1998413.7439
229	L	967+00.00	493973.3521	1998513.4614
230	L	968+00.00	493965.8403	1998613.1788
231	L	969+00.00	493958.3284	1998712.8963
232	L	970+00.00	493950.8165	1998812.6138
233	L	971+00.00	493943.3046	1998912.3312
234	L	972+00.00	493935.7928	1999012.0487
235	L	973+00.00	493928.2809	1999111.7661
236	L	974+00.00	493920.7690	1999211.4836
237	L	975+00.00	493913.2571	1999311.2011
238	L	976+00.00	493905.7453	1999410.9185
239	L	977+00.00	493898.2334	1999510.6360
240	L	978+00.00	493890.7294	1999610.3540
241	L	979+00.00	493883.6171	1999710.1005
242	L	980+00.00	493877.8078	1999809.9303
243	L	981+00.00	493873.8785	1999909.8515
244	L	982+00.00	493871.8713	2000009.8299
245	L	983+00.00	493871.7871	2000109.8283
246	L	984+00.00	493873.6258	2000209.8098
247	L	985+00.00	493877.3867	2000309.7375
248	L	986+00.00	493883.0686	2000409.5745
249	L	987+00.00	493890.6692	2000509.2836
250	L	988+00.00	493900.1858	2000608.8282
251	L	989+00.00	493911.6148	2000708.1714
252	L	990+00.00	493924.9520	2000807.2765
253	L	991+00.00	493940.1925	2000906.1067
254	L	992+00.00	493957.3307	2001004.6256
255	L	993+00.00	493976.3601	2001102.7968
256	L	994+00.00	493997.2229	2001200.5950
257	L	995+00.00	494019.3132	2001298.1243
258	L	996+00.00	494041.7469	2001395.5755
259	L	996+86.94	494061.2552	2001480.2999
260	LOOPA1	0+00.00	478404.9412	1992793.2338
261	LOOPA1	1+00.00	478504.8885	1992795.9027
262	LOOPA1	2+00.00	478604.2683	1992786.1802
263	LOOPA1	3+00.00	478697.9648	1992752.4068
264	LOOPA1	4+00.00	478772.8439	1992687.2552
265	LOOPA1	5+00.00	478813.5299	1992596.7670
266	LOOPA1	6+00.00	478812.3156	1992497.5602
267	LOOPA1	7+00.00	478769.4272	1992408.0949
268	LOOPA1	8+00.00	478692.8450	1992345.0185
269	LOOPA1	9+00.00	478596.8193	1992320.0681
270	LOOPA1	10+00.00	478499.2182	1992337.8863
271	LOOPA1	11+00.00	478418.2030	1992395.1575
272	LOOPA1	12+00.00	478367.4983	1992480.6516
273	LOOPA1	13+00.00	478341.6160	1992577.1230
274	LOOPA1	13+25.98	478336.6394	1992602.6190
275	LOOPC1	0+00.00	478012.4984	1992905.9638
276	LOOPC1	1+00.00	477912.7706	1992912.3967
277	LOOPC1	2+00.00	477817.4016	1992940.9181
278	LOOPC1	3+00.00	477740.9241	1993004.1213
279	LOOPC1	4+00.00	477698.1839	1993093.6575
280	LOOPC1	5+00.00	477697.1341	1993192.8662
281	LOOPC1	6+00.00	477737.9699	1993283.2868
282	LOOPC1	7+00.00	477813.0928	1993348.0943
283	LOOPC1	8+00.00	477908.5241	1993375.2294
284	LOOPC1	9+00.00	478006.5064	1993359.6430
285	LOOPC1	10+00.00	478088.8073	1993304.2353
286	LOOPC1	11+00.00	478141.1892	1993219.7923
287	LOOPC1	12+00.00	478167.9312	1993123.5724
288	LOOPC1	12+31.23	478173.9466	1993092.9315
289	RAMPA1	0+00.00	480109.9139	1993134.3922
290	RAMPA1	1+00.00	480016.7448	1993098.0671
291	RAMPA1	2+00.00	479923.5756	1993061.7419
292	RAMPA1	3+00.00	479830.4065	1993025.4168
293	RAMPA1	4+00.00	479737.3501	1992988.8054
294	RAMPA1	5+00.00	479645.2321	1992949.9081
295	RAMPA1	6+00.00	479555.3167	1992906.1871
296	RAMPA1	7+00.00	479468.6922	1992856.2676
297	RAMPA1	8+00.00	479385.8512	1992800.2933
298	RAMPA1	9+00.00	479307.2162	1992738.5496
299	RAMPA1	10+00.00	479233.1327	1992671.4095
300	RAMPA1	11+00.00	479162.6584	1992600.4707
301	RAMPA1	12+00.00	479093.3807	1992528.3557
302	RAMPA1	13+00.00	479021.8017	1992458.5485
303	RAMPA1	14+00.00	478944.0718	1992395.7302
304	RAMPA1	15+00.00	478859.1843	1992342.9940
305	RAMPA1	16+00.00	478768.3843	1992301.2526
306	RAMPA1	17+00.00	478673.0887	1992271.1573
307	RAMPA1	18+00.00	478575.1270	1992251.1372
308	RAMPA1	19+00.00	478476.9328	1992232.2194
309	RAMPA1	20+00.00	478378.7385	1992213.3016
310	RAMPA1	20+01.19	478377.5703	1992213.0765
311	RAMPB1	0+00.00	476221.9491	1992953.0628
312	RAMPB1	1+00.00	476321.3683	1992942.3081
313	RAMPB1	2+00.00	476420.4440	1992928.7971
314	RAMPB1	3+00.00	476518.6980	1992910.2613
315	RAMPB1	4+00.00	476615.7712	1992886.2984
316	RAMPB1	5+00.00	476711.3640	1992856.9822
317	RAMPB1	6+00.00	476805.1815	1992822.4033
318	RAMPB1	7+00.00	476896.9343	1992782.6683
319	RAMPB1	8+00.00	476986.3391	1992737.8999
320	RAMPB1	9+00.00	477073.1201	1992688.2362
321	RAMPB1	10+00.00	477157.0095	1992633.8304
322	RAMPB1	11+00.00	477237.7485	1992574.8505
323	RAMPB1	12+00.00	477315.3304	1992511.7675
324	RAMPB1	13+00.00	477391.0161	1992446.4110
325	RAMPB1	14+00.00	477466.8883	1992381.2747
326	RAMPB1	15+00.00	477546.4077	1992320.6949
327	RAMPB1	16+00.00	477632.1929	1992269.4319
328	RAMPB1	17+00.00	477723.6998	1992229.2639
329	RAMPB1	18+00.00	477819.5007	1992200.8178
330	RAMPB1	19+00.00	477918.1006	1992184.5377
331	RAMPB1	20+00.00	478017.9609	1992180.6775
332	RAMPB1	21+00.00	478117.6519	1992188.1677
333	RAMPB1	22+00.00	478217.1959	1992197.7073
334	RAMPB1	23+00.00	478316.7398	1992207.2469
335	RAMPB1	23+61.11	478377.5703	1992213.0765
336	RAMPC1	0+00.00	476121.6969	1993082.0686
337	RAMPC1	1+00.00	476221.4987	1993075.7750
338	RAMPC1	2+00.00	476321.3004	1993069.4815
339	RAMPC1	3+00.00	476421.1086	1993063.2919
340	RAMPC1	4+00.00	476521.0071	1993058.8878
341	RAMPC1	5+00.00	476620.9933	1993059.0745
342	RAMPC1	6+00.00	476720.7967	1993065.1069
343	RAMPC1	7+00.00	476820.0729	1993076.9963
344	RAMPC1	8+00.00	476918.4784	1993094.7016
345	RAMPC1	9+00.00	477015.6728	1993118.1614
346	RAMPC1	10+00.00	477111.3199	1993147.2947
347	RAMPC1	11+00.00	477205.0888	1993182.0007
348	RAMPC1	12+00.00	477296.7314	1993221.9931
349	RAMPC1	13+00.00	477386.8164	1993265.4011
350	RAMPC1	14+00.00	477476.5448	1993309.5458
351	RAMPC1	15+00.00	477567.2099	1993351.7204
352	RAMPC1	16+00.00	477659.9117	1993389.1763
353	RAMPC1	17+00.00	477754.8840	1993420.4261
354	RAMPC1	18+00.00	477851.7272	1993445.2797
355	RAMPC1	19+00.00	477949.8086	1993464.7557
356	RAMPC1	20+00.00	478048.0029	1993483.6732
357	RAMPC1	20+83.25	478129.7505	1993499.4222
358	RAMPD1	0+00.00	480109.0440	1993258.8919
359	RAMPD1	1+00.00	480014.3391	1993226.7860
360	RAMPD1	2+00.00	479918.7621	1993197.4007
361	RAMPD1	3+00.00	479821.6887	1993173.4670
362	RAMPD1	4+00.00	479723.1664	1993156.4638
363	RAMPD1	5+00.00	479623.6819	1993146.5354
364	RAMPD1	6+00.00	479523.7425	1993143.7322
365	RAMPD1	7+00.00	479423.8578	1993148.0687
366	RAMPD1	8+00.00	479324.5373	1993159.5226
367	RAMPD1	9+00.00	479226.2876	1993178.0357
368	RAMPD1	10+00.00	479129.6096	1993203.5134
369	RAMPD1	11+00.00	479034.9964	1993235.8257
370	RAMPD1	12+00.00	478942.7097	1993274.3040
371	RAMPD1	13+00.00	478852.0876	1993316.5770
372	RAMPD1	14+00.00	478761.9942	1993359.9722
373	RAMPD1	15+00.00	478670.8432	1993401.0766
374	RAMPD1	16+00.00	478577.0901	1993435.7747
375	RAMPD1	17+00.00	478480.5946	1993461.8844
376	RAMPD1	18+00.00	478382.1271	1993479.1261
377	RAMPD1	19+00.00	478282.5472	1993488.1065
378	RAMPD1	20+00.00	478182.8203	1993495.4920
379	RAMPD1	20+53.22	478129.7505	1993499.4222
380	LOOPA2	0+00.00	493795.9333	1996112.8221
381	LOOPA2	1+00.00	493827.8393	1996207.5717
382	LOOPA2	2+00.00	493872.8325	1996296.6622
383	LOOPA2	3+00.00	493940.8780	1996369.2135
384	LOOPA2	4+00.00	494032.3892	1996407.0263
385	LOOPA2	5+00.00	494130.8036	1996396.6339
386	LOOPA2	6+00.00	494212.1880	1996340.3313
387	LOOPA2	7+00.00	494256.6166	1996251.9034
388	LOOPA2	8+00.00	494253.2117	1996153.0004
389	LOOPA2	9+00.00	494202.8071	1996067.8372
390	LOOPA2	10+00.00	494117.7434	1996017.2648
391	LOOPA2	11+00.00	494018.8473	1996013.6650
392	LOOPA2	12+00.00	493928.5758	1996055.1562
393	LOOPA2	13+00.00	493852.1506	1996119.5071
394	LOOPA2	13+07.63	493846.5764	1996124.7158
395	PC2_RE	0+00.00	493706.1140	1996140.5444
396	PC2_RE	1+00.00	493671.4228	1996046.8627
397	PC2_RE	2+00.00	493612.0532	1995967.3178
398	PC2_RE	3+00.00	493521.8672	1995927.1693
399	PC2_RE	4+00.00	493424.0695	1995940.6244
400	PC2_RE	5+00.00	493348.0762	1996003.6360
401	PC2_RE	6+00.00	493316.7450	1996097.2511
402	PC2_RE	7+00.00	493339.4999	1996193.3117

PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	1-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
403	LPC2_REV	8+00.00	493409.4964	1996262.9243
404	LPC2_REV	9+00.00	493505.6808	1996285.1504
405	LPC2_REV	10+00.00	493599.9813	1996254.9507
406	LPC2_REV	11+00.00	493678.8550	1996193.7904
407	LPC2_REV	11+26.19	493698.0458	1996175.9630
408	RAMPA2	0+00.00	494054.3872	1997946.4437
409	RAMPA2	1+00.00	494059.0979	1997846.5547
410	RAMPA2	2+00.00	494063.8086	1997746.6658
411	RAMPA2	3+00.00	494068.5193	1997646.7768
412	RAMPA2	4+00.00	494073.2301	1997546.8878
413	RAMPA2	5+00.00	494077.9408	1997446.9988
414	RAMPA2	6+00.00	494082.9490	1997347.1249
415	RAMPA2	7+00.00	494090.7323	1997247.4366
416	RAMPA2	8+00.00	494103.5239	1997148.2696
417	RAMPA2	9+00.00	494121.4880	1997049.9080
418	RAMPA2	10+00.00	494144.5753	1996952.6213
419	RAMPA2	11+00.00	494172.3382	1996856.5592
420	RAMPA2	12+00.00	494202.1926	1996761.1198
421	RAMPA2	13+00.00	494232.1769	1996665.7209
422	RAMPA2	14+00.00	494262.1600	1996570.3216
423	RAMPA2	15+00.00	494290.6772	1996474.4818
424	RAMPA2	16+00.00	494311.8766	1996376.8063
425	RAMPA2	17+00.00	494319.0992	1996277.1847
426	RAMPA2	18+00.00	494309.3408	1996177.7843
427	RAMPA2	19+00.00	494282.8157	1996081.4926
428	RAMPA2	20+00.00	494240.2972	1995991.1164
429	RAMPA2	21+00.00	494184.3790	1995908.2704
430	RAMPA2	22+00.00	494126.2747	1995826.8831
431	RAMPA2	22+05.50	494123.0802	1995822.4084
432	RAMPB2	0+00.00	492537.6948	1993922.5134
433	RAMPB2	1+00.00	492604.7259	1993996.7205
434	RAMPB2	2+00.00	492671.1126	1994071.5054
435	RAMPB2	3+00.00	492737.3914	1994146.3861
436	RAMPB2	4+00.00	492803.6702	1994221.2668
437	RAMPB2	5+00.00	492869.9490	1994296.1475
438	RAMPB2	6+00.00	492936.2279	1994371.0282
439	RAMPB2	7+00.00	493002.3308	1994446.0639
440	RAMPB2	8+00.00	493067.8259	1994521.6307
441	RAMPB2	9+00.00	493132.6889	1994597.7407
442	RAMPB2	10+00.00	493196.9154	1994674.3886
443	RAMPB2	11+00.00	493260.5010	1994751.5690
444	RAMPB2	12+00.00	493323.4412	1994829.2766
445	RAMPB2	13+00.00	493385.7317	1994907.5060
446	RAMPB2	14+00.00	493447.3681	1994986.2517
447	RAMPB2	15+00.00	493508.5055	1995065.3859
448	RAMPB2	16+00.00	493569.6122	1995144.5438
449	RAMPB2	17+00.00	493630.7189	1995223.7017
450	RAMPB2	18+00.00	493691.8255	1995302.8596
451	RAMPB2	19+00.00	493752.9322	1995382.0175
452	RAMPB2	20+00.00	493814.0389	1995461.1754
453	RAMPB2	21+00.00	493875.1455	1995540.3334
454	RAMPB2	22+00.00	493936.2522	1995619.4913
455	RAMPB2	23+00.00	493997.3588	1995698.6492
456	RAMPB2	24+00.00	494058.4655	1995777.8071
457	RAMPB2	24+77.05	494105.5485	1995838.7986
458	RAMPC2	0+00.00	492981.4961	1994635.0186
459	RAMPC2	1+00.00	493031.5550	1994721.5871
460	RAMPC2	2+00.00	493081.6140	1994808.1556
461	RAMPC2	3+00.00	493131.2877	1994894.9444
462	RAMPC2	4+00.00	493177.8184	1994983.4442
463	RAMPC2	5+00.00	493217.7835	1995075.0798
464	RAMPC2	6+00.00	493250.0232	1995169.7099
465	RAMPC2	7+00.00	493274.3146	1995266.6852
466	RAMPC2	8+00.00	493290.4907	1995365.3392
467	RAMPC2	9+00.00	493298.4403	1995464.9939
468	RAMPC2	10+00.00	493298.1088	1995564.9648
469	RAMPC2	11+00.00	493289.5116	1995664.5662
470	RAMPC2	12+00.00	493274.2454	1995763.3849
471	RAMPC2	13+00.00	493256.6936	1995861.8325
472	RAMPC2	14+00.00	493240.8976	1995960.5627
473	RAMPC2	15+00.00	493236.3984	1996060.3410
474	RAMPC2	16+00.00	493250.7671	1996159.1409
475	RAMPC2	17+00.00	493284.1454	1996253.2354
476	RAMPC2	18+00.00	493335.2489	1996339.0042
477	RAMPC2	19+00.00	493397.3191	1996417.4040
478	RAMPC2	19+61.19	493435.4764	1996465.2432
479	RAMPD2	0+00.00	493946.6961	1998008.6000
480	RAMPD2	1+00.00	493948.7352	1997908.6238

Point #	Chain	Station	Northing (Y)	Easting (X)
481	RAMPD2	2+00.00	493947.1952	1997808.6436
482	RAMPD2	3+00.00	493941.1524	1997708.8350
483	RAMPD2	4+00.00	493930.5806	1997609.4040
484	RAMPD2	5+00.00	493915.5018	1997510.5562
485	RAMPD2	6+00.00	493895.9469	1997412.4955
486	RAMPD2	7+00.00	493871.9565	1997315.4247
487	RAMPD2	8+00.00	493843.5801	1997219.5443
488	RAMPD2	9+00.00	493810.8763	1997125.0523
489	RAMPD2	10+00.00	493773.9127	1997032.1439
490	RAMPD2	11+00.00	493732.7655	1996941.0111
491	RAMPD2	12+00.00	493687.5199	1996851.8421
492	RAMPD2	13+00.00	493638.2693	1996764.8210
493	RAMPD2	14+00.00	493585.1157	1996680.1277
494	RAMPD2	15+00.00	493528.6825	1996597.5769
495	RAMPD2	16+00.00	493471.1112	1996515.8117
496	RAMPD2	16+61.86	493435.4764	1996465.2432
497	L	32+00.00	494056.8529	2001461.4692
498	L	33+00.00	494079.2914	2001558.9193
499	L	34+00.00	494101.7299	2001656.3693
500	L	35+00.00	494124.1683	2001753.8194
501	L	36+00.00	494146.6068	2001851.2695
502	L	37+00.00	494169.0453	2001948.7195
503	L	38+00.00	494191.4837	2002046.1696
504	L	39+00.00	494213.9222	2002143.6197
505	L	40+00.00	494236.3607	2002241.0697
506	L	41+00.00	494258.7991	2002338.5198
507	L	42+00.00	494281.2376	2002435.9699
508	L	43+00.00	494303.6761	2002533.4199
509	L	44+00.00	494326.1145	2002630.8700
510	L	45+00.00	494348.5530	2002728.3201
511	L	46+00.00	494370.9914	2002825.7701
512	L	47+00.00	494393.4299	2002923.2202
513	L	48+00.00	494415.8684	2003020.6703
514	L	49+00.00	494438.3068	2003118.1203
515	L	50+00.00	494460.7453	2003215.5704
516	L	51+00.00	494483.1838	2003313.0205
517	L	52+00.00	494505.6222	2003410.4705
518	L	53+00.00	494528.0607	2003507.9206
519	L	54+00.00	494550.4992	2003605.3707
520	L	55+00.00	494572.9376	2003702.8207
521	L	56+00.00	494595.3761	2003800.2708
522	L	57+00.00	494617.8146	2003897.7209
523	L	58+00.00	494640.2530	2003995.1709
524	L	59+00.00	494662.6915	2004092.6210
525	L	60+00.00	494685.1299	2004190.0711
526	L	61+00.00	494707.5684	2004287.5211
527	L	62+00.00	494730.0069	2004384.9712
528	L	63+00.00	494752.4453	2004482.4213
529	L	64+00.00	494774.8838	2004579.8713
530	L	65+00.00	494797.3223	2004677.3214
531	L	66+00.00	494819.7607	2004774.7714
532	L	67+00.00	494842.1992	2004872.2215
533				
534	COL1	60+00.00	494628.7702	2004204.1055
535	COL1	61+00.00	494651.0628	2004301.5890
536	COL1	62+00.00	494672.8086	2004399.1957
537	COL1	63+00.00	494693.7271	2004496.9831
538	COL1	64+00.00	494713.7919	2004594.9491
539	COL1	65+00.00	494733.0016	2004693.0863
540	COL1	66+00.00	494751.5543	2004791.3502
541	COL1	67+00.00	494770.0638	2004889.6223

Point #	Chain	Station	Northing (Y)	Easting (X)
542	COL2	43+00.00	494371.9551	2002518.3874
543	COL2	44+00.00	494394.7615	2002615.7520
544	COL2	45+00.00	494417.9923	2002713.0161
545	COL2	46+00.00	494441.6470	2002810.1780
546	COL2	47+00.00	494465.7252	2002907.2359
547	COL2	48+00.00	494490.2263	2003004.1878
548	COL2	49+00.00	494515.1500	2003101.0320
549	COL2	50+00.00	494540.4957	2003197.7666
550	COL2	51+00.00	494566.2630	2003294.3897
551	COL2	52+00.00	494592.4461	2003390.9010
552	COL2	53+00.00	494618.7779	2003487.3719
553	COL2	54+00.00	494645.1097	2003583.8428
554	COL2	55+00.00	494671.2618	2003680.3625
555	COL2	56+00.00	494696.9940	2003776.9950
556	COL2	57+00.00	494722.3046	2003873.7388
557	COL2	58+00.00	494747.1931	2003970.5920
558	COL2	59+00.00	494771.6590	2004067.5529
559	COL2	60+00.00	494795.7019	2004164.6195
560	COL2	61+00.00	494819.3213	2004261.7900
561	COL2	62+00.00	494842.5168	2004359.0625
562	COL2	63+00.00	494865.2878	2004456.4353
563	COL2	64+00.00	494887.7433	2004553.8815
564	COL2	65+00.00	494910.1818	2004651.3315
565	COL2	66+00.00	494932.6203	2004748.7816
566	COL2	67+00.00	494955.0587	2004846.2317

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

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

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

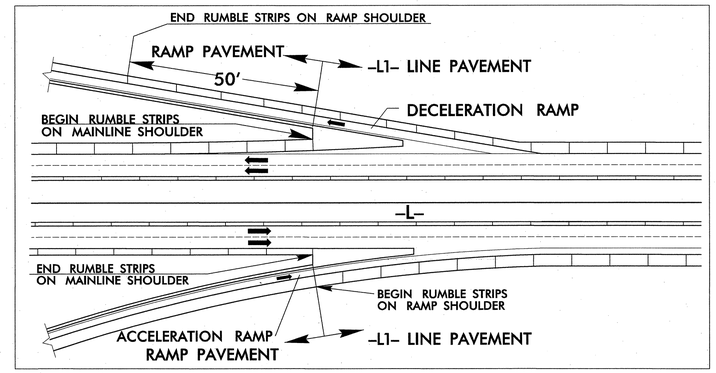
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DONG-CHI CHEN 5/16/14

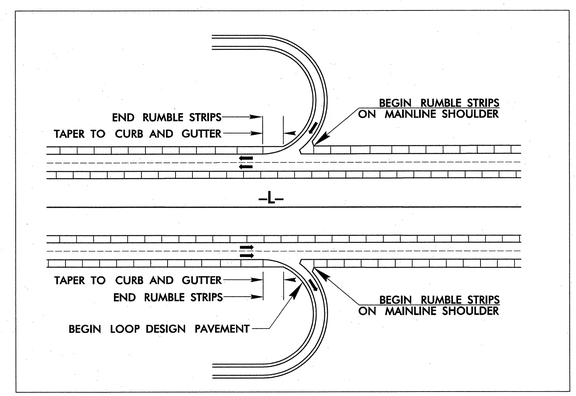
FINAL PAVEMENT SCHEDULE

A1	PROP. APPROX. 12" PORTLAND CEMENT CONCRETE PAVEMENT WITH DOWELS.	J2	PROP. 10" AGGREGATE BASE COURSE.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER.	J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB AND GUTTER.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R2	4' CONCRETE EXPRESSWAY GUTTER.
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD. IN ONE LAYER.	R4	SINGLE FACED CONCRETE BARRIER.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN ONE LAYER.	R5	CONCRETE VALLEY GUTTER.
D3	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN ONE LAYER.	R6	1'-6" MODIFIED CONCRETE CURB AND GUTTER.
D4	PROP. APPROX. 3½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN ONE LAYER.	R7	6" CONCRETE CURB.
D5	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN ONE LAYER.	R8	SHOULDER BERM GUTTER
D6	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R9	DOUBLE FACED CONCRETE BARRIER
D7	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	S	4" CONCRETE SIDEWALK.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN ONE LAYER.	T	EARTH MATERIAL.
E3	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN ONE LAYER.	U	EXISTING PAVEMENT.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	V1	ASPHALT MILLED RUMBLE STRIPS
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2-G).
J1	PROP. 8" AGGREGATE BASE COURSE.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2-I).

**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



DETAIL SHOWING LIMITS OF PAVEMENT DESIGN & RUMBLE STRIP TREATMENT AT RAMP TERMINAL
REFER TO STD DRAWING NO. 665.01



DETAIL SHOWING LIMITS OF PAVEMENT DESIGN & RUMBLE STRIP TREATMENT AT LOOP TERMINALS
REFER TO STD DRAWING NO. 665.01

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5/2/2014
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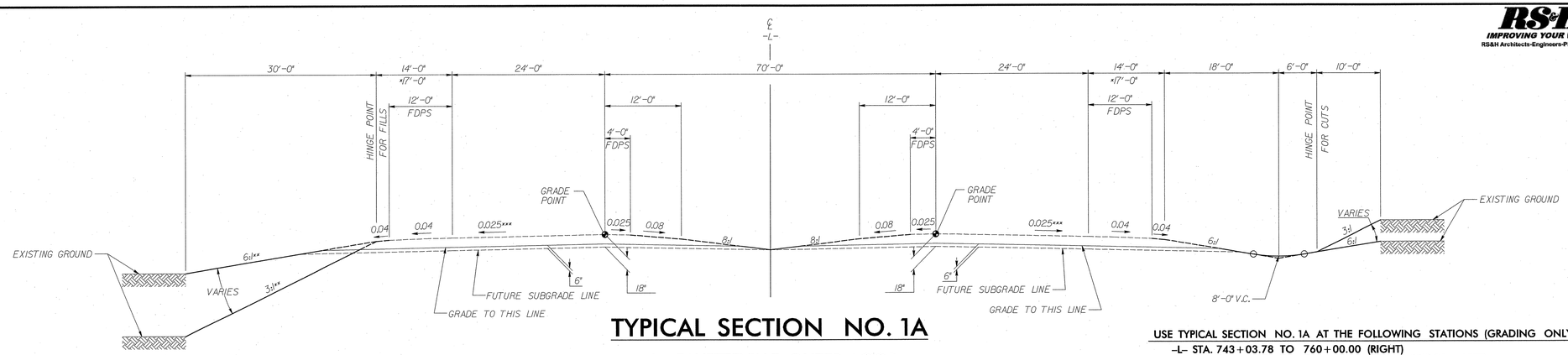
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON CHI CHENG — 5/16/14



TYPICAL SECTION NO. 1A

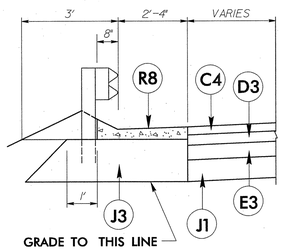
-L- FAYETTEVILLE OUTER LOOP

USE TYPICAL SECTION NO. 1A AT THE FOLLOWING STATIONS (GRADING ONLY)

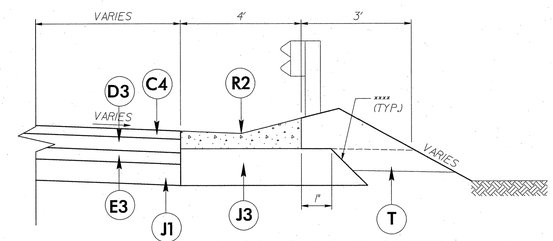
-L- STA. 743+03.78 TO 760+00.00 (RIGHT)
-L- STA. 743+03.78 TO 764+45.95 (BEGIN BRIDGE - LEFT)
-L- STA. 766+20.76 (END BRIDGE - LEFT) TO 777+80.00 (LEFT)

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1, 2, 3, 4, 5, 6

-L- STA. 831+40.00 (LT.) TO -L- 831+60.00 (LT.)
-L- STA. 831+40.00 (RT.) TO -L- 831+60.00 (RT.)
-L- STA. 846+68.75 (RT.) TO -L- 854+23.00 (RT.)
-L- STA. 884+50.00 (RT.) TO -L- 893+21.00 (RT.)
-L- STA. 902+15.00 (LT.) TO -L- 902+40.00 (LT.)
-L- STA. 961+96.00 (RT.) TO -L- 966+77.00 (RT.)
-L- STA. 47+24.00 (RT.) TO -L- 51+84.00 (RT.)
-COL1- STA. 71+52.00 (RT.) TO -COL1- 79+67.00 (RT.)
-COL1- STA. 87+10.00 (RT.) TO -COL1- 87+81.00 (RT.)



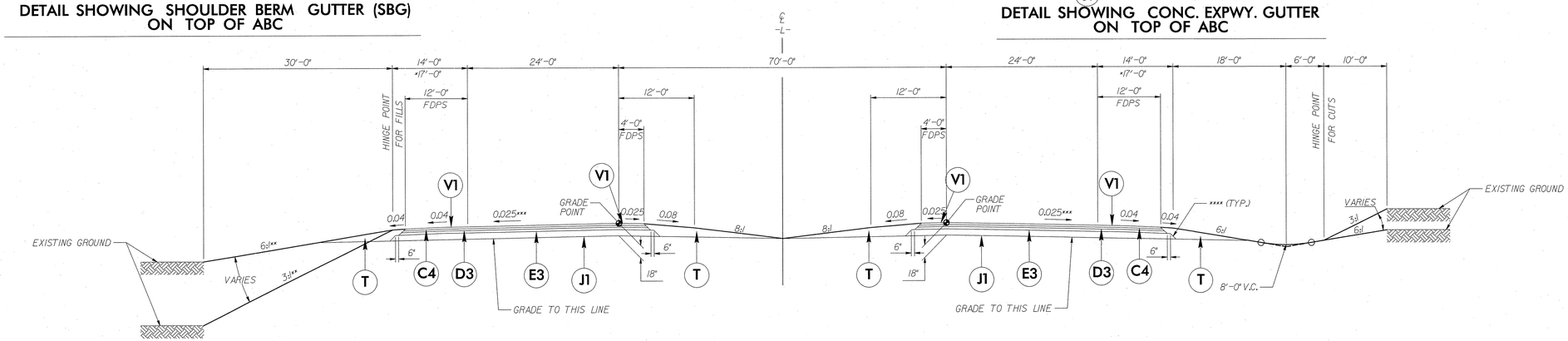
DETAIL SHOWING SHOULDER BERM GUTTER (SBG) ON TOP OF ABC



DETAIL SHOWING CONC. EXPWY. GUTTER ON TOP OF ABC

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1, 3

-L- STA. 766+24.00 (RT.) TO -L- 766+61.00 (RT.)
-L- STA. 902+17.00 (RT.) TO -L- 902+41.00 (RT.)



TYPICAL SECTION NO. 1

-L- FAYETTEVILLE OUTER LOOP

USE TYPICAL SECTION NO. 1 AT THE FOLLOWING STATIONS

-L- STA. 760+00.00 (RIGHT) TO 764+35.98 (BEGIN BRIDGE - RIGHT)
-L- STA. 766+06.91 (END BRIDGE - RIGHT) TO 777+80.00 (RIGHT)
-L- STA. 777+80.00 TO 784+86.70
-L- STA. 995+31.20 TO 996+82.82 (LT.)
-L- STA. 995+90.72 TO 996+82.82 (RT.)

NOTES:
* SHOULDER WIDTH INCREASED 3' WHERE GUARDRAIL IS USED
** FILL SLOPES WITHIN THE INTERCHANGES WILL BE 4:1 OR FLATTER.
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

C4	3" ACSC TYPE S9.5C
D3	3" ACIC TYPE I19.0C
E3	4" ACBC TYPE B25.0C
E4	VAR. ACBC TYPE B25.0B
J1	8" ABC
J3	VAR. ABC
R2	4' CONC. EXPWY. GUTTER
R8	SHOULDER BERM GUTTER
T	EARTH MATERIAL
V1	ASPH. RUMBLE STRIPS

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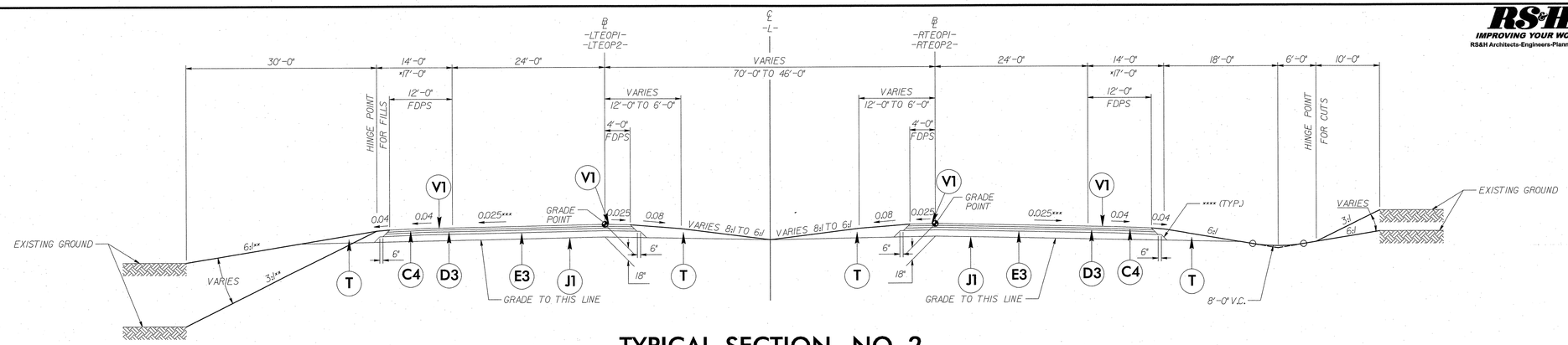
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 5/16/14

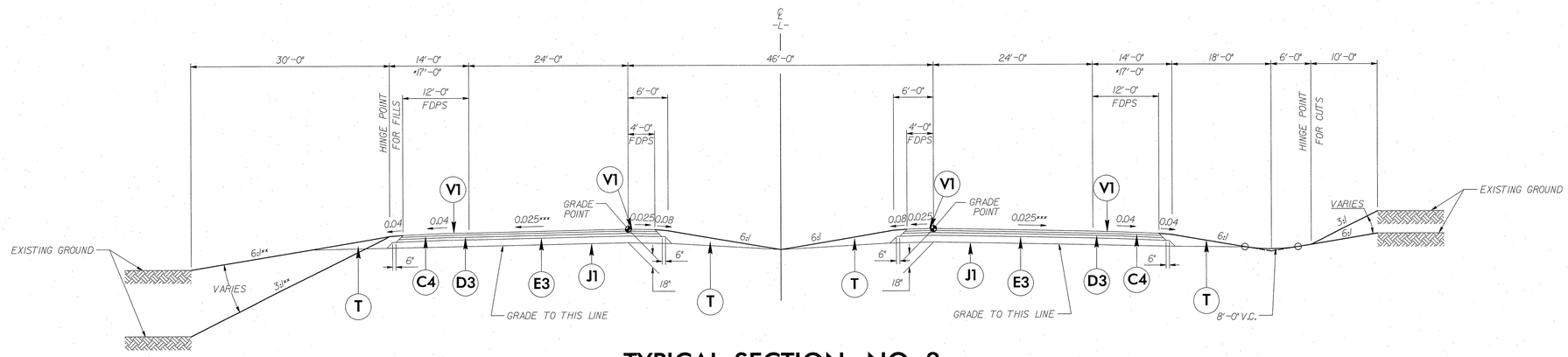


TYPICAL SECTION NO. 2

-L- FAYETTEVILLE OUTER LOOP

USE TYPICAL SECTION NO. 2 AT THE FOLLOWING STATIONS

-L- STA. 784+86.70 TO 795+35.47
-L- STA. 977+68.90 (LT.) TO 995+31.20 (LT.)
-L- STA. 977+63.39 (RT.) TO 995+90.72 (RT.)



TYPICAL SECTION NO. 3

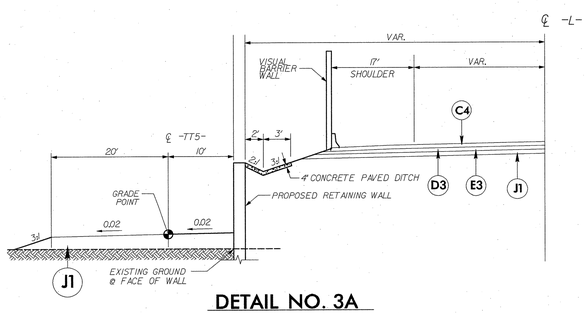
-L- FAYETTEVILLE OUTER LOOP

USE TYPICAL SECTION NO. 3 AT THE FOLLOWING STATIONS

-L- STA. 795+35.47 TO 821+14.63 (BEGIN BRIDGE)
-L- STA. 831+15.34 (END BRIDGE – LEFT) TO 894+20.99 (BEGIN BRIDGE – LEFT)
-L- STA. 831+15.41 (END BRIDGE – RIGHT) TO 893+76.24 (BEGIN BRIDGE – RIGHT)
-L- STA. 902+57.75 (END BRIDGE – LEFT) TO 968+83.97 (BEGIN BRIDGE – LEFT)
-L- STA. 902+24.59 (END BRIDGE – RIGHT) TO 968+00.78 (BEGIN BRIDGE – RIGHT)
-L- STA. 970+90.97 (END BRIDGE – LEFT) TO 977+68.90 (LT.)
-L- STA. 970+07.78 (END BRIDGE – RIGHT) TO 977+63.39 (RT.)

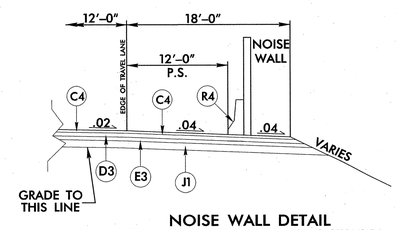
NOTE: -L- STA. 996+82.82 LB = -L- STA. 32+15.22 LA

NOTES:
* SHOULDER WIDTH INCREASED 3' WHERE GUARDRAIL IS USED
** FILL SLOPES WITHIN THE INTERCHANGES WILL BE 4:1 OR FLATTER.
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



DETAIL NO. 3A

USE DETAIL NO. 3A WITH
TYPICAL SECTION NO. 3 AT THE FOLLOWING STATIONS
-L- STA. 956+50.00 TO 970+00.00



NOISE WALL DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTIONS IN AREAS WHERE NOISE WALL IS SPECIFIED IN PLANS
-L- STA. 794+89.54 TO 820+83.24
-L- STA. 969+50.59 TO 985+75.02

C4	3" ACSC TYPE S9.5C
D3	3" ACIC TYPE I19.0C
E3	4" ACBC TYPE B25.0C
J1	8" ABC
R4	SINGLE FACED BARRIER
T	EARTH MATERIAL
V1	ASPH. RUMBLE STRIPS

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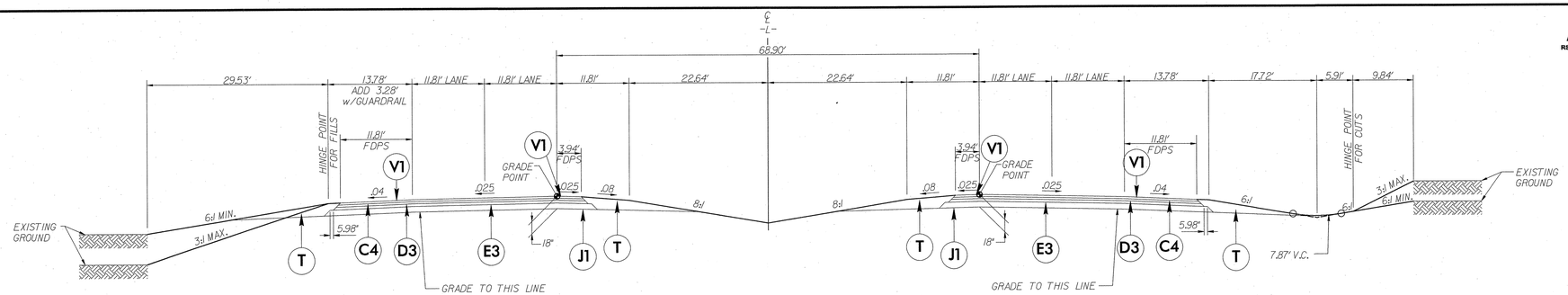
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER YUAN-CHI CHEN 5/16/14



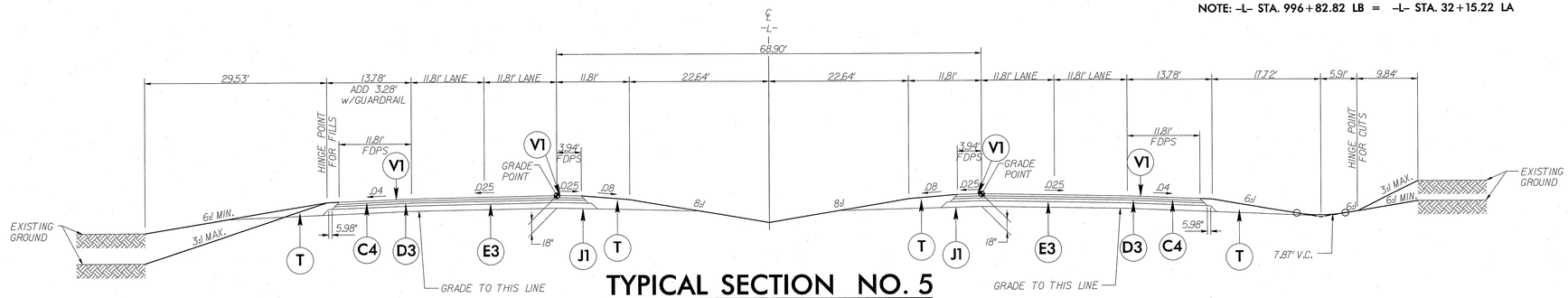
TYPICAL SECTION NO. 4

-L- FAYETTEVILLE OUTER LOOP

USE TYPICAL SECTION NO. 4 AT THE FOLLOWING STATIONS

-L- STA. 32+15.22 TO 88+45.35 (BEGIN BRIDGE - LEFT)
-L- STA. 32+15.22 TO 88+32.21 (BEGIN BRIDGE - RIGHT)

NOTE: -L- STA. 996+82.82 LB = -L- STA. 32+15.22 LA

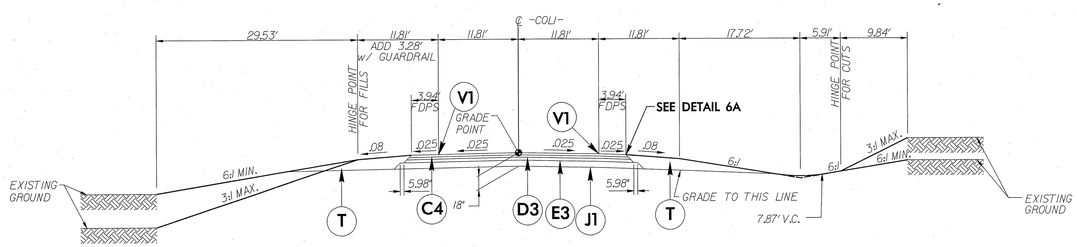


TYPICAL SECTION NO. 5

-L- FAYETTEVILLE OUTER LOOP

USE TYPICAL SECTION NO. 5 AT THE FOLLOWING STATIONS

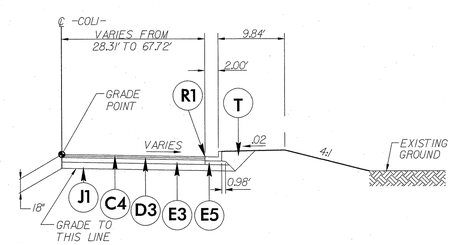
-L- STA. 95+32.03 (END BRIDGE - LEFT) TO 103+01.82
-L- STA. 95+43.49 (END BRIDGE - RIGHT) TO 103+01.82



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AT THE FOLLOWING STATIONS

-COL1- STA. 72+78.78 TO 88+05.34 (BEGIN BRIDGE)
-COL1- STA. 95+57.02 (END BRIDGE) TO 103+02.06



DETAIL NO. 6A

USE DETAIL NO. 6A WITH TYPICAL SECTION NO. 6 AT THE FOLLOWING STATIONS

-COL1- STA. 95+57.02 (END BRIDGE) TO 99+33.36

C4	3" ACSC TYPE S9.5C
D3	3" ACIC TYPE I19.0C
E3	4" ACBC TYPE B25.0C
E5	VAR. ACBC TYPE B25.0C
J1	8" ABC
R1	2'-6" CURB & GUTTER
T	EARTH MATERIAL
V1	ASPH. RUMBLE STRIPS

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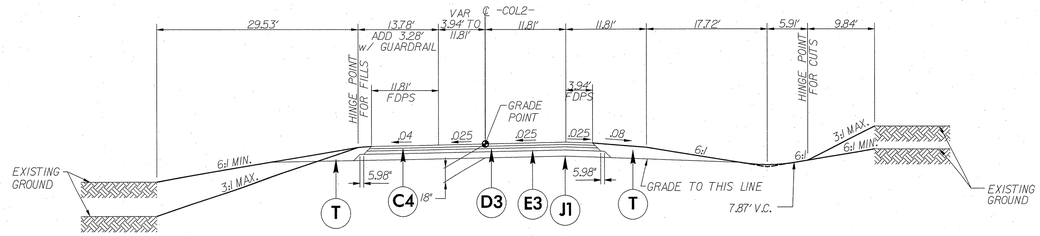
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-D

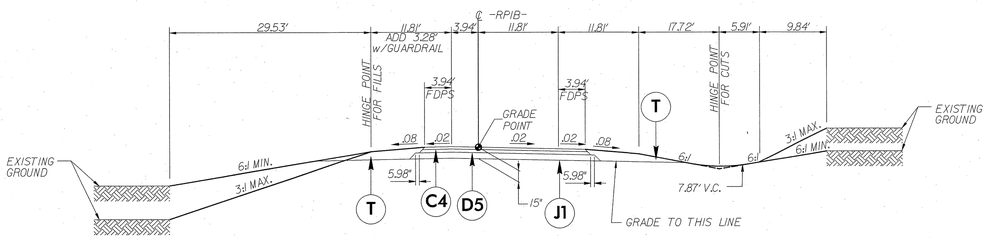
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 5/16/14



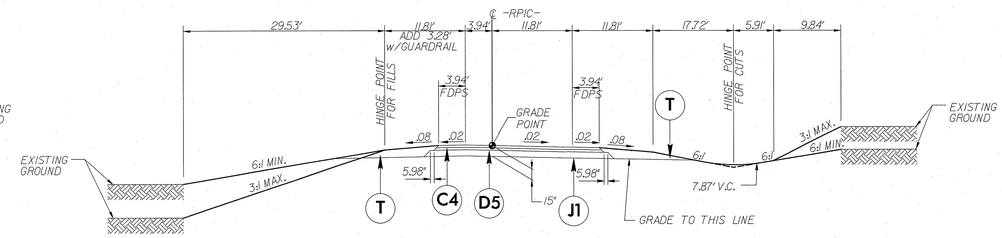
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AT THE FOLLOWING STATIONS
-COL2- STA. 54+09.98 TO 89+12.67 (END PAVING)



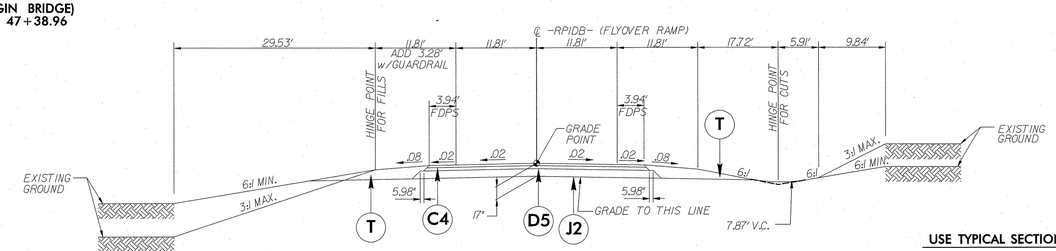
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AT THE FOLLOWING STATIONS
-RP1B- STA. 35+72.05 TO 41+22.56 (BEGIN BRIDGE)
-RP1B- STA. 42+65.52 (END BRIDGE) TO 47+38.96



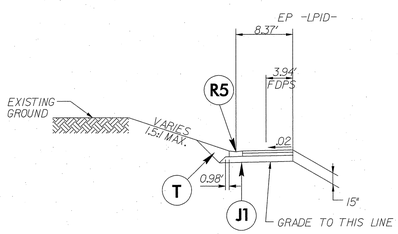
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 AT THE FOLLOWING STATIONS
-RP1C- STA. 37+72.37 TO 41+14.17 (BEGIN BRIDGE)
-RP1C- STA. 49+01.57 (END BRIDGE) TO 51+10.17



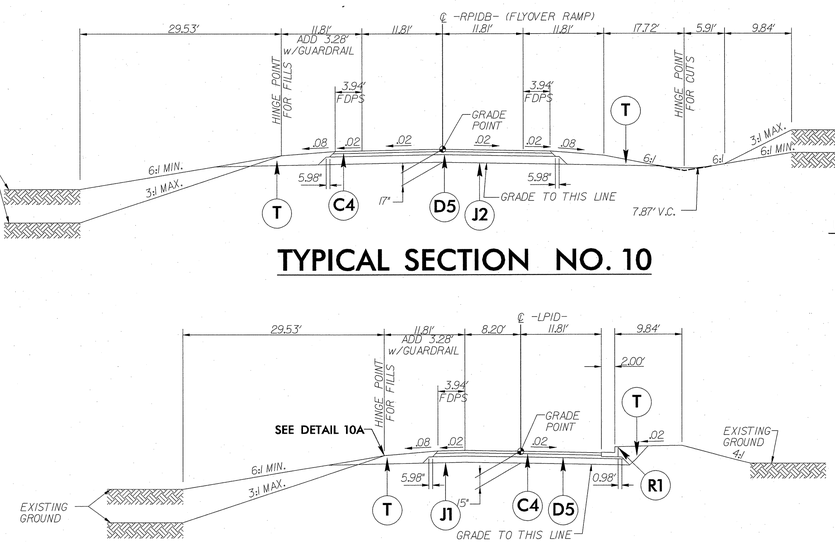
TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 AT THE FOLLOWING STATIONS
-RP1DB- STA. 44+41.67 TO 47+93.07 (BEGIN BRIDGE)
-RP1DB- STA. 63+93.07 (END BRIDGE) TO 77+25.25



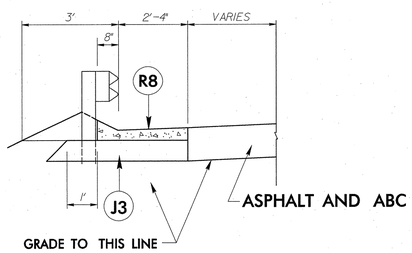
DETAIL NO. 11A

USE DETAIL NO. 11A WITH
TYPICAL SECTION NO. 11 AT THE FOLLOWING STATIONS
-LP1D- STA. 36+90.94 TO 38+48.13



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 AT THE FOLLOWING STATIONS
-LP1D- STA. 35+73.57 TO 45+65.11



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

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 7, 9, 10

-COL2-	STA. 50+10.00 (LT.) TO	-COL2-	54+49.00 (LT.)
-COL2-	STA. 61+48.00 (LT.) TO	-COL2-	69+18.00 (LT.)
-RP1DB-	STA. 44+41.00 (LT.) TO	-RP1DB-	47+69.00 (LT.)
-RP1DB-	STA. 64+17.00 (LT.) TO	-RP1DB-	64+27.00 (LT.)
-RP1DB-	STA. 76+11.00 (RT.) TO	-RP1DB-	82+09.00 (RT.)
-RP1C-	STA. 32+80.00 (RT.) TO	-RP1C-	40+90.00 (RT.)
-RP1C-	STA. 49+25.00 (RT.) TO	-RP1C-	52+10.00 (RT.)

C4	3" ACSC TYPE S9.5C
D3	3" ACIC TYPE I19.0C
D5	4" ACIC TYPE I19.0C
E3	4" ACBC TYPE B25.0C
J1	8" ABC
J2	10" ABC
J3	VAR. ABC
R1	2'-6" CURB & GUTTER
R5	CONC. VLY. GUTTER
R8	SHOULDER BERM GUTTER
T	EARTH MATERIAL

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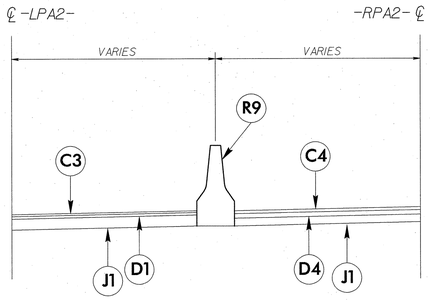
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

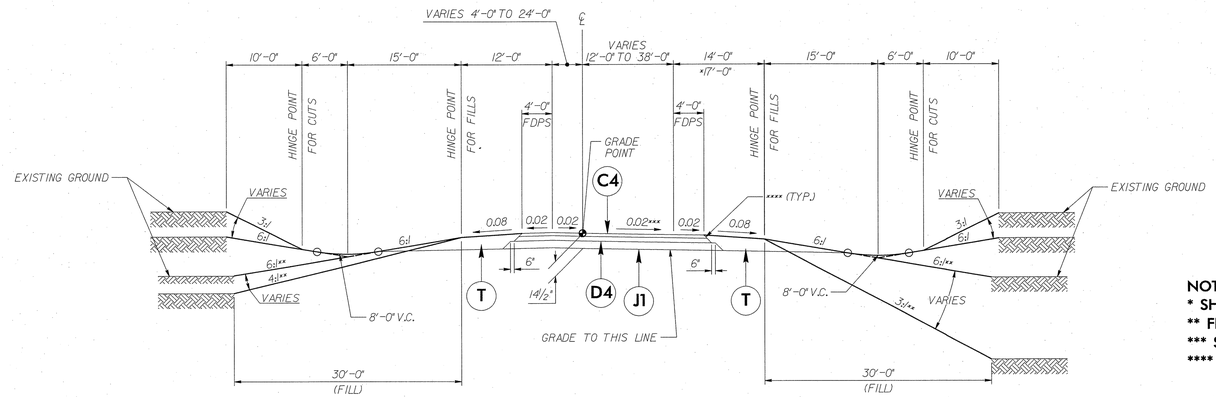
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-DAY CHEN 5/16/14



DETAIL NO. 12A

USE DETAIL NO. 12A WITH
TYPICAL SECTION NO. 12 & NO. 16 AT THE FOLLOWING STATIONS

-RPA2- STA. 17+03 TO 19+65
-LPC2- STA. 6+80 TO 9+03

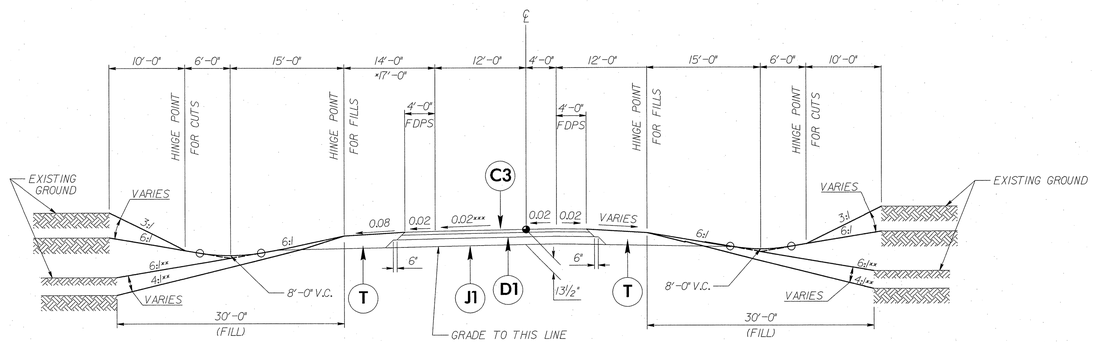


TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 AT THE FOLLOWING STATIONS

-RPA2- STA. 5+15.13 TO 21+73.22

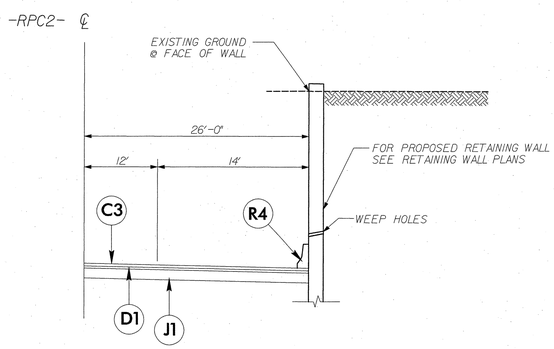
NOTES:
* SHOULDER WIDTH INCREASED 3' WHERE GUARDRAIL IS USED
** FILL SLOPES WITHIN THE INTERCHANGES WILL BE 4:1 OR FLATTER.
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 AT THE FOLLOWING STATIONS

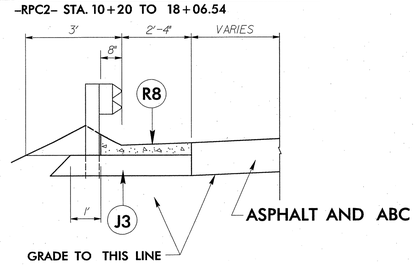
-RPB2- STA. 7+08.53 TO 24+20.80
-RPD2- STA. 5+52.43 TO 16+17.45



DETAIL NO. 14A

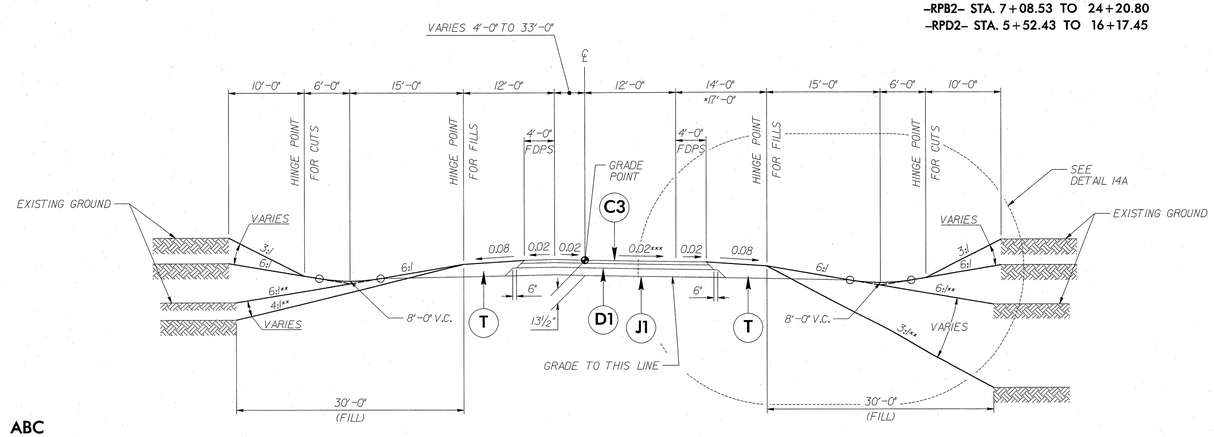
USE DETAIL NO. 14A WITH
TYPICAL SECTION NO. 14 AT THE FOLLOWING STATIONS

-RPC2- STA. 10+20 TO 18+06.54



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

-RPD2- STA. 0+00.00 (LT.) TO -RPD2- 8+00.00 (LT.)
-RPA2- STA. 6+71.00 (RT.) TO -RPA2- 8+90.00 (RT.)



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 AT THE FOLLOWING STATIONS

-RPC2- STA. 5+55.45 TO 19+29.09

C3	3" ACSC TYPE S9.5B
C4	3" ACSC TYPE S9.5C
D1	2½" ACIC TYPE I19.0B
D4	3½" ACIC TYPE I19.0C
J1	8" ABC
J3	VAR. ABC
R4	SINGLE FACED BARRIER
R8	SHOULDER BERM GUTTER
R9	DOUBLE FACED CONCRETE BARRIER
T	EARTH MATERIAL

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-F

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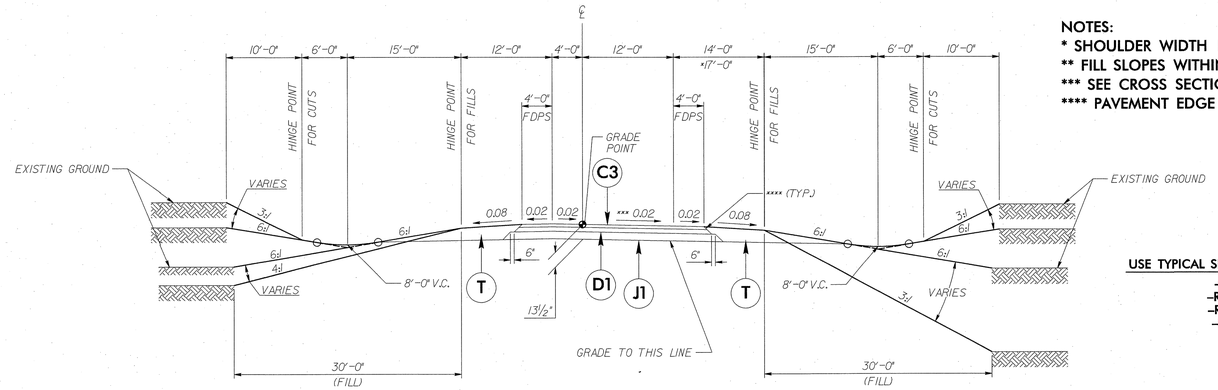
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

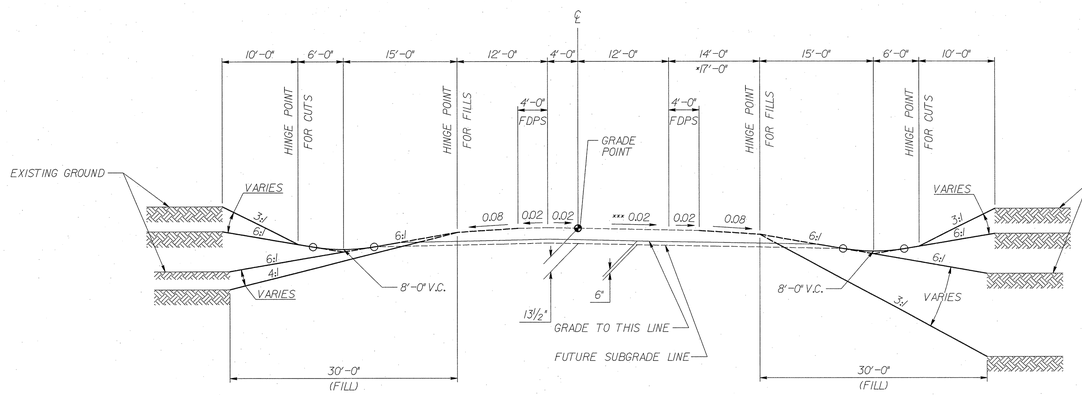
PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 5/16/14

NOTES:
* SHOULDER WIDTH INCREASED 3' WHERE GUARDRAIL IS USED
** FILL SLOPES WITHIN THE INTERCHANGES WILL BE 4:1 OR FLATTER.
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



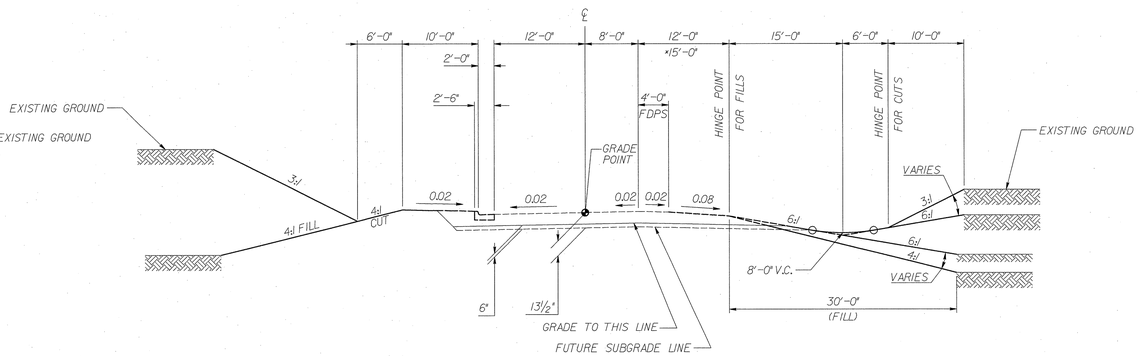
USE TYPICAL SECTION NO. 15 AT THE FOLLOWING STATIONS
-RPA1- STA. 5+03.61 TO 19+67.61
-RPB1- STA. 21+00.00 TO 23+27.67
-RPC1- STA. 18+41.33 TO 20+49.94
-RPD1- STA. 4+57.41 TO 20+18.57

TYPICAL SECTION NO. 15



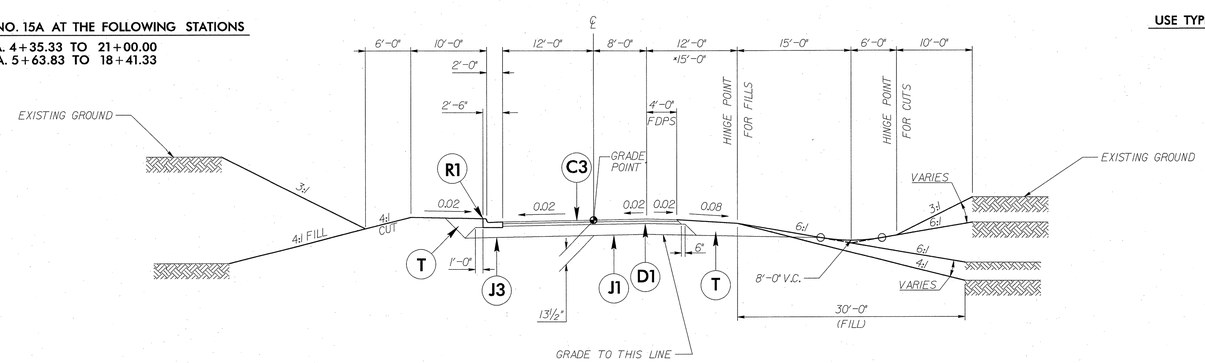
TYPICAL SECTION NO. 15A

USE TYPICAL SECTION NO. 15A AT THE FOLLOWING STATIONS
-RPB1- STA. 4+35.33 TO 21+00.00
-RPC1- STA. 5+63.83 TO 18+41.33



TYPICAL SECTION NO. 16A

USE TYPICAL SECTION NO. 16A AT THE FOLLOWING STATIONS
-LPA1- STA. 2+44.57 TO 9+97.84



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16 AT THE FOLLOWING STATIONS
-LPA1- STA. 9+97.84 TO 11+03.84
-LPC1- STA. 2+16.33 TO 10+09.53
-LPA2- STA. 2+34.36 TO 10+93.45
-LPC2_REV- STA. 1+98.42 TO 9+19.13

C3	3" ACSC TYPE S9.5B
D1	2½" ACIC TYPE I19.0B
J1	8" ABC
J3	VAR. ABC
R1	2'-6" CURB & GUTTER
T	EARTH MATERIAL

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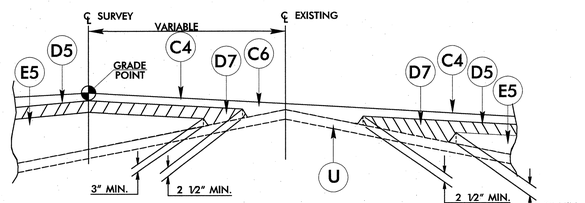
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-G
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

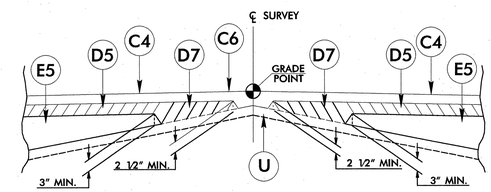
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 5/16/14

NOTE: SEE TYPICAL SECTION 19 ON SHEET 2-H FOR -Y1- CANOPY LANE, -Y1- STA. 23+65.00 TO 41+16.00

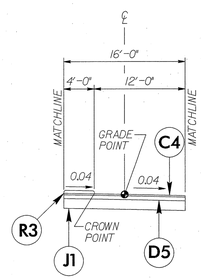


Detail Showing Method Of Wedging



Detail Showing Method of Wedging

WEDGING DETAIL W1

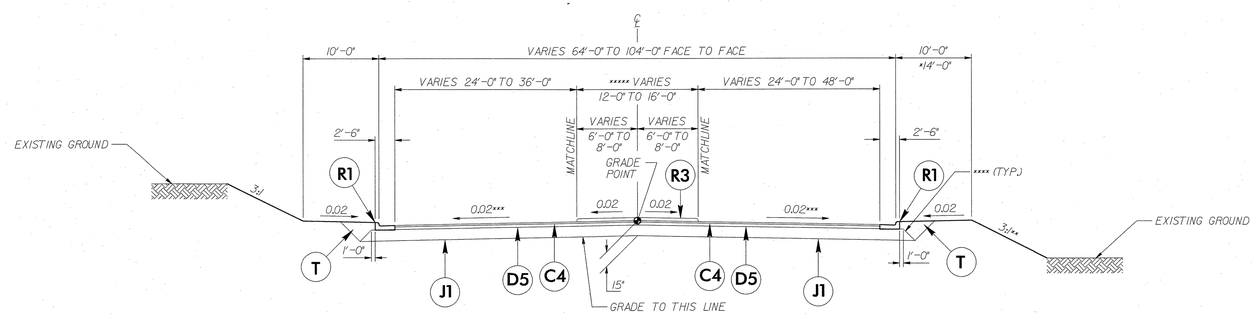


USE DETAIL NO. 17B WITH TYPICAL SECTION NO. 17 AT THE FOLLOWING STATIONS

-Y1- STA. 57+00.00 TO 61+04.99

DETAIL NO. 17B

-Y1- CANOPY LANE



TYPICAL SECTION NO. 17

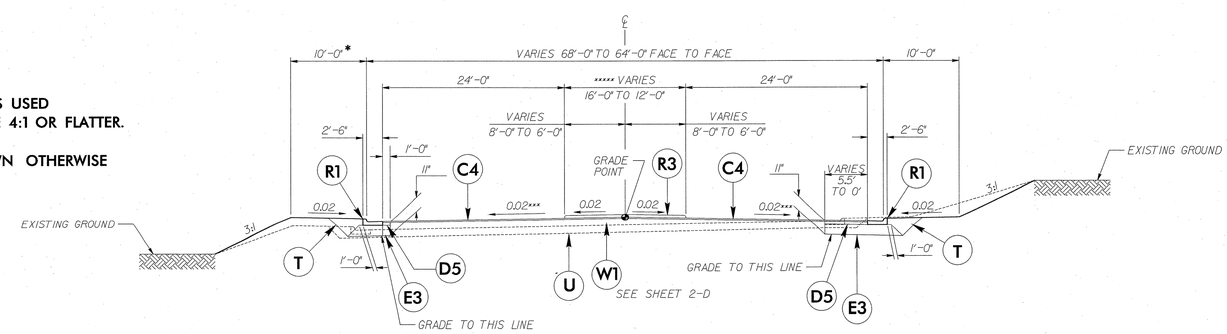
-Y1- CANOPY LANE

USE TYPICAL SECTION NO. 17 AT THE FOLLOWING STATIONS

-Y1- STA. 41+16.00 TO 48+34.10 (BEGIN BRIDGE)
-Y1- STA. 50+70.35 (END BRIDGE) TO 67+50.00

***** 5" MONOLITHIC ISLAND VARIES 12'-0" TO 16'-0" FROM
-Y1- STA. 41+16.00 TO 44+54.08
-Y1- STA. 45+08.72 TO 53+50.75
-Y1- STA. 54+18.97 TO 61+04.99
-Y1- STA. 62+41.99 TO 70+04.00

NOTES:
* BERM WIDTH INCREASED 4' WHERE GUARDRAIL IS USED
** FILL SLOPES WITHIN THE INTERCHANGES WILL BE 4:1 OR FLATTER.
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 18

-Y1- CANOPY LANE

NOTES:
8' BERM FROM STA. 68+00.00 TO STA. 69+00.00
6' BERM FROM STA. 69+50.00 TO STA. 70+75.00

USE TYPICAL SECTION NO. 18 IN CONJUNCTION WITH WEDGING DETAIL W1 AT THE FOLLOWING STATIONS

-Y1- STA. 67+50.00 TO 70+75.00

C4	3" ACSC TYPE S9.5C
C6	VAR. ACSC TYPE S9.5C
D5	4" ACIC TYPE I19.0C
D7	VAR. ACIC TYPE I19.0C
E3	4" ACBC TYPE B25.0C
E5	VAR. ACBC TYPE B25.0C
J1	8" ABC
R1	2'-6" CURB & GUTTER
R3	5" CONC. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	VARIABLE DEPTH

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PAVEMENT SCHEDULE	
C3	3" ACSC TYPE S9.5B
C4	3" ACSC TYPE S9.5C
D2	4" ACIC TYPE I19.0B
D5	4" ACIC TYPE I19.0C
J1	8" ABC
R6	1'-6" MOD. CONC. C&G
R7	6" CONC. CURB
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING
W2	WEDGING

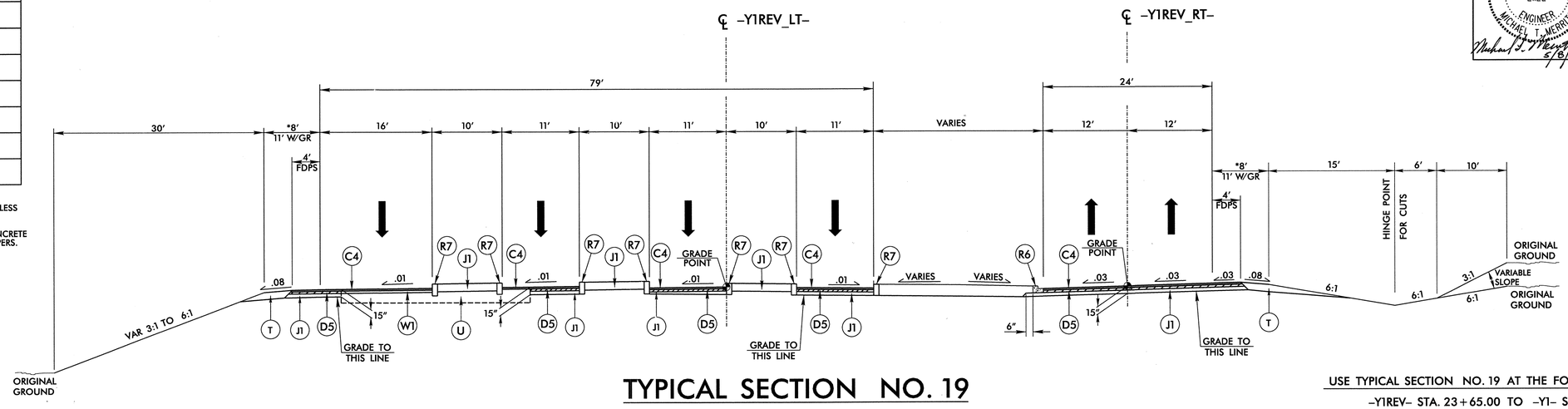
NOTES:
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILIARY LANES, AND TAPERS.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT 5/8/2014

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 5/16/14

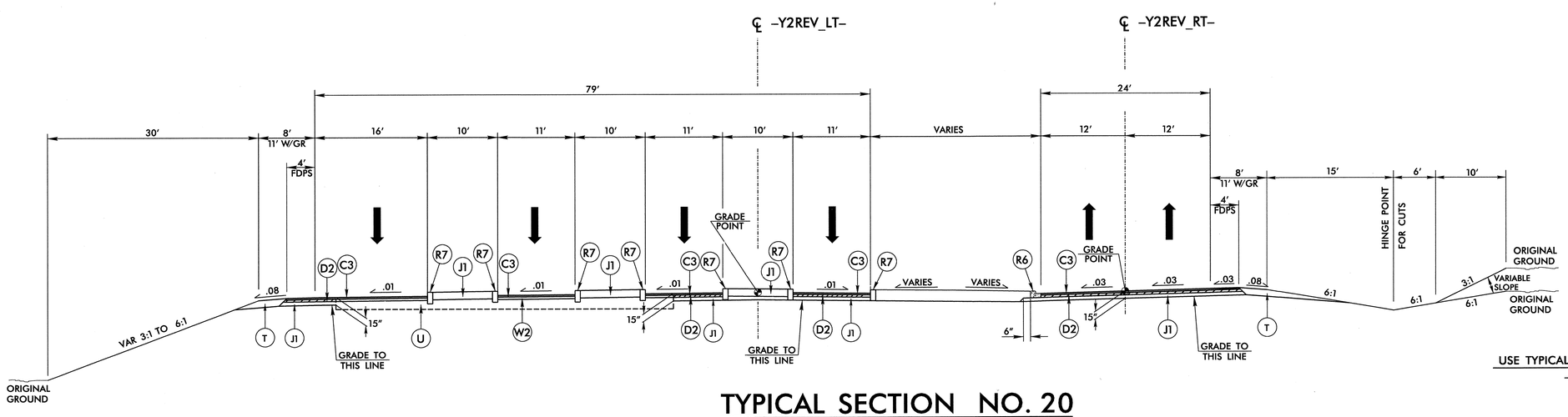


TYPICAL SECTION NO. 19

-Y1REV- CANOPY LANE

USE TYPICAL SECTION NO. 19 AT THE FOLLOWING STATIONS
-Y1REV- STA. 23+65.00 TO -Y1- STA. 41+16.00

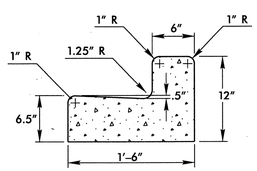
* TRANSITION FROM 8' SHOULDER TO 12' SHOULDER 40+66 TO 41+16



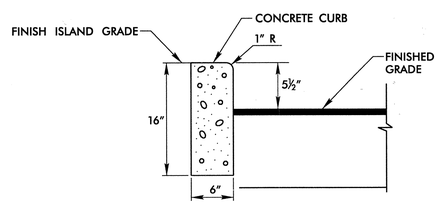
USE TYPICAL SECTION NO. 20 AT THE FOLLOWING STATIONS
-Y2REV- STA. 29+32.90 TO 49+13.23

TYPICAL SECTION NO. 20

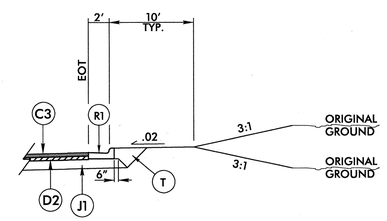
-Y2REV- REILLY ROAD (SR 1403)



1"-6" MOD. CONCRETE CURB & GUTTER
SCALE: NOT TO SCALE



6" CONCRETE CURB
SCALE: NOT TO SCALE



2'-6" CURB AND GUTTER DETAIL FOR -Y2REV-
-Y2REV_RT- STA. 43+00.00 TO 48+81.00 RT.
-Y2REV_LT- STA. 47+92.00 TO 48+75.00 LT.

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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R:\Roadway\Proj\u2519cb_rdy_Typical_psh02H.dgn

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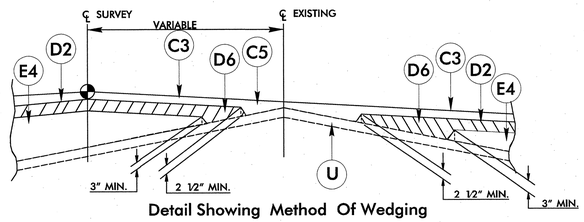
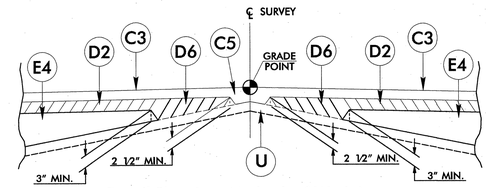
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-CHI CHEN 5/16/14

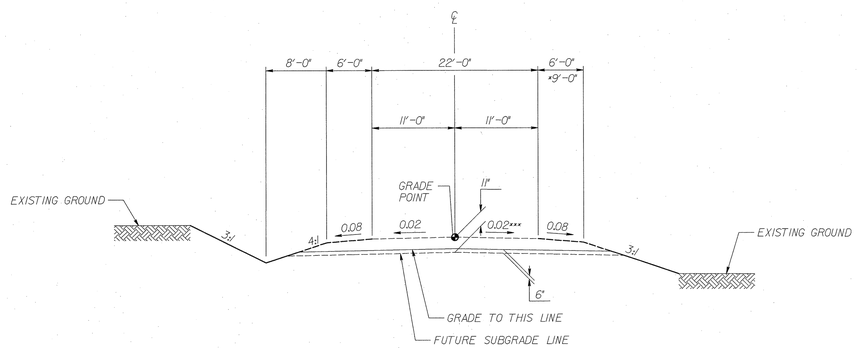


Detail Showing Method Of Wedging



Detail Showing Method of Wedging

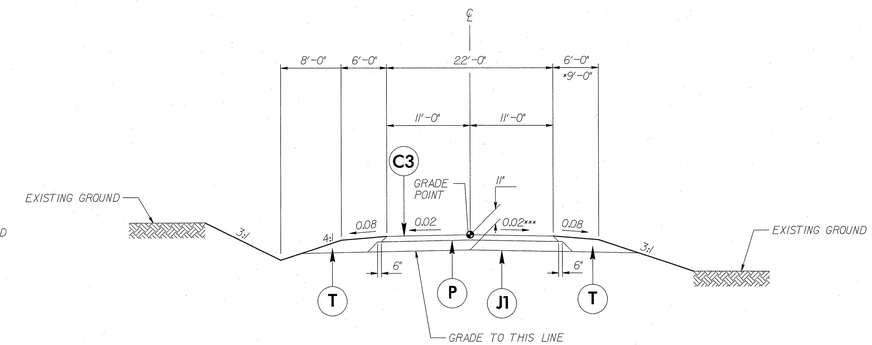
WEDGING DETAIL W2



TYPICAL SECTION NO. 21

–Y23– SERVICE ROAD

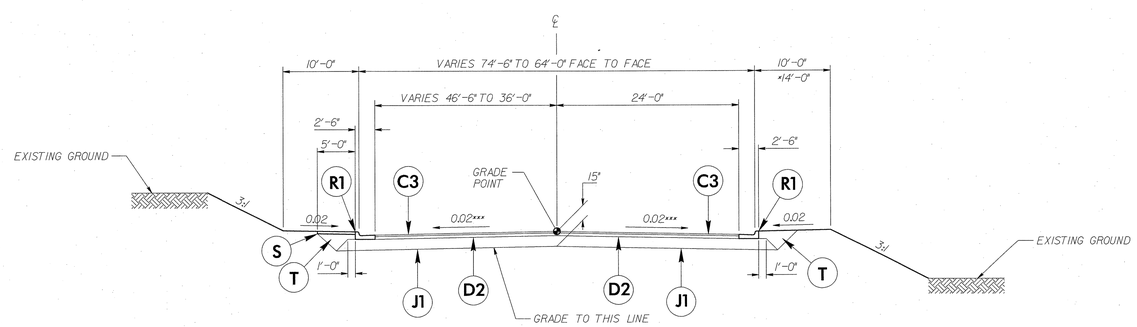
USE TYPICAL SECTION NO. 21 AT THE FOLLOWING STATIONS
–Y23– STA. 95+72.42 TO 126+00.00



TYPICAL SECTION NO. 21A

–Y23– SERVICE ROAD

USE TYPICAL SECTION NO. 21A AT THE FOLLOWING STATIONS
–Y23– STA. 126+00.00 TO 129+08.28



TYPICAL SECTION NO. 22

–Y3– YADKIN ROAD (SR 1415)

USE TYPICAL SECTION NO. 22 AT THE FOLLOWING STATIONS
–Y3– STA. 17+50.00 TO 18+46.26 (BEGIN BRIDGE)
–Y3– STA. 21+24.01 (END BRIDGE) TO 23+75.00

C3	3" ACSC TYPE S9.5B
C5	VAR. ACSC TYPE S9.5B
D2	4" ACIC TYPE I19.0B
D6	VAR. ACIC TYPE I19.0B
E4	VAR. ACBC TYPE B25.0B
J1	8" ABC
P	PRIME COAT
R1	2'-6" CURB & GUTTER
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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14:41 PM

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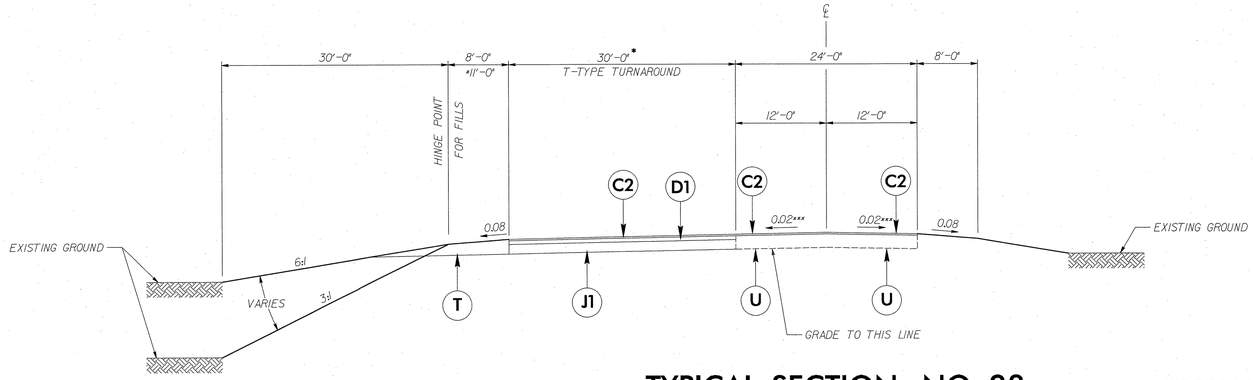
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-J
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 7-28-2014

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER HONG-CHI CHEN 7/28/14

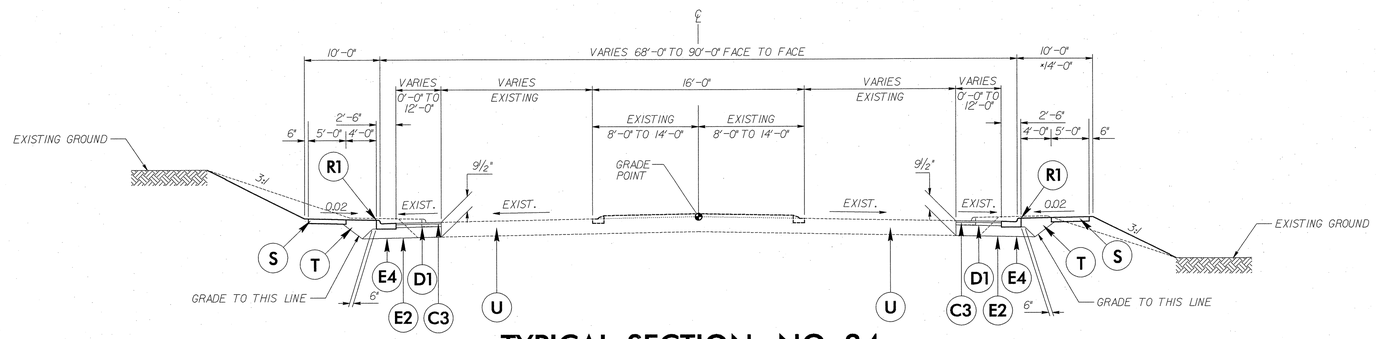


TYPICAL SECTION NO. 23

-Y4REV- CHICKEN ROAD

USE TYPICAL SECTION NO. 23 AT THE FOLLOWING STATIONS

-Y4REV- STA. 11+00.00 TO 11+92.00
* -Y4REV- STA. 11+47.05 TO 11+67.05

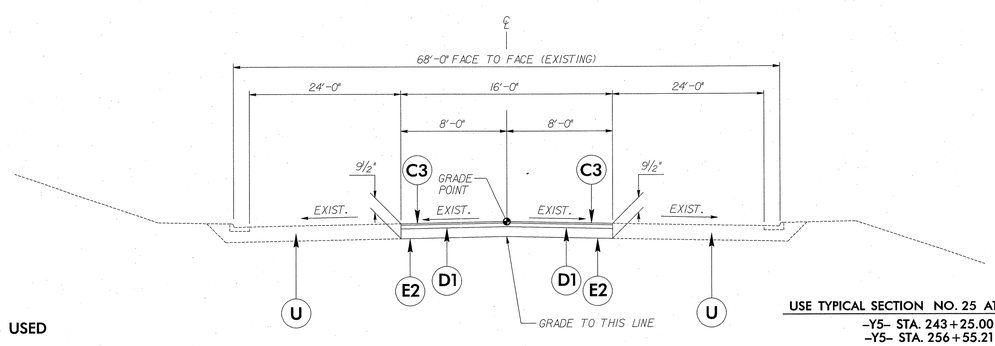


TYPICAL SECTION NO. 24

-Y5- CLIFFDALE ROAD (SR 1400)

USE TYPICAL SECTION NO. 24 AT THE FOLLOWING STATIONS

-Y5- STA. 238+95.19 TO 243+83.36 (RIGHT)
-Y5- STA. 247+55.18 TO 257+77.18 (RIGHT)
-Y5- STA. 242+59.17 TO 252+55.18 (LEFT)
-Y5- STA. 256+44.79 TO 261+34.69 (LEFT)



TYPICAL SECTION NO. 25

-Y5- CLIFFDALE ROAD (SR 1400)

USE TYPICAL SECTION NO. 25 AT THE FOLLOWING STATIONS

-Y5- STA. 243+25.00 TO 243+95.18
-Y5- STA. 256+55.21 TO 257+15.00

NOTES:
* BERM WIDTH INCREASED 4' WHERE GUARDRAIL IS USED
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

C2	1½" ACSC TYPE S9.5B
C3	3" ACSC TYPE S9.5B
D1	2½" ACIC TYPE I19.0B
E2	4" ACBC TYPE B25.0B
E4	VAR. ACBC TYPE B25.0B
J1	8" ABC
R1	2'-6" CURB & GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-K
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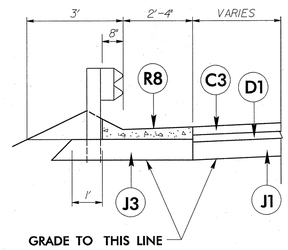
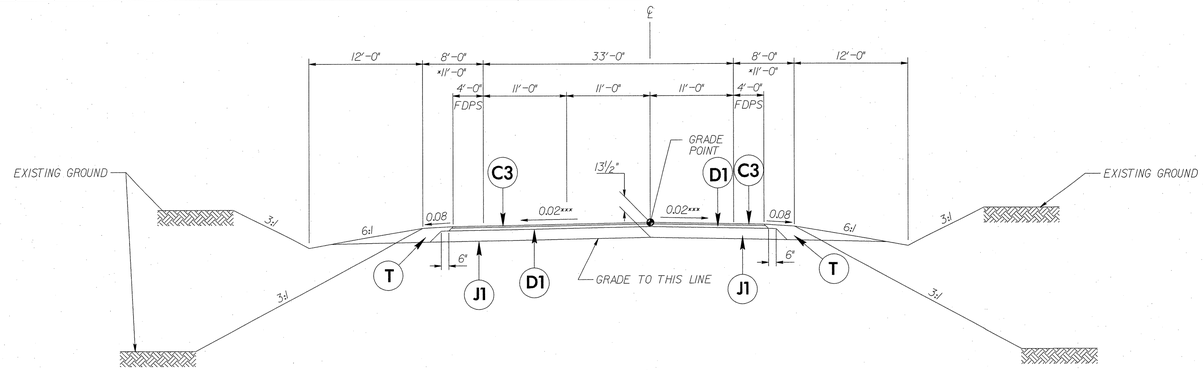
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER MONG-CHI CHEN 5/16/14



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

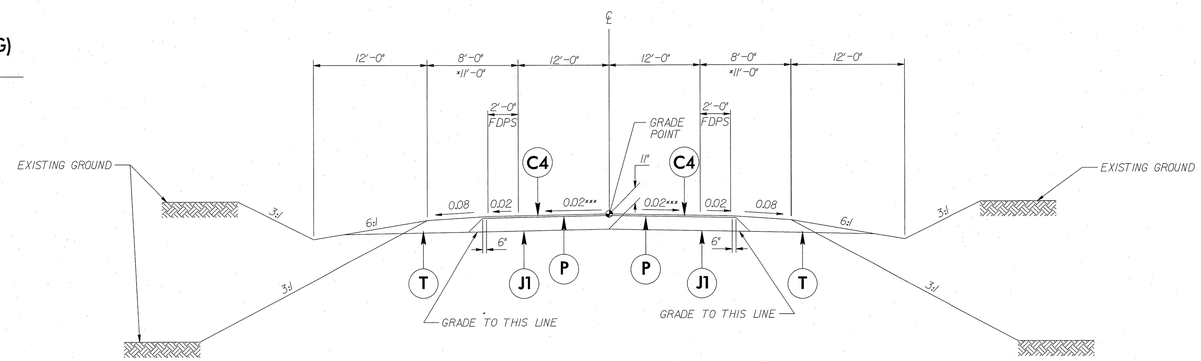
–PXROAD– STA. 18+50.00 (LT.) TO –PXROAD– 19+90.00 (LT.)
–PXROAD– STA. 22+25.00 (LT.) TO –PXROAD– 24+80.00 (LT.)



TYPICAL SECTION NO. 26

–PXROAD– PX ACCESS ROAD

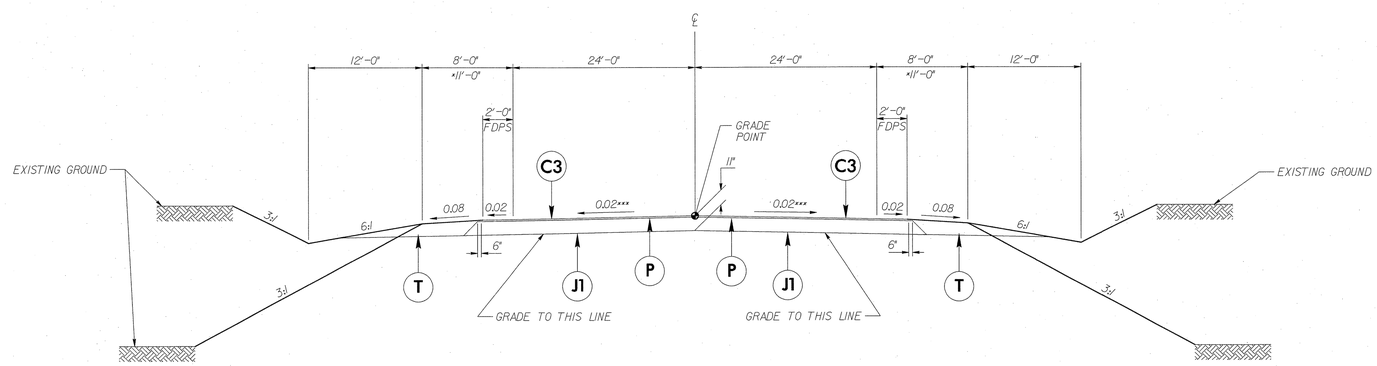
USE TYPICAL SECTION NO. 26 AT THE FOLLOWING STATIONS
–PXROAD– STA. 15+21.17 TO 20+50.12 (BEGIN BRIDGE)
–PXROAD– STA. 21+51.37 (END BRIDGE) TO 37+28.07



TYPICAL SECTION NO. 27

–Y1DET– CANOPY LANE DETOUR

USE TYPICAL SECTION NO. 27 AT THE FOLLOWING STATIONS
–Y1DET_REV– STA. 10+00.00 TO 21+46.10



TYPICAL SECTION NO. 28

–Y3DET_REV– YADKIN ROAD DETOUR

USE TYPICAL SECTION NO. 28 AT THE FOLLOWING STATIONS
–Y3DET_REV– STA. 10+43.59 TO 27+64.73

NOTES:
* SHOULDER WIDTH INCREASED 3' WHERE GUARDRAIL IS USED
*** SEE CROSS SECTIONS FOR VARIABLE SLOPES
**** PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

C3	3" ACSC TYPE S9.5B
C4	3" ACSC TYPE S9.5C
D1	2½" ACIC TYPE I19.0B
J1	8" ABC
J3	VAR. ABC
P	PRIME COAT
R8	SHOULDER BERM GUTTER
T	EARTH MATERIAL

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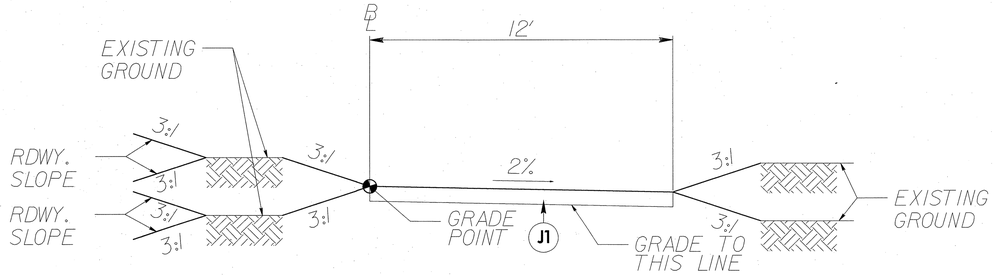
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-L
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JOHN-CHY CHEN 5/16/14

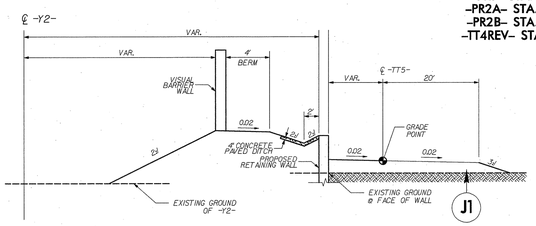
PATROL ROAD AND TANK TRAIL DETAILS



PATROL ROAD DETAIL 1

USE PATROL ROAD DETAIL 1 AT THE FOLLOWING STATIONS

-TT1- STA. 10+00.00 TO 64+97.42
-TT2- STA. 10+00.00 TO 20+03.77
-PR1- STA. 10+00.00 TO 37+23.84
-PR2A- STA. 10+00.00 TO 38+54.39
-PR2B- STA. 35+00.00 TO 38+55.81
-TT4REV- STA. 26+00.00 TO 79+45.11

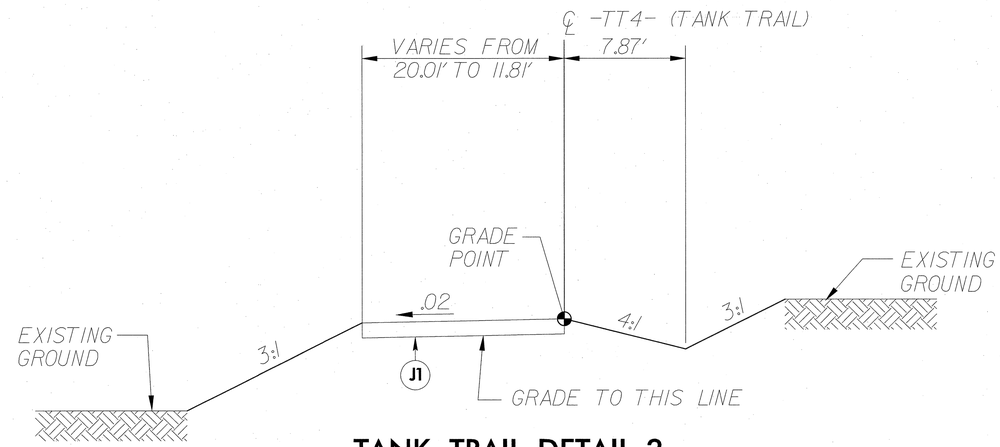


DETAIL NO. 1A

-Y2- STA. 21+90.09 TO 25+50.00

USE DETAIL NO. 1A WITH TANK TRAIL DETAIL 1 AT THE FOLLOWING STATIONS

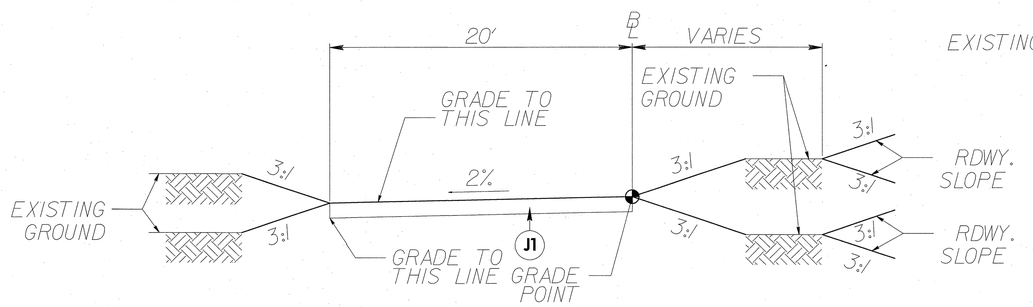
-TT5- STA. 35+92.06 TO 39+41.21



TANK TRAIL DETAIL 2

USE TANK TRAIL DETAIL 2 AT THE FOLLOWING STATIONS

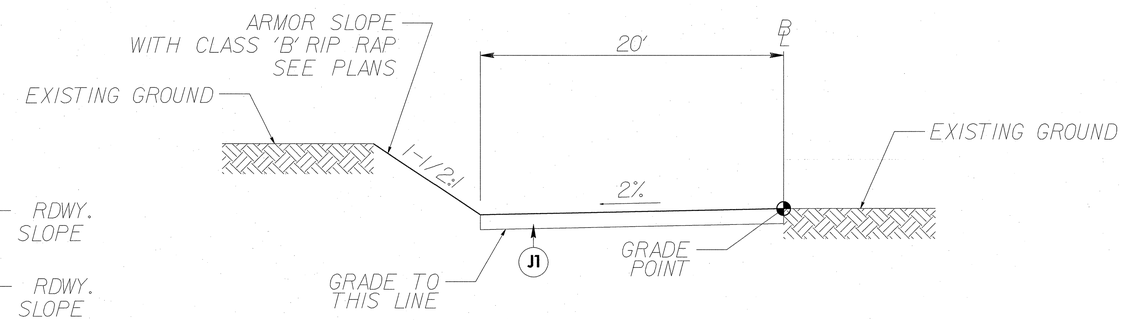
-TT4DA- STA. 32+76.71 TO 55+97.68



TANK TRAIL DETAIL 1

USE TANK TRAIL DETAIL 1 AT THE FOLLOWING STATIONS

-TT5- STA. 10+00.00 TO 56+65.28
-TT5REV- STA. 56+65.28 TO 67+57.38



TANK TRAIL DETAIL 3

USE TANK TRAIL DETAIL 3 IN LIEU OF TANK TRAIL DETAIL 1 TO CONSTRUCT TANK TRAIL AT THE FOLLOWING STATIONS

-TT5- STA. 22+50.00 TO 24+00.00

J1	8" ABC

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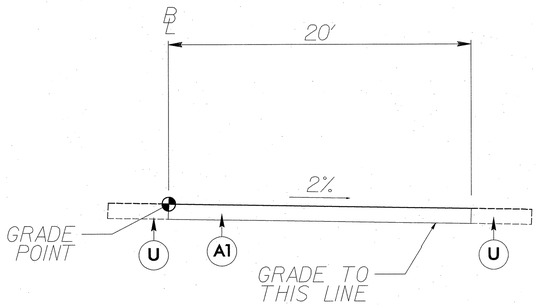
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-M
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DON-EMI CHEN 5/16/14

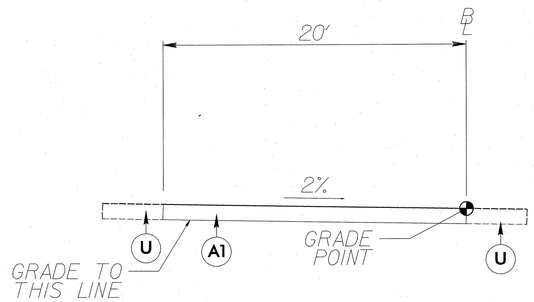
PATROL ROAD AND TANK TRAIL DETAILS



TANK TRAIL DETAIL 4

USE TANK TRAIL DETAIL 4 IN LIEU OF TANK TRAIL DETAIL 1 TO CONSTRUCT TANK TRAIL AT THE FOLLOWING STATIONS

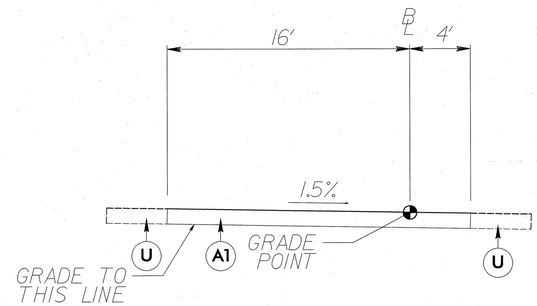
-TT4REV- STA. 79+58.35 TO 80+06.08 CROSSING -Y1-



TANK TRAIL DETAIL 5

USE TANK TRAIL DETAIL 5 IN LIEU OF TANK TRAIL DETAIL 1 TO CONSTRUCT TANK TRAIL AT THE FOLLOWING STATIONS

-TT5- STA. 39+92.76 TO 40+54.28 CROSSING -Y2-



TANK TRAIL DETAIL 6

USE TANK TRAIL DETAIL 6 IN LIEU OF TANK TRAIL DETAIL 1 TO CONSTRUCT TANK TRAIL AT THE FOLLOWING STATIONS

-TT5REV- STA. 56+86.59 TO 57+57.12 CROSSING -Y3-

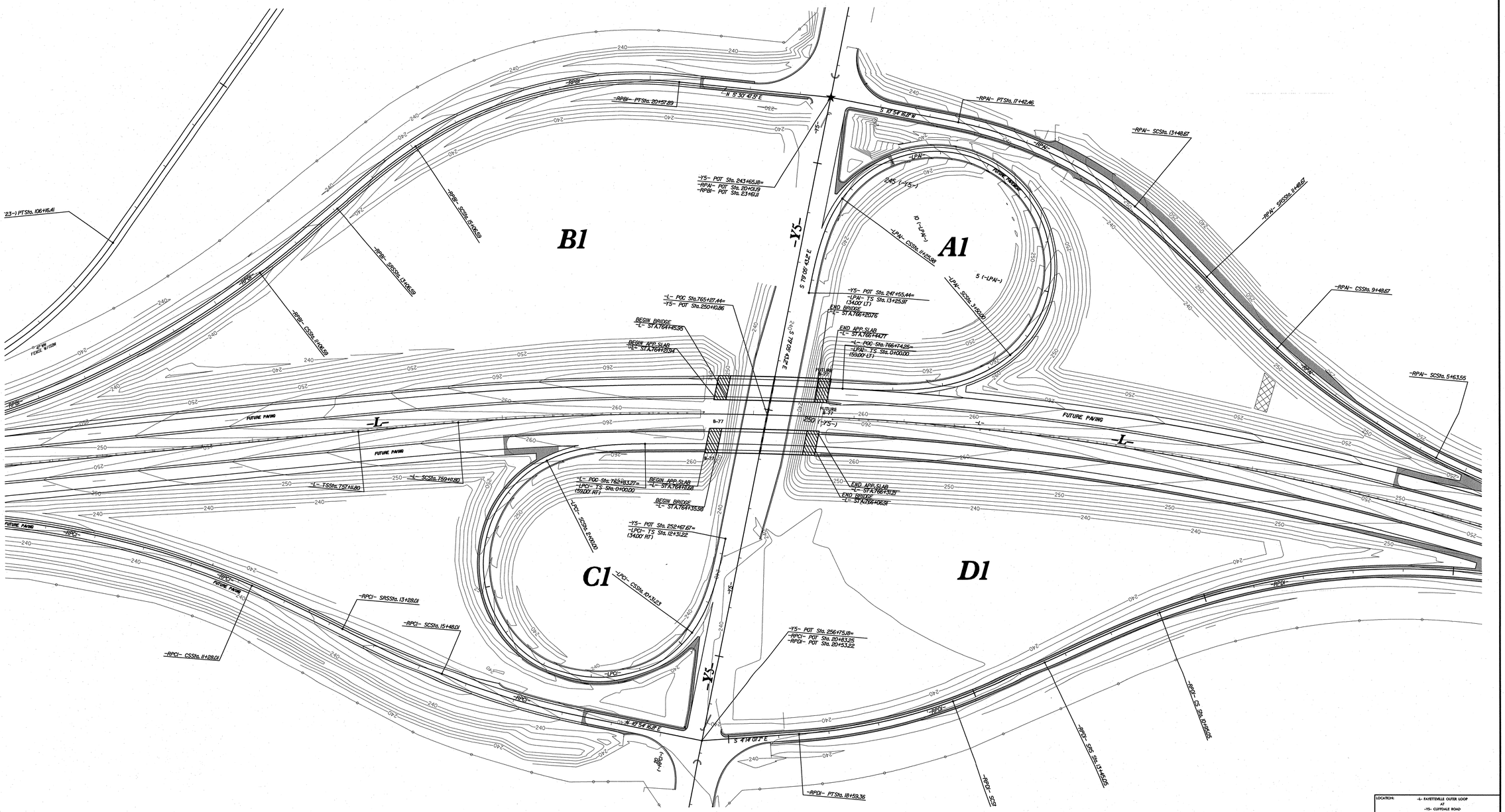
A1	12" PCC WITH DOWELS
U	EXISTING PAVEMENT

5/1/2014
W:\Roadway\Proj\u2519cb_rdy_typ.dgn
12:04 PM

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-N
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15784 ENGINEER JAMES A. BYRD 5-1-14

GRADING PLAN -Y5- CLIFFDALE RD

NAD 83



LOCATION:	-L- FAYETTEVILLE OUTER LOOP AT -Y5- CLIFFDALE ROAD
TIP NO.: U-2519CB	COUNTY: CUMBERLAND
DESIGNED BY: DGM	
CHECKED BY: PCP	DATE: 3/16/06

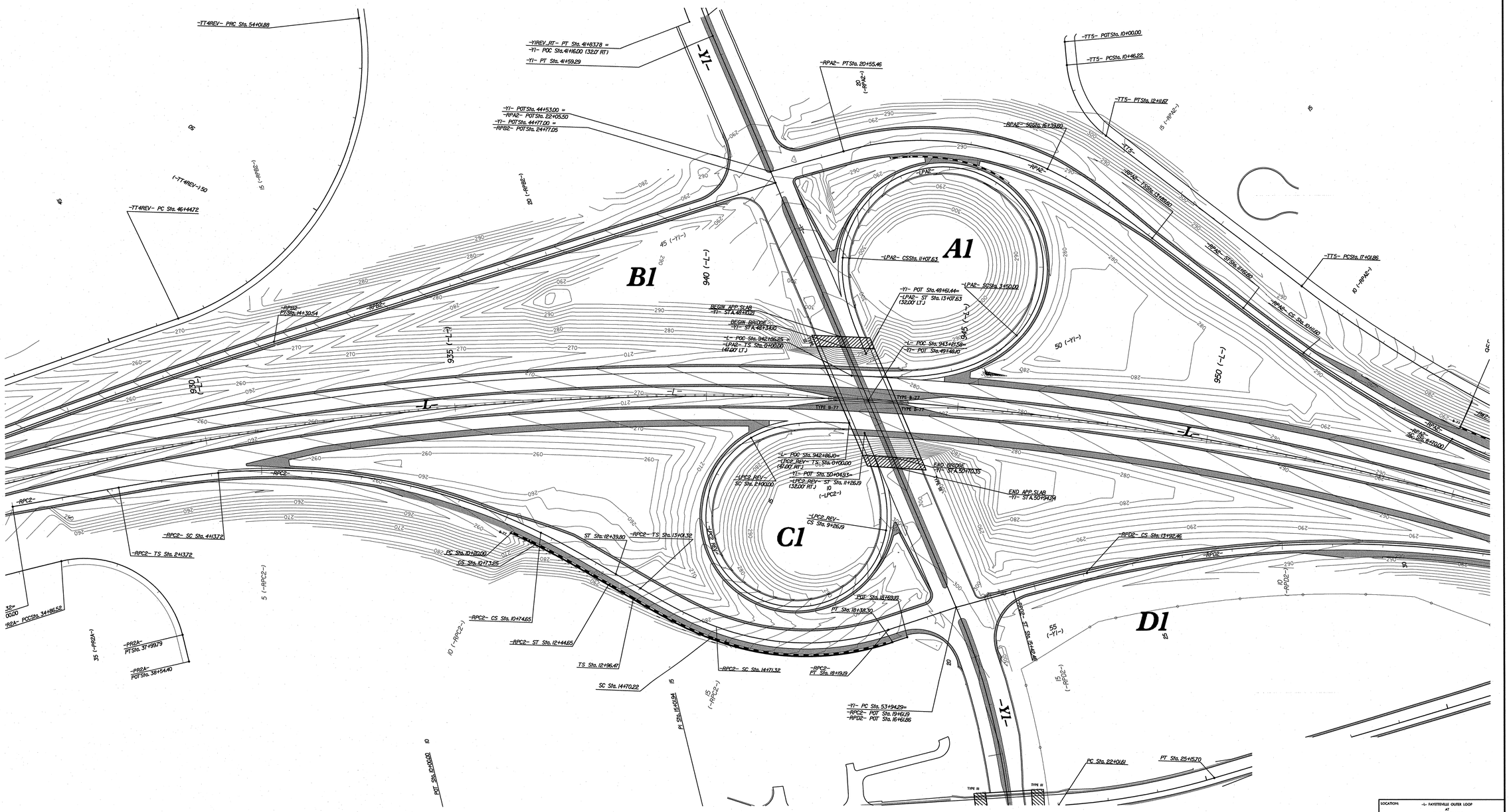
REVISIONS

8/17/99

3/3/2014
W:\Roadway\Proj\u2519cb_rdy_psh02-N.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-0 (1 of 2)
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 13784 ENGINEER JAMES A. BYRD 5-7-14

GRADING PLAN -Y1- CANOPY LN



LOCATION:	-L- FAYETTEVILLE OUTER LOOP AT -Y1- CANOPY LANE
TIP NO.: U-2519CB	COUNTY: CUMBERLAND
DESIGNED BY: DGM	
CHECKED BY: PCP	DATE: 3/14/14

REVISIONS

8/17/99

3/31/2014
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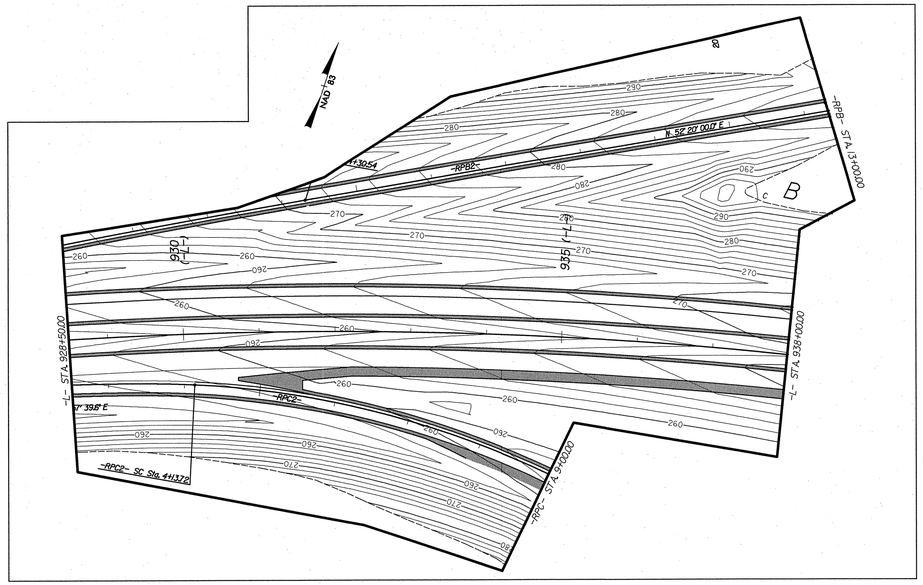
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-0 (2 of 2)
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

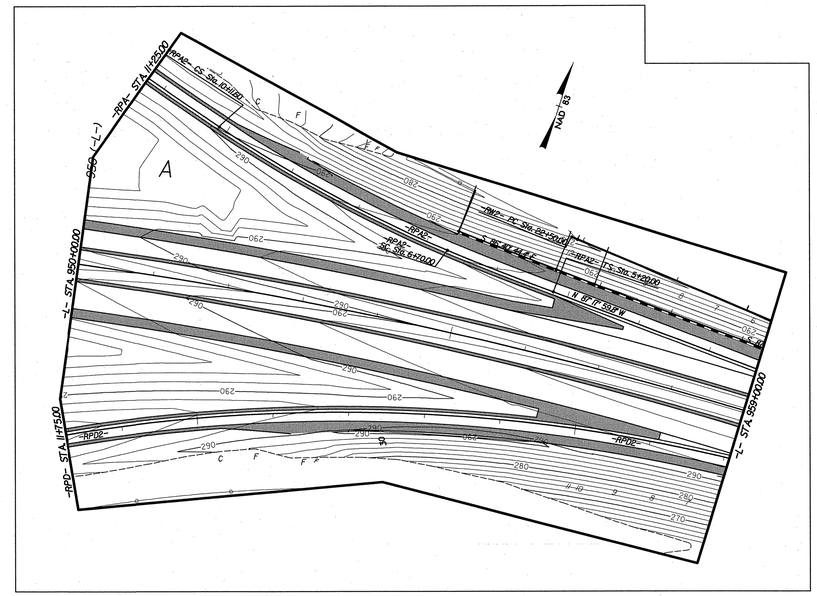
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 15984 ENGINEER JAMES A. BYRD 5-7-14

GRADING PLAN

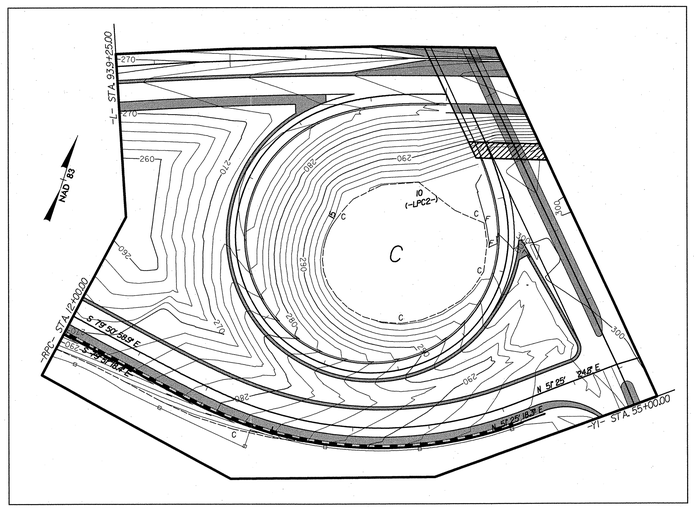


GORE AREAS AT -YI- INTERCHANGE
RAMPS B AND C
VIEW #1: REF FILES 18, 21, 24, 27, 30



GORE AREAS AT -YI- INTERCHANGE
RAMPS A AND D
VIEW #3 : REF FILES 20, 23, 26, 29, 32

INCLUDED IN THIS DETAIL IS THE DETAILED SUPER BREAK FOR THE RAMP A GORE.



GORE AREAS AT -YI- INTERCHANGE
RAMP C AND LOOP C
VIEW #2 : REF FILES 19, 22, 25, 28, 31

REVISIONS

8/17/99

3/31/2014
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7:06:36 PM

LOCATION:
-L- FAYETTEVILLE OUTER LOOP
AT
-Y1- CANOPY LANE TO REILLY RD.

TIP NO.: U-2519CB
COUNTY: CUMBERLAND

DESIGNED BY:

CHECKED BY:
DATE:

7/2/99

REVISIONS

SHEAR POINT DIAGRAM
–Y5– CLIFFDALE RD

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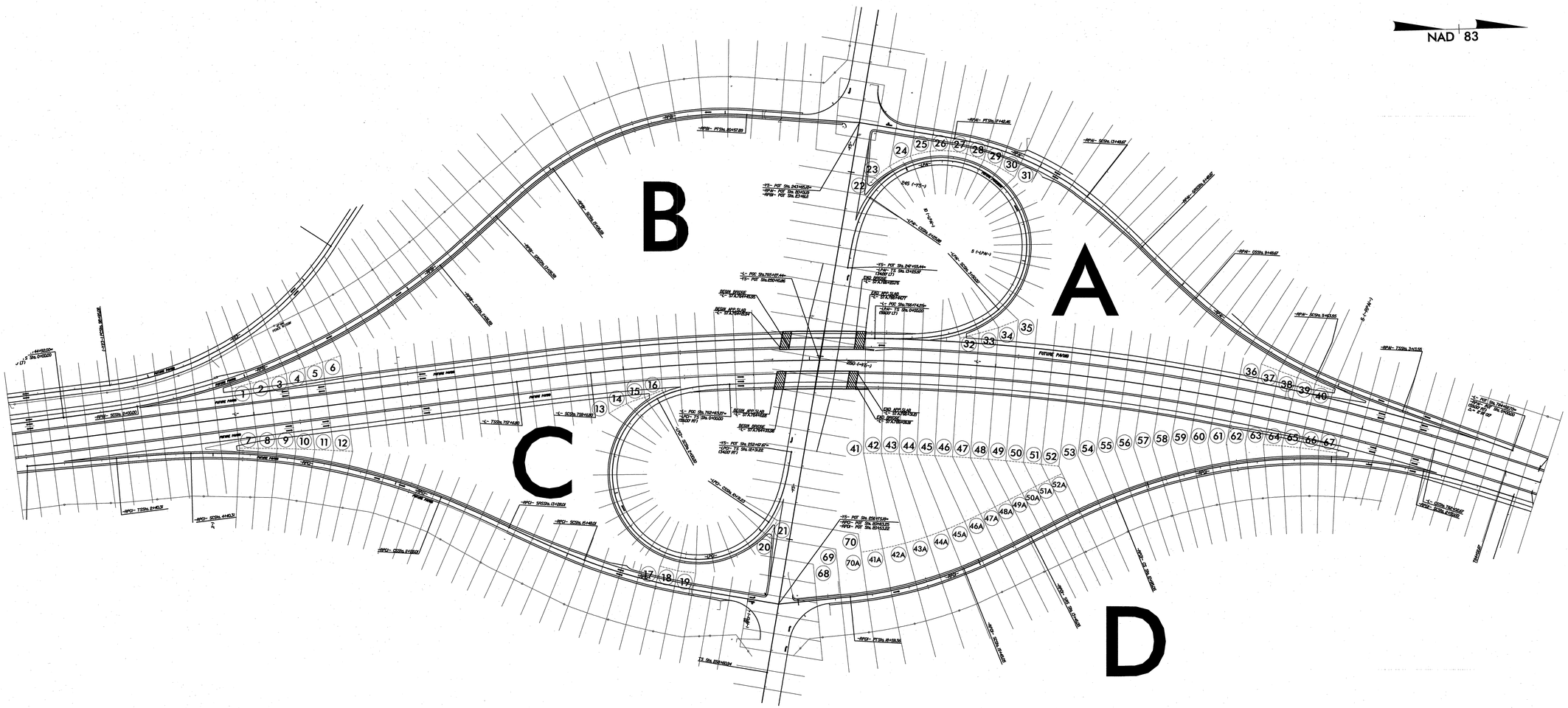
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-P(1 OF 2)
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY
5-7-14

NAD 83



I04.00L001/u2519cb/Roadway/proj/u2519cb_rdy_psh02-14

7/2/99

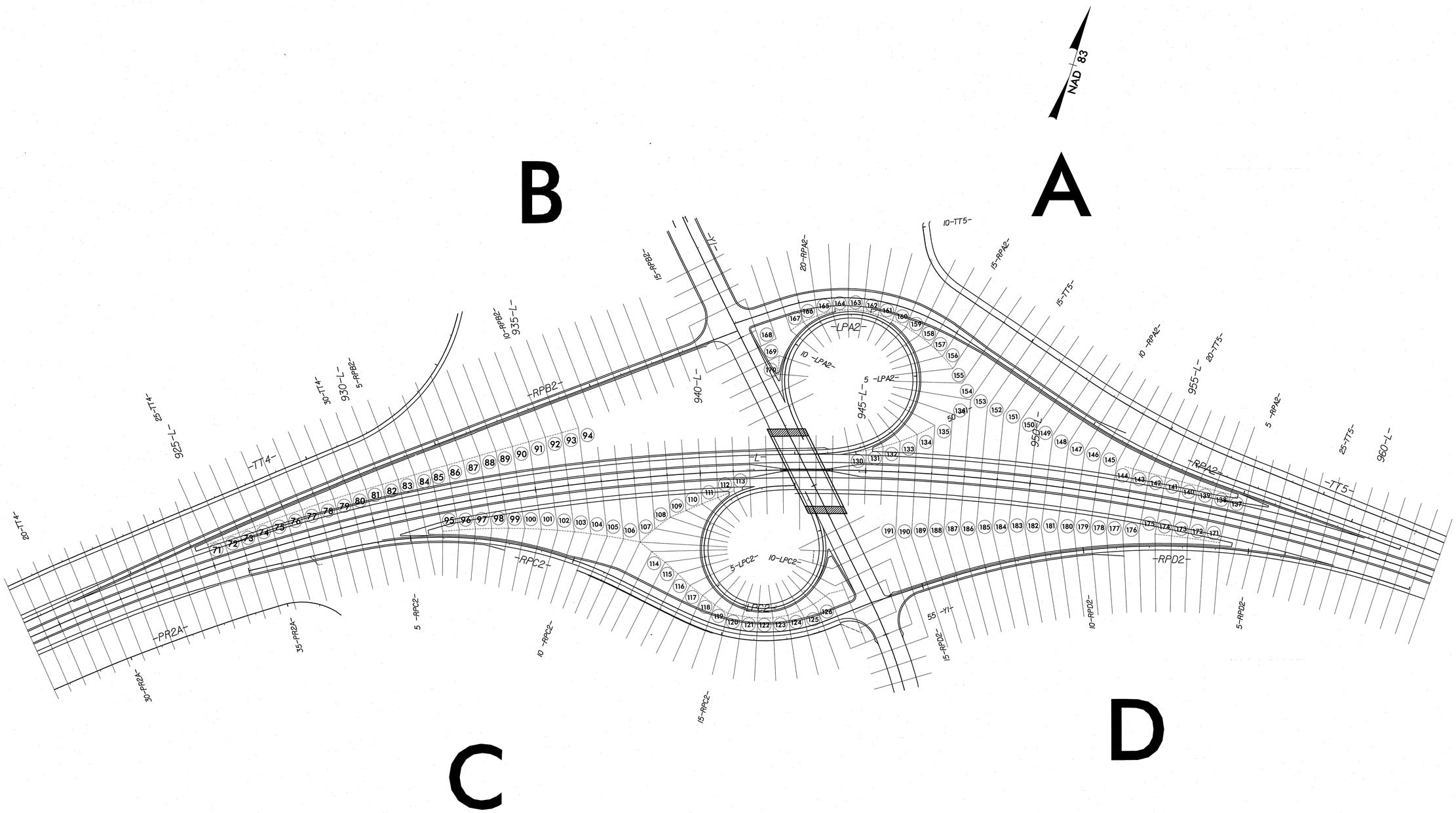
REVISIONS

SHEAR POINT DIAGRAM
-Y1- CANOPY RD

RS&H IMPROVING YOUR WORLD
RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-P(2 OF 2)
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-19-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh02-13

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REVISIONS

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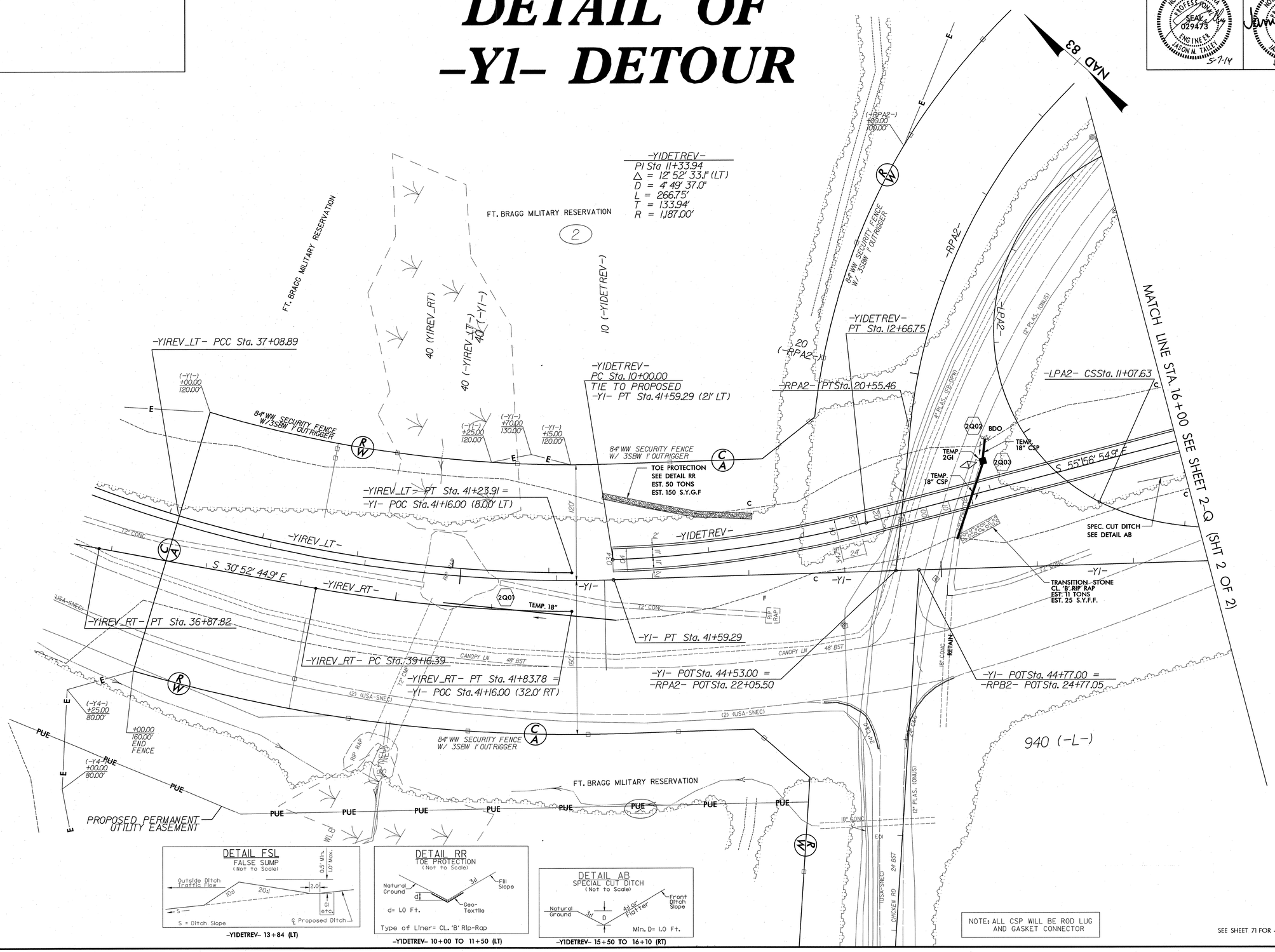
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-Q (1 of 2)
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

DETAIL OF -Y1- DETOUR



NOTE: ALL CSP WILL BE ROD LUG AND GASKET CONNECTOR

SEE SHEET 71 FOR -Y1 DET- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh02-n

7/2/99

REVISIONS

DETAIL OF -Y1- DETOUR

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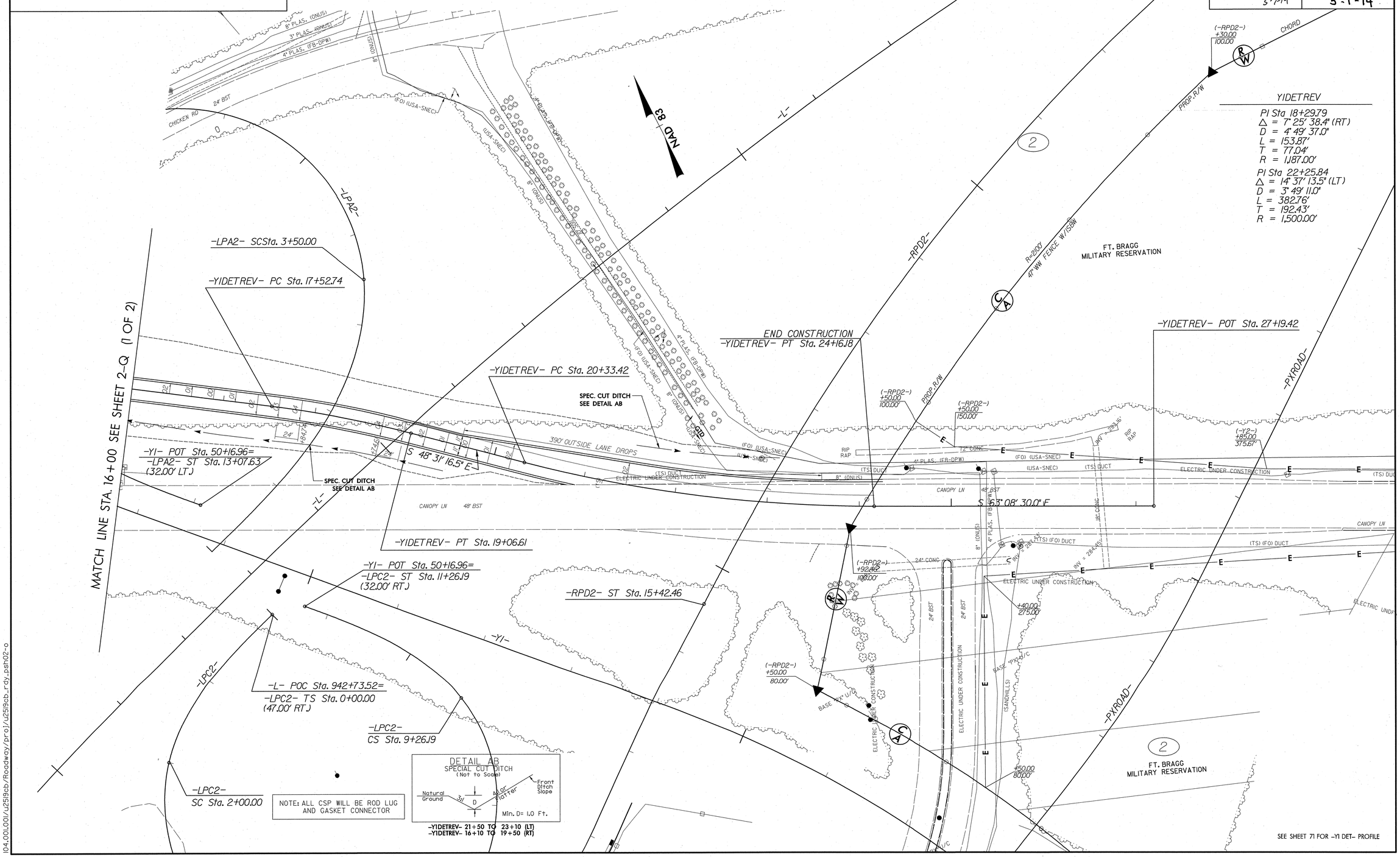
RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-Q (2 of 2)

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19764 ENGINEER JAMES A. BYRD — 5-7-14



104.001.001/U2519cb/Roadway/proj/u2519cb_rdy.psh02-o

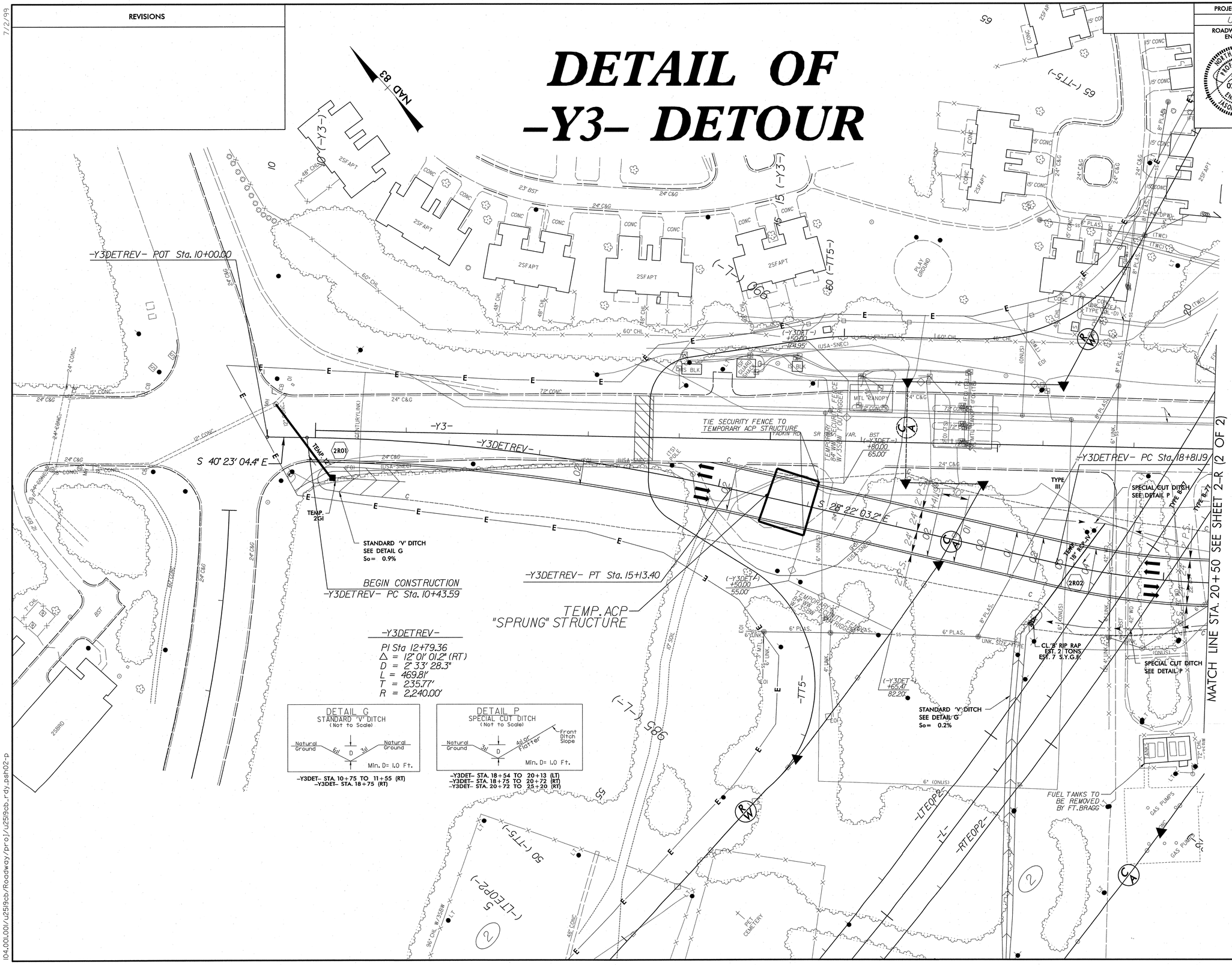
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-R (1 of 2)

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

DETAIL OF -Y3- DETOUR


NAD 83
-Y3DETREV- POT Sta. 10+00.00
S 40° 23' 04.4" E
TEMP. 2G1
STANDARD 'V' DITCH
SEE DETAIL G
So= 0.9%
BEGIN CONSTRUCTION
-Y3DETREV- PC Sta. 10+43.59
-Y3DETREV- PT Sta. 15+13.40
TEMP. ACP
"SPRUNG" STRUCTURE
-Y3DETREV-
PI Sta 12+79.36
Δ = 12° 01' 01.2" (RT)
D = 2° 33' 28.3"
L = 469.81'
T = 235.77'
R = 2,240.00'
DETAIL G
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Natural Ground
Min. D= 1.0 Ft.
-Y3DET- STA. 10+75 TO 11+55 (RT)
-Y3DET- STA. 18+75 (RT)
DETAIL P
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D= 1.0 Ft.
-Y3DET- STA. 18+54 TO 20+13 (LT)
-Y3DET- STA. 18+75 TO 20+72 (RT)
-Y3DET- STA. 20+72 TO 25+20 (RT)
TIE SECURITY FENCE TO TEMPORARY ACP STRUCTURE
-Y3DETREV- PC Sta. 18+81.19
S 26° 22' 03.2" E
TYPE III
SPECIAL CUT DITCH
SEE DETAIL P
CL'B' RIP RAP
EST. 2 TONS
EST. 7 S.Y.G.E.
STANDARD 'V' DITCH
SEE DETAIL G
So= 0.2%
FUEL TANKS TO BE REMOVED BY FT. BRAGG
MATCH LINE STA. 20+50 SEE SHEET 2-R (2 OF 2)
PLAY GROUND
2SFAPT
2SBRD
-Y3-
-Y3DETREV-
-L-
-LTEOP2-
-RTEOP2-
-TT5-
-L1-
-Y1-
-Y2-
-Y3-
-Y4-
-Y5-
-Y6-
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-Y37-
-Y38-
-Y39-
-Y40-

REVISIONS

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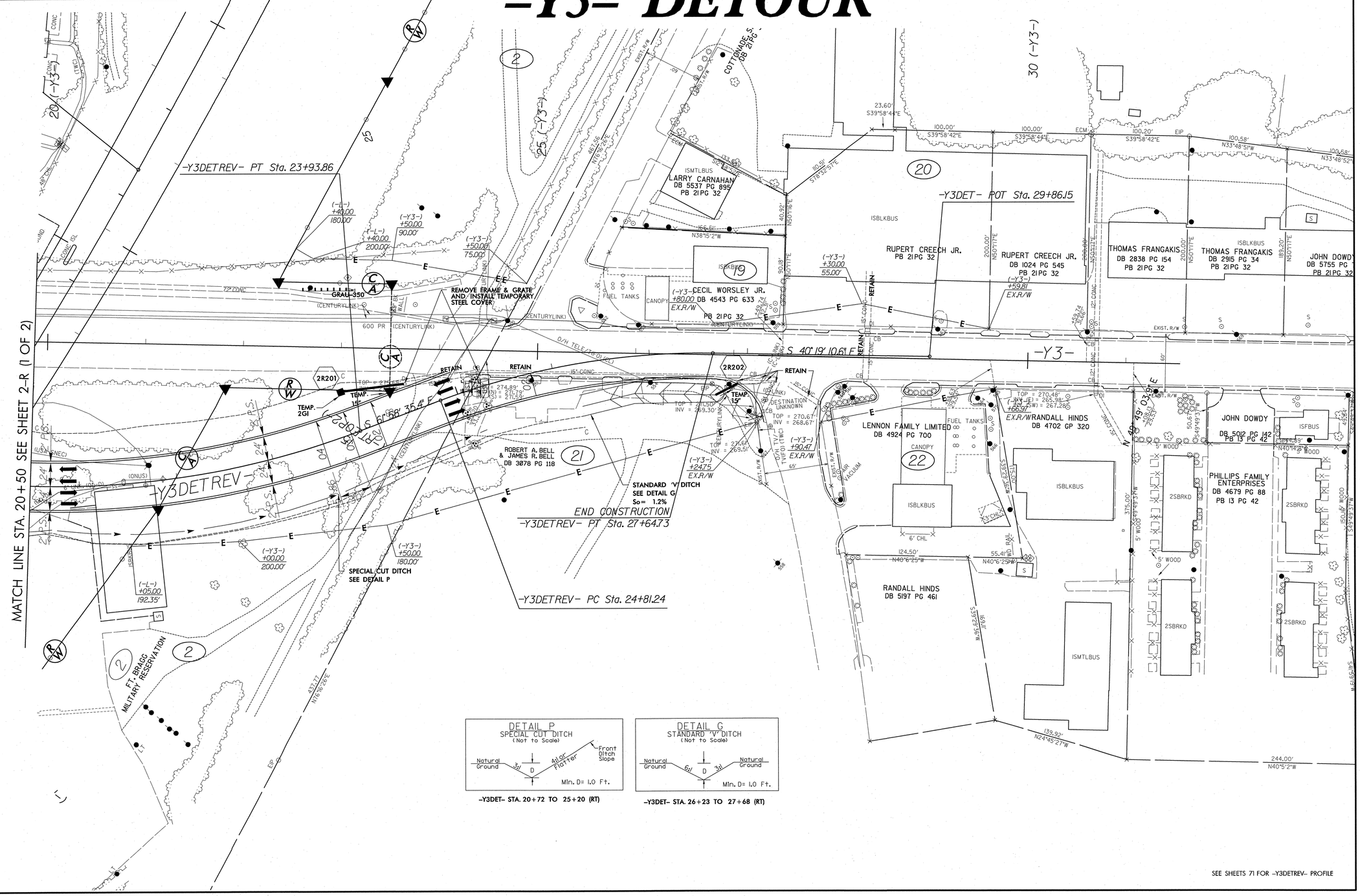
RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-R (2 of 2)
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 43764 ENGINEER JAMES A. BYRD 5-7-14

DETAIL OF -Y3- DETOUR



SEE SHEETS 71 FOR -Y3DETREV- PROFILE

7/2/99

104.001.001/u2519cb/Roadway/proj/U2519cb_rdy_psh02-q

7/2/99

REVISIONS

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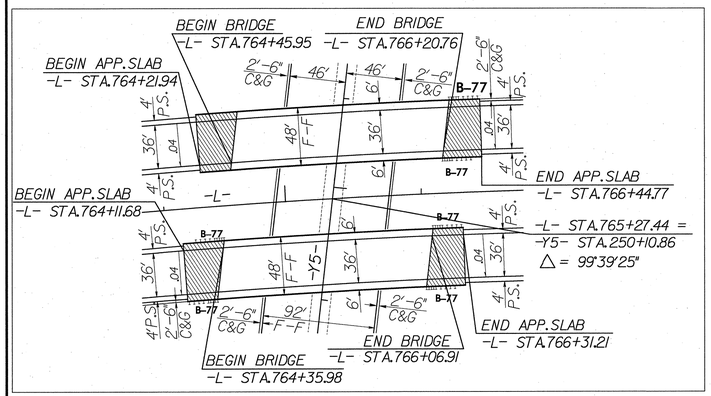
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-S
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

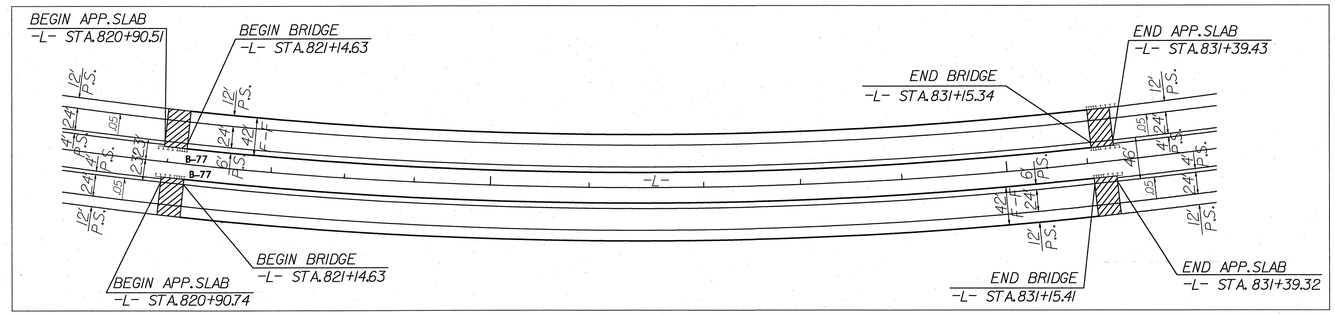
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-2-14

PSH 5



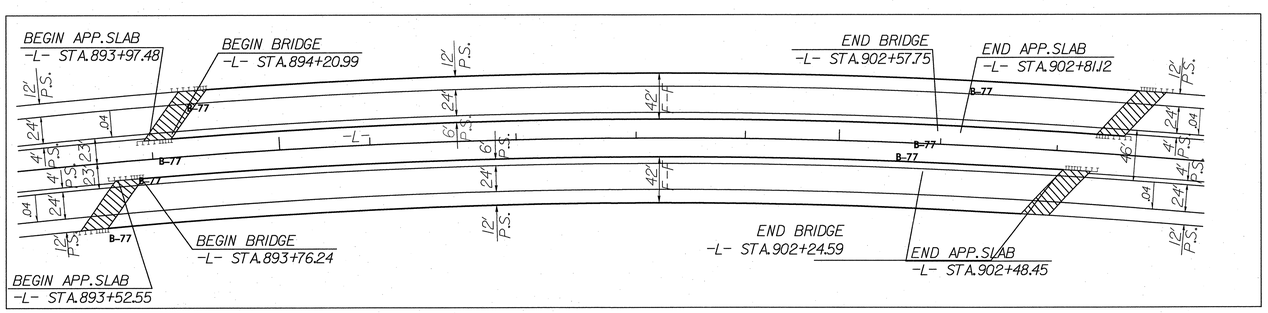
STRUCTURE AT -L- OVER -Y5-

PSH 9 & PSH 10



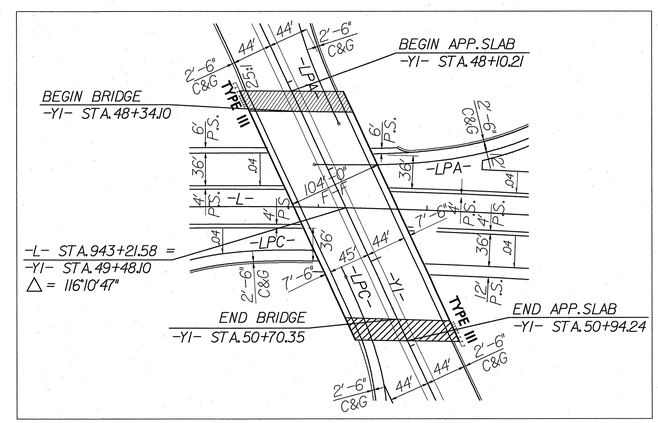
STRUCTURE AT -L- OVER WETLANDS

PSH 15



STRUCTURE AT -L- OVER STEWARD CREEK

PSH 18



STRUCTURE AT -Y1- OVER -L-

7/2/99

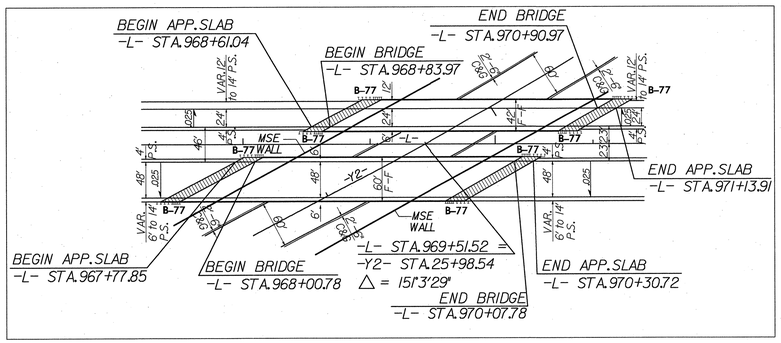
REVISIONS

RS&H IMPROVING YOUR WORLD
RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-T
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

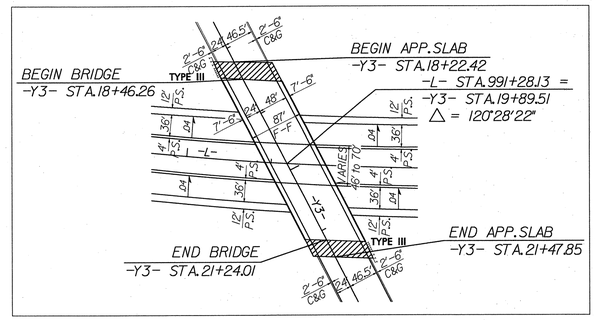
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

PSH 20



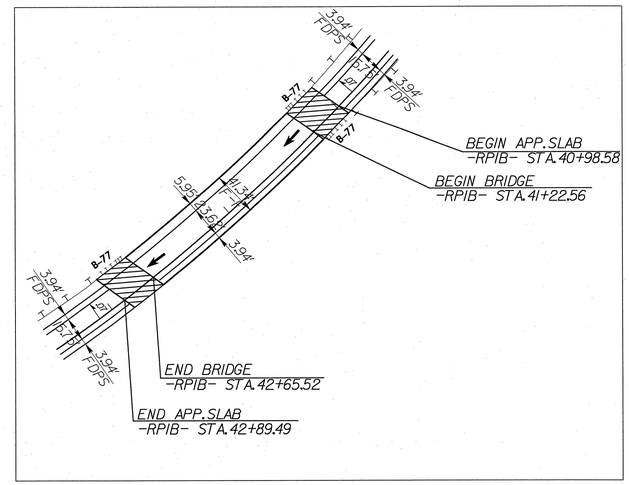
STRUCTURE AT -L- OVER -Y2-

PSH 22



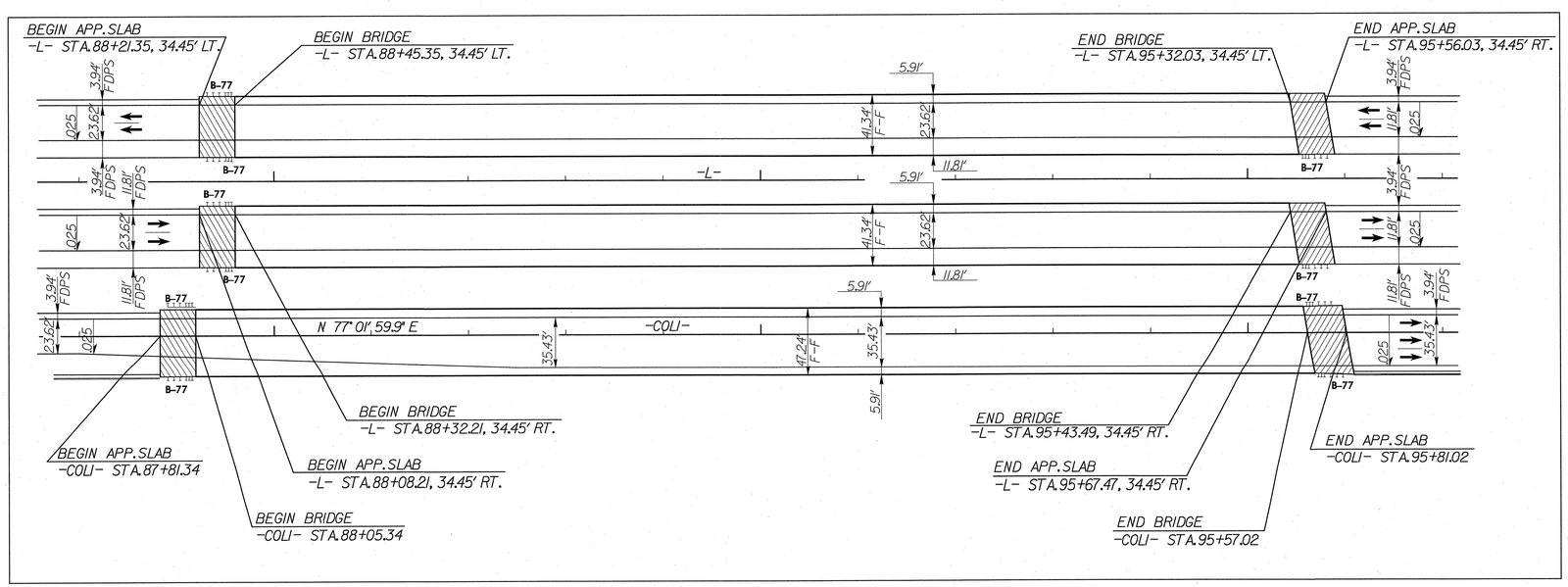
STRUCTURE AT -Y3- OVER -L-

PSH 22D



STRUCTURE AT -RPIB- OVER ALL AMERICAN FREEWAY

PSH 22D



STRUCTURES AT -L- OVER ALL AMERICAN FREEWAY

7/2/99

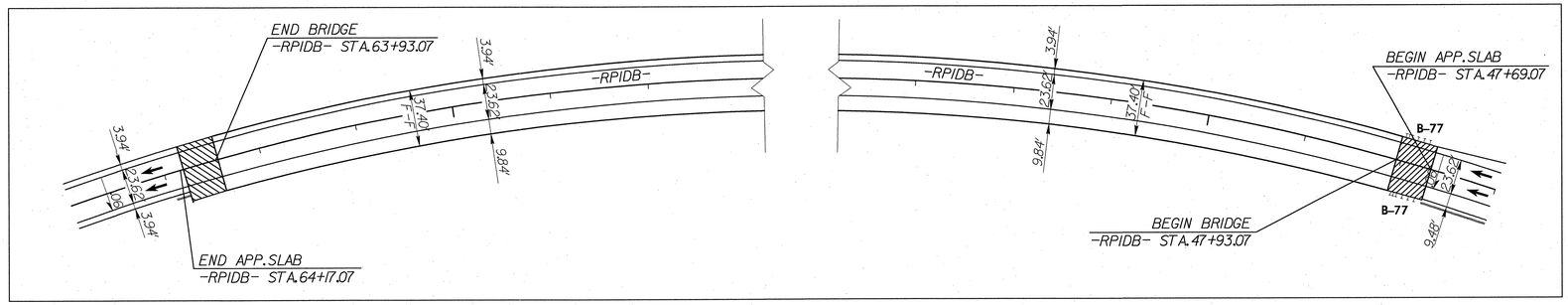
REVISIONS

RS&H IMPROVING YOUR WORLD
RS&H Architects-Engineers-Planners, Inc.

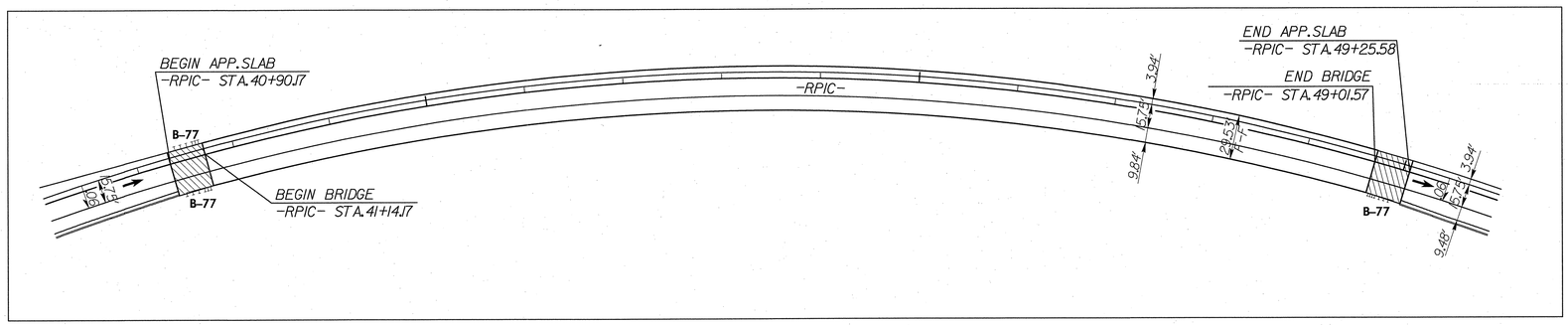
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-U
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-1-14

PSH 22E & PSH 22D

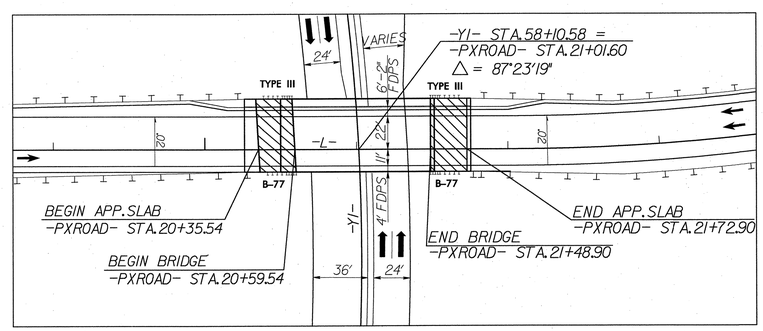


STRUCTURE AT -RPIDB- OVER -Y1-



STRUCTURE AT -RPIC- OVER BEAVER CREEK

PSH 25



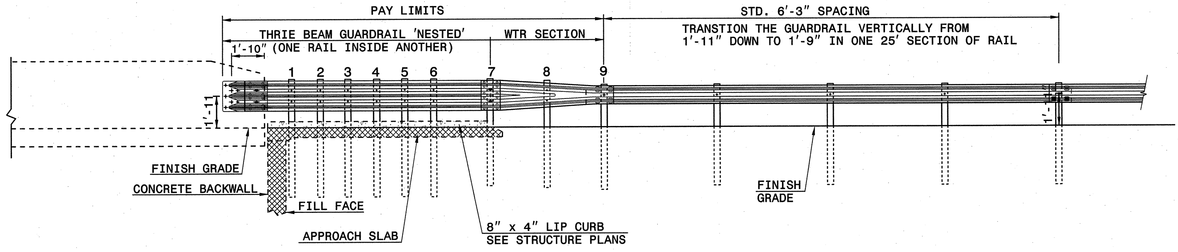
STRUCTURE AT -PXROAD- OVER CANOPY LANE

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

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

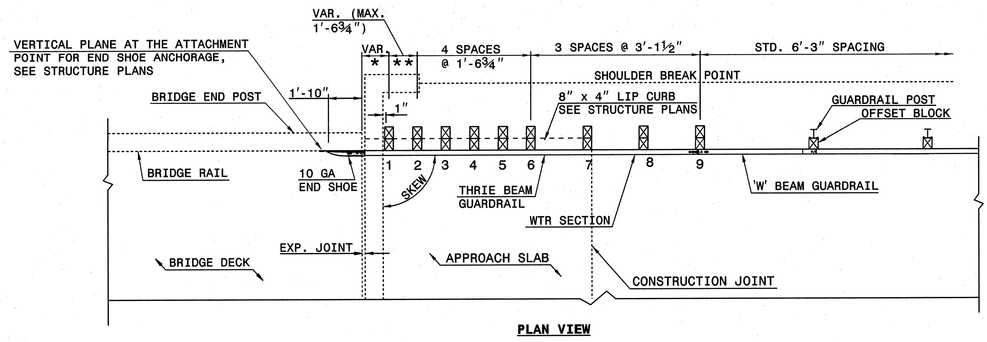
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03



ELEVATION

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



PLAN VIEW

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

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

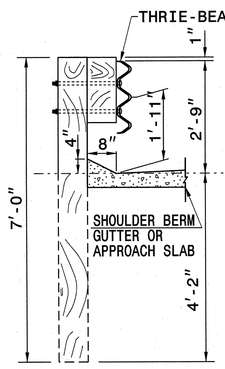
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03

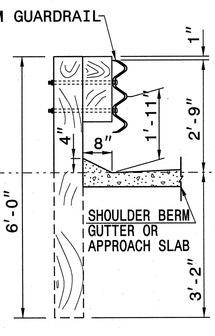
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

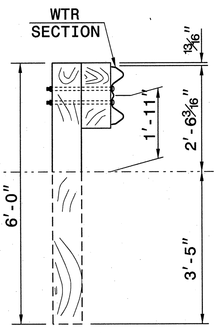
SHEET 3 OF 7
862d03



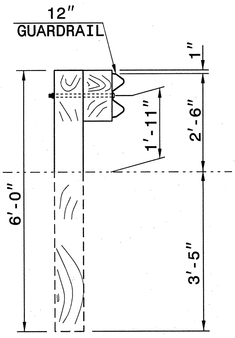
SECTION OF THRIE BEAM POSTS 1 THRU 6



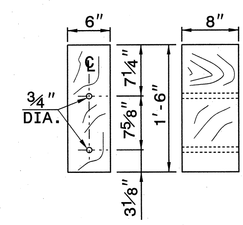
SECTION OF THRIE BEAM POST 7



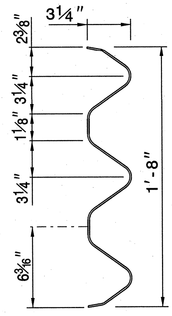
SECTION OF WTR BEAM POST 8



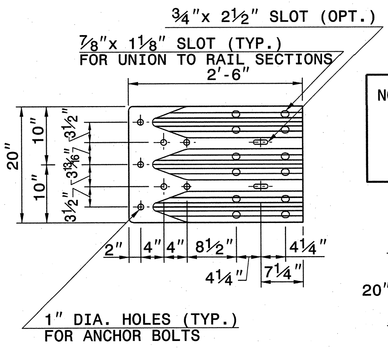
SECTION OF 'W' BEAM POST 9



THRIE BEAM OFFSET BLOCK

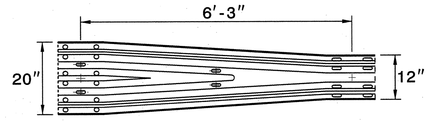


THRIE-BEAM SECTION

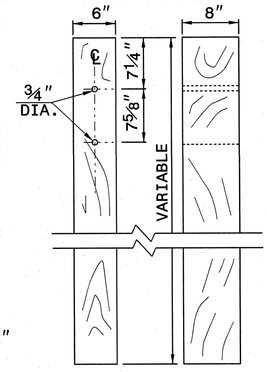


END SHOE

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



THRIE BEAM LINE POST

SHEET 3 OF 7
862d03

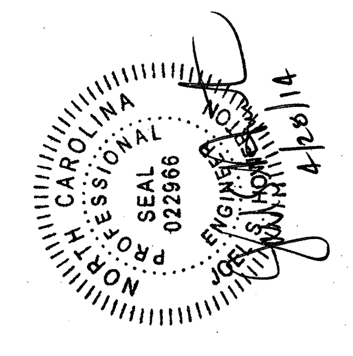
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

NORTH CAROLINA PROFESSIONAL SEAL 02966 ENGINEER
4/26/12

PROJECT REFERENCE NO. U-2519CB
SHEET NO. 2-V



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

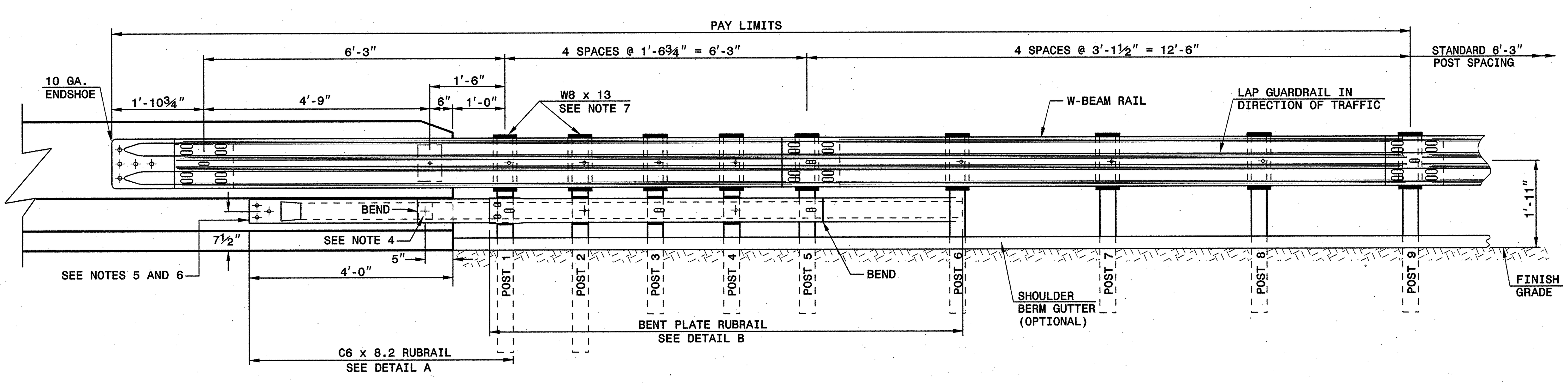
SEE TITLE BLOCK

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

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

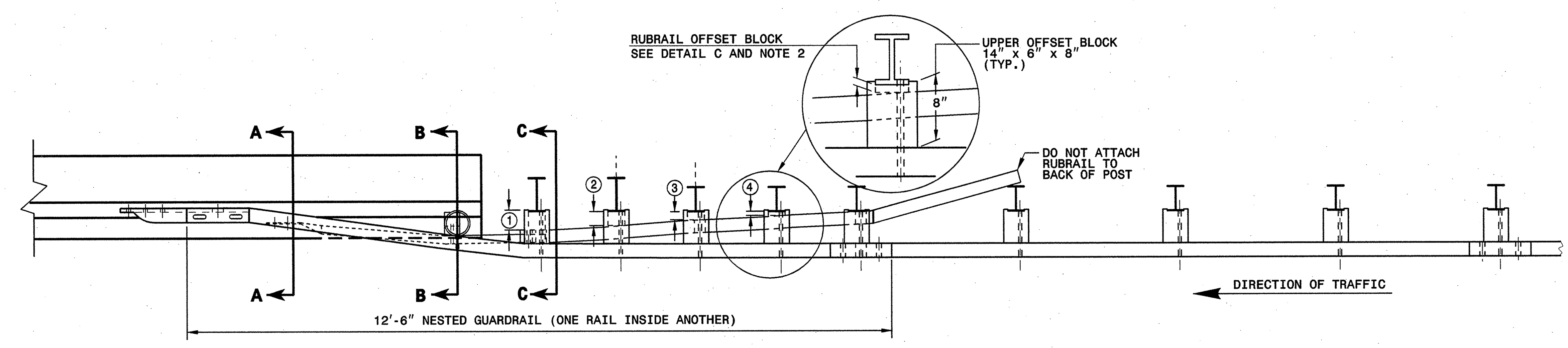
ENGLISH DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03



ELEVATION

GENERAL NOTES:
1) POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
2) RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH ⅝" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A ⅝" x 4½" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
3) STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH ⅝" x 1¼" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
4) SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE ⅜" x 3" LAG BOLT WITH FLAT WASHER.
5) SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
6) ANCHORAGE:
   (a) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE ⅝" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS ½".
   (b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04). A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01). INSTALL THE W-BEAM END SHOE BEHIND THE NESTED W-BEAM ELEMENTS.
   (c) AT NEW BRIDGE RAIL, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
7) POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.



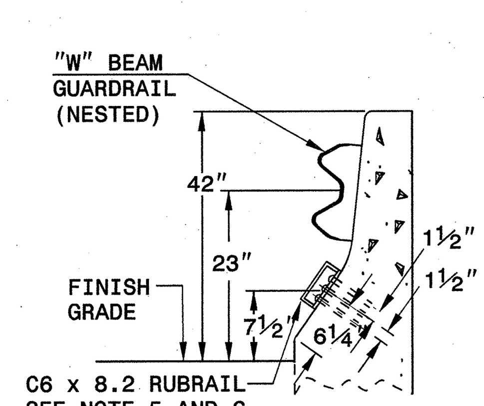
PLAN

GUARDRAIL ANCHOR UNIT TYPE B-77

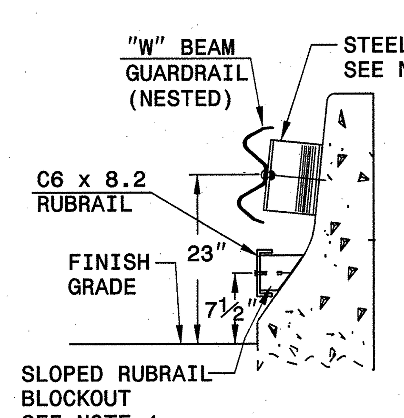
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

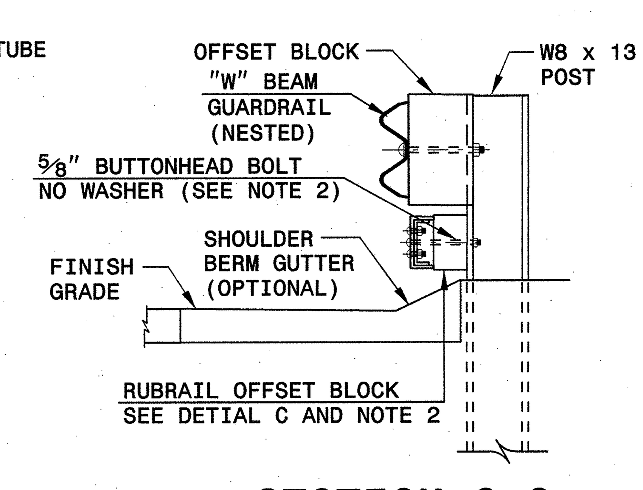
SHEET 5 OF 7
862D03



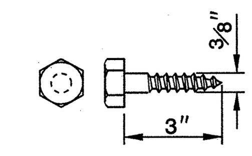
SECTION A-A



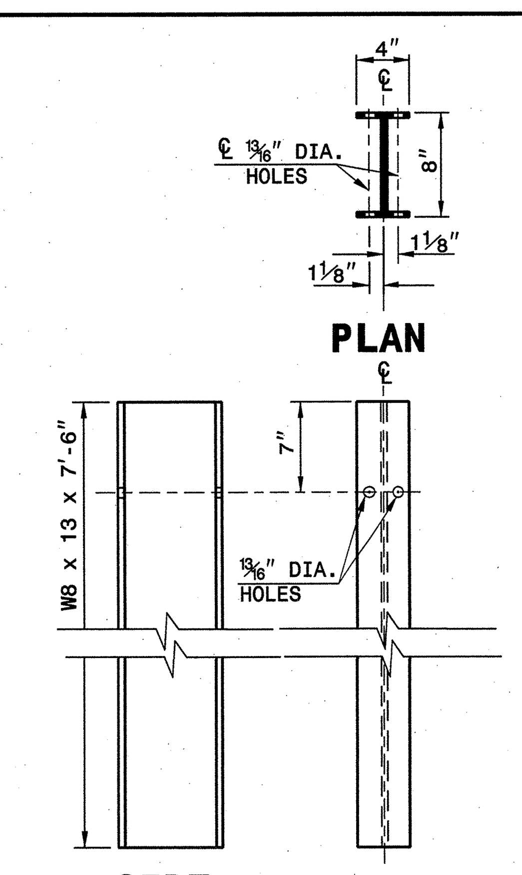
SECTION B-B



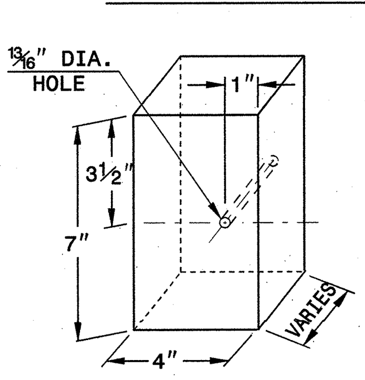
SECTION C-C



DETAIL E LAG BOLT



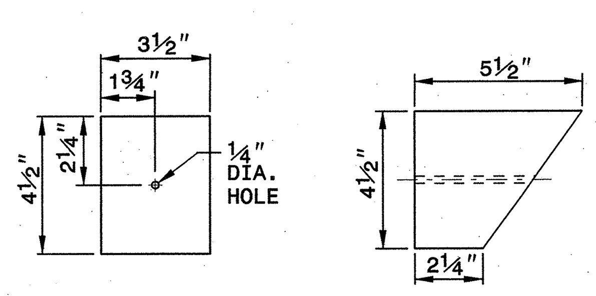
DETAIL F STEEL POST "W8 X 13 X 7'-6"



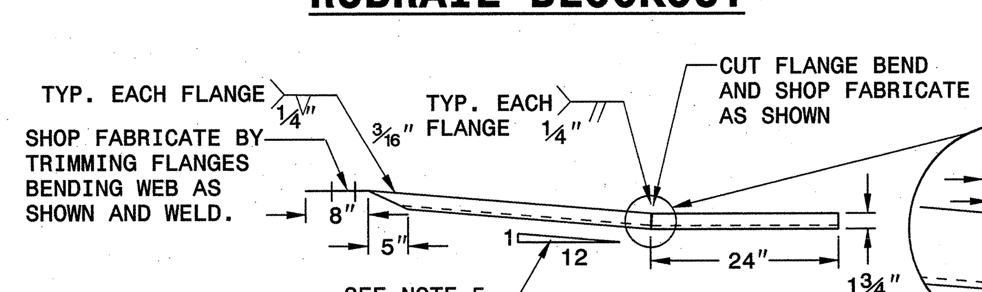
RUBRAIL BLOCKS 7" HIGH x 4" WIDE		
POST	THICKNESS	BOLT LENGTH
①	4¼"	9"
②	3¼"	5" *
③	2"	6"
④	1"	3" *

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

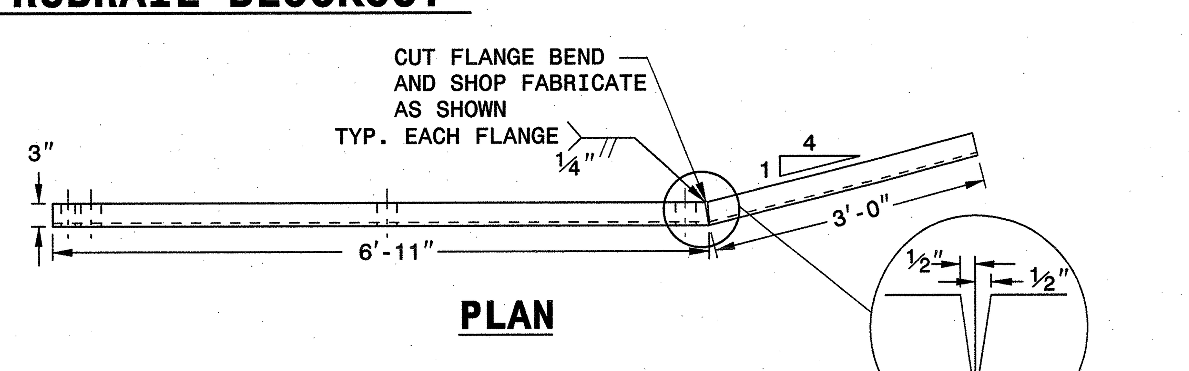
DETAIL C RUBRAIL BLOCKOUT



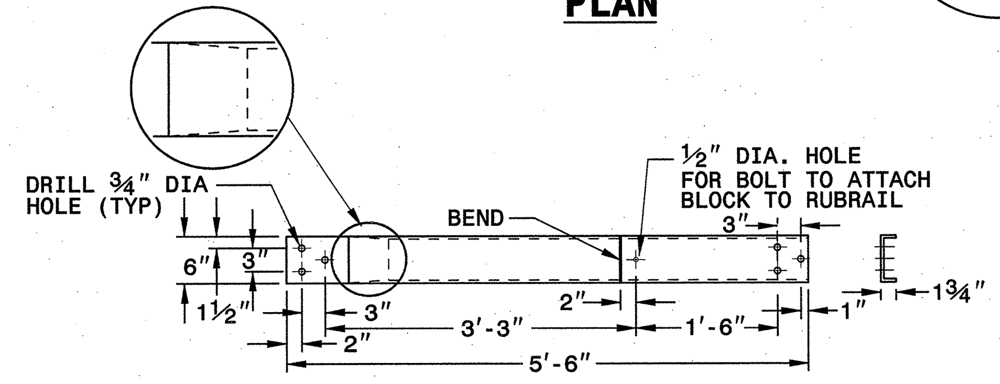
DETAIL D SLOPED RUBRAIL BLOCKOUT



PLAN

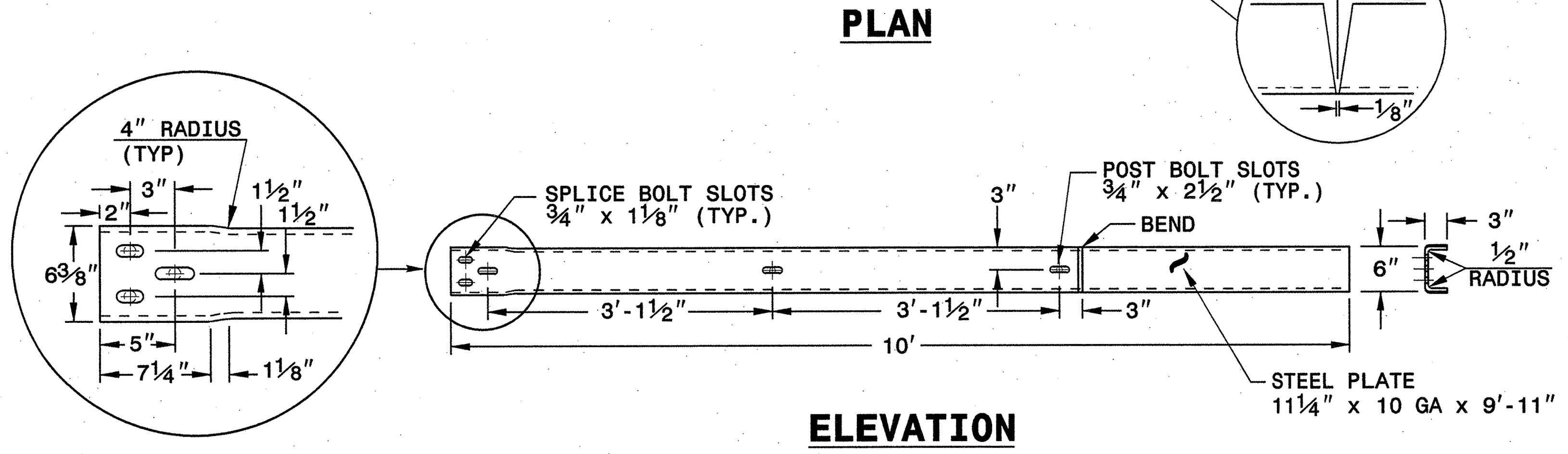


PLAN



ELEVATION

DETAIL A C6 x 8.2 RUBRAIL



ELEVATION

DETAIL B BENT PLATE RUBRAIL

GUARDRAIL ANCHOR UNIT TYPE B-77

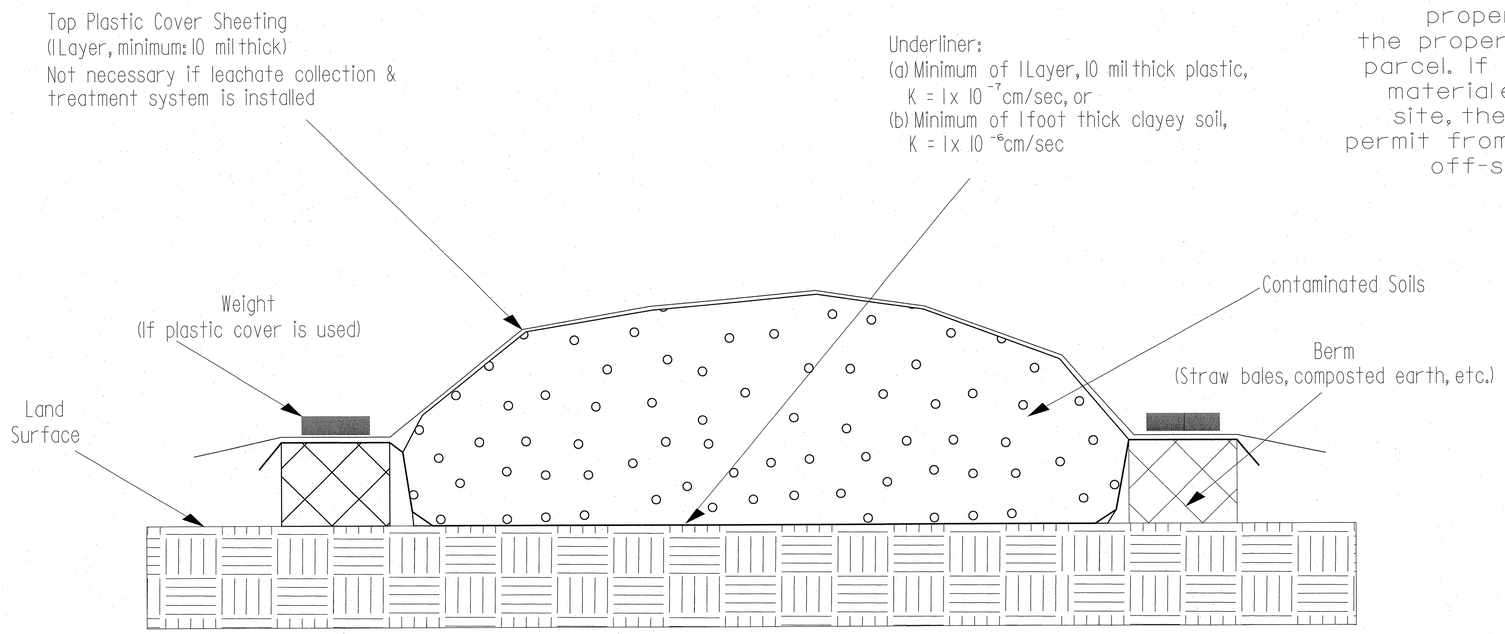
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
U-2519CB	2-X

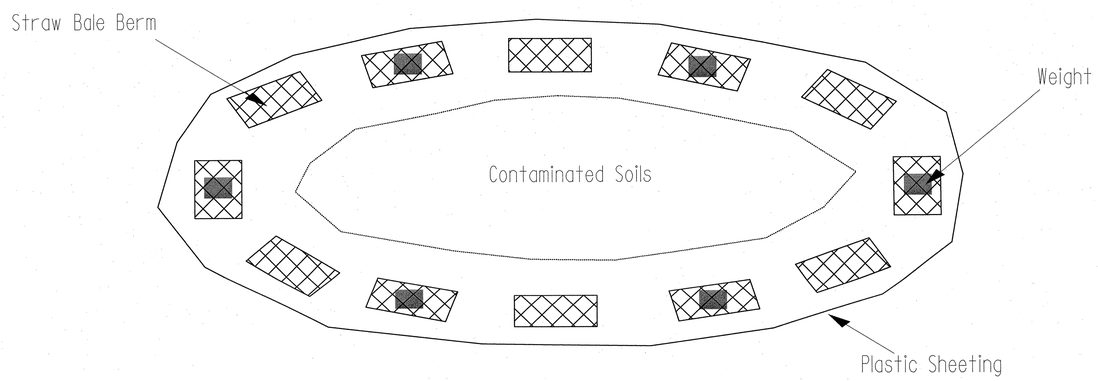
Detail for Temporary Containment of Contaminated Soil

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



7/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-Y

HYDRAULICS ENGINEER

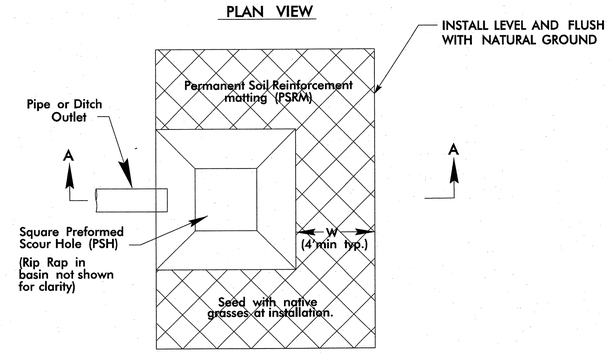
NORTH CAROLINA PROFESSIONAL SEAL 19704 ENGINEER JAMES A. BYRD

5-7-14

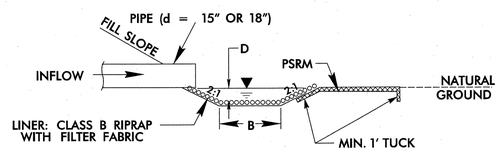
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



SECTION A-A

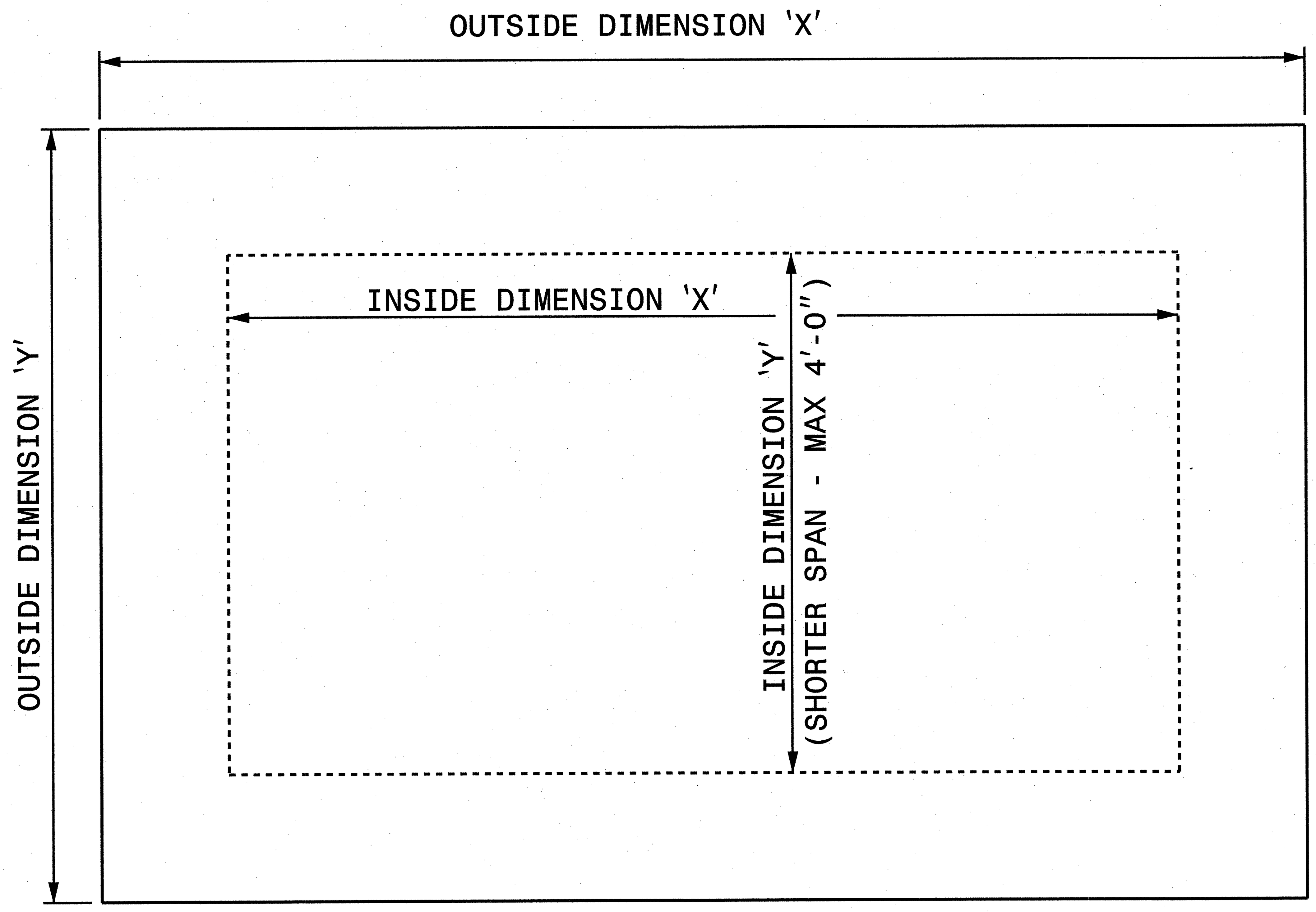


3/08

PREFORMED SCOUR HOLE

-L- STA. 820+50 RT
-L- STA. 847+50 RT
-L- STA. 850+22 RT
-L- STA. 886+65 RT
-L- STA. 970+24 RT
-RPD2- STA. 6+60 LT
-RPD2- STA. 9+50 LT
-Y1REV_RT- STA. 39+81 RT
-Y1DETREV- STA. 40+68 LT

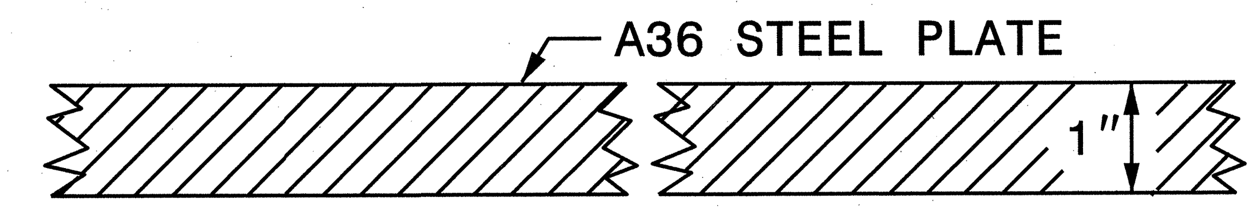
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-Z



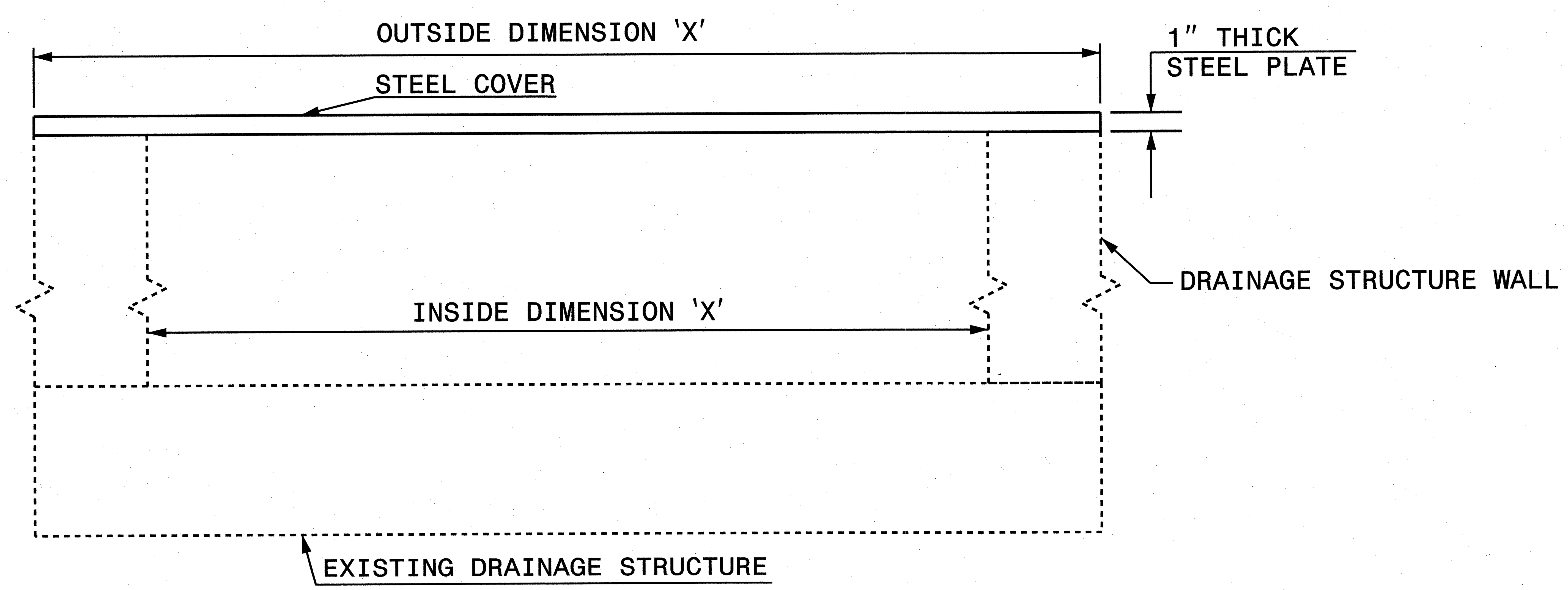
PLAN VIEWS

GENERAL NOTES:

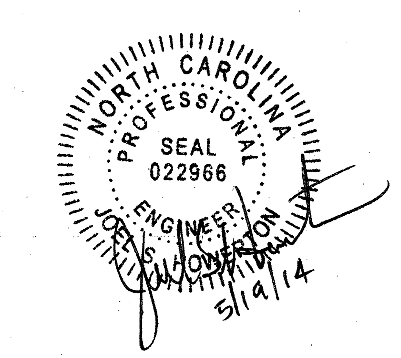
- -USE GRADE A36 STEEL
- -STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- -FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- -SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- -QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS



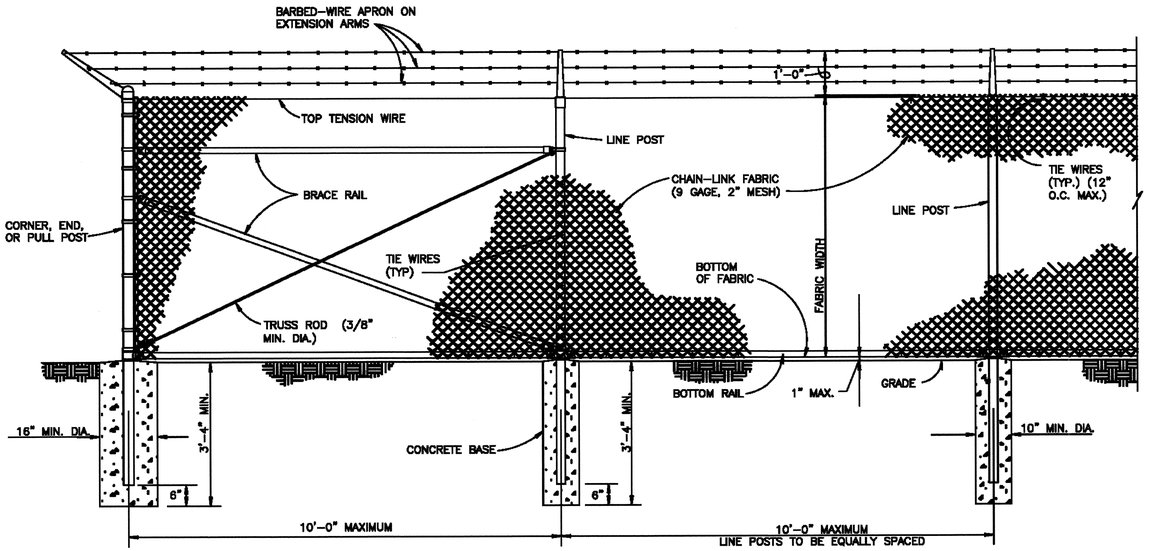
$$$$$$SYSTIME$$$$$
$$$$$$$$$DGN$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

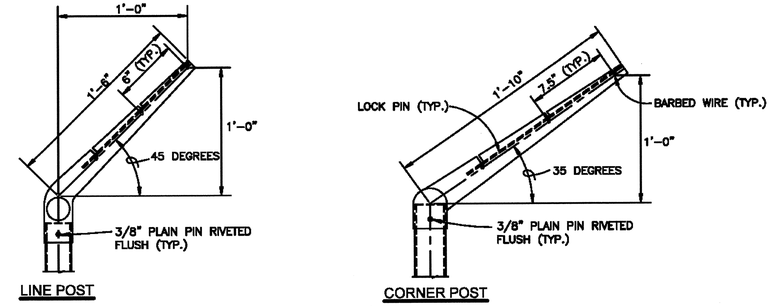
ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

U-2519CB 2-AA(1)



CHAIN-LINK SECURITY FENCE DETAIL

NO SCALE



EXTENSION ARM DETAILS

NO SCALE

STEEL POST SCHEDULE			
USE AND SECTION	MINIMUM OUTSIDE DIMENSIONS (NOMINAL)		
	FABRIC WIDTH 72" OR LESS	FABRIC WIDTH 84" TO 96"	FABRIC WIDTH 108" AND OVER
CORNER, END & PULL POSTS TUBULAR – ROUND	2.375" O.D.	2.875" O.D.	4.00" O.D.
LINE POSTS TUBULAR – ROUND	1.90" O.D.	2.375" O.D.	2.875" O.D.
BOTTOM & BRACE RAILS			
TUBULAR – ROUND	1.66" O.D.		
TUBULAR – SQUARE	1.50" SQ.		
H–SECTION	1.625" X 1.50"		
C–SECTION (ROLL–FORMED)	1.625" X 1.25"		

NOTES:

1. WIRE TIES, RAILS, POSTS, AND BRACES SHALL BE CONSTRUCTED ON THE SECURE SIDE OF THE FENCE ALIGNMENT. CHAIN–LINK FABRIC SHALL BE PLACED ON THE SIDE OPPOSITE THE SECURE AREA.

2. ONLY 9–GAGE GALVANIZED STEEL TIE WIRES SHALL BE USED FOR FASTENING THE FENCE FABRIC TO FENCE POSTS AND RAILS. 16–GAGE, 6.5 INCH LONG, STAINLESS STEEL DOUBLE LOOP BAR TIE WIRES SHALL BE USED FOR FASTENING FENCE FABRIC TO TENSION WIRES AND TRUSS RODS. HOG RINGS SHALL NOT BE ALLOWED ON SENSORED FENCES.

3. BOTTOM RAIL SHALL BE ATTACHED TO DOUBLE RAIL ENDS USING 3/8" CARRIAGE BOLTS AS SHOWN. ADDITIONAL HOLES SHALL BE DRILLED THROUGH THE BOTTOM RAIL ENDS TO INSURE THAT CARRIAGE BOLTS PASS THROUGH THE BOTTOM RAIL AS SHOWN.

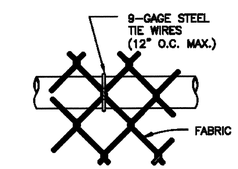
FENCE LEGEND:

TYPE FE5 – CHAIN–LINK FENCE WITHOUT BARBED–WIRE APRON
TYPE FE6 – CHAIN–LINK FENCE W/BARBED–WIRE ON SINGLE OUTRIGGER
TYPE FE7 – CHAIN–LINK FENCE W/BARBED–WIRE ON DOUBLE OUTRIGGER
TYPE FE8 – CHAIN–LINK FENCE W/BARBED–WIRE AND BARBED–TAPE ON DOUBLE OUTRIGGER
TR – FENCE WITH TOP RAIL AND TENSION WIRE AT BOTTOM
TBR – FENCE WITH TOP AND BOTTOM RAILS
TWB – TENSION WIRE TOP AND BOTTOM
TWBR – FENCE WITH TOP TENSION WIRE AND BOTTOM RAIL
FINAL NUMBER IS FABRIC WIDTH IN INCHES.

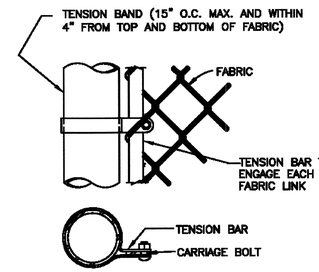
EXAMPLES

FE6–TR–72 – CHAIN–LINK SECURITY FENCE WITH BARBED–WIRE ON SINGLE OUTRIGGER, TOP RAIL, AND 72 INCH FABRIC WIDTH.

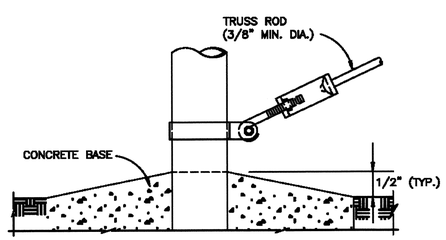
FE5–TWB–84 – CHAIN–LINK SECURITY FENCE WITH NO APRON, TOP AND BOTTOM TENSION WIRE, AND 84 INCH FABRIC WIDTH.



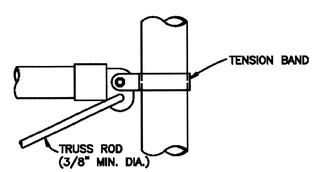
BRACE RAIL ATTACHMENT



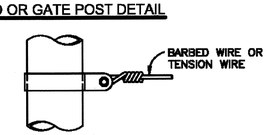
END OR GATE POST DETAIL



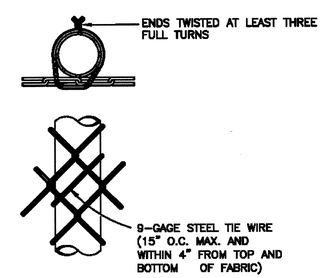
TRUSS ROD AND BAND



BRACE RAIL CLAMP DETAIL



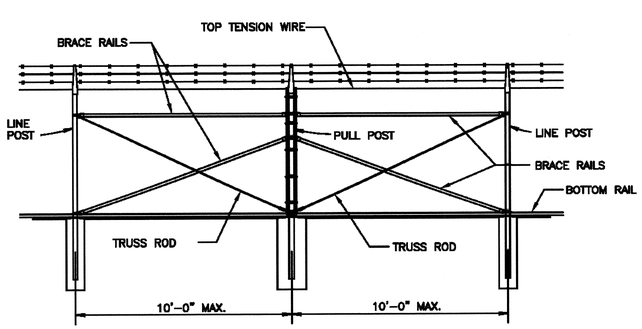
TENSION BAND DETAIL



LINE POST ATTACHMENTS

FASTENING DETAILS

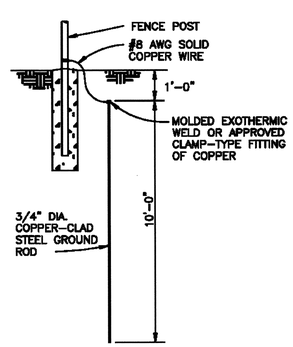
NO SCALE



BRACE PANEL DETAIL

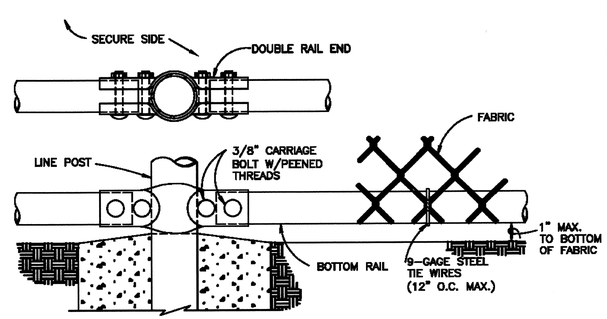
NO SCALE

NOTE:
PROVIDE BRACE PANEL WHENEVER STRAIGHT RUNS EXCEED 500 FEET.



GROUNDING DETAIL

NO SCALE



BOTTOM RAIL DETAILS

NO SCALE

1

	$$ - THINK VALUE ENGINEERING - $$		
	Revisions		
Symbol	Descriptions	Date	Approved
1	REV #0001 NEW SHEET ADDED	3/17/04	JWE

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: X
Drawn by: X
Checked by: X
Reviewed by: X
Submitted by:
Chief: X Section

BASE NAME BASE LOCATION

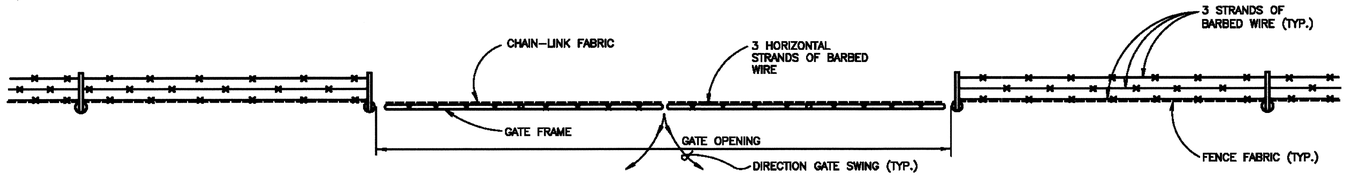
STANDARD DETAILS FOR CHAIN-LINK SECURITY FENCES, FARM STYLE FENCES AND A DOUBLE CABLE BARRIER

FE6 CHAIN-LINK SECURITY FENCE DETAILS FOR SENSORED FENCE

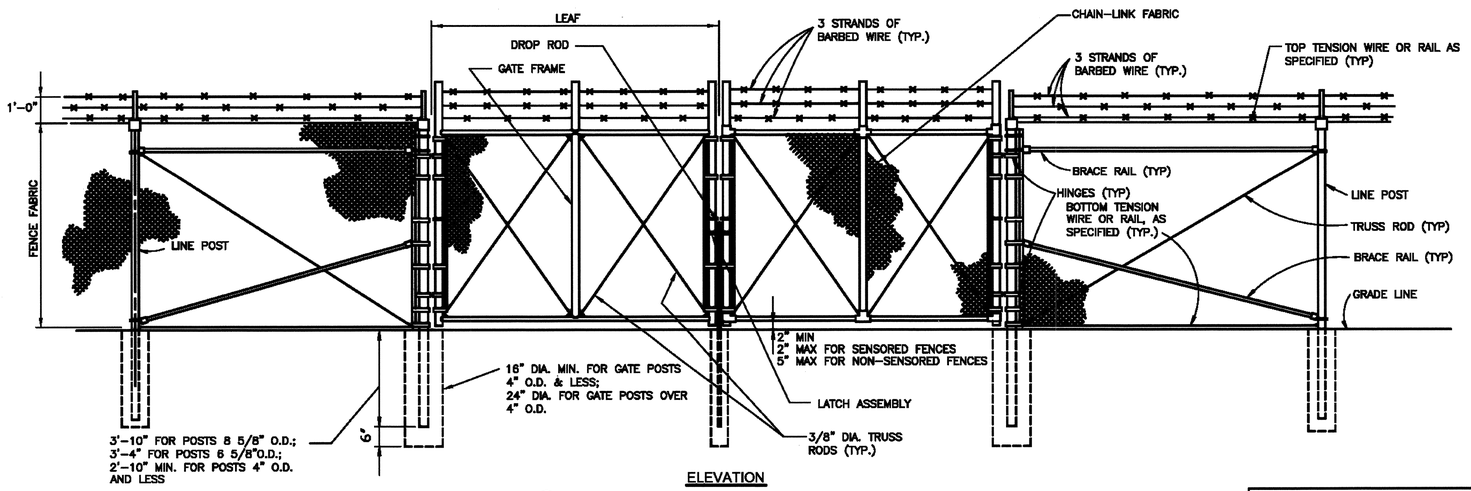
Plot Scale Ratio: 1:1
Design File: 04_FE6FENCE2.DWG
Date: 03/17/04
Spec. No.: DACA 45
Contract No.: DACA 45
Drawing Code: STD 872-90-04
Sheet reference number: 04

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
7/24/14

U-2519CB 2-AA(2)

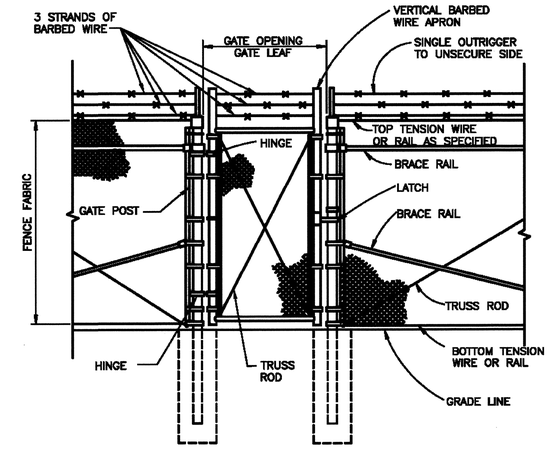


PLAN

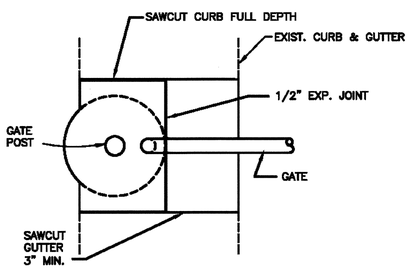


ELEVATION

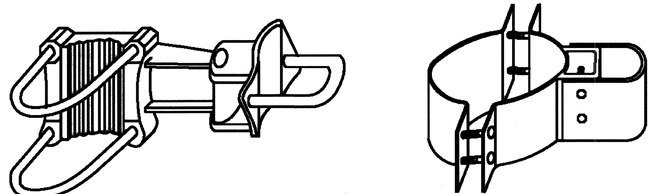
① DOUBLE SWING GATE (TYPE FE-6 FENCE)
NO SCALE



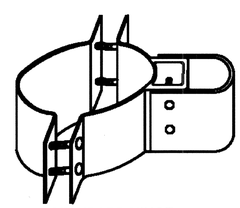
① PERSONNEL GATE
TYPE FE-6 FENCE
NO SCALE



① PLAN



OFFSET HINGE



STANDARD HINGE

GATE POST SCHEDULE	
GATE LEAF WIDTH (NOMINAL)	OUTSIDE DIMENSION (NOMINAL)
6' OR LESS	2.875" OD 2.5" SQ
MORE THAN 6' TO 13'	4.0" OD
MORE THAN 13' TO 18'	6.625" OD
MORE THAN 18'	8.625" OD

NOTES:

①

1. FOR NON-SENSORED FENCES, DETAILS SHOWN ARE TO CLARIFY REQUIREMENTS AND ARE NOT INTENDED TO LIMIT OTHER TYPE OF FENCE SECTIONS AND METHODS OF INSTALLATION THAT COMPLY WITH THE SPECIFICATIONS.

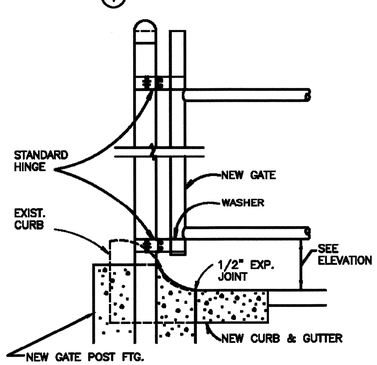
2. SWING GATES SHALL BE CONSTRUCTED WITH DROP RODS, PADLOCKS, LATCH ASSEMBLY AND GATE KEEPERS EXCEPT AS NOTED.

3. ALL GATE FRAMES SHALL BE A MINIMUM 1.90" NOMINAL (ROUND) OR 2.00" NOMINAL (SQUARE). GATE FRAMES SHALL BE OF WELDED CONSTRUCTION OR SHALL BE ASSEMBLED USING HEAVY FITTINGS. AT CONTRACTOR'S OPTION A WELDED HORIZONTAL BRACE MAY BE USED IN LIEU OF TRUSS RODS TO BRACE ALL-WELDED GATE FRAMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER RIGID CONSTRUCTION OF ALL GATES SUPPLIED.

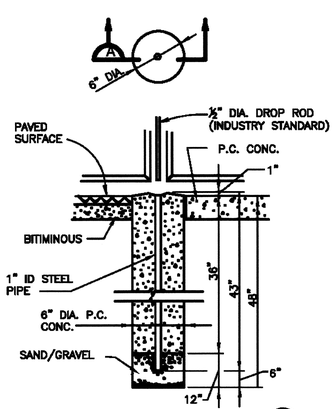
4. GATES SHALL BE DESIGNATED AS FOLLOWS:

FENCE TYPE	–	FE5, FE6, ETC.
FENCE HEIGHT	–	INCHES
TYPE OPENING	–	SO (SINGLE)
	–	DO (DOUBLE)
HINGE	–	RA (STANDARD)
	–	HO (OFFSET)
OPENING	–	FEET (CLEAR OPENING BETWEEN GATE POSTS)

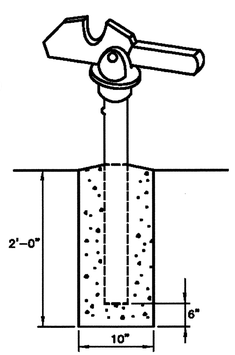
EXAMPLES: FE6-84-DO-RA-24
FE5-48-SO-HO-6



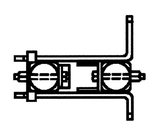
① GATE POST SECTION AT CURB AND GUTTER
NO SCALE

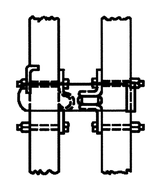


DROP ROD FOUNDATION A

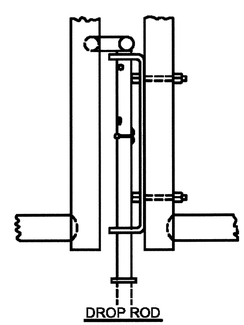


GATE KEEPER
(TO HOLD GATE OPEN)





LATCH ASSEMBLY



DROP ROD ASSEMBLY

SWING GATE DETAILS
NO SCALE

$$ - THINK VALUE ENGINEERING - $$

Revisions

Symbol	Descriptions	Date	Approved
①	REV #0001 GENERAL REVISIONS	3/17/04	JWE

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: x
Drawn by: x
Checked by: x
Reviewed by: x
Submitted by:
Chief: x Section

BASE NAME BASE LOCATION

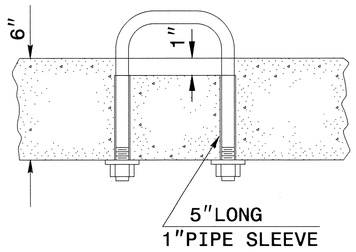
STANDARD DETAILS FOR CHAIN-LINK SECURITY FENCES, FARM STYLE FENCES AND A DOUBLE CABLE BARRIER

FE6 CHAIN-LINK SECURITY FENCE GATE DETAILS

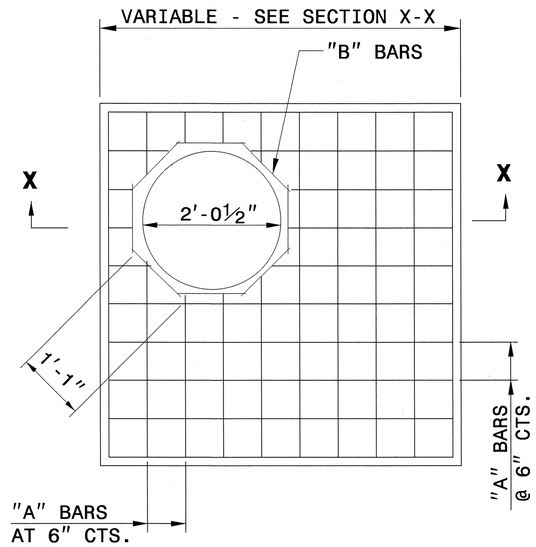
Plot Scale Ratio: 1:1
Date: 03/17/04
Design File: 09_FE6GATE.DWG
Spec. No.: DACA 45
Drawing Code: STD 872-90-09
Contract No.: DACA 45
Sheet reference number: 09

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
7/24/14

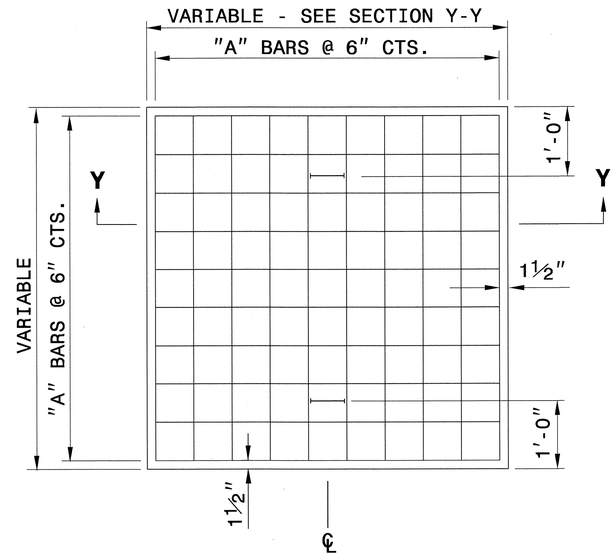
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AB



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

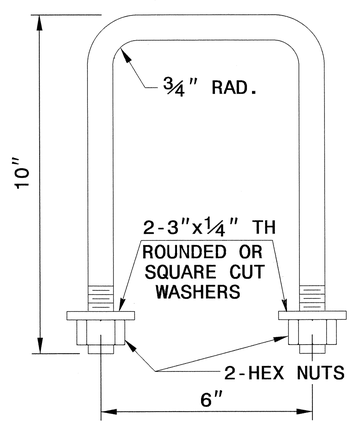
THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

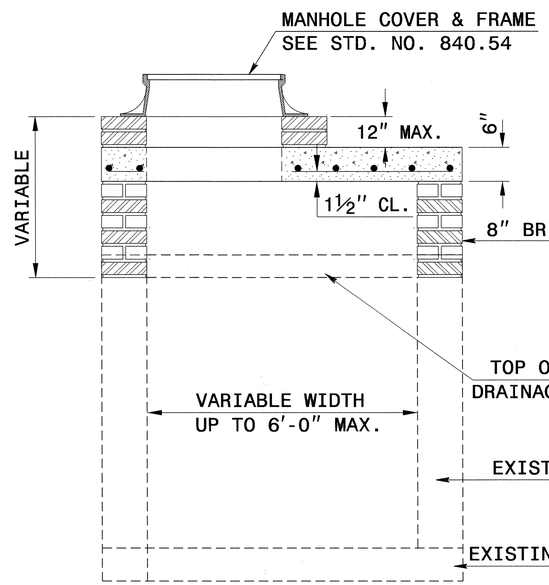
BILL OF MATERIALS

REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *
MASONRY				CU YDS
TOP SLAB CONCRETE CLASS "B"				.4326 *
BRICK MASONRY PER FT HT (MIN)				.4111

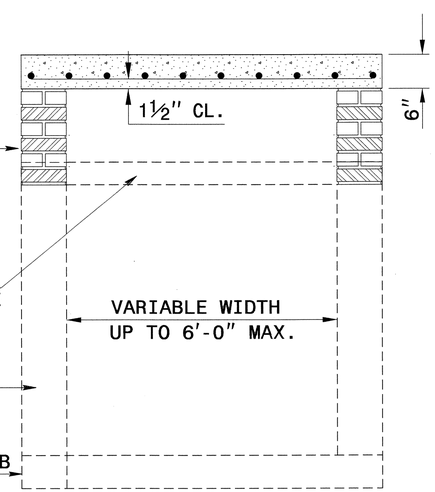
★ NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER T. S. SHAW
4/24/14

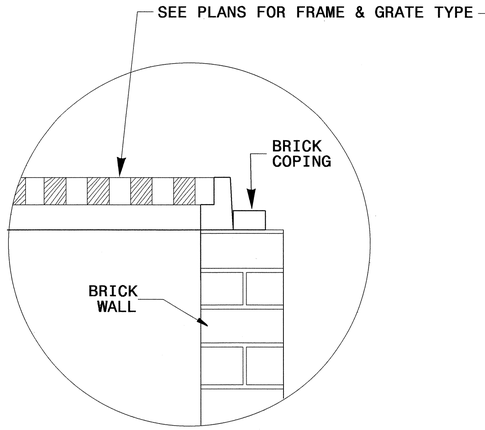
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

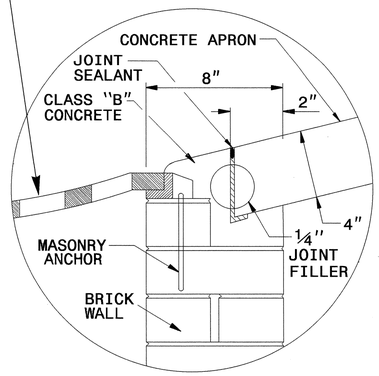
USERNAME = DGN14 SYTIME = 10:45:

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	1-AC



GRATE PLACEMENT DETAIL

FOR DROP INLETS

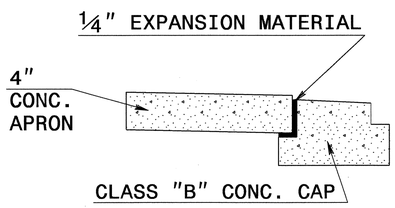


GRATE PLACEMENT DETAIL

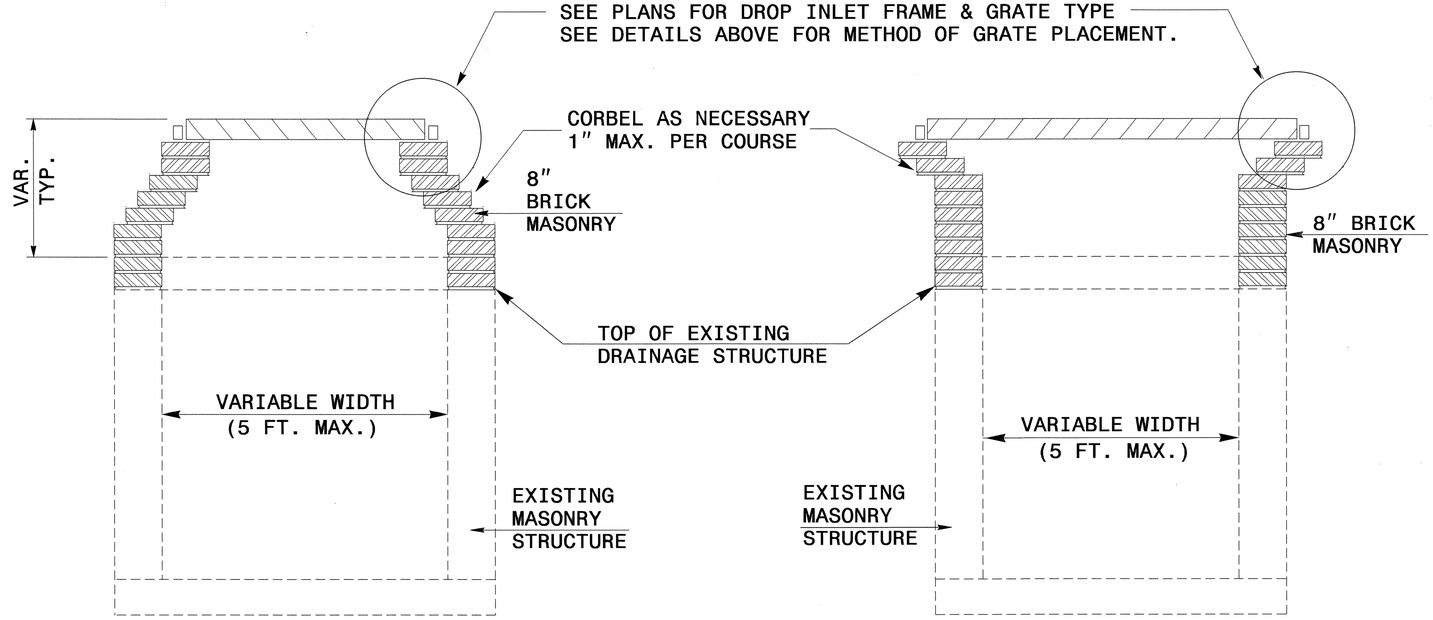
FOR GRATED DROP INLETS

GENERAL NOTES:

- CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- USE CLASS B CONCRETE.
- THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- JUMBO CONCRETE BRICK WILL BE PERMITTED. 4" CONCRETE BRICK OR 8" SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- INCLUDE 18" CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.
- SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.



EXPANSION JOINT DETAIL



TYPICAL SECTION

TYPICAL SECTION

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

DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI

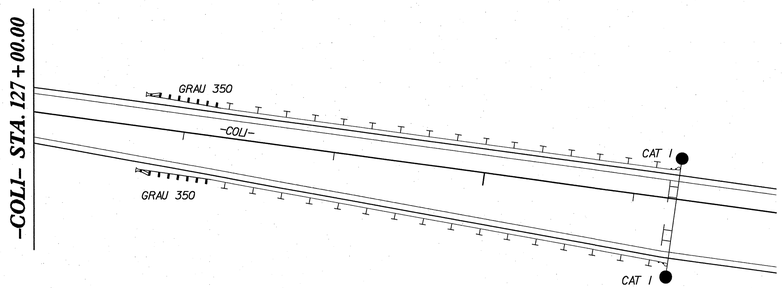
ORIGINAL BY:	T.S.S.	DATE:	NOV.1997
MODIFIED BY:	T.S.S.	DATE:	FEB.2000
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/cbtodi02.dgn		

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AD
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

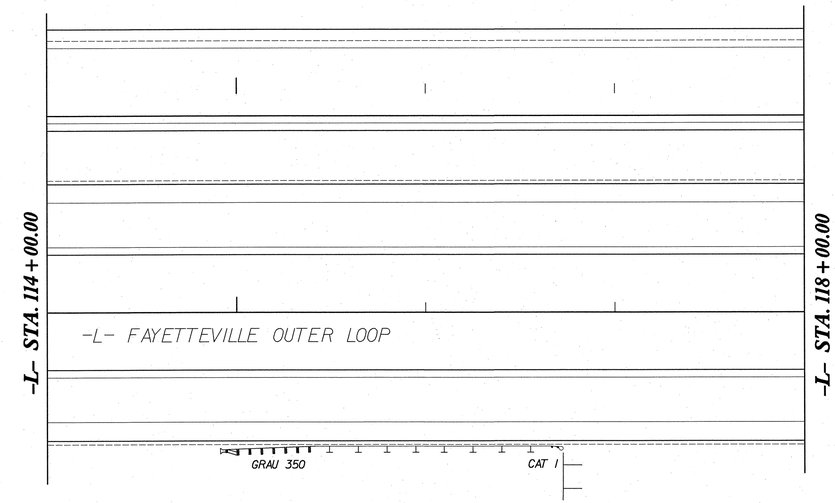
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

SIGN SUPPORT GUARDRAIL DETAILS

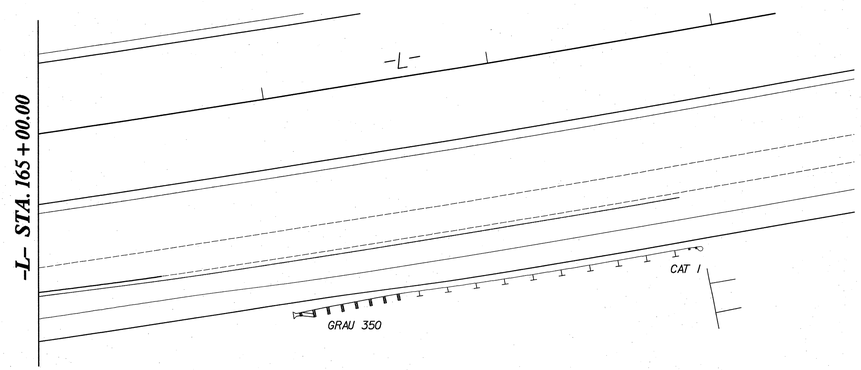
NAD 83



-COLI- SIGN SUPPORT DETAIL
LENGTH OF GUARDRAIL = 356.25' LT.& RT.*
FROM STA.127+72.00 TO STA.131+28.25



-L- SIGN SUPPORT DETAIL
LENGTH OF GUARDRAIL = 181.25' RT.*
FROM STA.114+91.25 TO STA.116+72.50



-L- SIGN SUPPORT DETAIL
LENGTH OF GUARDRAIL = 181.25' RT.*
FROM STA.165+98.25 TO STA.167+79.50

*NOTE: ALL THESE LENGTHS ARE CALCULATED FOR U-2519DA, BUT ARE PAID FOR IN U-2519CB.

REVISIONS

8/17/99

4/12/2014
W:\Roadway\Proj\u2519cb_rdy_psh02-ad.dgn
7:35:31 PM

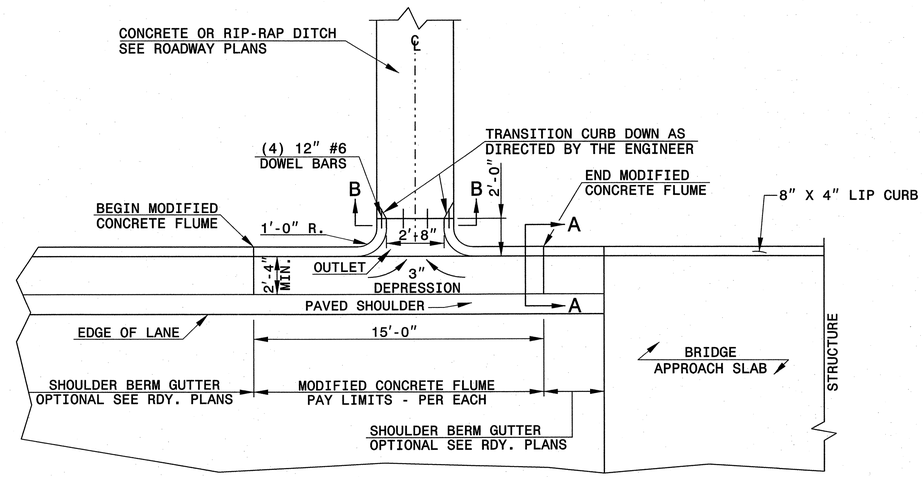
LOCATION: -L- FAYETTEVILLE OUTER LOOP

TIP NO.: U-2519CB COUNTY: CUMBERLAND

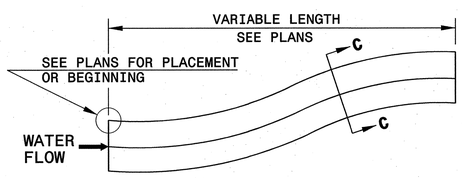
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AE

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

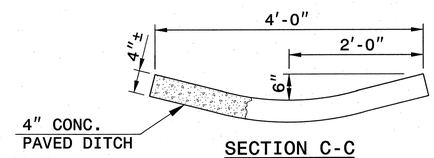
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH



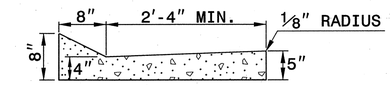
PLAN VIEW



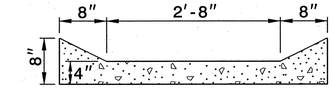
DOWNGRADE OR SAG



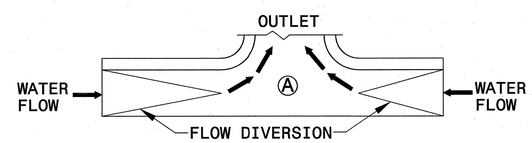
SECTION C-C



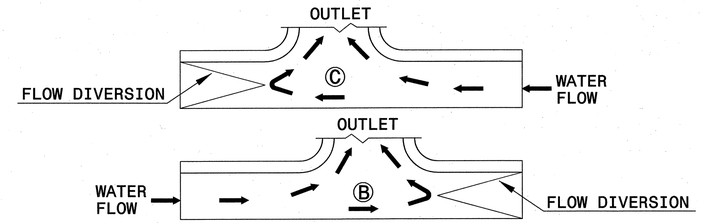
SECTION A-A



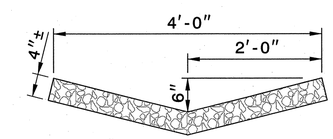
SECTION B-B



SAG



DOWN GRADE



RIP-RAP LINED DITCH

FLOW DIVERSION EXAMPLES

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 4/28/14

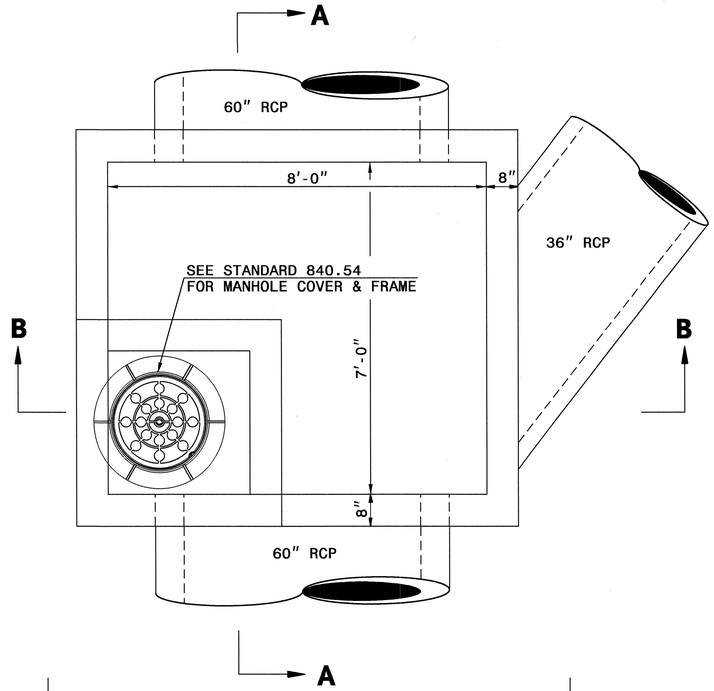
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

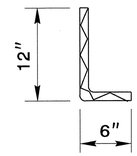
ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: E.E. Ward DATE: July 2004
CHECKED BY: DATE:
FILE SPEC.: w:details\stand\modifiedflume.dgn

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

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AF



PLAN



DOWEL

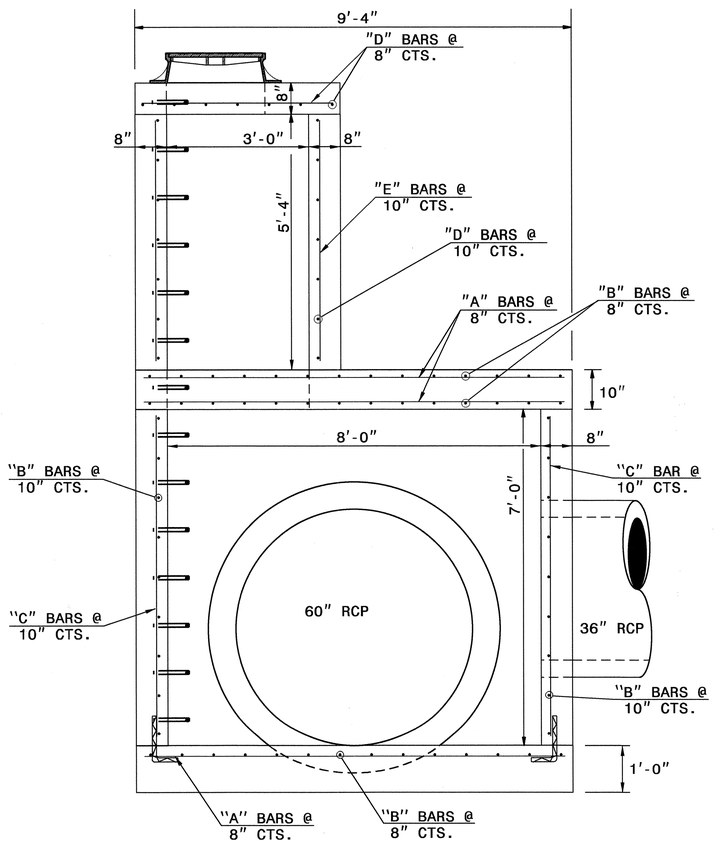
GENERAL NOTES:

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 400.
6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
7. HEIGHT OF JUNCTION BOX MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.
8. PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
9. IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

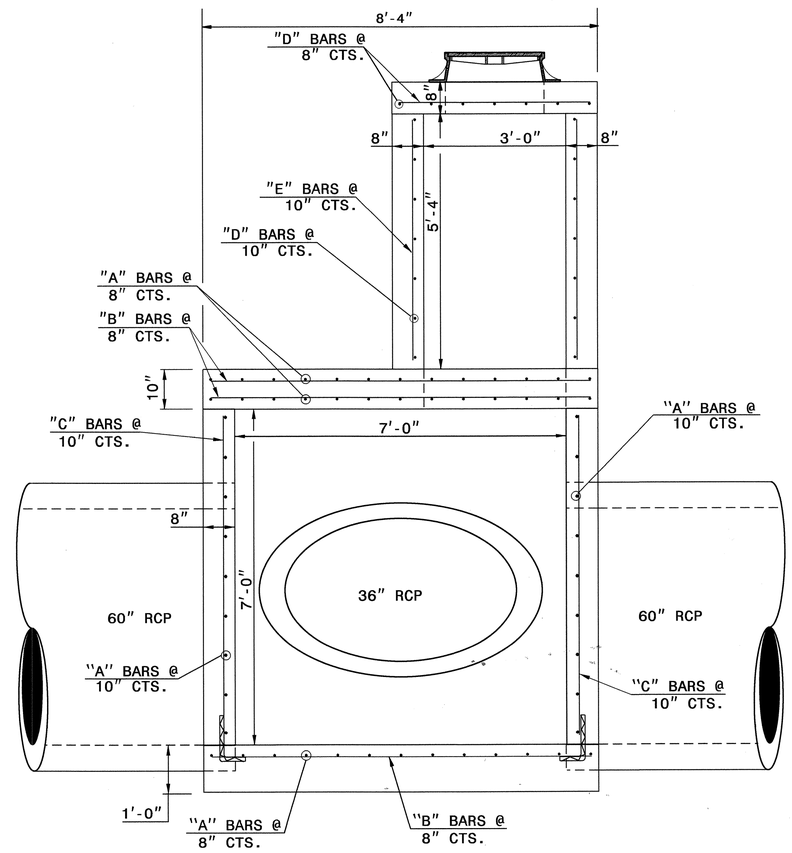
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	57	#5	9'-0"	535
B	64	#5	8'-0"	534
C	42	#5	6'-8"	292
DOWEL	46	#5	1'-6"	72
D	42	#4	4'-0"	112
E	20	#4	5'-0"	67
TOTAL REINF. STEEL (lbs.)				1612
TOTAL CONC. CU. YDS.				13.3
DEDUCTIONS FOR ONE PIPE				
60" RCP				0.9
SKEWED 36" RCP				0.4

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES.



SECTION B-B



SECTION A-A

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOELIS HOWERTON
4/28/14

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

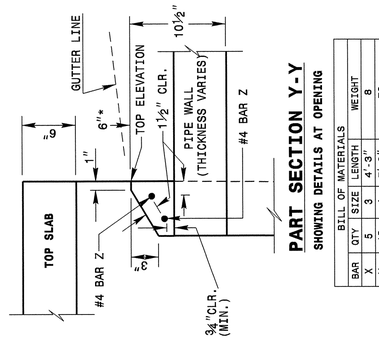
DETAIL OF SPECIAL JUNCTION BOX WITH MANHOLE

ORIGINAL BY: K.A. Kempf DATE: February 6, 2014
MODIFIED BY: DATE:
CHECKED BY: [signature] DATE: 2/6/14
FILE SPEC.: details/kkempf/english/jb60_u2519cb.dgn

06-FEB-2014 15:16
S:\Contracts\Contracts\Special Details\kkempf\english\jb60_u2519cb.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A8

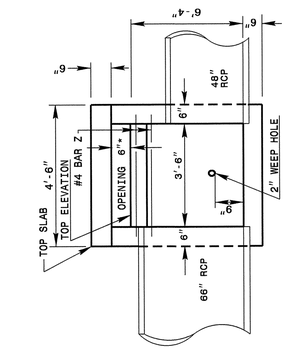
NOTES: USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB, OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
CONSTRUCT WITH PIPE CROWNS MATCHING.
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.
INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.
* INCREASE THE SIZE OF THE 6' OPENING TO 8' MAX., AS DIRECTED BY THE ENGINEER BY ADDING 2" TO THE WALL HIEGHT ABOVE THE TOP ELEVATION. ADJUST QUANTITIES ACCORDINGLY.



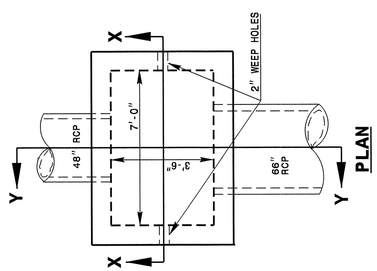
PART SECTION Y-Y
SHOWING DETAILS AT OPENING

BILL OF MATERIALS

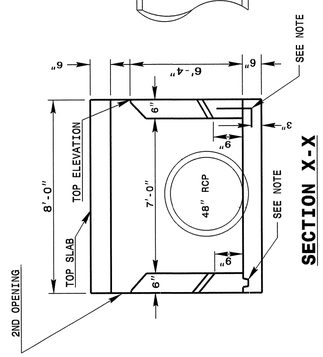
BAR	QTY	SIZE	LENGTH	WEIGHT
X	5	3	4'-3"	8
Y	15	4	7'-9"	78
Z	4	4	4'-0"	11
TOTAL REINF. STEEL (lbs.)				97
TOTAL CONC. CU. YDS.				4.2



SECTION Y-Y



PLAN



SECTION X-X

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

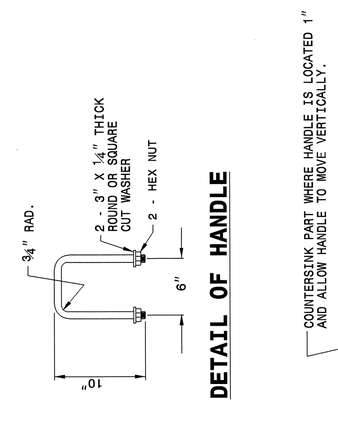
ENGLISH DETAIL DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
66" AND 48" PIPE

SHEET 1 OF 2 **840D04**

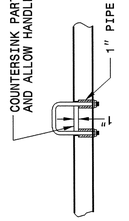
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
66" AND 48" PIPE

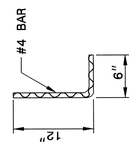
SHEET 1 OF 2 840D04



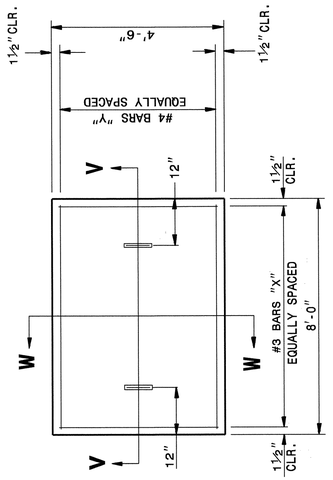
DETAIL OF HANDLE



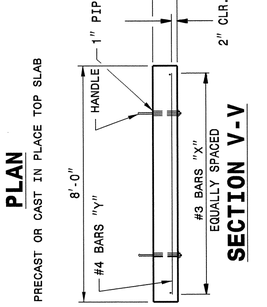
PART SECTION
THRU COVER SHOWING HANDLE



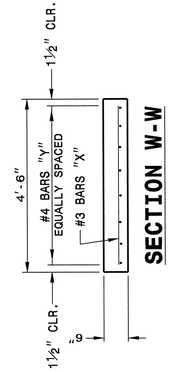
DOWEL



PLAN
PRECAST OR CAST IN PLACE TOP SLAB



SECTION V-V



SECTION W-W

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

ENGLISH DETAIL DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
66" AND 48" PIPE

SHEET 2 OF 2 **840D04**

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

ENGLISH DETAIL DRAWING FOR
CONCRETE OPEN THROAT CATCH BASIN
66" AND 48" PIPE

SHEET 2 OF 2 840D04

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOELIS HOWARD
4/11/14

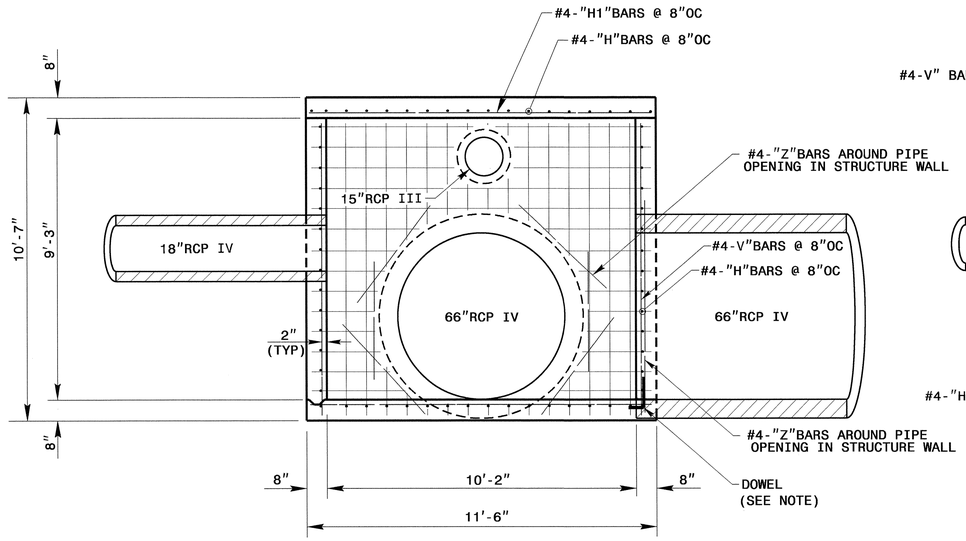
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

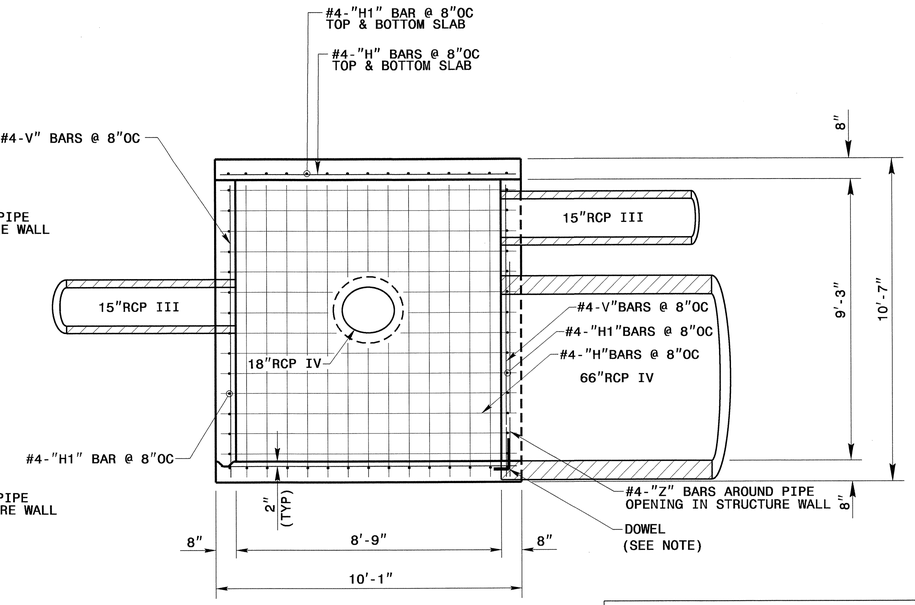
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: KYLE KEMPF DATE: 4/11/2014
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

11-APR-2014 10:39
S:\Contracts\Contracts\Special Details\kkempf\english\840D0402.dgn
$$$$USERNAME$$$$

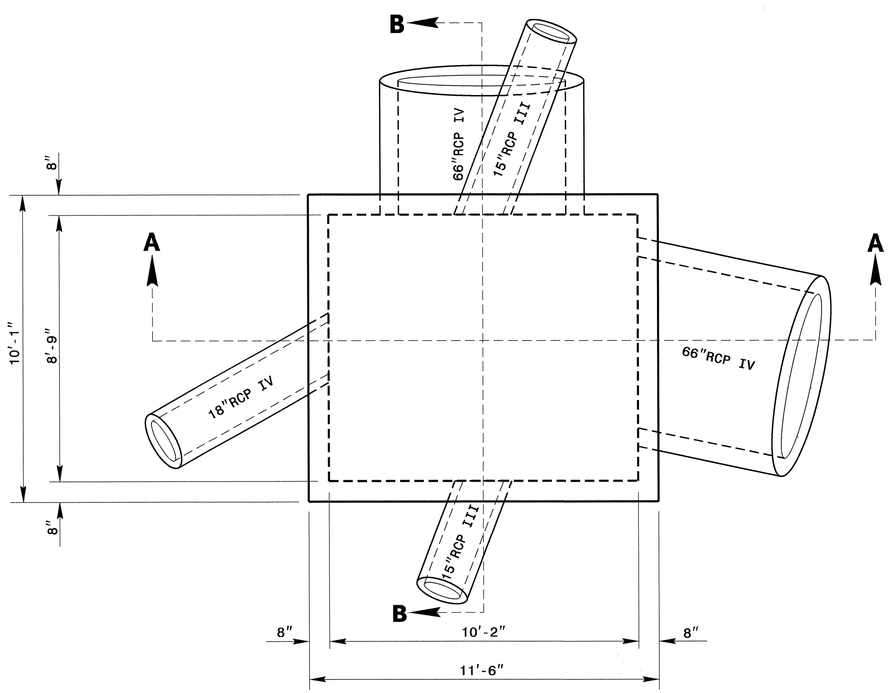
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A11



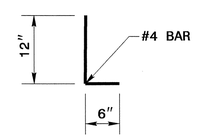
SECTION A-A



SECTION B-B



PLAN VIEW



DOWEL DETAIL

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

CHAMFER ALL EXPOSED CORNERS 1".

HEIGHT DIMENSIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

BILL OF MATERIALS

BAR	NO.	SIZE	LENGTH	WEIGHT
H	64	#4	9'-9"	417
H1	58	#4	11'-2"	433
V	60	#4	9'-7"	385
Z	12	#4	4'-0"	32
TOTAL REINF. STEEL (LBS.)				1267
CLASS "B" CONC.(CU.YDS.)				15
RC PIPE DEDUCTIONS				
2-66" RC-IV PIPE				-1.7
1-18" RC-IV PIPE				-0.1
2-15" RC-III PIPE				-0.1
TOTAL CL."B" CONC.(CU.YDS.)				13.1

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER

4/11/14

STRUCTURE NO.2003

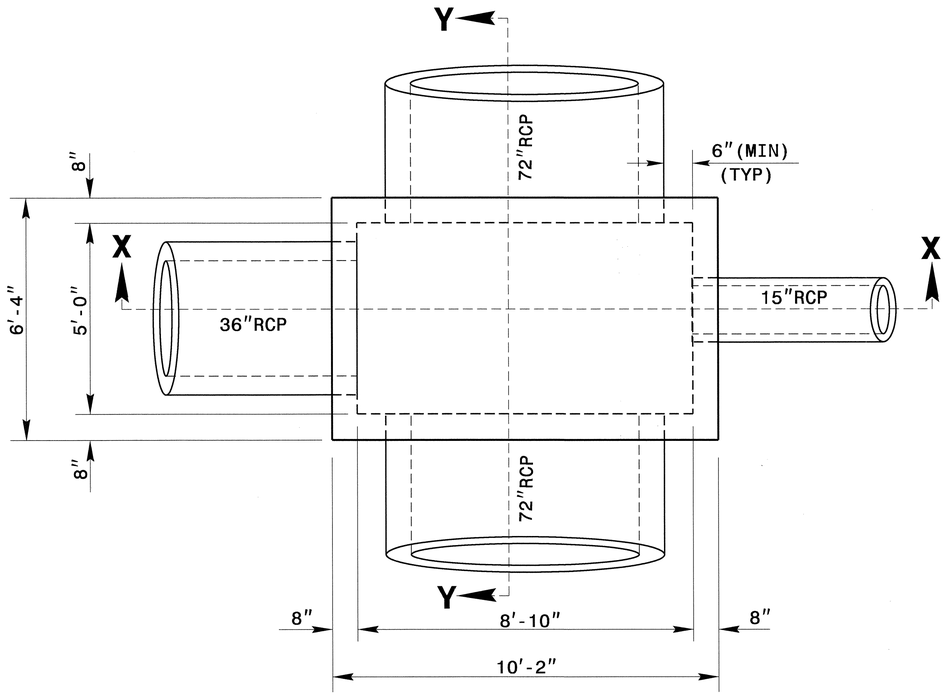
CONTRACT STANDARDS & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-707-6950 FAX 919-250-4119

66" JUNCTION BOX

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: nbritt DATE: 04/11/14
CHECKED BY: [signature] DATE: 4/11/14
FILE SPEC.: detail/nbritt/english/urban/u2519cb 66jb.dgn

SYSTIME = 11:01:11
USERNAME = DOT4NBRITT

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A1



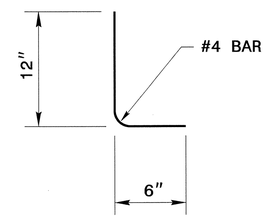
PLAN VIEW

GENERAL NOTES:

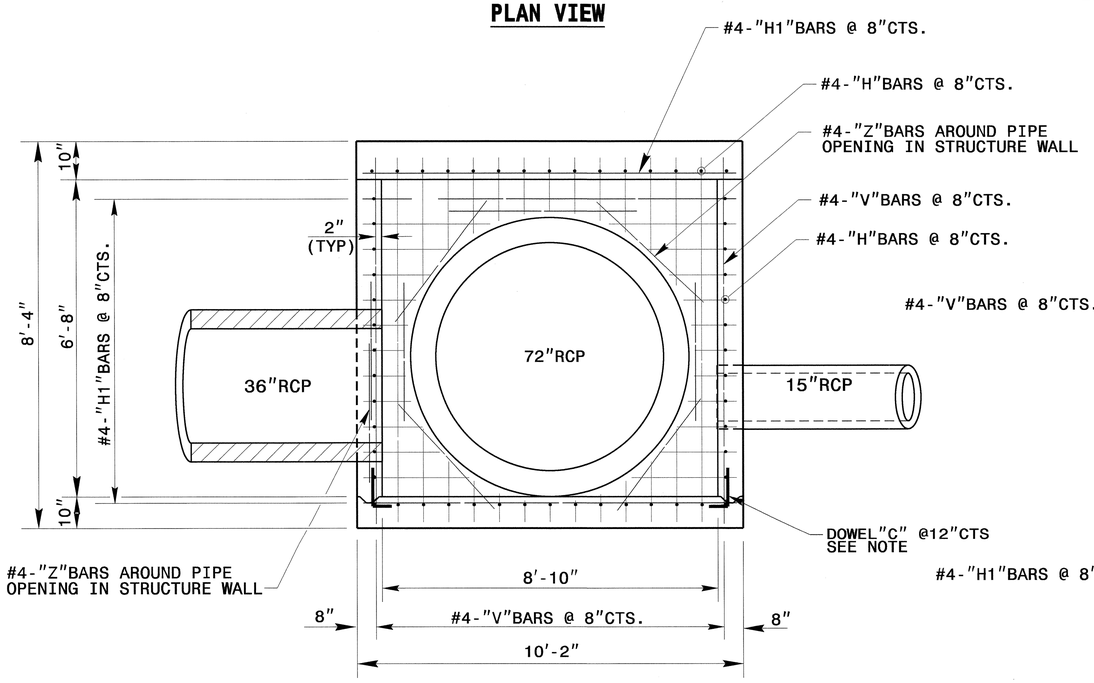
- THE BASE SLAB TO BE CONSTRUCTED BY FORMING.
- SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB
- CLASS 'B' CONCRETE TO BE USED THROUGHOUT.
- CONSTRUCTION OPTIONS: MONOLITHIC POUR; 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- REINFORCING STEEL TO BE CUT, BENT OR RELOCATED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.
- ALL EXPOSED CORNERS TO BE CHAMFERED 1".
- MAINTAIN 2" MINIMUM CONCRETE COVERAGE ON ALL STEEL.

BILL OF MATERIALS

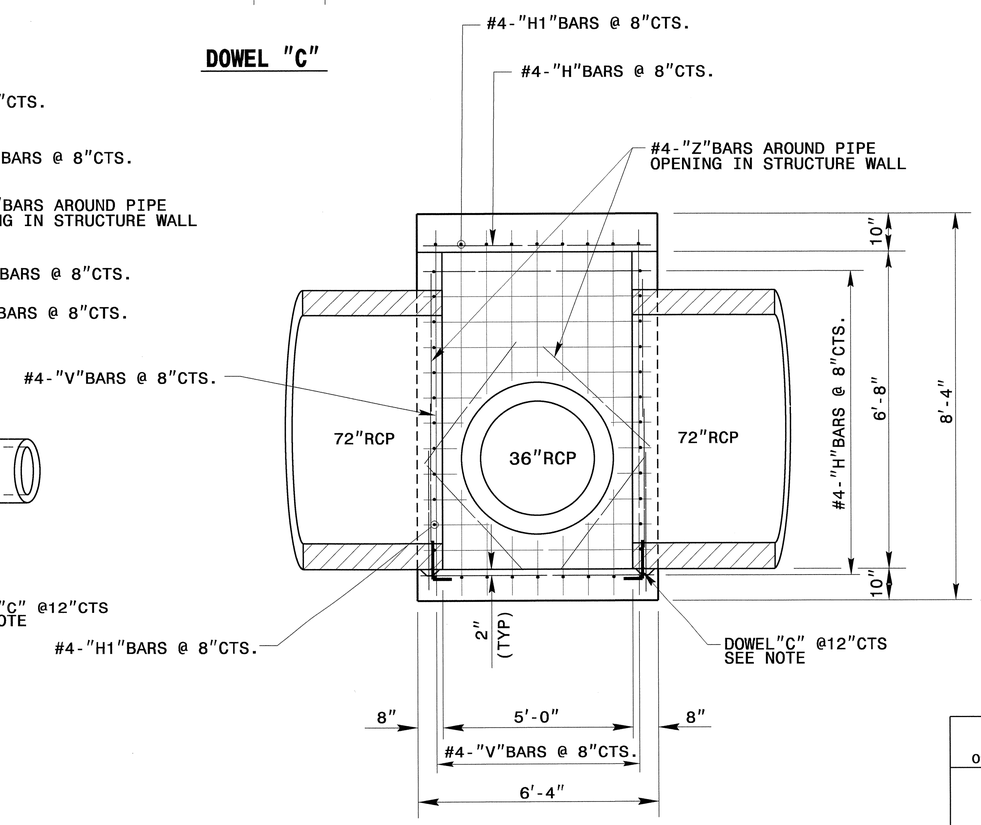
BAR	NO.	SIZE	LENGTH	WEIGHT
H	56	#4	6'-0"	225
H1	44	#4	9'-10"	289
V	48	#4	7'-8"	246
Z	18	#4	5'-0"	61
TOTAL CONC. (CU. YDS.)				9.0
CONCRETE PIPE DEDUCTION				
1-36" RCP				-0.3
2-72" RCP				-2.0
1-15" RCP				
TOTAL REINF. STEEL (LBS.)				821
TOTAL CONC. (CU. YDS.)				6.6



DOWEL "C"



SECTION X-X



SECTION Y-Y

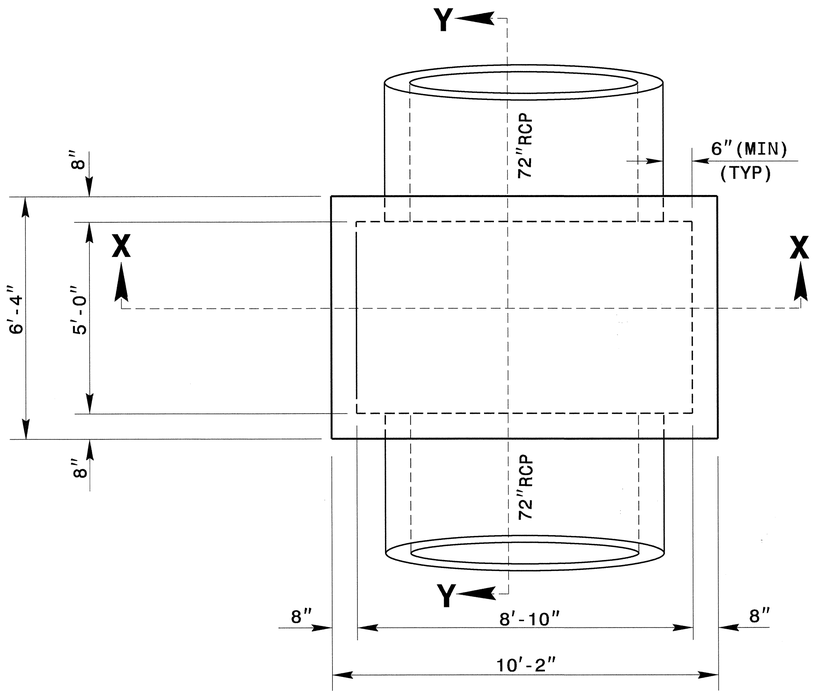
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 4/9/14

CONTRACT STANDARDS
STANDARDS AND SPECIAL DESIGN
Office 919-707-6900 FAX 919-250-4119

72" JUNCTION BOX WITH SLAB LID

ORIGINAL BY: DATE:
MODIFIED BY: nbritt DATE: 11/10/11
CHECKED BY: DATE:
FILE SPEC.: detail/nbritt/english/interstate/i3819a72jb.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	L-AJ



PLAN VIEW

GENERAL NOTES:

-THE BASE SLAB TO BE CONSTRUCTED BY FORMING.

-SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB

-CLASS 'B' CONCRETE TO BE USED THROUGHOUT.

-CONSTRUCTION OPTIONS: MONOLITHIC POUR; 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

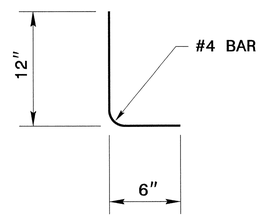
-REINFORCING STEEL TO BE CUT, BENT OR RELOCATED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.

-ALL EXPOSED CORNERS TO BE CHAMFERED 1".

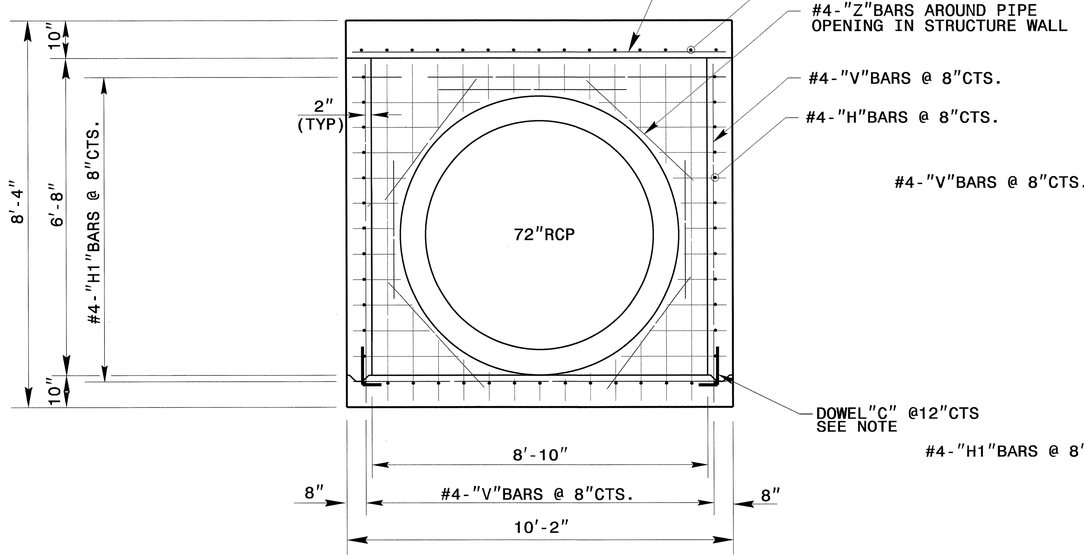
-MAINTAIN 2" MINIMUM CONCRETE COVERAGE ON ALL STEEL.

BILL OF MATERIALS

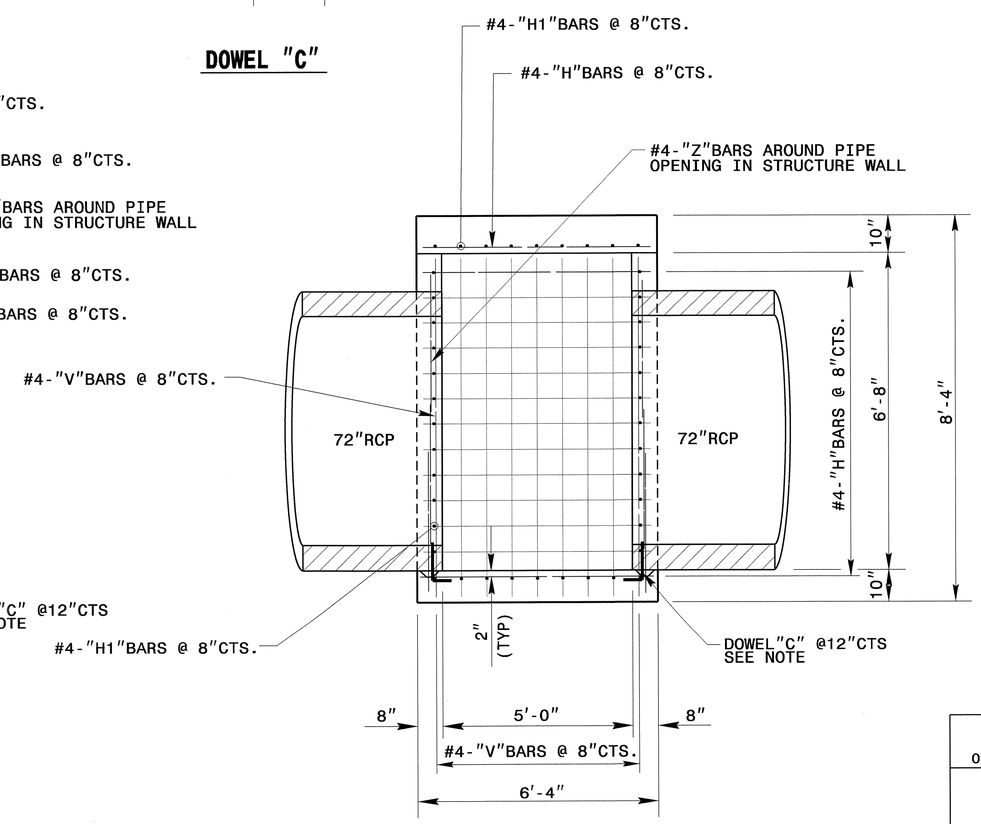
BAR	NO.	SIZE	LENGTH	WEIGHT
H	56	#4	6'-0"	225
H1	44	#4	9'-10"	289
V	48	#4	7'-8"	246
Z	18	#4	5'-0"	61
TOTAL CONC. (CU. YDS.)				9.0
CONCRETE PIPE DEDUCTION				
2-72" RCP				-2.0
TOTAL REINF. STEEL (LBS.)				821
TOTAL CONC. (CU. YDS.)				7.0



DOWEL "C"



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
4/9/14

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

72" JUNCTION BOX WITH SLAB LID

ORIGINAL BY: DATE:
MODIFIED BY: nbritt DATE: 11/10/11
CHECKED BY: DATE:
FILE SPEC.: detail/nbritt/english/interstate/i3819a72jb.dgn

PROJECT REFERENCE NO.	SHEET
U-2519CB	2-AK

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 7/22/13

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

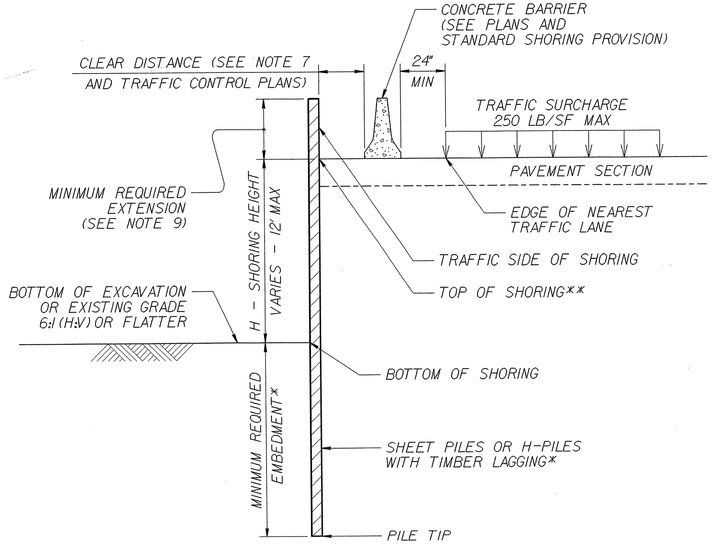
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

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

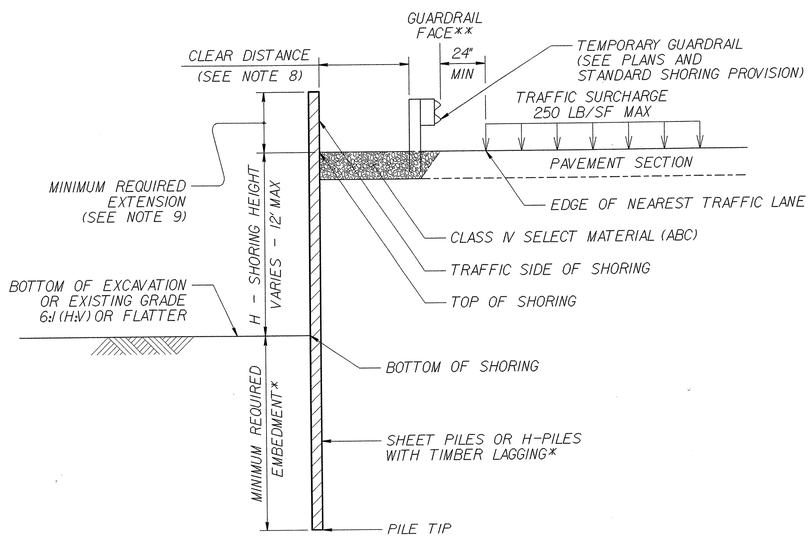
NOTES:

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



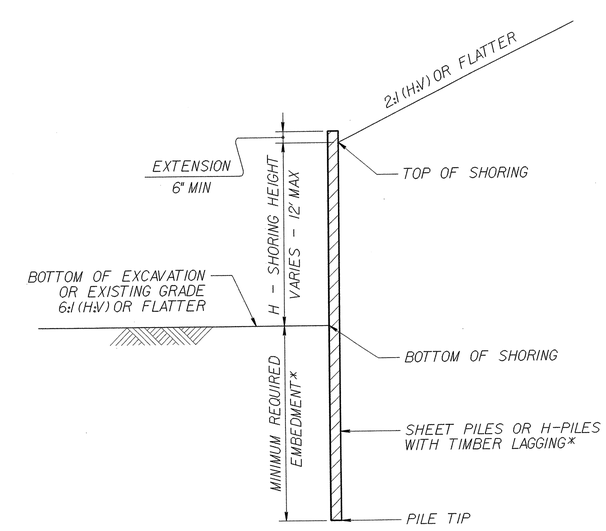
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)

***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

***SEE TABLE ABOVE.**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

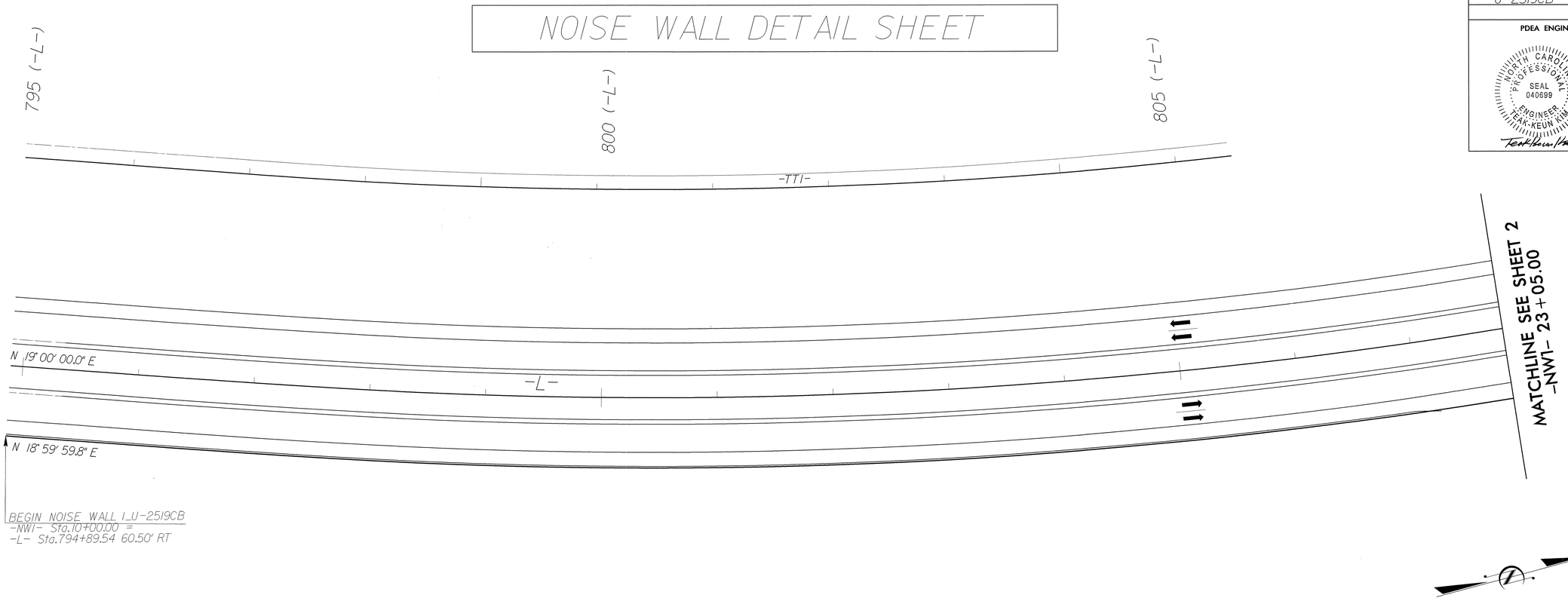
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AL

PDEA ENGINEER

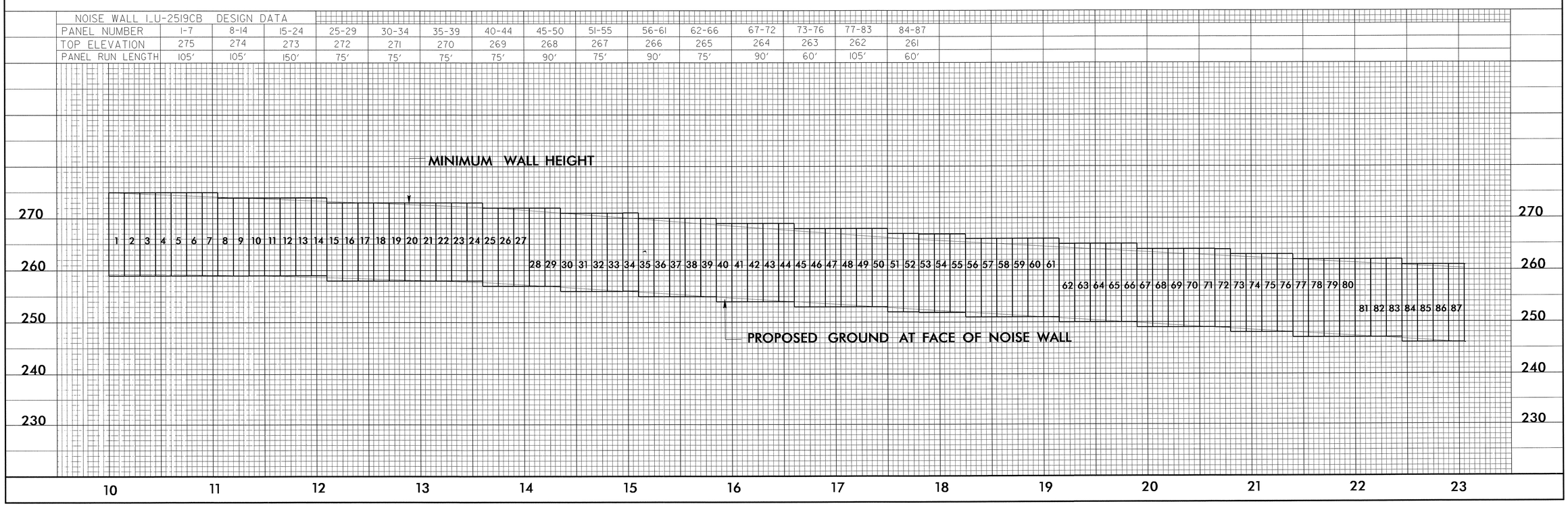
NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

Teak-Keun Kim 3-28-14

NOISE WALL DETAIL SHEET



NOISE WALL 1_U-2519CB DESIGN DATA															
PANEL NUMBER	1-7	8-14	15-24	25-29	30-34	35-39	40-44	45-50	51-55	56-61	62-66	67-72	73-76	77-83	84-87
TOP ELEVATION	275	274	273	272	271	270	269	268	267	266	265	264	263	262	261
PANEL RUN LENGTH	105'	105'	150'	75'	75'	75'	75'	90'	75'	90'	75'	90'	60'	105'	60'



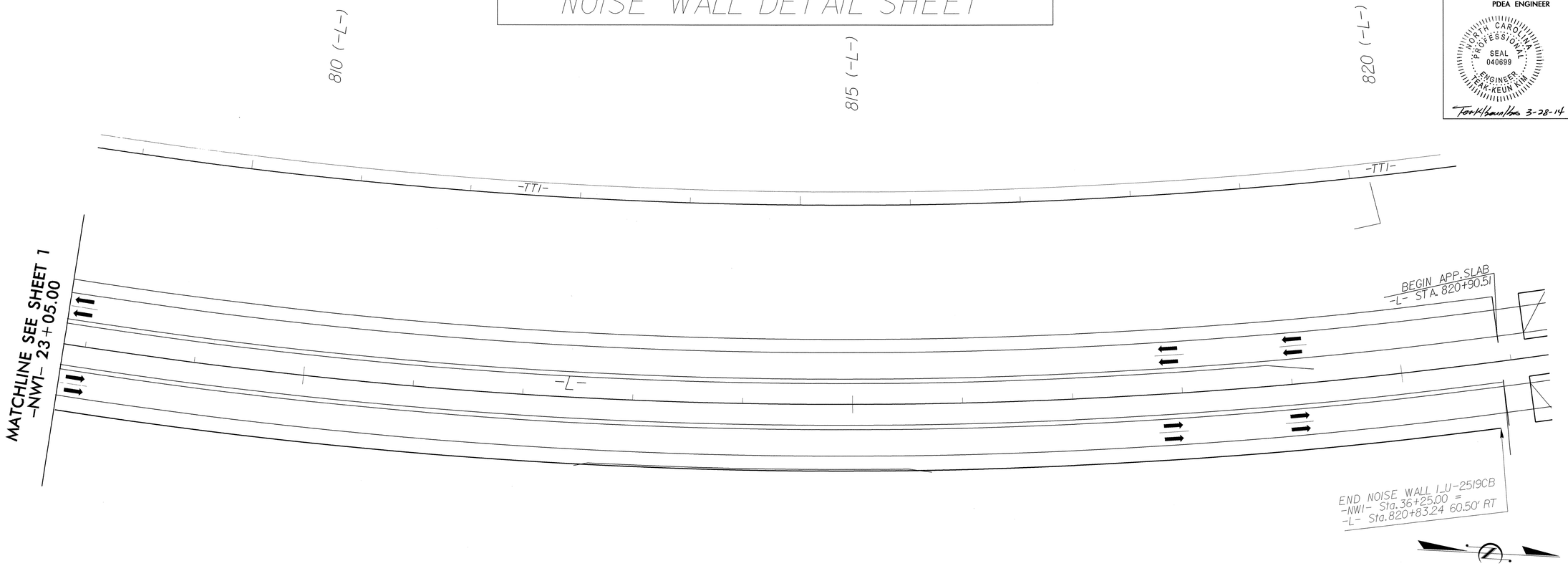
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AM

PDEA ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

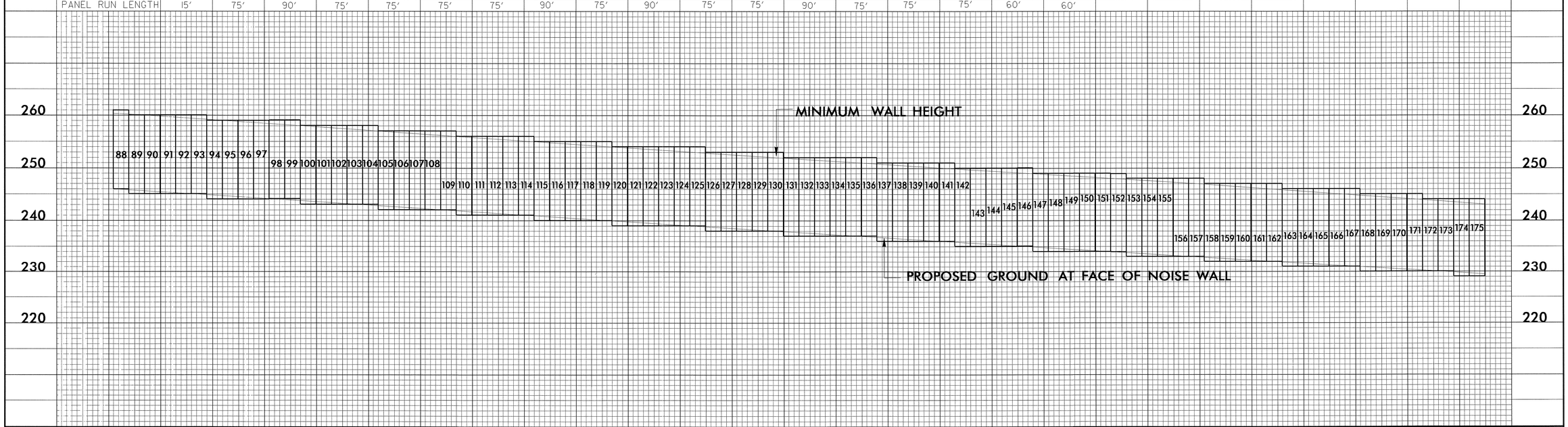
Teak Keun Kim 3-28-14

NOISE WALL DETAIL SHEET



NOISE WALL I_U-2519CB DESIGN DATA

PANEL NUMBER	88	89-93	94-99	100-104	105-109	110-114	115-119	120-125	126-130	131-136	137-141	142-146	147-152	153-157	158-162	163-167	168-171	172-175
TOP ELEVATION	261	260	259	258	257	256	255	254	253	252	251	250	249	248	247	246	245	244
PANEL RUN LENGTH	15'	75'	90'	75'	75'	75'	75'	90'	75'	90'	75'	75'	90'	75'	75'	75'	60'	60'



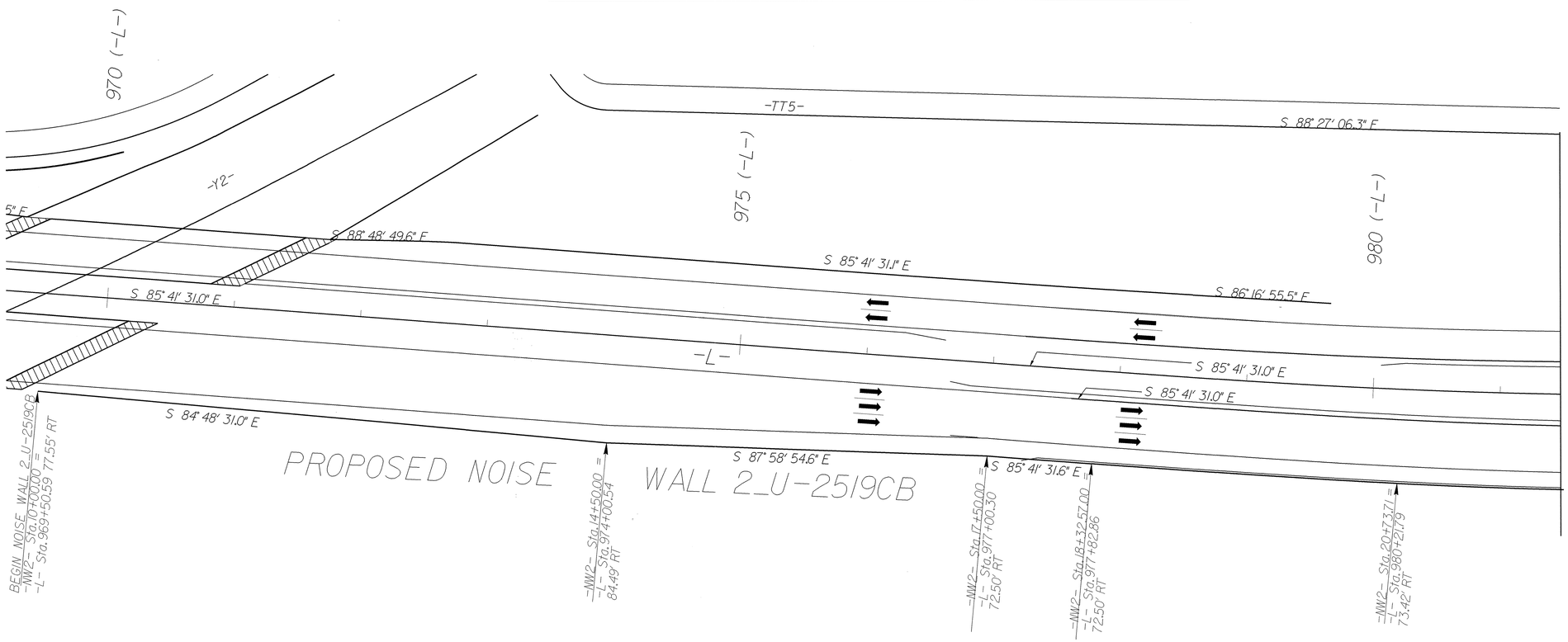
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AN

PDEA ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

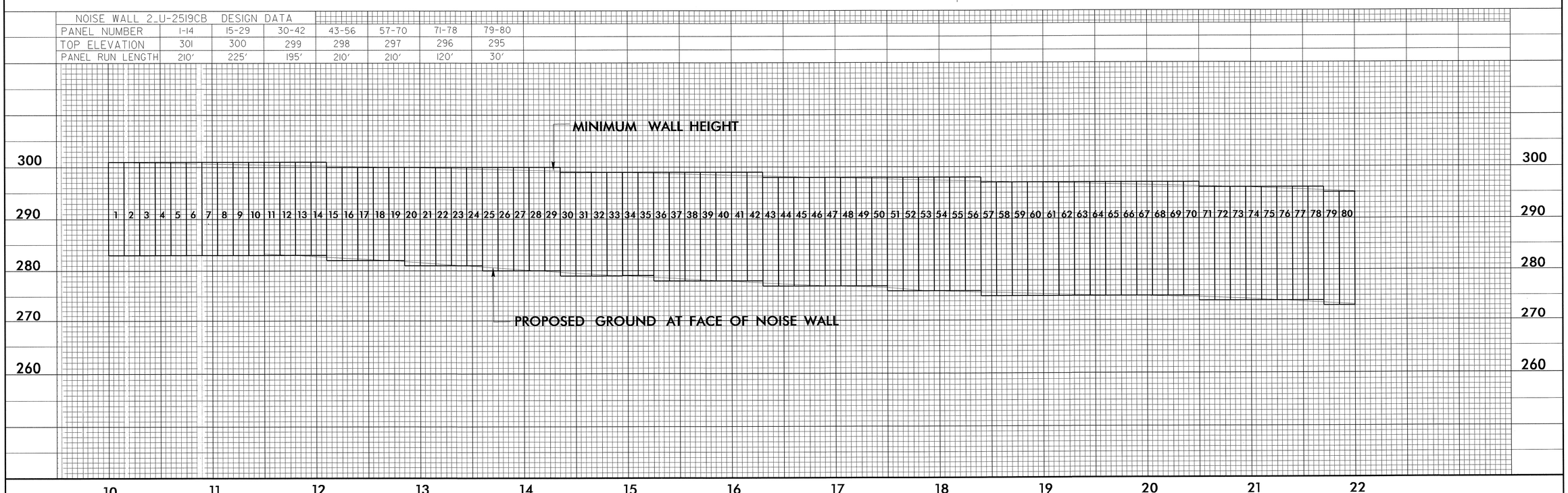
Teak/keun/kim 3-28-14

NOISE WALL DETAIL SHEET



MATCHLINE SEE SHEET 2
-NW2- 22 + 00.00

NOISE WALL 2_U-2519CB DESIGN DATA							
PANEL NUMBER	1-14	15-29	30-42	43-56	57-70	71-78	79-80
TOP ELEVATION	301	300	299	298	297	296	295
PANEL RUN LENGTH	210'	225'	195'	210'	210'	120'	30'



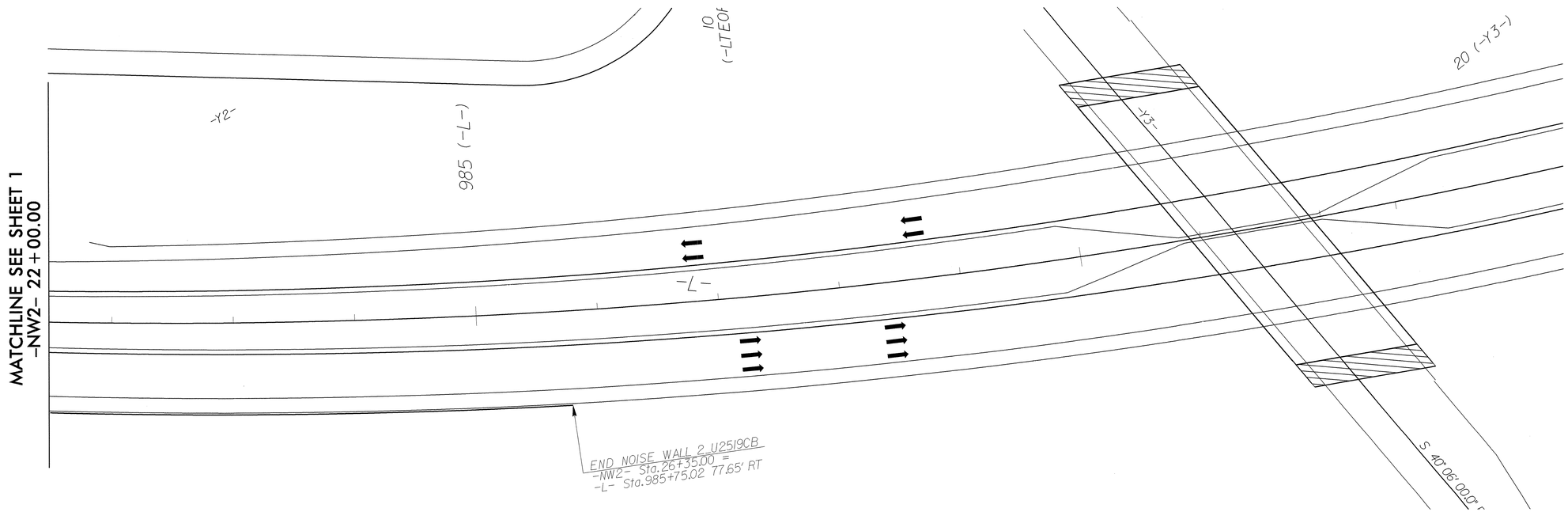
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A0

PDEA ENGINEER

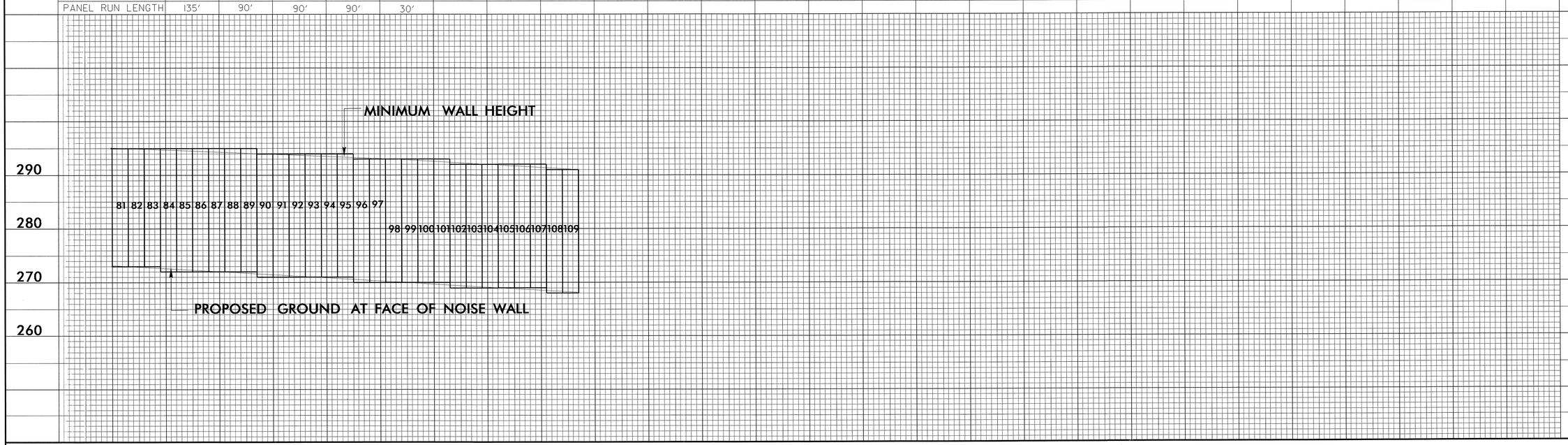
NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

Teak Keun Kim 3-28-14

NOISE WALL DETAIL SHEET



NOISE WALL 2_U-2519CB DESIGN DATA					
PANEL NUMBER	81-89	90-95	96-101	102-107	108-109
TOP ELEVATION	295	294	293	292	291
PANEL RUN LENGTH	135'	90'	90'	90'	30'



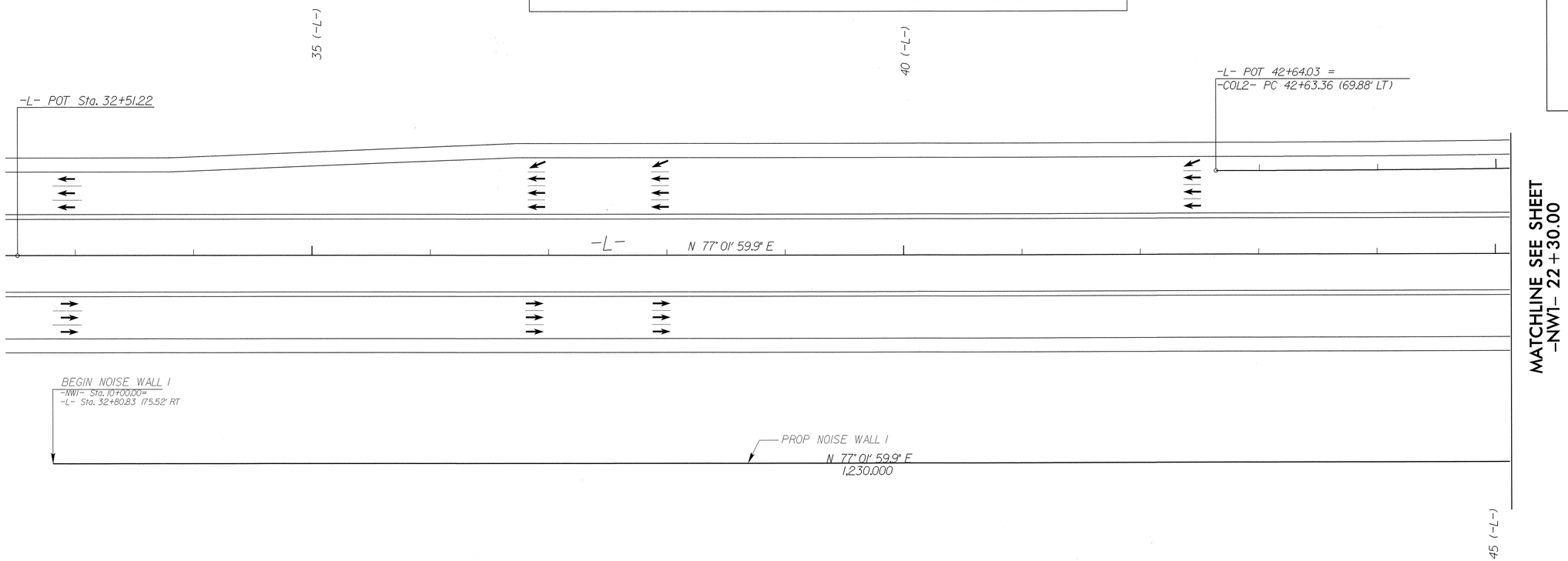
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A9

PDEA ENGINEER

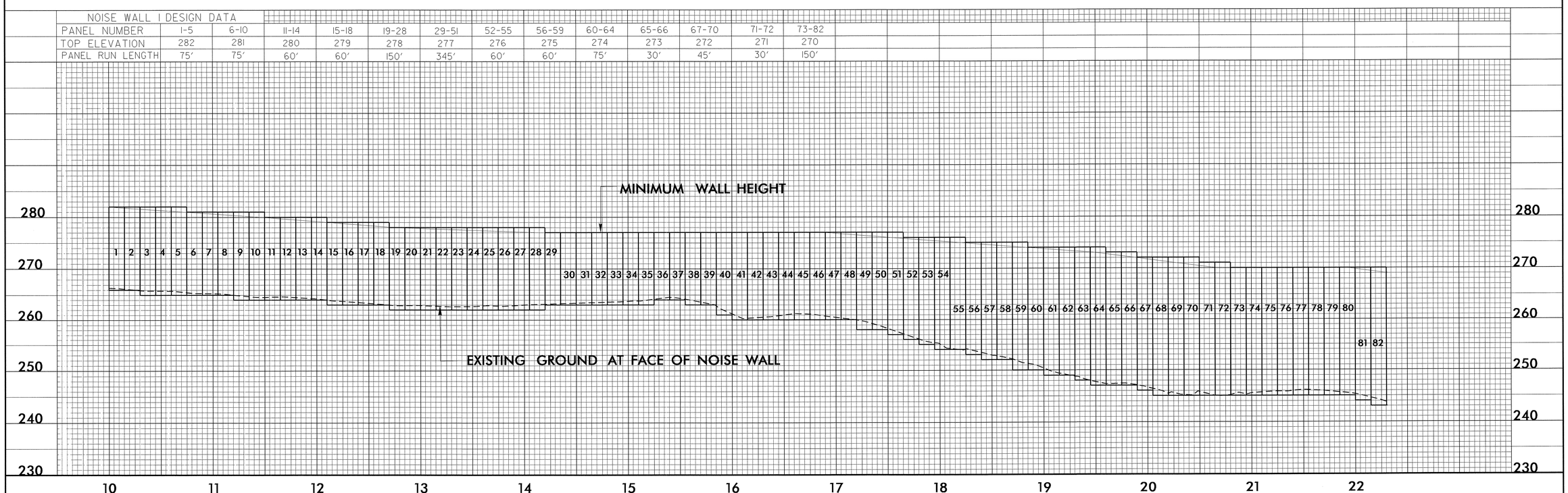
NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TAEK-KEUN KIM

Taek-Keun Kim 3-10-2014

NOISE WALL DETAIL SHEET



NOISE WALL 1 DESIGN DATA												
PANEL NUMBER	1-5	6-10	11-14	15-18	19-28	29-51	52-55	56-59	60-64	65-66	67-70	71-72	73-82
TOP ELEVATION	282	281	280	279	278	277	276	275	274	273	272	271	270
PANEL RUN LENGTH	75'	75'	60'	60'	150'	345'	60'	60'	75'	30'	45'	30'	150'



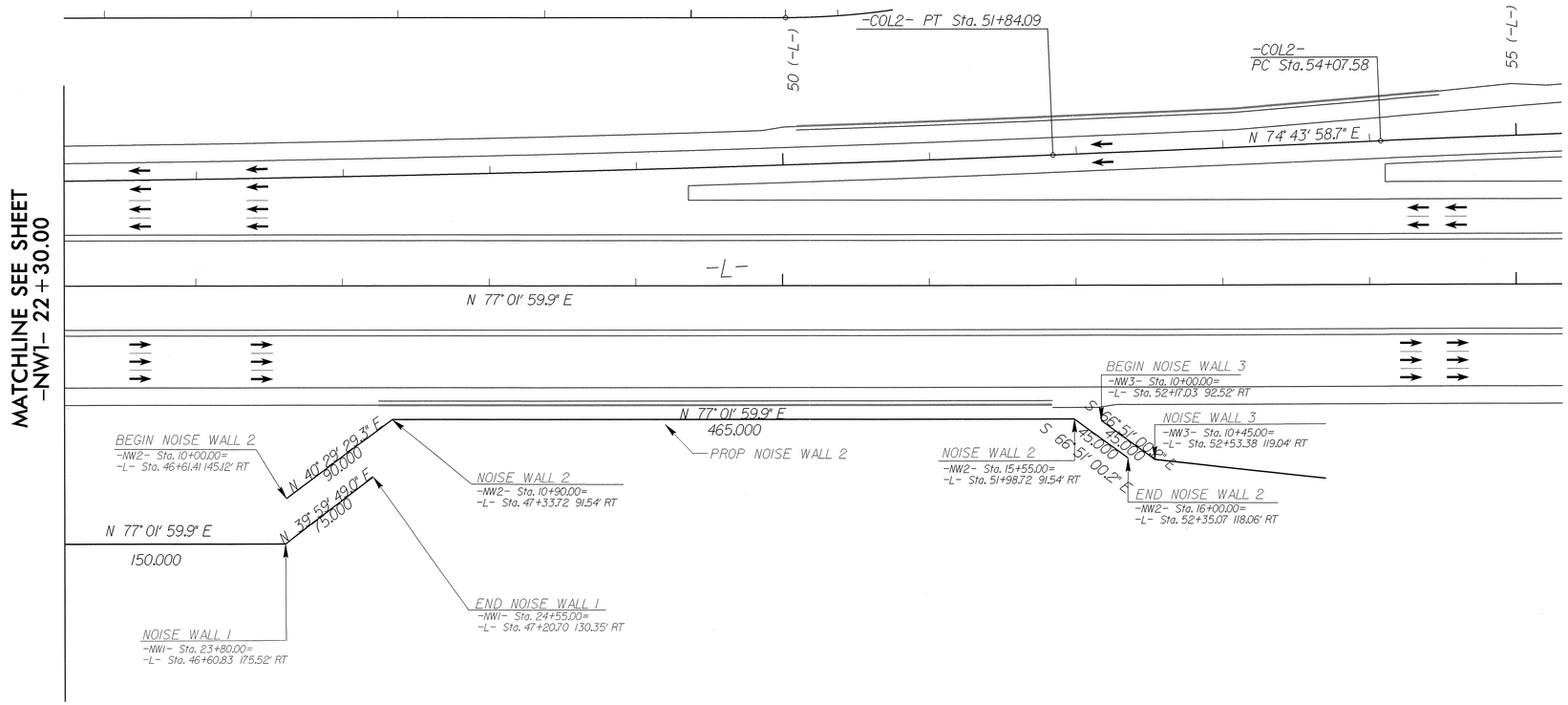
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A2

PDEA ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

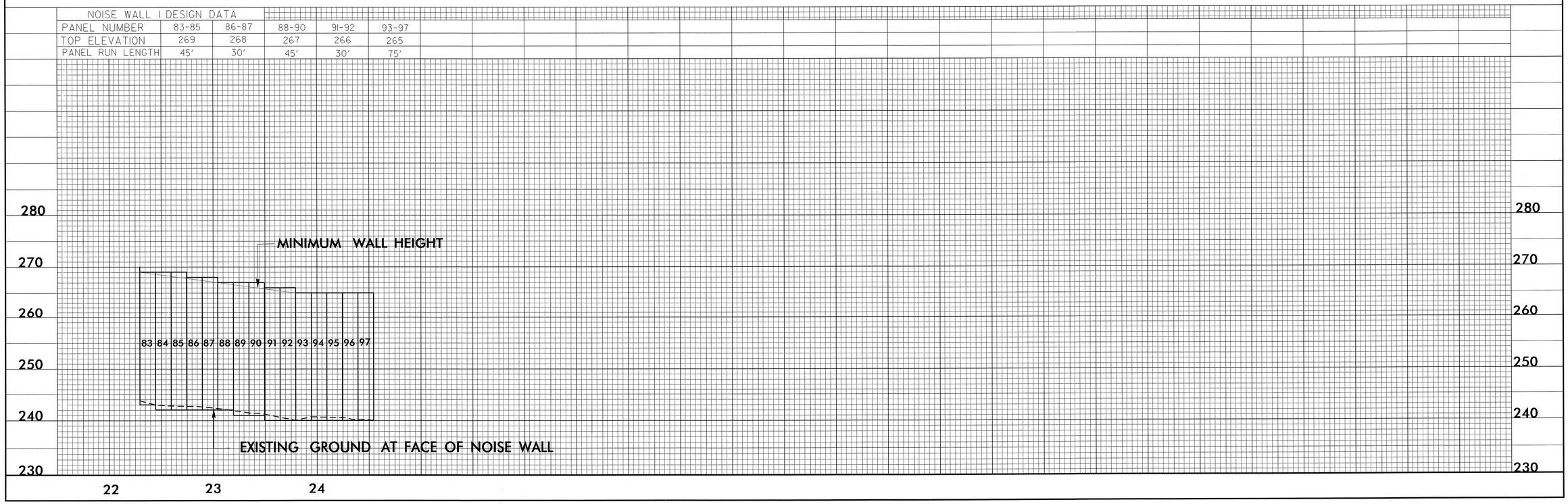
Teakkeun Kim 3-10-2014

NOISE WALL DETAIL SHEET



NOISE WALL 1 DESIGN DATA

PANEL NUMBER	83-85	86-87	88-90	91-92	93-97
TOP ELEVATION	269	268	267	266	265
PANEL RUN LENGTH	45'	30'	45'	30'	75'



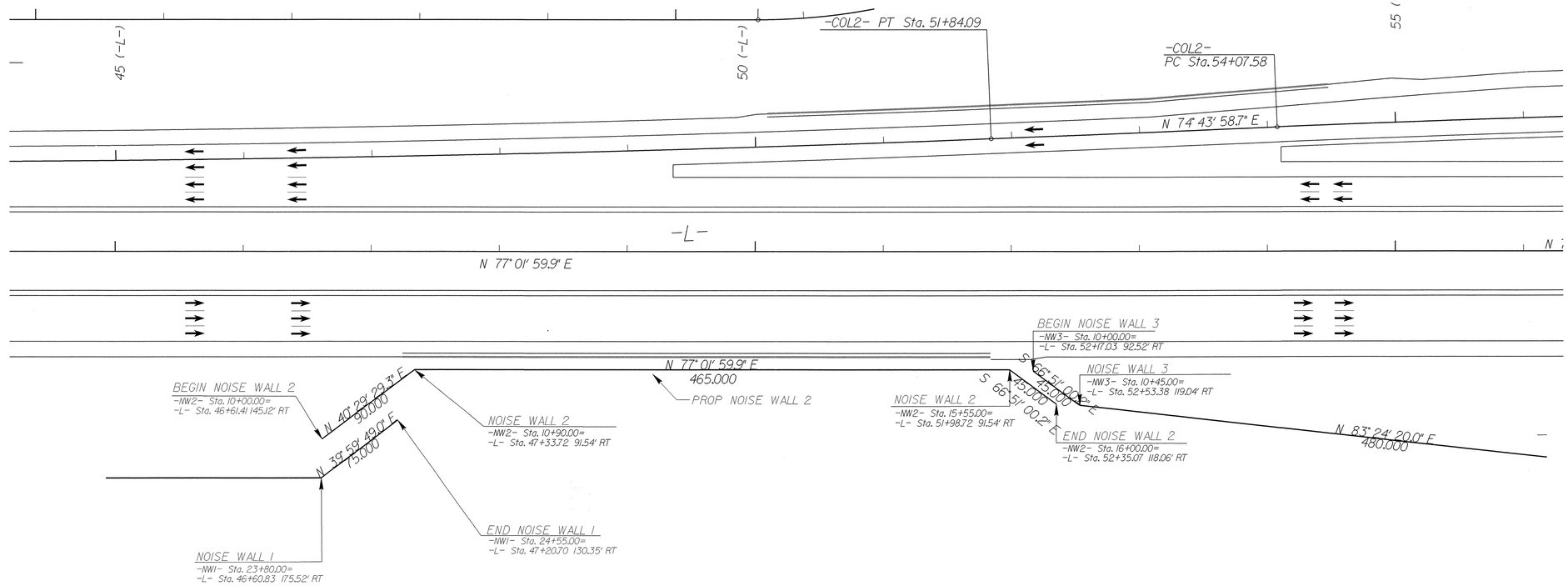
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AR

PDEA ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TAEK-KEUN KIM

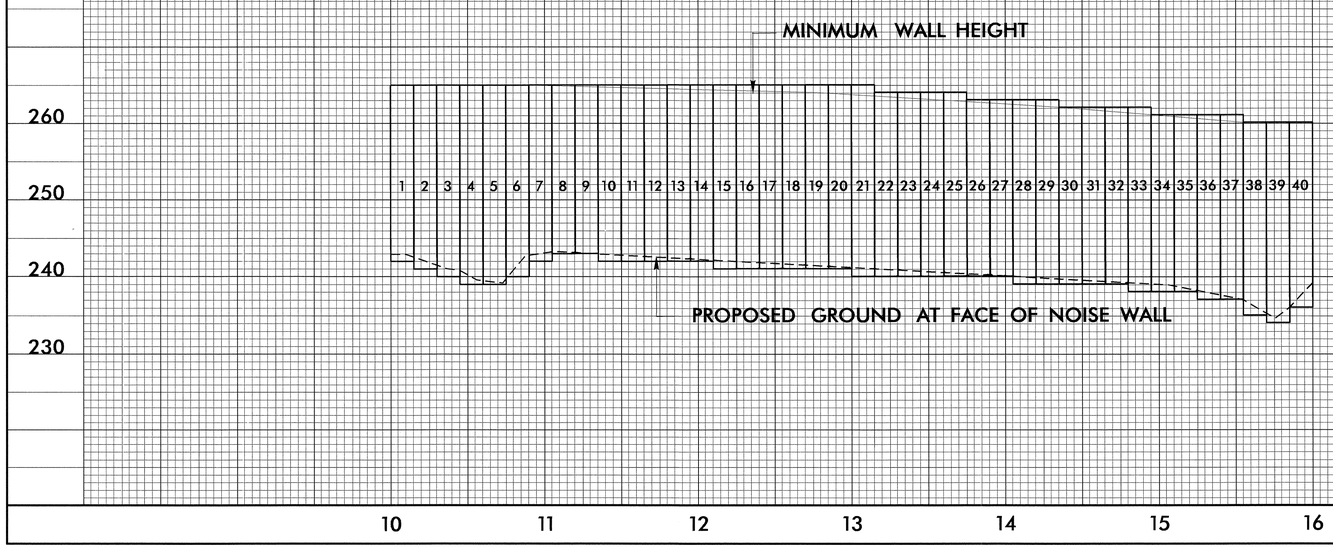
Taek Keun Kim 3-10-2014

NOISE WALL DETAIL SHEET



NOISE WALL 2 DESIGN DATA

PANEL NUMBER	1-21	22-25	26-29	30-33	34-37	38-40
TOP ELEVATION	265	264	263	262	261	260
PANEL RUN LENGTH	315'	60'	60'	60'	60'	45'



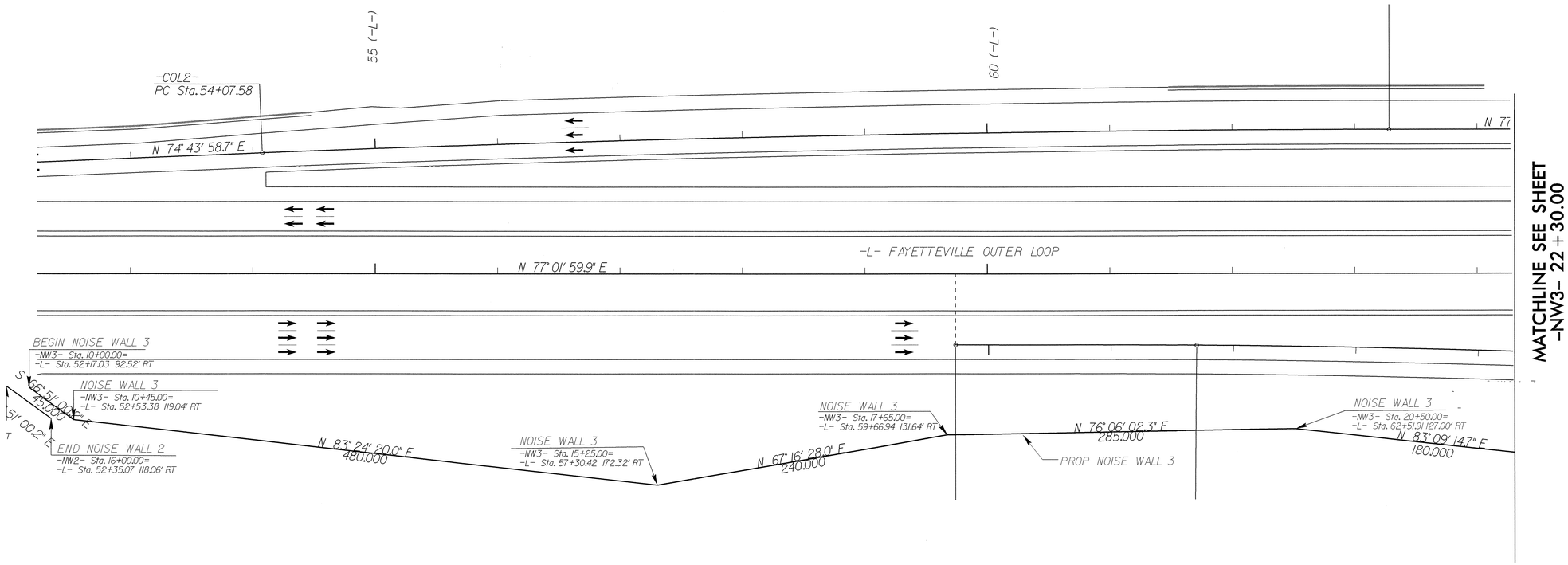
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AS

PDEA ENGINEER

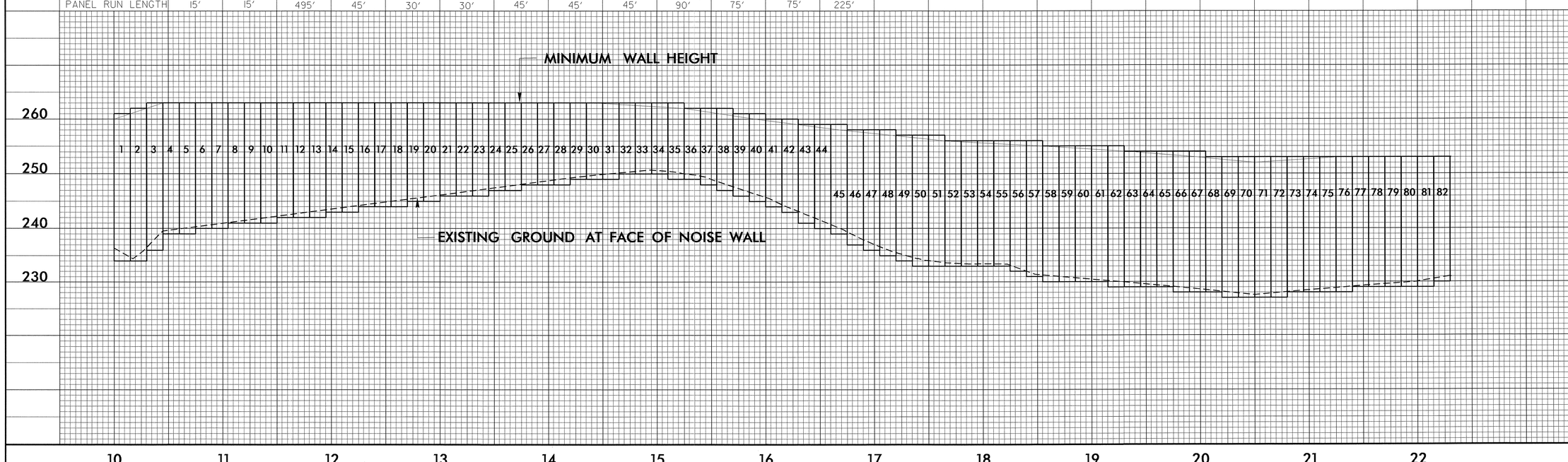
NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

Teak Keun Kim 3-10-2014

NOISE WALL DETAIL SHEET



NOISE WALL 3 DESIGN DATA													
PANEL NUMBER	1	2	3-35	36-38	39-40	41-42	43-45	46-48	49-51	52-57	58-62	63-67	68-82
TOP ELEVATION	261	262	263	262	261	260	259	258	257	256	255	254	253
PANEL RUN LENGTH	15'	15'	495'	45'	30'	30'	45'	45'	45'	90'	75'	75'	225'



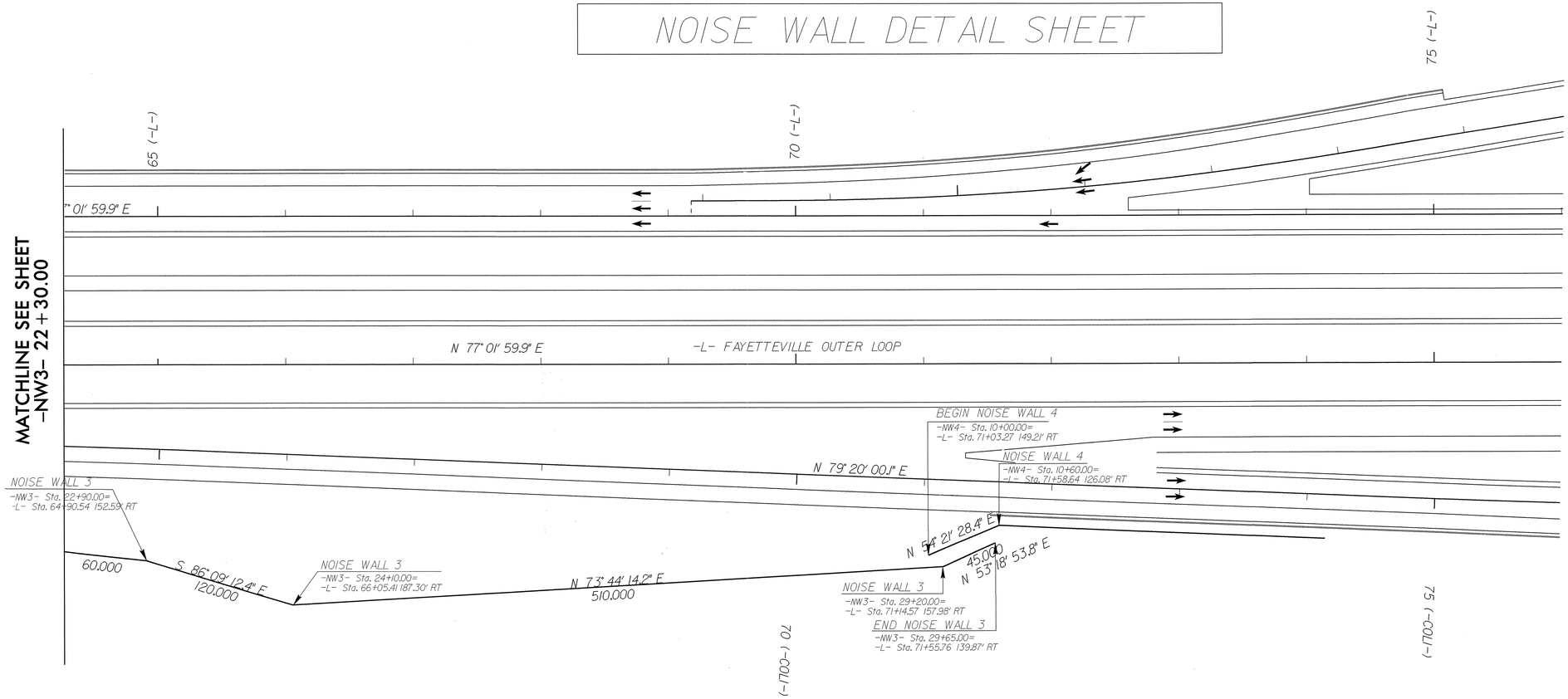
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AT

PDEA ENGINEER

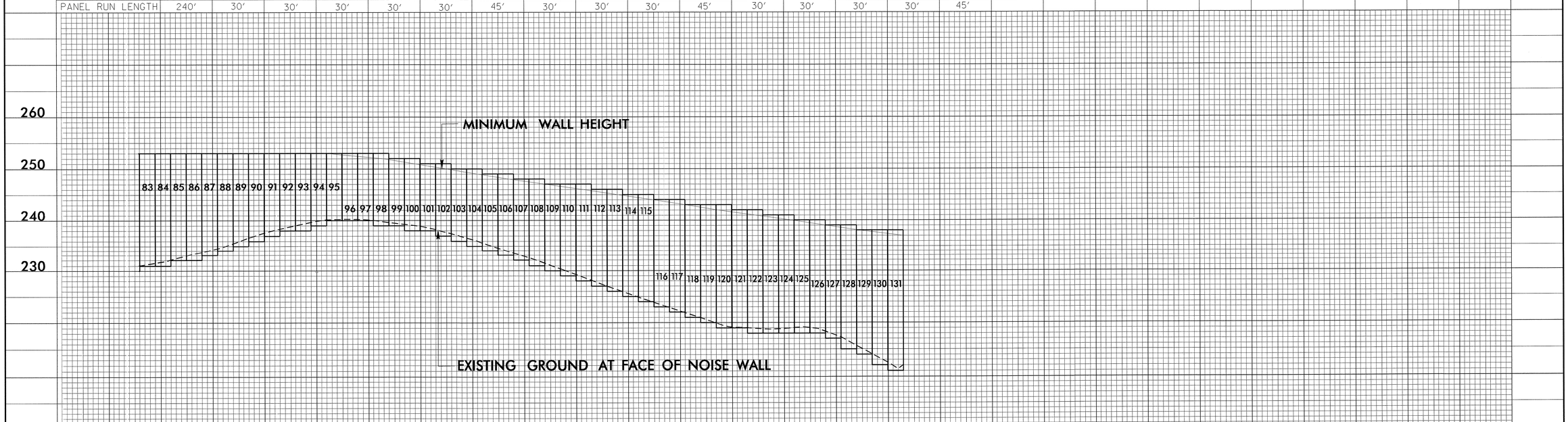
NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

Teak-Keun Kim 3-10-2014

NOISE WALL DETAIL SHEET



NOISE WALL 3 DESIGN DATA																
PANEL NUMBER	83-98	99-100	101-102	103-104	105-106	107-108	109-111	112-113	114-115	116-117	118-120	121-122	123-124	125-126	127-128	129-131
TOP ELEVATION	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	238
PANEL RUN LENGTH	240'	30'	30'	30'	30'	30'	45'	30'	30'	30'	45'	30'	30'	30'	30'	45'



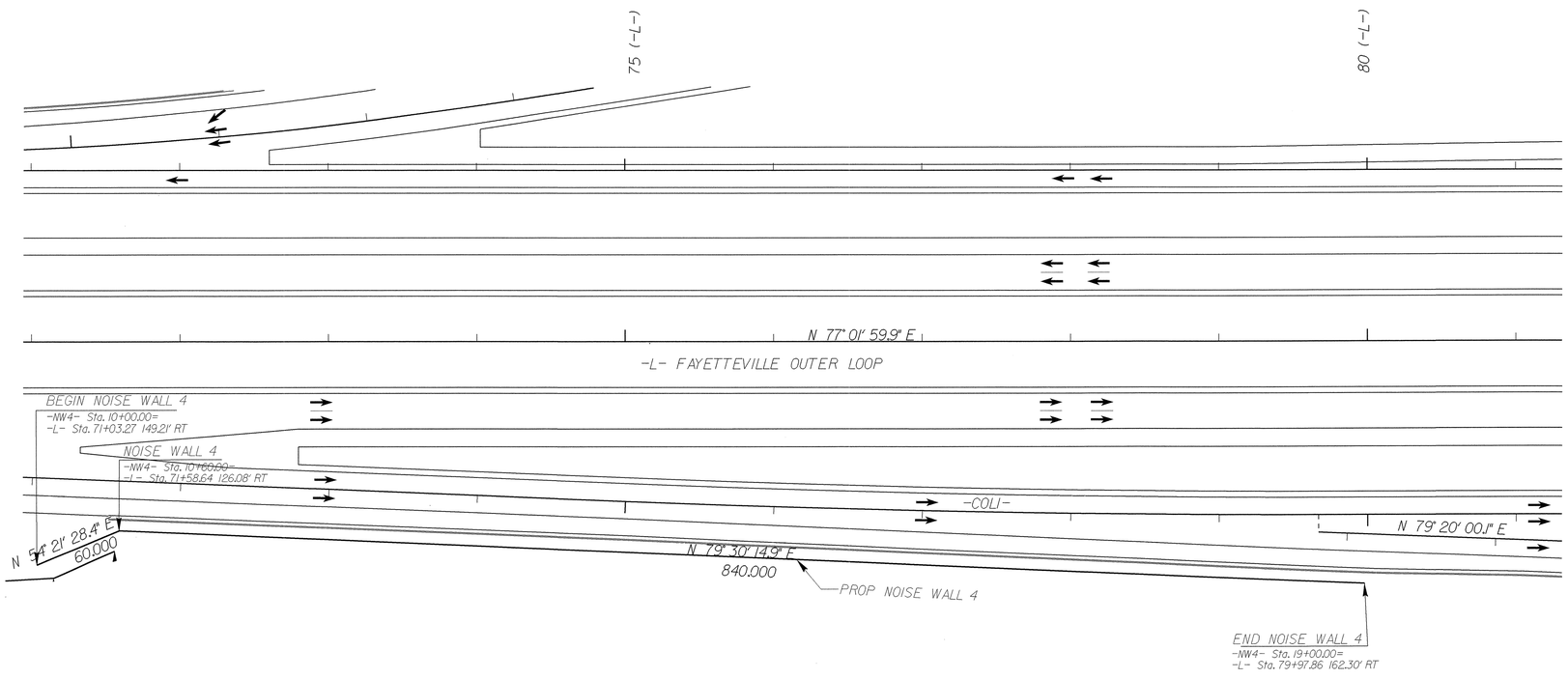
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-A11

PDEA ENGINEER

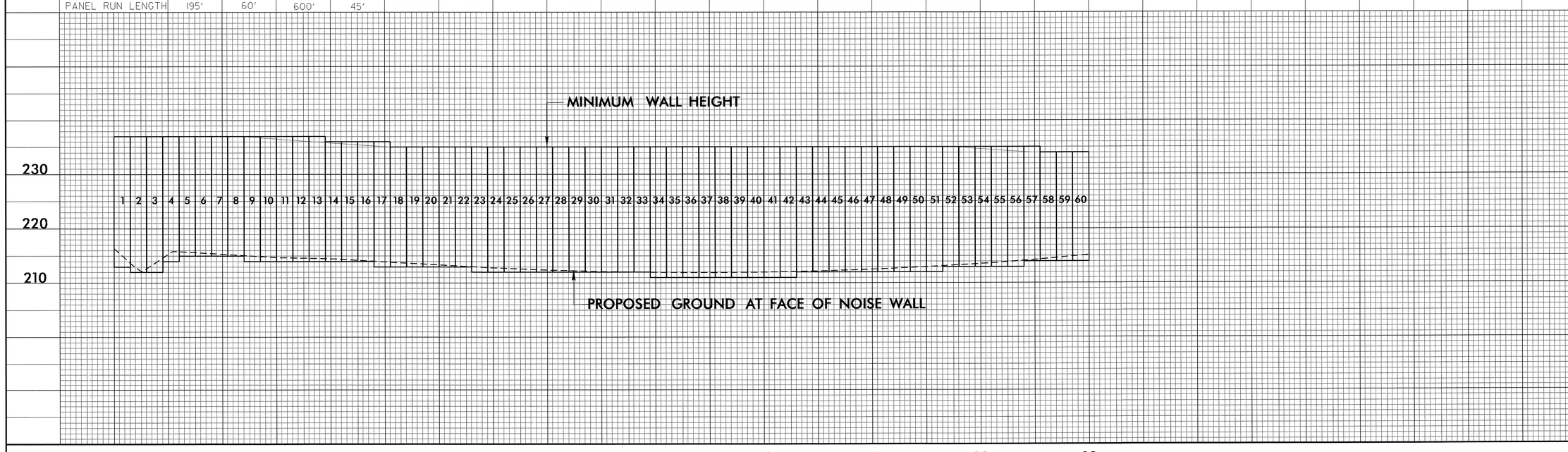
NORTH CAROLINA PROFESSIONAL SEAL 040699 ENGINEER TEAK-KEUN KIM

3-10-2014

NOISE WALL DETAIL SHEET



NOISE WALL 4 DESIGN DATA				
PANEL NUMBER	1-13	14-17	18-57	58-60
TOP ELEVATION	237	236	235	234
PANEL RUN LENGTH	195'	60'	600'	45'



PROJECT REFERENCE NO.	SHEET
U-2519CB	2-AV

GEOTECHNICAL ENGINEER

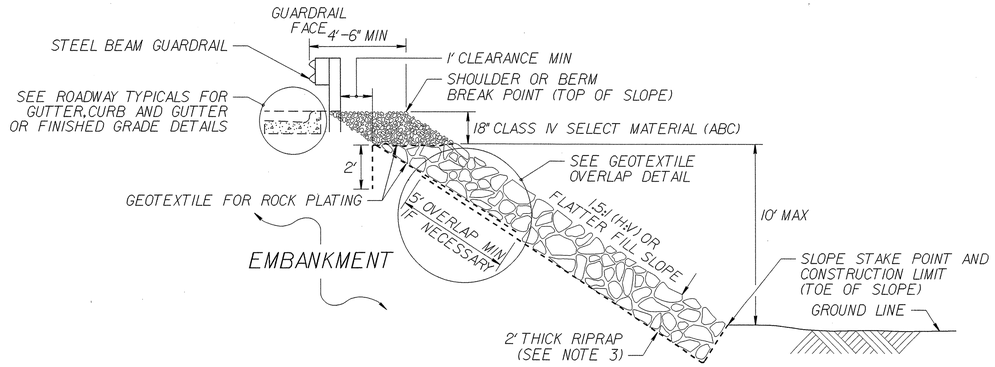
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 7/22/13

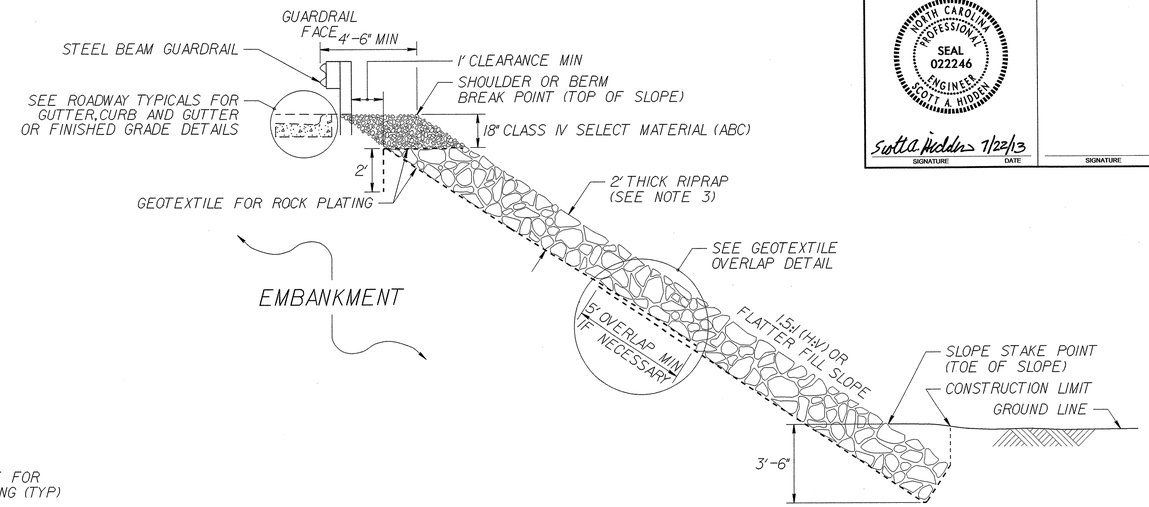
SIGNATURE DATE

ENGINEER

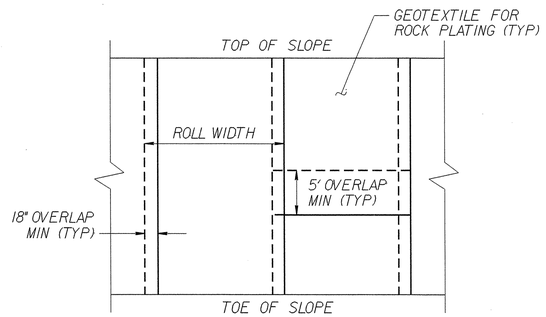
SIGNATURE DATE



ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION

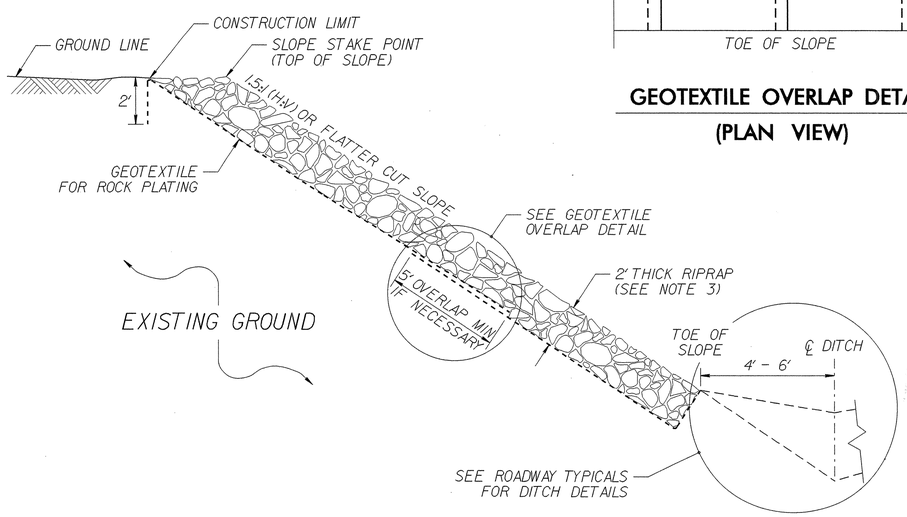


ROCK PLATING DETAIL NO. 2 – TYPICAL SECTION

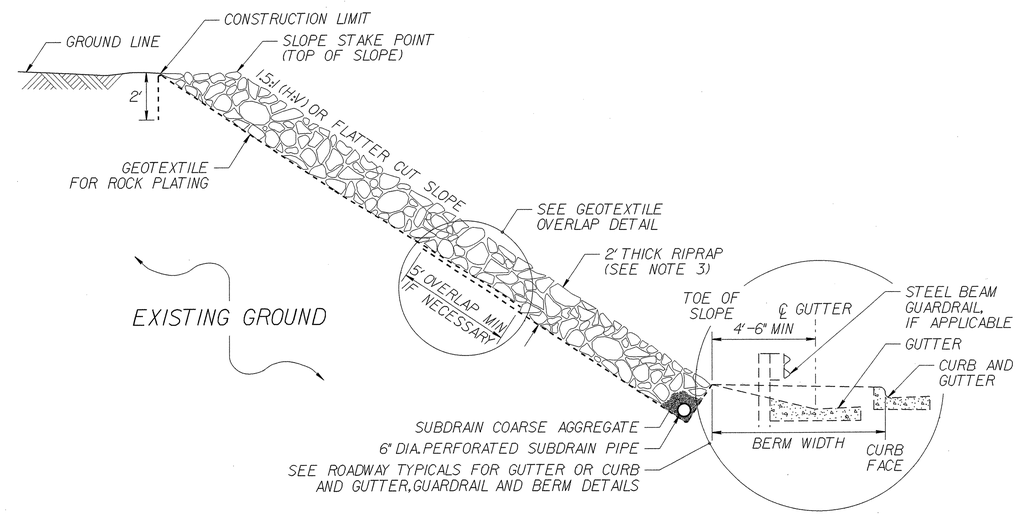


GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)



ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 – TYPICAL SECTION

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS I, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

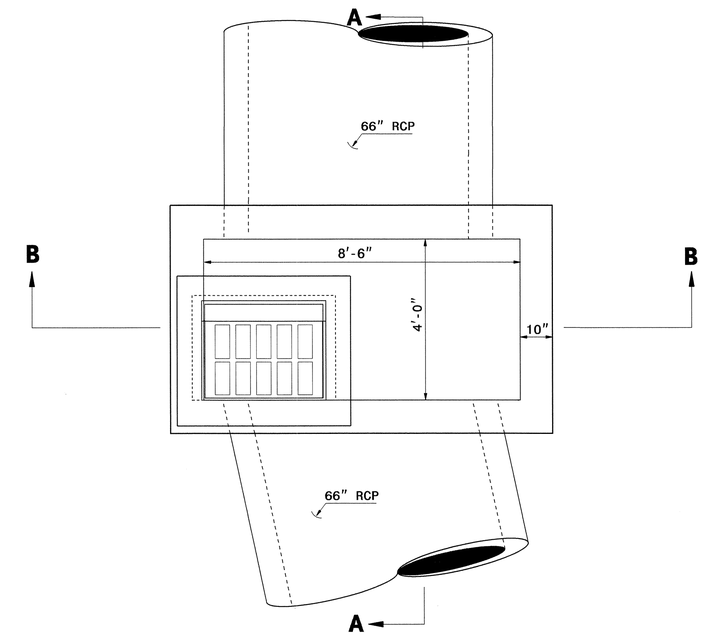
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1802.01

STANDARD ROCK PLATING

DATE: 2-19-13

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-AW



PLAN

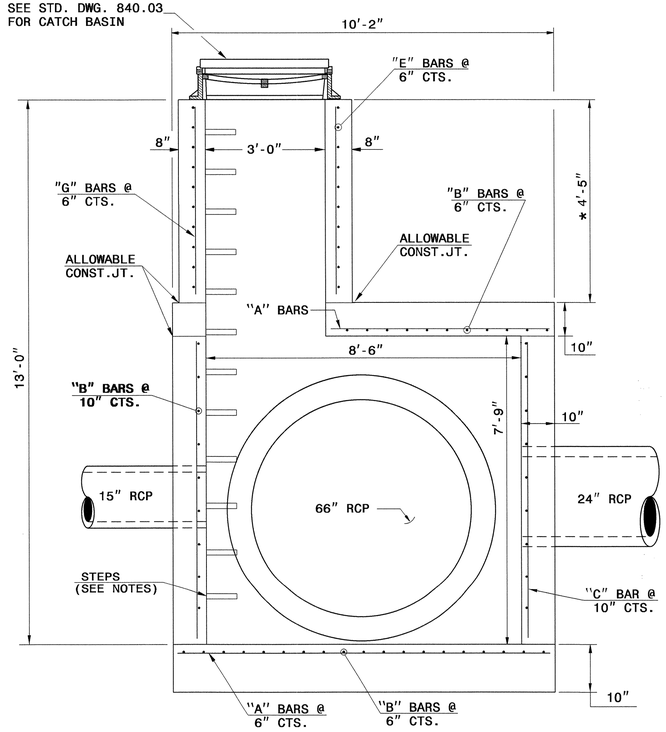
GENERAL NOTES:

1. USE CLASS "B" CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
4. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND FRAME AND GRATE OPENINGS.
5. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 400.
6. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2" CLEARANCE.
7. LOCATE FRAME AND GRATE AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.
8. PROVIDE STEPS ON 12" CENTERS, IN ACCORDANCE WITH STD.DWG.NO. 840.66.

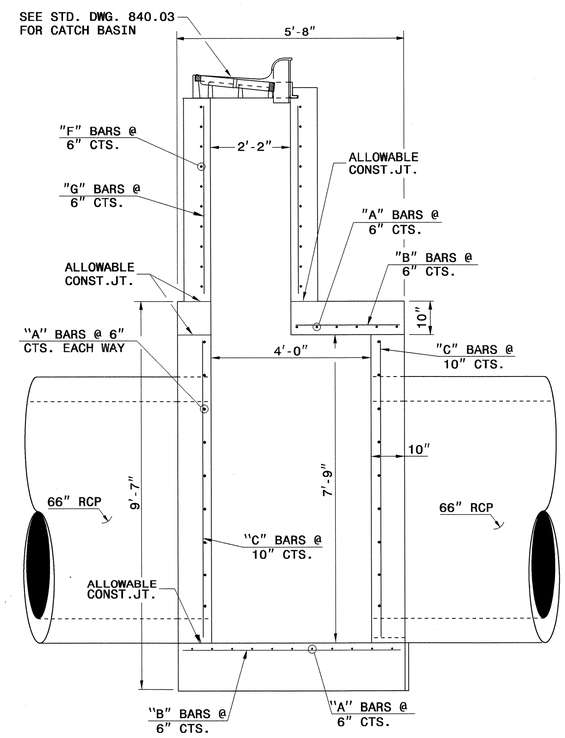
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A	64	#5	9'-3"	651
B	38	#5	5'-4"	211
C	38	#5	10'-0"	367
D	8	#5	5'-0"	42
E	18	#5	3'-2"	60
F	20	#5	4'-0"	75
G	32	#5	7'-1"	167
TOTAL REINF. STEEL (lbs.)				1573
TOTAL CONC. (CU. YDS.)				12
DEDUCTIONS FOR ONE PIPE				
66" RCP				1.38

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES OR CATCH BASIN OPENING.



SECTION B-B



SECTION A-A

* ADJUST AS FIELD CONDITIONS DICTATE.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
4/16/14

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

SPECIAL CATCH BASIN

ORIGINAL BY: E.E. WARD DATE: 3-12-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: usr/details/stand/conflict box.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BA
R/W SHEET NO.	

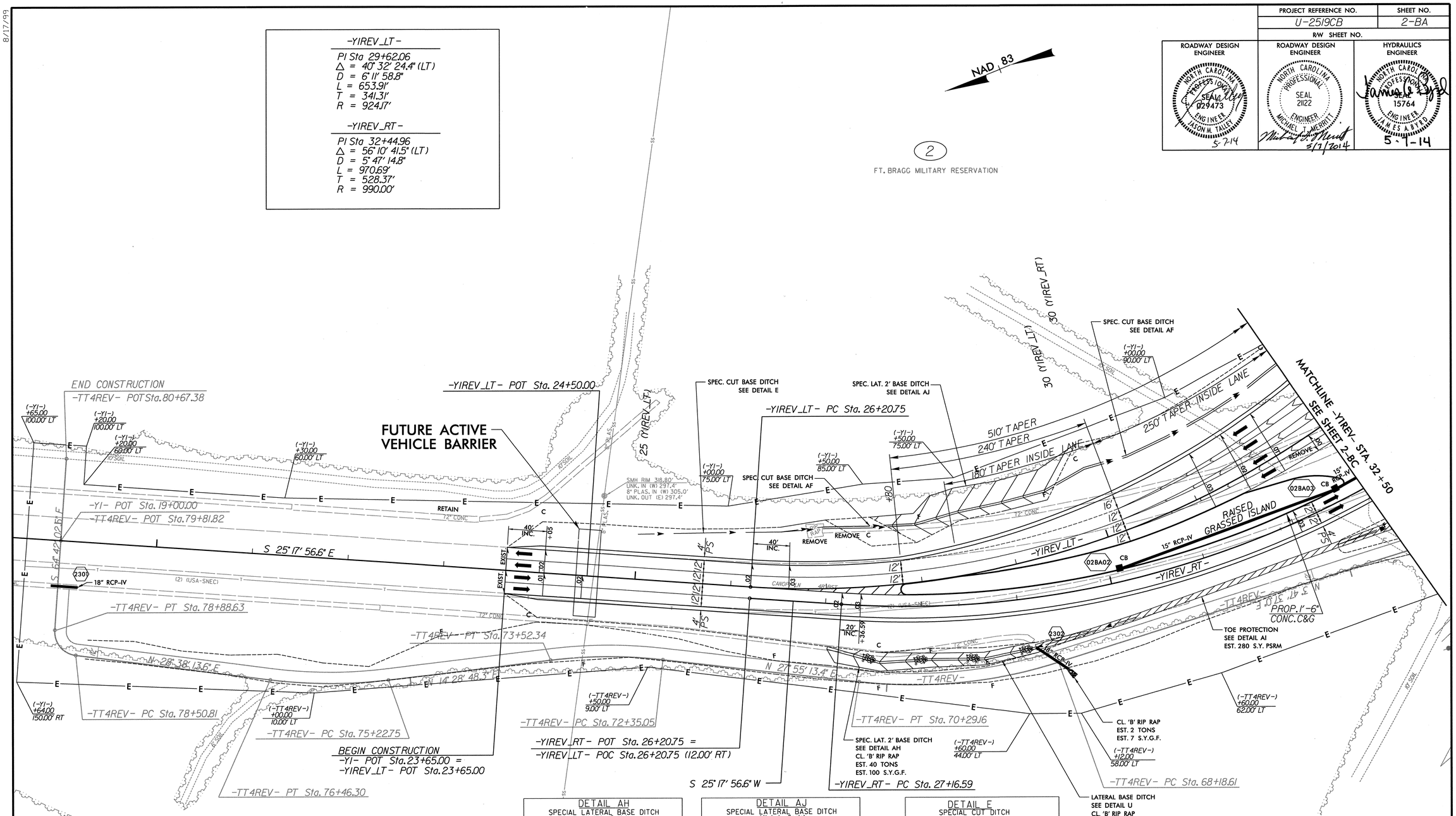
ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT 5/7/2014	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYARD 5-7-14

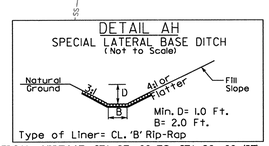
-YIREV_LT-

PI Sta 29+62.06
Δ = 40° 32' 24.4" (LT)
D = 6° 11' 58.8"
L = 653.91'
T = 341.31'
R = 924.17'

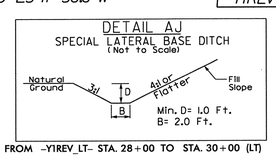
-YIREV_RT-

PI Sta 32+44.96
Δ = 56° 10' 41.5" (LT)
D = 5° 47' 14.8"
L = 970.69'
T = 528.37'
R = 990.00'

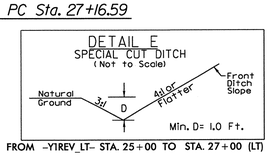




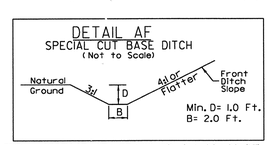
FROM -YIREV_LT- STA. 27+00 TO STA. 28+00 (RT)



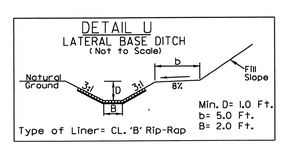
FROM -YIREV_LT- STA. 28+00 TO STA. 30+00 (LT)



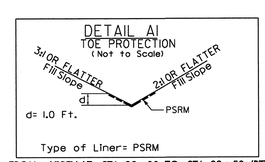
FROM -YIREV_LT- STA. 25+00 TO STA. 27+00 (LT)



FROM -YIREV_LT- STA. 27+00 TO STA. 28+00 (LT)
FROM -YIREV_LT- STA. 30+00 TO STA. 33+00 (LT)



FROM -YIREV_LT- STA. 28+00 TO STA. 29+00 (RT)



FROM -YIREV_LT- STA. 29+00 TO STA. 32+50 (RT)

-TT4REV-

PI Sta 78+82.53	PI Sta 75+92.97	PI Sta 73+02.10	PI Sta 69+33.60
Δ = 86° 39' 43.9" (RT)	Δ = 14° 09' 25.4" (RT)	Δ = 13° 26' 25.1" (LT)	Δ = 24° 07' 36.4" (RT)
D = 229° 10' 59.2"	D = 11° 27' 33.0"	D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 37.81'	L = 123.54'	L = 117.29'	L = 210.55''
T = 23.58'	T = 62.09'	T = 58.91'	T = 106.86'
R = 25.00'	R = 500.00'	R = 500.00'	R = 500.00'

SEE DETAIL SHTS. 2-BI THRU 2-BK FOR ISLANDS AND PAVEMENT DIMENSIONING AND CONSTRUCTION DETAILS.

FOR -YIREV_LT- PROFILE SEE SHT. 2-BE

FOR -YIREV_RT- PROFILE SEE SHT. 2-BF

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/17/99
5/7/2014
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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BB
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT — 5/7/2014

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029764 ENGINEER JAMES A. BARD — 5-1-14

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

NAD 83

-Y1REV_LT-

PI Sta 36+10.62 △ = 9° 24' 20.1" (LT) D = 4° 46' 28.7" L = 196.99' T = 98.72' R = 1,200.00'	PI Sta 39+17.88 △ = 16° 41' 39.0" (LT) D = 4° 01' 20.9" L = 415.02' T = 208.99' R = 1,424.39'

-Y1REV_RT-

PI Sta 32+44.96 △ = 56° 10' 41.5" (LT) D = 5° 47' 14.8" L = 970.69' T = 528.37' R = 990.00'	PI Sta 40+50.46 △ = 10° 27' 42.5" (LT) D = 3° 54' 45.3" L = 267.39' T = 134.07' R = 1,464.39'

-TT4REV-

PI Sta 56+95.37 △ = 64° 11' 04.5" (RT) D = 12° 14' 33.7" L = 524.27' T = 293.49' R = 468.00'	PI Sta 59+85.43 △ = 27° 45' 00.1" (LT) D = 23° 52' 23.7" L = 116.24' T = 59.28' R = 240.00'	PI Sta 61+64.70 △ = 8° 56' 53.2" (RT) D = 28° 38' 52.4" L = 31.23' T = 15.65' R = 200.00'	PI Sta 62+92.51 △ = 12° 57' 49.6" (LT) D = 22° 55' 05.9" L = 56.57' T = 28.40' R = 250.00'

PAVEMENT REMOVAL

2 — FT. BRAGG MILITARY RESERVATION

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

DETAIL T — STANDARD BASE DITCH (Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground; B
Min. D= 1.5 Ft. B= 2.0 Ft.
Type of Liner= CL. 'B' Rip-Rap
FROM -Y1REV_LT- STA. 33+50 TO STA. 35+50 (RT)

DETAIL AF — SPECIAL CUT BASE DITCH (Not to Scale)
Natural Ground, 3:1, D, B, 4:1 or Flatter, Front Ditch Slope
Min. D= 1.0 Ft. B= 2.0 Ft.
FROM -Y1REV_LT- STA. 30+00 TO STA. 33+00 (LT)

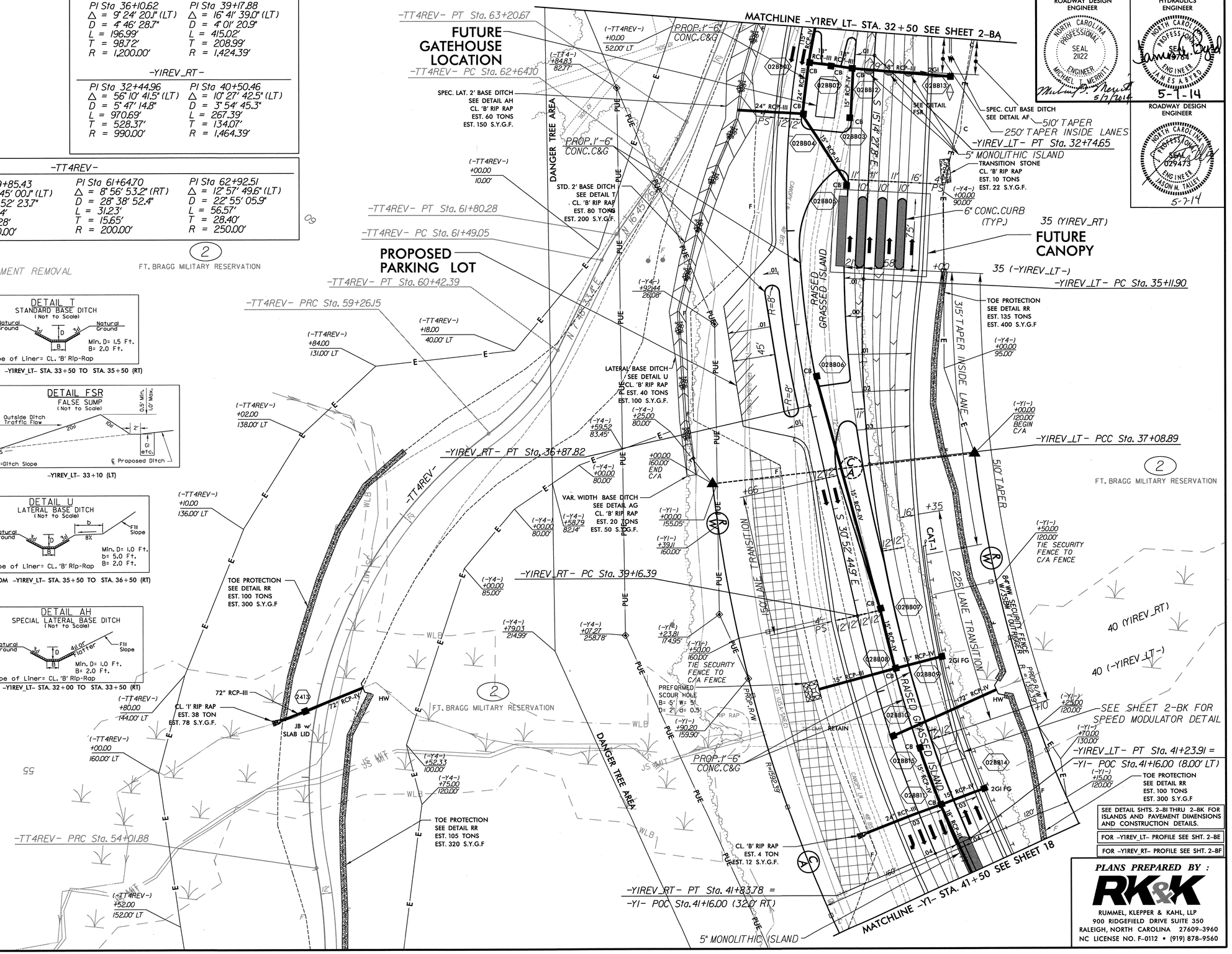
DETAIL FSR — FALSE SUMP (Not to Scale)
Outside Ditch Traffic Flow, 20:1, 10:1, 2', 0.5' Min., 1.0' Max., 0' etc., S=Ditch Slope, ℄ Proposed Ditch
-Y1REV_LT- 33+10 (LT)

DETAIL RR — TOE PROTECTION (Not to Scale)
Natural Ground, 3:1, d, Geo-Textile, Fill Slope
d= 1.0 Ft.
Type of Liner= CL. 'B' Rip-Rap
-TT4REV- 52+50 TO 56+05 (RT)
-TT4REV- 55+56 TO 58+50 (LT)
-Y1REV_LT- 35+00 TO 39+70 (LT)
-Y1REV_LT- 39+90 TO 41+25 (LT)

DETAIL U — LATERAL BASE DITCH (Not to Scale)
Natural Ground, 3:1, D, 3:1, B, b, 8%, Fill Slope
Min. D= 1.0 Ft. b= 5.0 Ft. B= 2.0 Ft.
Type of Liner= CL. 'B' Rip-Rap
FROM -Y1REV_LT- STA. 35+50 TO STA. 36+50 (RT)

DETAIL AG — STANDARD BASE DITCH (Not to Scale)
Natural Ground, 3:1, D, 3:1, B, Natural Ground
Min. D= - Ft. B= * Ft.
Type of Liner= CL. 'B' Rip-Rap
FROM -Y1REV_LT- STA. 36+50 TO STA. 37+00 (RT)
*B VARIES FROM 2 TO 10 FT

DETAIL AH — SPECIAL LATERAL BASE DITCH (Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, B, Fill Slope
Min. D= 1.0 Ft. B= 2.0 Ft.
Type of Liner= CL. 'B' Rip-Rap
FROM -Y1REV_LT- STA. 32+00 TO STA. 33+50 (RT)



SEE DETAIL SHTS. 2-BI THRU 2-BK FOR ISLANDS AND PAVEMENT DIMENSIONS AND CONSTRUCTION DETAILS.

FOR -Y1REV_LT- PROFILE SEE SHT. 2-BE

FOR -Y1REV_RT- PROFILE SEE SHT. 2-BF

PLANS PREPARED BY :
RK&K
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8/17/99

5/7/2014
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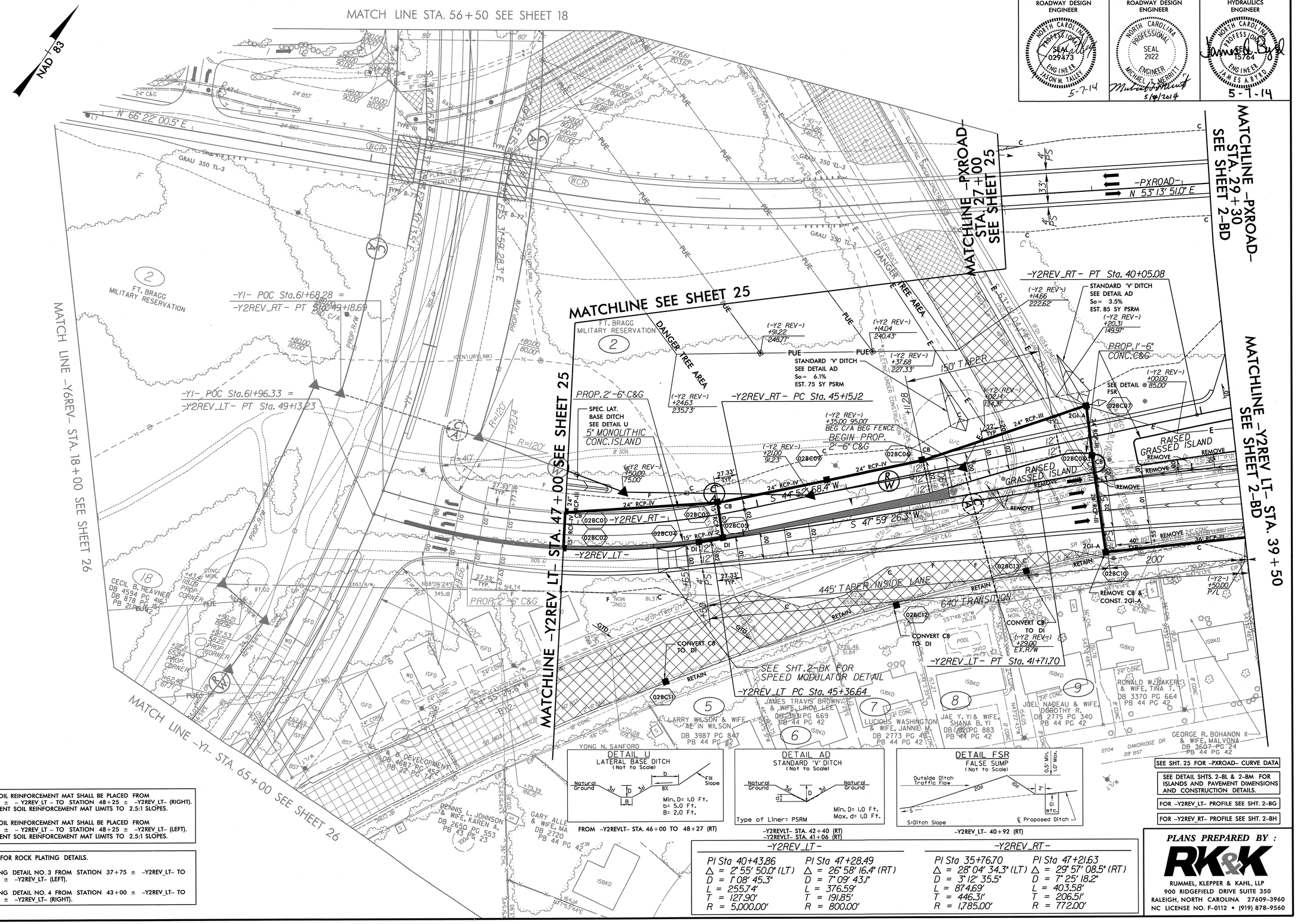
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BC
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT 5/9/2014	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JIM E. A. BYRD 5-7-14



DETAIL U
LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.0 Ft.
b= 5.0 Ft.
B= 2.0 Ft.

FROM -Y2REVLT- STA. 46+00 TO 48+27 (RT)

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

Min. D= 1.0 Ft.
Max. d= 1.0 Ft.

Type of Liner= PSRM

-Y2REVLT- STA. 42+40 (RT)
-Y2REVLT- STA. 41+06 (RT)

DETAIL FSR
FALSE SUMP
(Not to Scale)

-Y2REV_LT- 40+92 (RT)

A PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED FROM STATION 47+00 ± – Y2REV_LT – TO STATION 48+25 ± –Y2REV_LT– (RIGHT). EXTEND PERMANENT SOIL REINFORCEMENT MAT LIMITS TO 2.5:1 SLOPES.

A PERMANENT SOIL REINFORCEMENT MAT SHALL BE PLACED FROM STATION 47+75 ± – Y2REV_LT – TO STATION 48+25 ± –Y2REV_LT– (LEFT). EXTEND PERMANENT SOIL REINFORCEMENT MAT LIMITS TO 2.5:1 SLOPES.

SEE SHEET 2-AV FOR ROCK PLATING DETAILS.

USE ROCK PLATING DETAIL NO. 3 FROM STATION 37+75 ± –Y2REV_LT– TO STATION 39+75 ± –Y2REV_LT– (LEFT).

USE ROCK PLATING DETAIL NO. 4 FROM STATION 43+00 ± –Y2REV_LT– TO STATION 45+00 ± –Y2REV_LT– (RIGHT).

-Y2REV_LT-

PI Sta 40+43.86
Δ = 2° 55' 50.0" (LT)
D = 1° 08' 45.3"
L = 255.74'
T = 127.90'
R = 5,000.00'

PI Sta 47+28.49
Δ = 26° 58' 16.4" (RT)
D = 7° 09' 43.1"
L = 376.59'
T = 191.85'
R = 800.00'

-Y2REV_RT-

PI Sta 35+76.70
Δ = 28° 04' 34.3" (LT)
D = 3° 12' 35.5"
L = 874.69'
T = 446.31'
R = 1,785.00'

PI Sta 47+21.63
Δ = 29° 57' 08.5" (RT)
D = 7° 25' 18.2"
L = 403.58'
T = 206.51'
R = 772.00'

SEE SHT. 25 FOR -PXROAD- CURVE DATA

SEE DETAIL SHTS. 2-BL & 2-BM FOR ISLANDS AND PAVEMENT DIMENSIONS AND CONSTRUCTION DETAILS.

FOR -Y2REV_LT- PROFILE SEE SHT. 2-BG

FOR -Y2REV_RT- PROFILE SEE SHT. 2-BH

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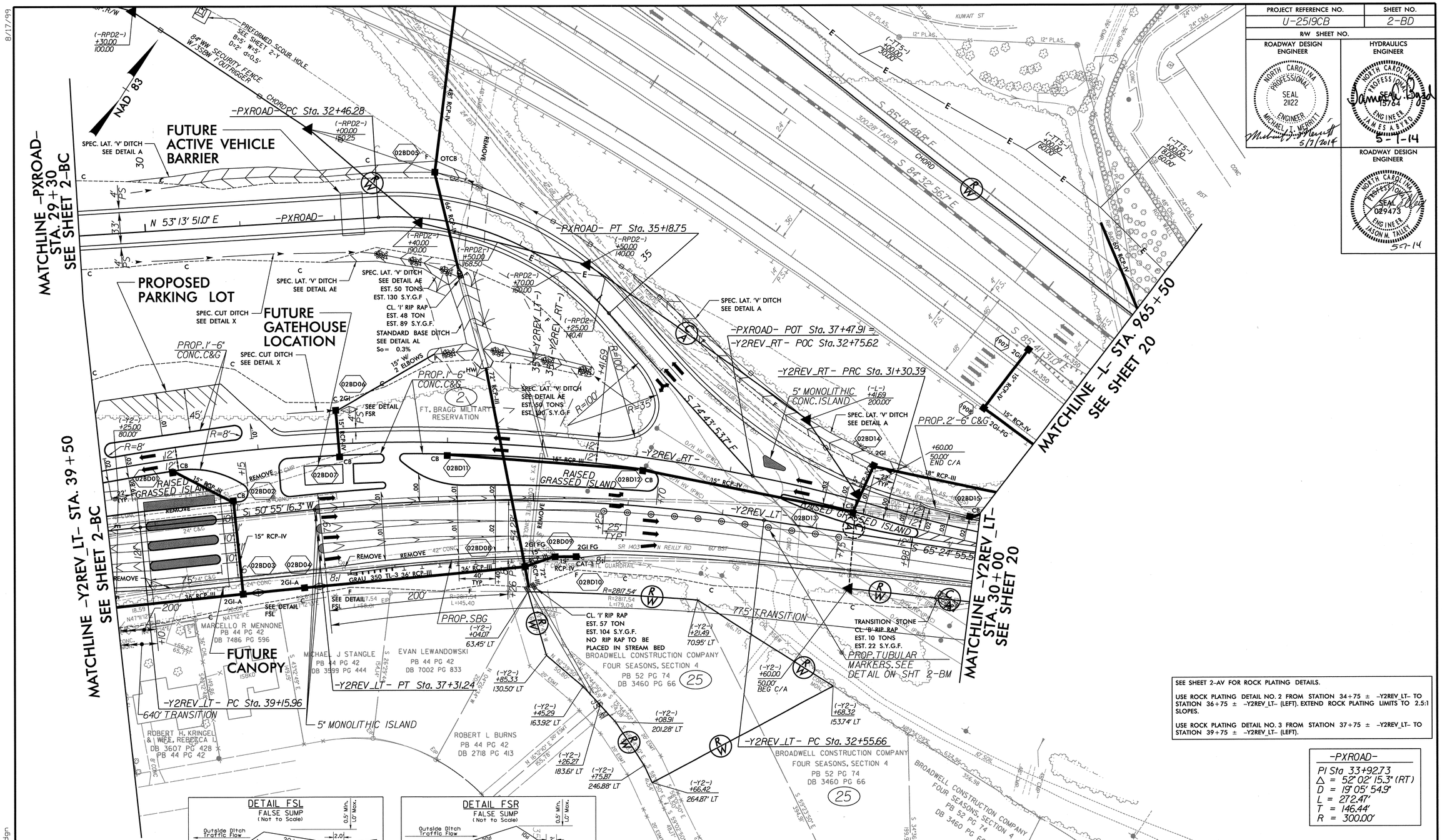
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BD
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL J. MERRITT
5/7/2014

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19784 ENGINEER JAMES A. BYRD
5-7-14

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-7-14



SEE SHEET 2-AV FOR ROCK PLATING DETAILS.

USE ROCK PLATING DETAIL NO. 2 FROM STATION 34+75 ± -Y2REV_LT- TO STATION 36+75 ± -Y2REV_LT- (LEFT). EXTEND ROCK PLATING LIMITS TO 2.5:1 SLOPES.

USE ROCK PLATING DETAIL NO. 3 FROM STATION 37+75 ± -Y2REV_LT- TO STATION 39+75 ± -Y2REV_LT- (LEFT).

-PXROAD-

PI Sta 33+92.73
△ = 52° 02' 15.3" (RT)
D = 19° 05' 54.9"
L = 272.47'
T = 146.44'
R = 300.00'

SEE DETAIL SHTS. 2-BL & 2-BM FOR ISLANDS AND PAVEMENT DIMENSIONS AND CONSTRUCTION DETAILS.

FOR -Y2REV_LT- PROFILE SEE SHT. 2-BG

FOR -Y2REV_RT- PROFILE SEE SHT. 2-BH

-Y2REV_LT-

PI Sta 34+94.73
△ = 14° 29' 39.2" (LT)
D = 3° 02' 51.5"
L = 475.59'
T = 239.07'
R = 1,880.00'

PI Sta 40+43.86
△ = 2° 55' 50.0" (LT)
D = 1° 08' 45.3"
L = 255.74'
T = 127.90'
R = 5,000.00'

-Y2REV_RT-

PI Sta 30+31.79
△ = 7° 32' 37.2" (RT)
D = 3° 49' 11.0"
L = 197.49'
T = 98.89'
R = 1,500.00'

PI Sta 35+76.70
△ = 28° 04' 34.3" (LT)
D = 3° 12' 35.5"
L = 874.69'
T = 446.31'
R = 1,785.00'

DETAIL FSL
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S = Ditch Slope
℄ Proposed Ditch
-Y2REV_LT- 37+34 (LT)
-Y2REV_LT- 38+00 (LT)

DETAIL FSR
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S=Ditch Slope
℄ Proposed Ditch
-Y2REV_LT- 36+87 (RT)

DETAIL AL
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D= 2.0 Ft.
B= 5.0 Ft.
-PXROAD- STA. 33+43 (RT)

DETAIL X
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D= 1.0 Ft.
FROM -PXROAD- 29+84 TO 31+87 (RT)
FROM -Y2REV_LT- 37+00 TO 37+50 (RT)

DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Fill Slope
Min. D= 1.0 Ft.
FROM -PXROAD- STA. 29+84 TO STA. 33+29 (LT)
FROM -PXROAD- STA. 35+00 TO STA. 36+50 (LT)
FROM -Y2REV_LT- STA. 31+00 TO STA. 33+09 (RT)

DETAIL AE
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Fill Slope
Geotextile
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
Type of Liner= Class 'I' Rip-Rap
FROM -PXROAD- 31+87 TO 33+45 (RT)
FROM -Y2REV_LT- STA. 34+47 TO STA. 36+00 (RT)

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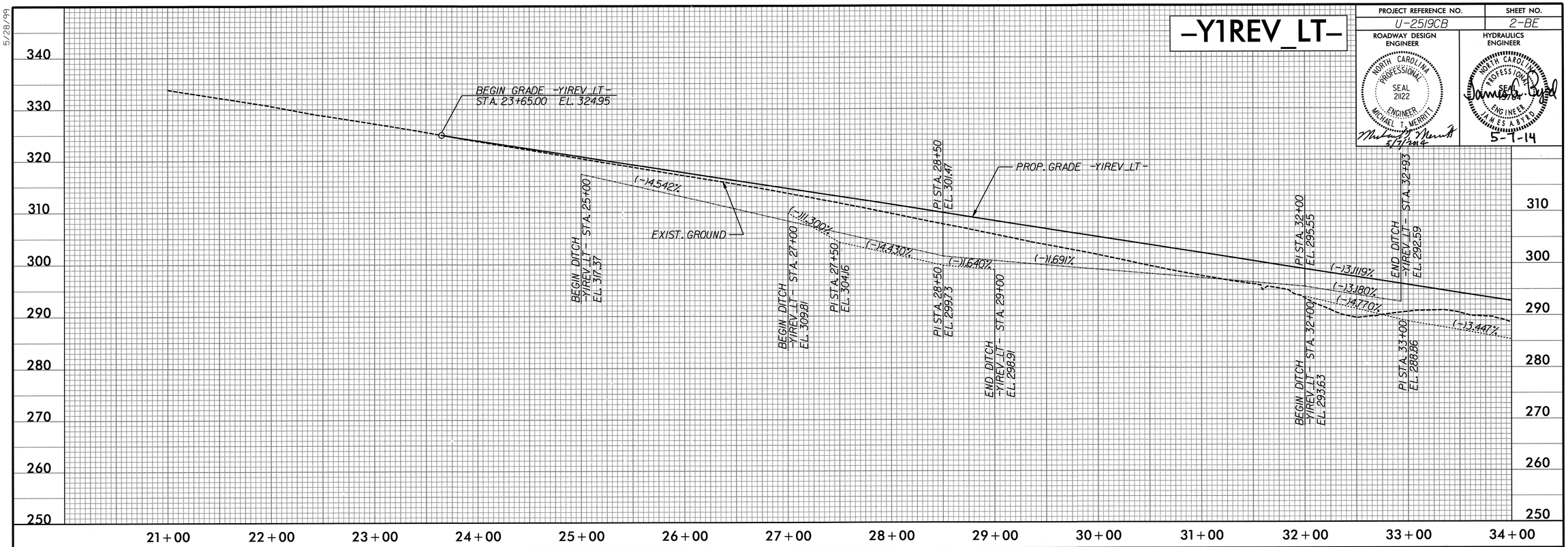
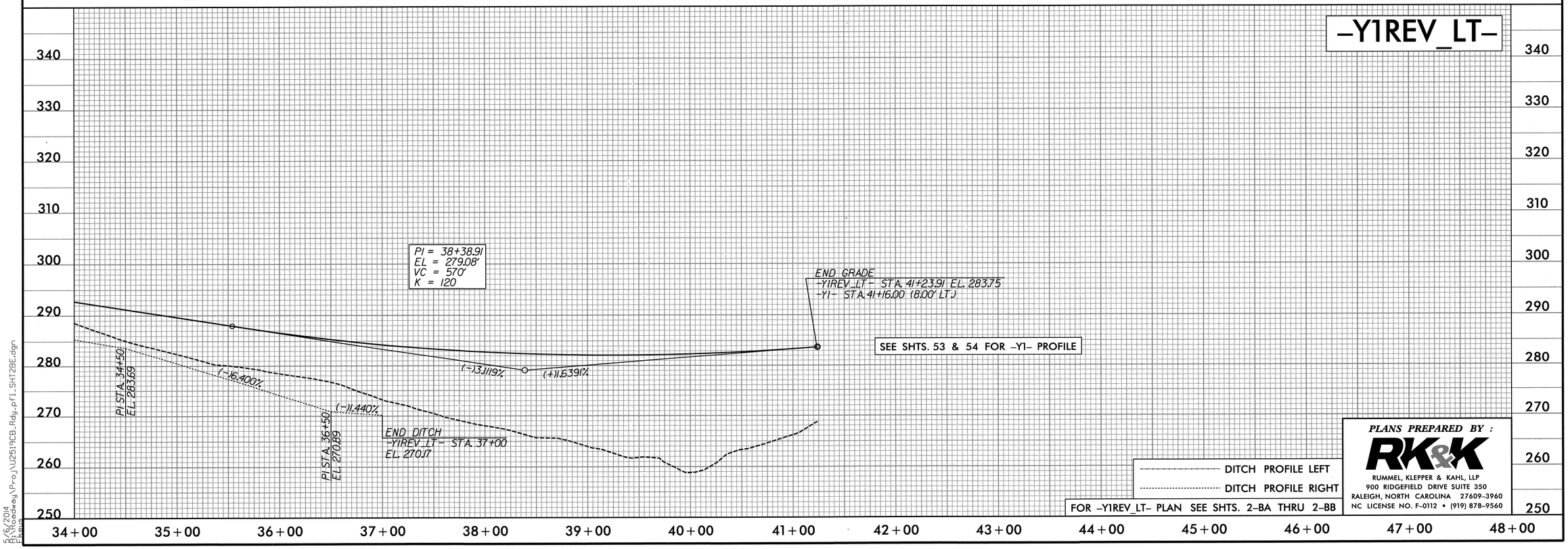
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BE

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT — 5/7/2014

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19784 ENGINEER JAMES A. BYRD — 5-7-14





DITCH PROFILE LEFT

DITCH PROFILE RIGHT

FOR -Y1REV_LT- PLAN SEE SHTS. 2-BA THRU 2-BB

PLANS PREPARED BY :

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BF

ROADWAY DESIGN ENGINEER

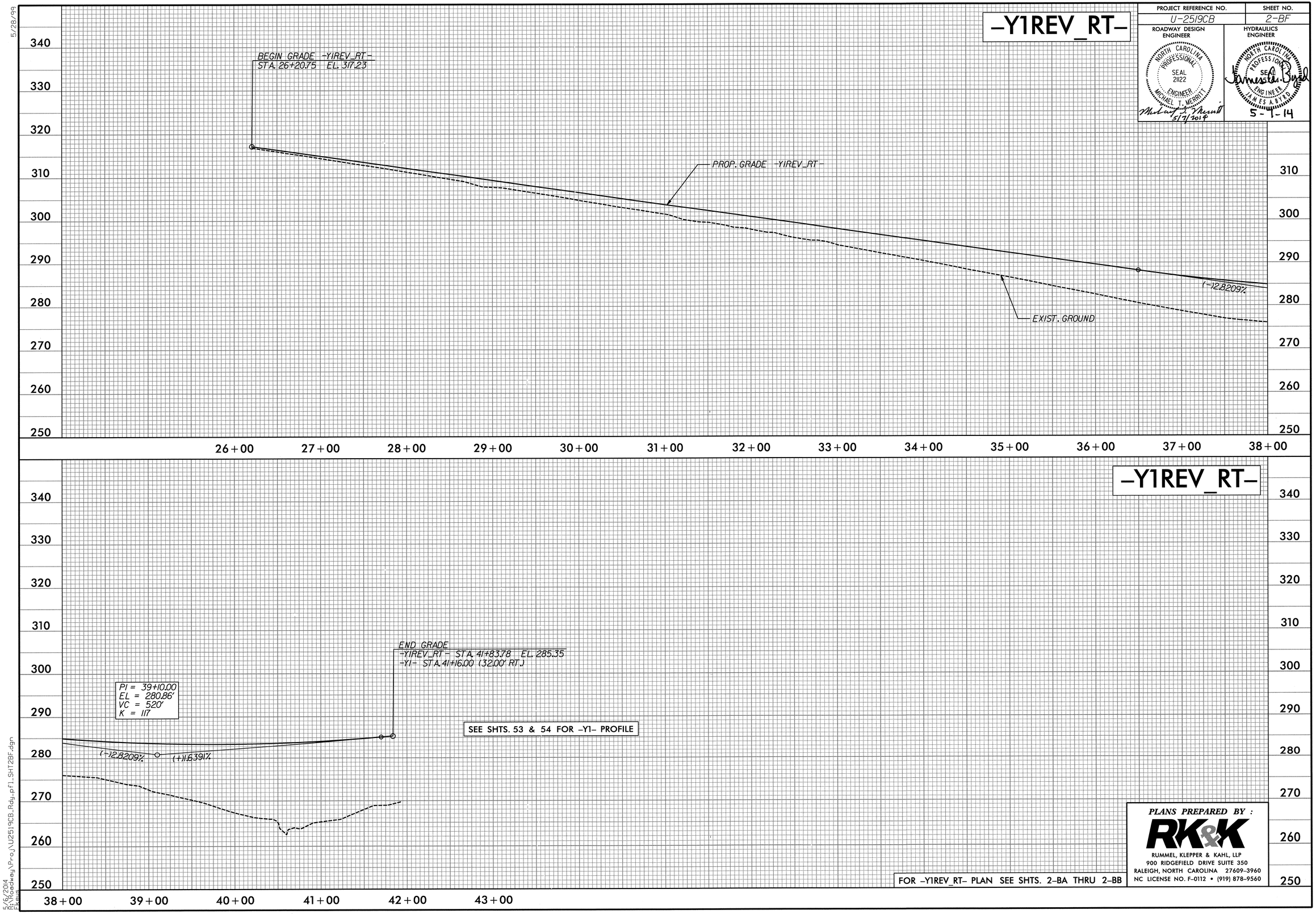
NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

5/7/2014

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JAMES A. BYRD

5-1-14



FOR -Y1REV_RT- PLAN SEE SHTS. 2-BA THRU 2-BB

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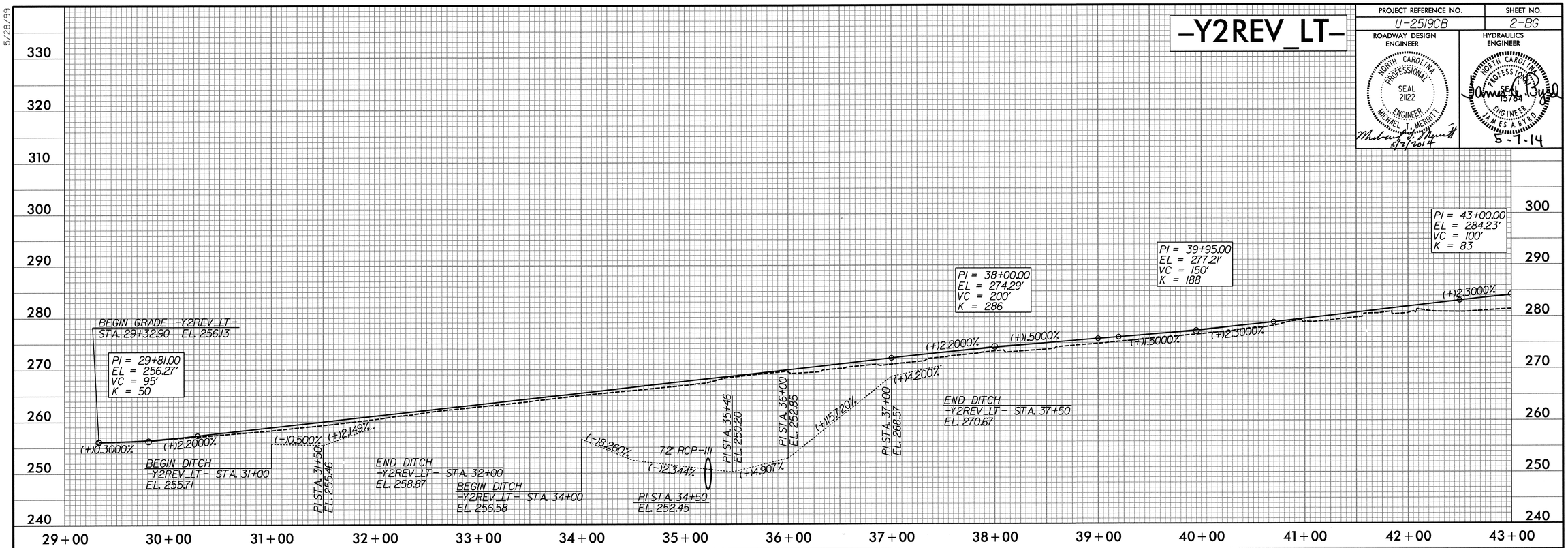
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BG

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT — 5/7/2014

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — 5-7-14



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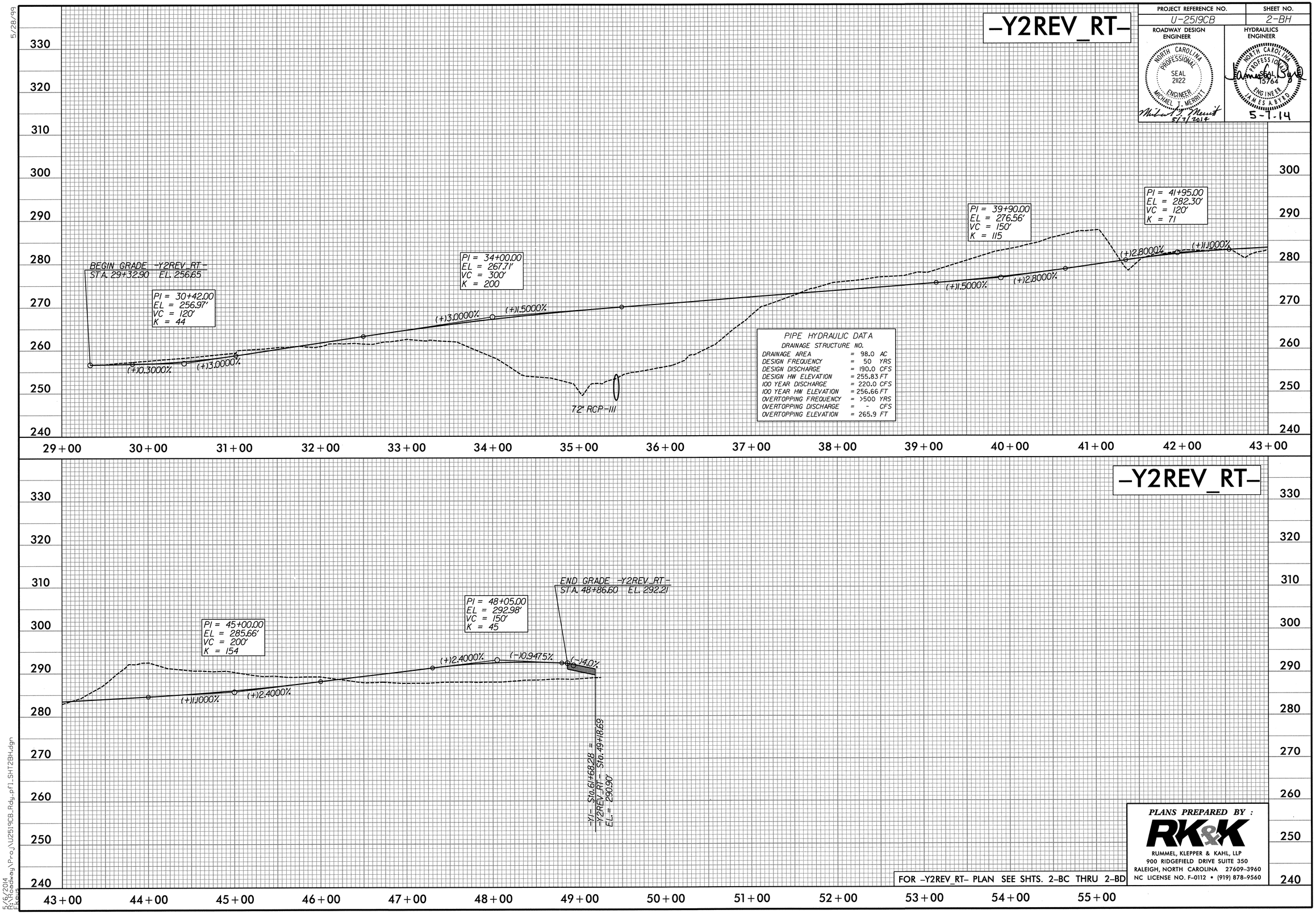
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BH

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL J. MERRITT — Michael J. Merritt 5/7/2014

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — James A. Byrd 5-7-14



FOR -Y2REV_RT- PLAN SEE SHTS. 2-BC THRU 2-BD

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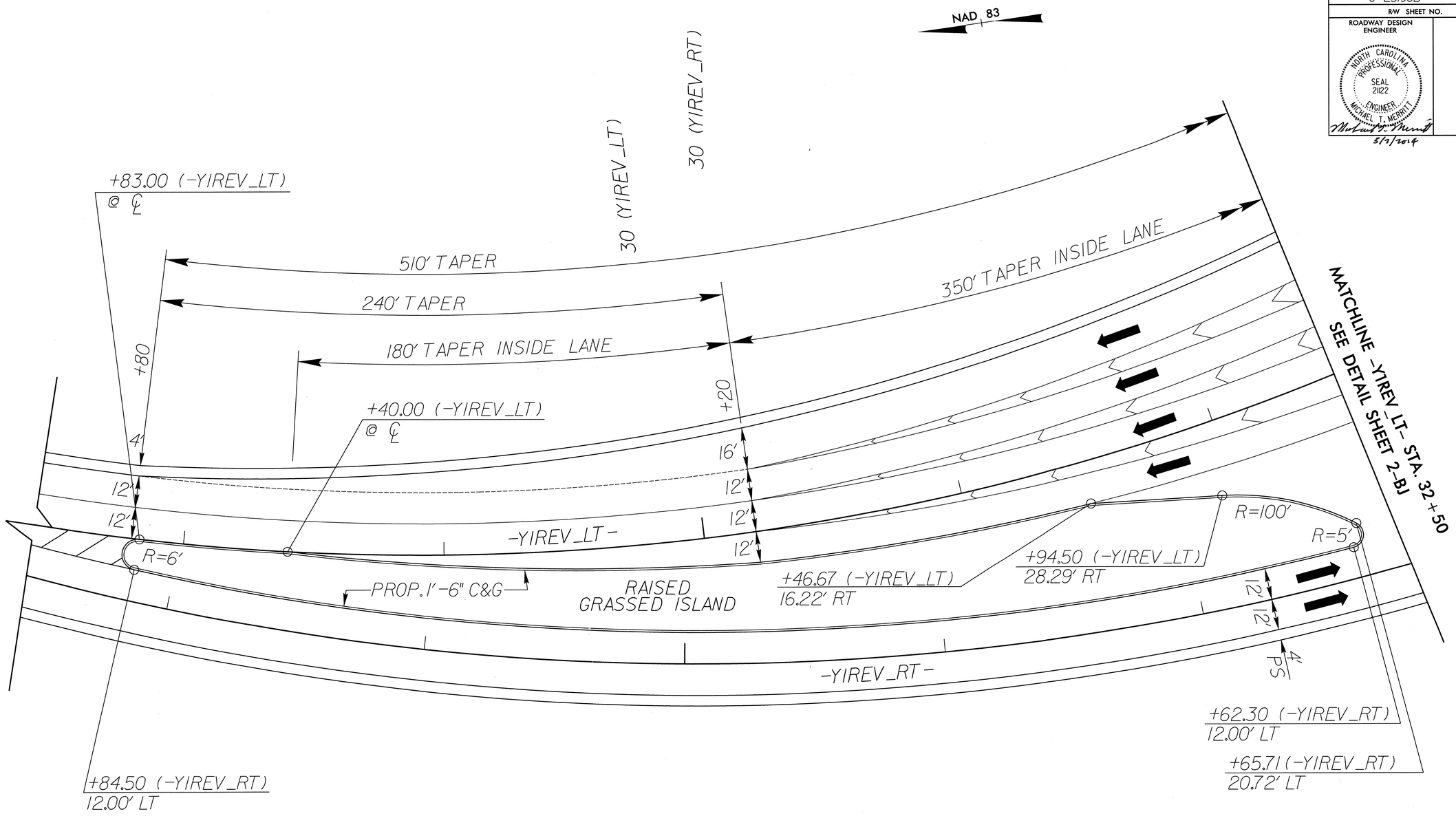
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BI
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

5/7/2014



SEE SHEETS 2-BA AND 2-BB FOR CURVE DATA

CANOPY LANE ACP DETAIL

10 0 10 20

1" = 20'

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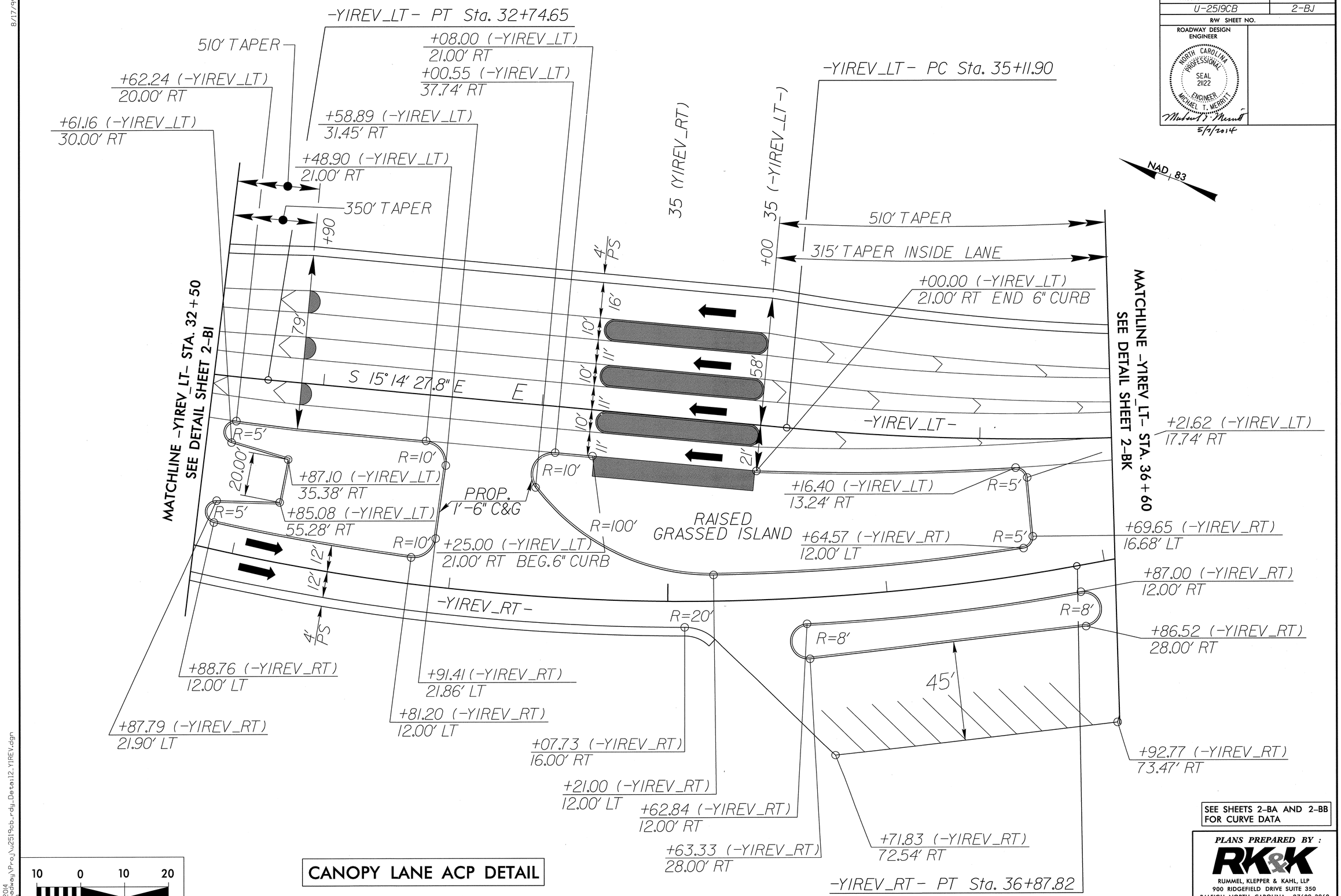
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BJ
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

5/6/2014



CANOPY LANE ACP DETAIL

SEE SHEETS 2-BA AND 2-BB FOR CURVE DATA

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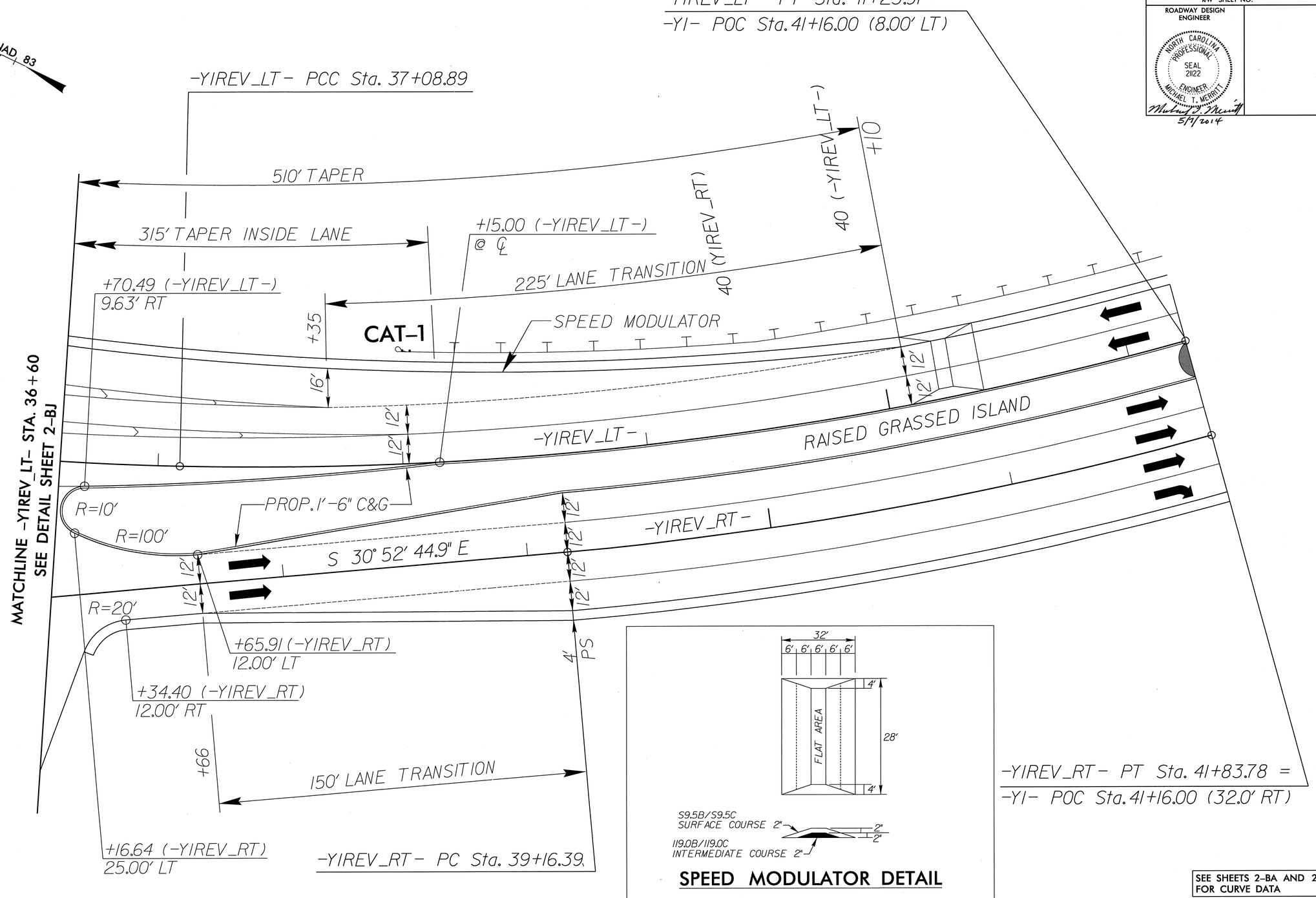
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BK
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

5/9/2014



SEE SHEETS 2-BA AND 2-BB FOR CURVE DATA

10 0 10 20

1" = 20'

CANOPY LANE ACP DETAIL

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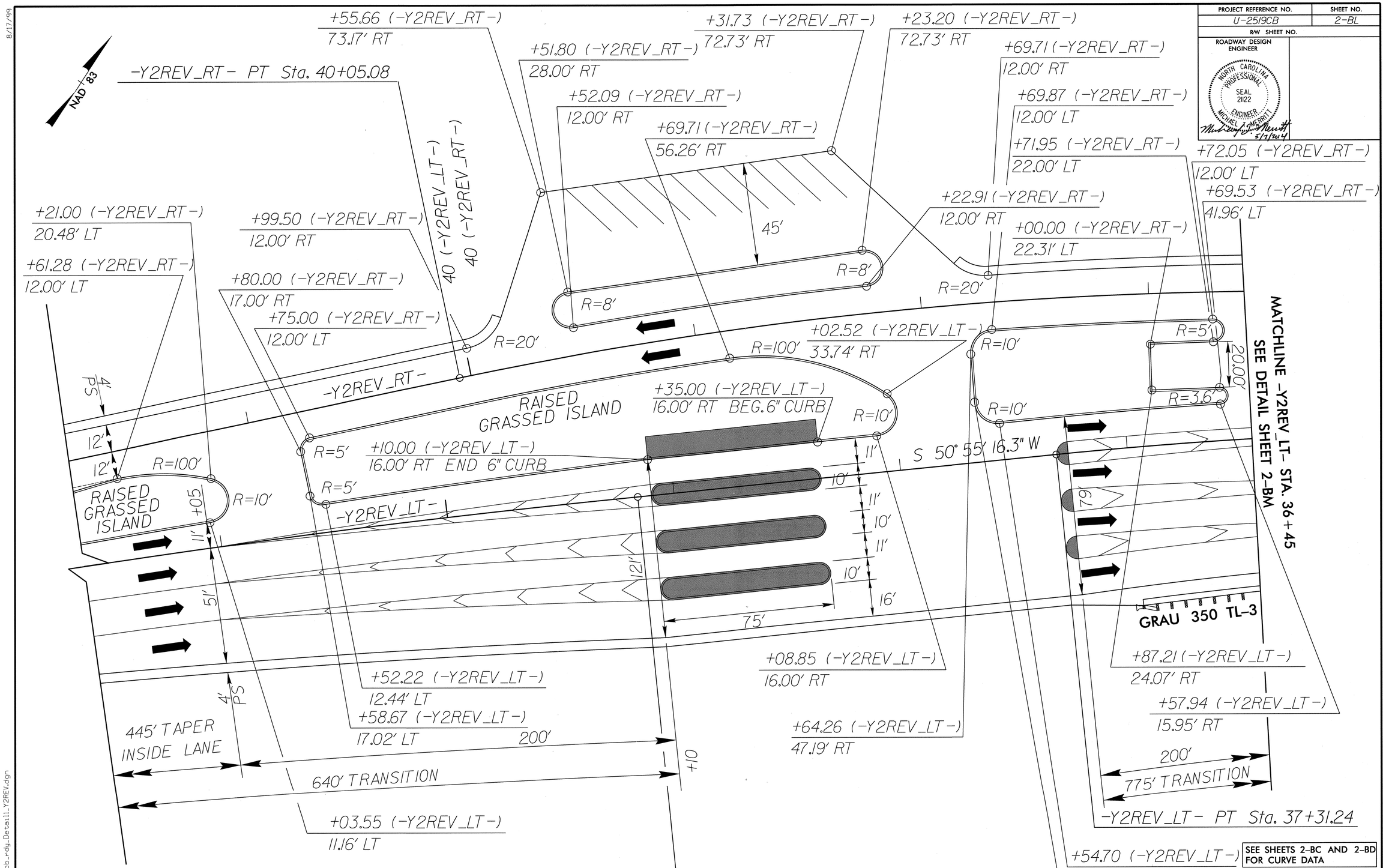
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL J. MERRITT 5/7/2014



SEE SHEETS 2-BC AND 2-BD FOR CURVE DATA

10 0 10 20
1" = 20'

REILLY ROAD ACP DETAIL

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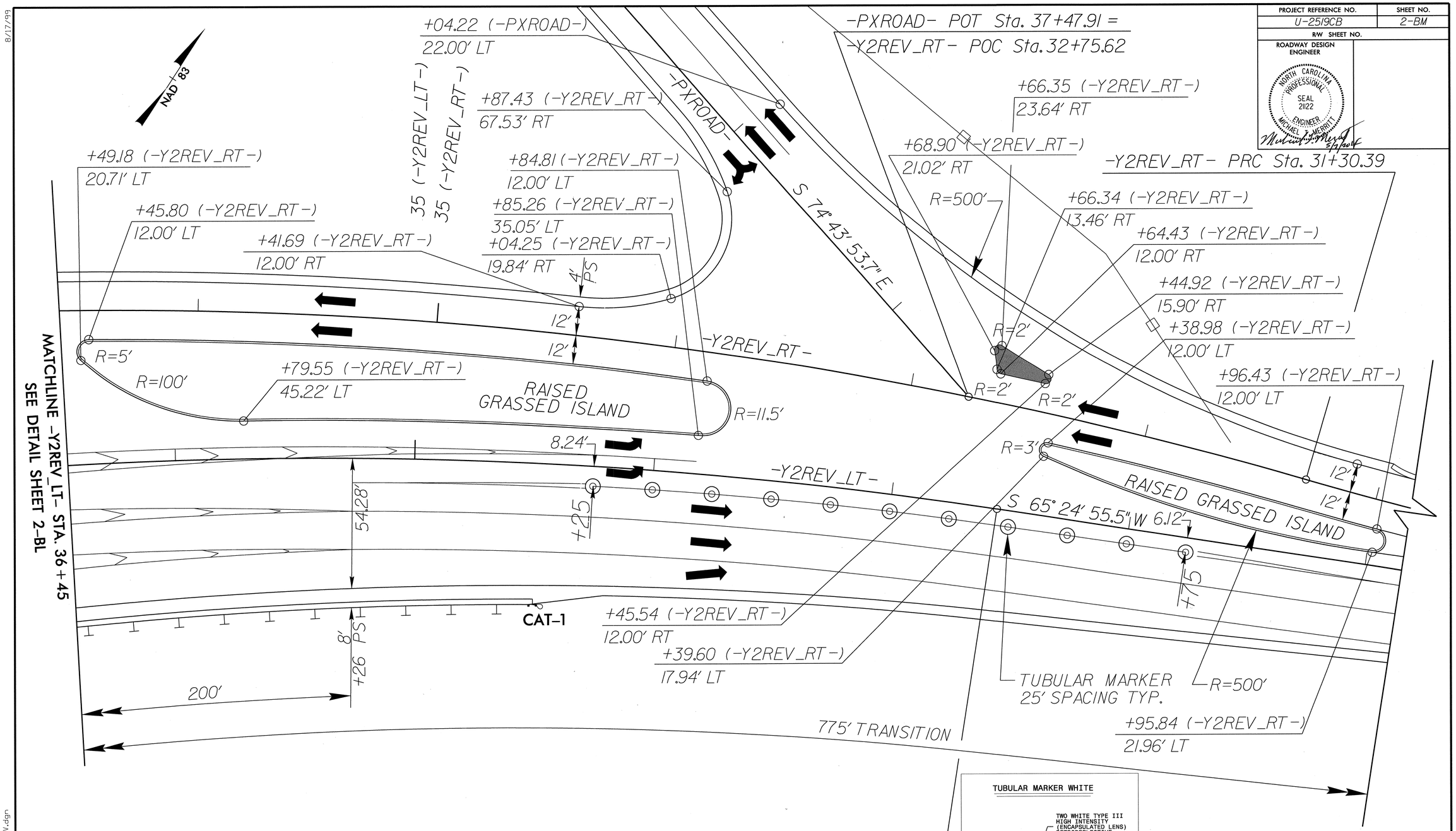
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BM
R/W SHEET NO.	

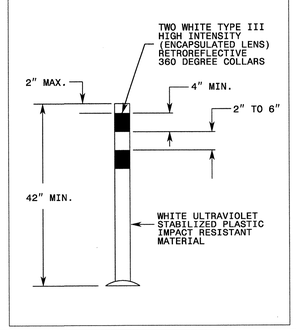
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

5/7/2014



TUBULAR MARKER WHITE



SEE SHEETS 2-BC AND 2-BD FOR CURVE DATA

10 0 10 20

1" = 20'

REILLY ROAD ACP DETAIL

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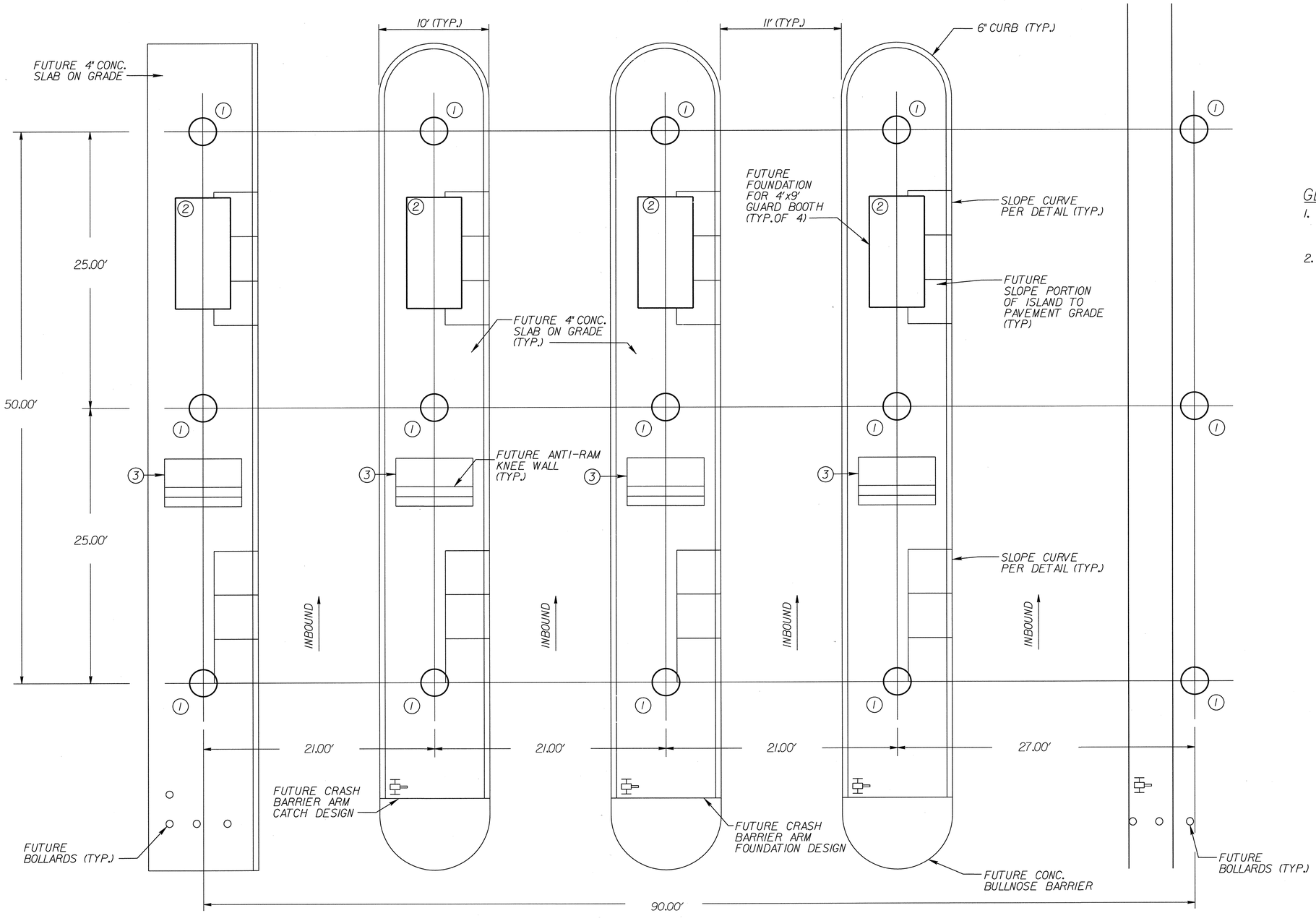
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BN
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL J. MERRITT

5/7/2014

FUTURE CANOPY LANE / REILLY ROAD ACP FOUNDATION DETAIL BY OTHERS

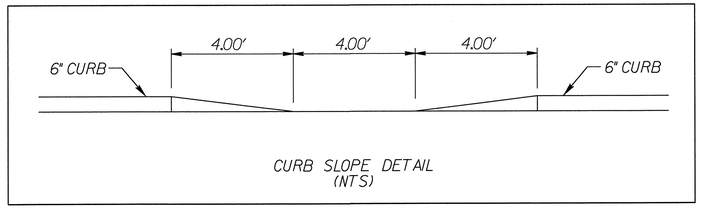


GENERAL NOTES:

1. COORDINATE ALL DIMENSIONS AND ELEVATIONS WITH CIVIL DRAWINGS PRIOR TO START OF CONSTRUCTION (TYP.)
2. SPECIFIED FOUNDATIONS ARE PRELIMINARY AND ARE SUBJECT TO FINAL DESIGN BY OTHERS.

FUTURE FOOTING SCHEDULE BY OTHERS

MARK	DESCRIPTION
1	FUTURE DRILLED SHAFTS BY OTHERS
2	FUTURE GUARD BOOTH SLAB BY OTHERS
3	FUTURE ANTI-RAM KNEE WALL BY OTHERS



CURB SLOPE DETAIL
(NTS)

5 0 5 10
1" = 10'

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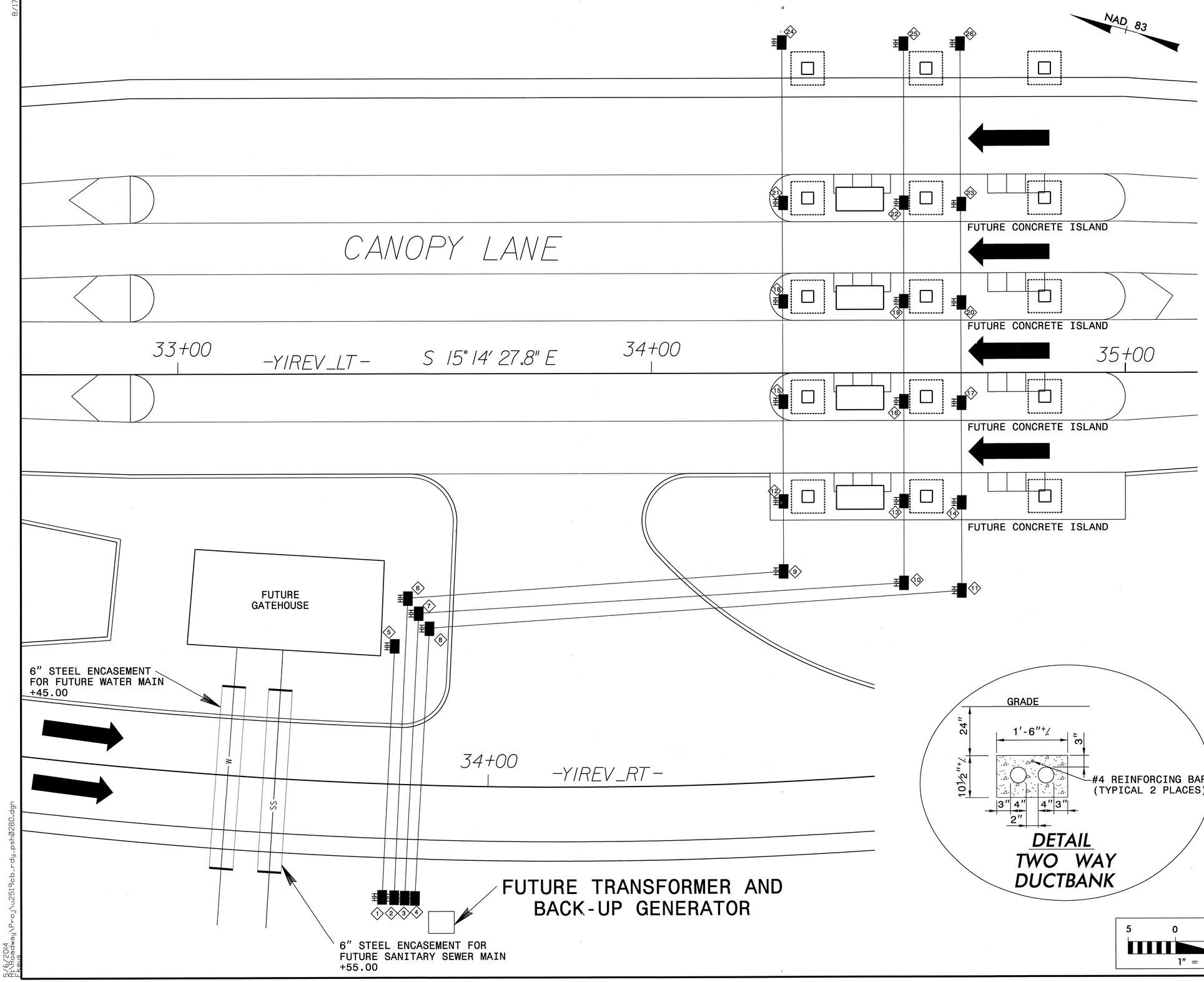
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-B0
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

5/7/2014



LEGEND

HH — HANDHOLE JUNCTION BOX - SEE NCDOT STD.1716.01

UNDERGROUND CONDUIT (TWO WAY DUCTBANK)

GENERAL NOTES:

1. EQUIPMENT AND WIRING TO BE INSTALLED BY OTHERS.
2. INSTALL PULLSTRING IN ALL EMPTY CONDUITS.

HANDHOLE	STATION MARKER / OFFSET
1	-Y1REV_RT- 33+77 /26.0 RT
2	-Y1REV_RT- 33+79 /26.0 RT
3	-Y1REV_RT- 33+81 /26.0 RT
4	-Y1REV_RT- 33+84 /26.5 RT
5	-Y1REV_RT- 33+77 /29.0 LT
6	-Y1REV_RT- 33+80 /39.0 LT
7	-Y1REV_RT- 33+82 /36.0 LT
8	-Y1REV_RT- 33+85 /33.0 LT
9	-Y1REV_LT- 34+28 /42.0 RT
10	-Y1REV_LT- 34+53 /44.5 RT
11	-Y1REV_LT- 34+65 /46.0 RT
12	-Y1REV_LT- 34+28 /27.0 RT
13	-Y1REV_LT- 34+53 /27.0 RT
14	-Y1REV_LT- 34+65 /27.5 RT
15	-Y1REV_LT- 34+28 /6.0 RT
16	-Y1REV_LT- 34+53 /6.0 RT
17	-Y1REV_LT- 34+65 /6.5 RT
18	-Y1REV_LT- 34+28 /15.0 LT
19	-Y1REV_LT- 34+53 /15.0 LT
20	-Y1REV_LT- 34+65 /14.5 LT
21	-Y1REV_LT- 34+28 /36.0 LT
22	-Y1REV_LT- 34+53 /36.0 LT
23	-Y1REV_LT- 34+65 /35.5 LT
24	-Y1REV_LT- 34+28 /69.5 LT
25	-Y1REV_LT- 34+53 /69.0 LT
26	-Y1REV_LT- 34+65 /69.0 LT

DETAIL
TWO WAY DUCTBANK

5 0 5 10
1" = 10'

PLANS PREPARED BY :

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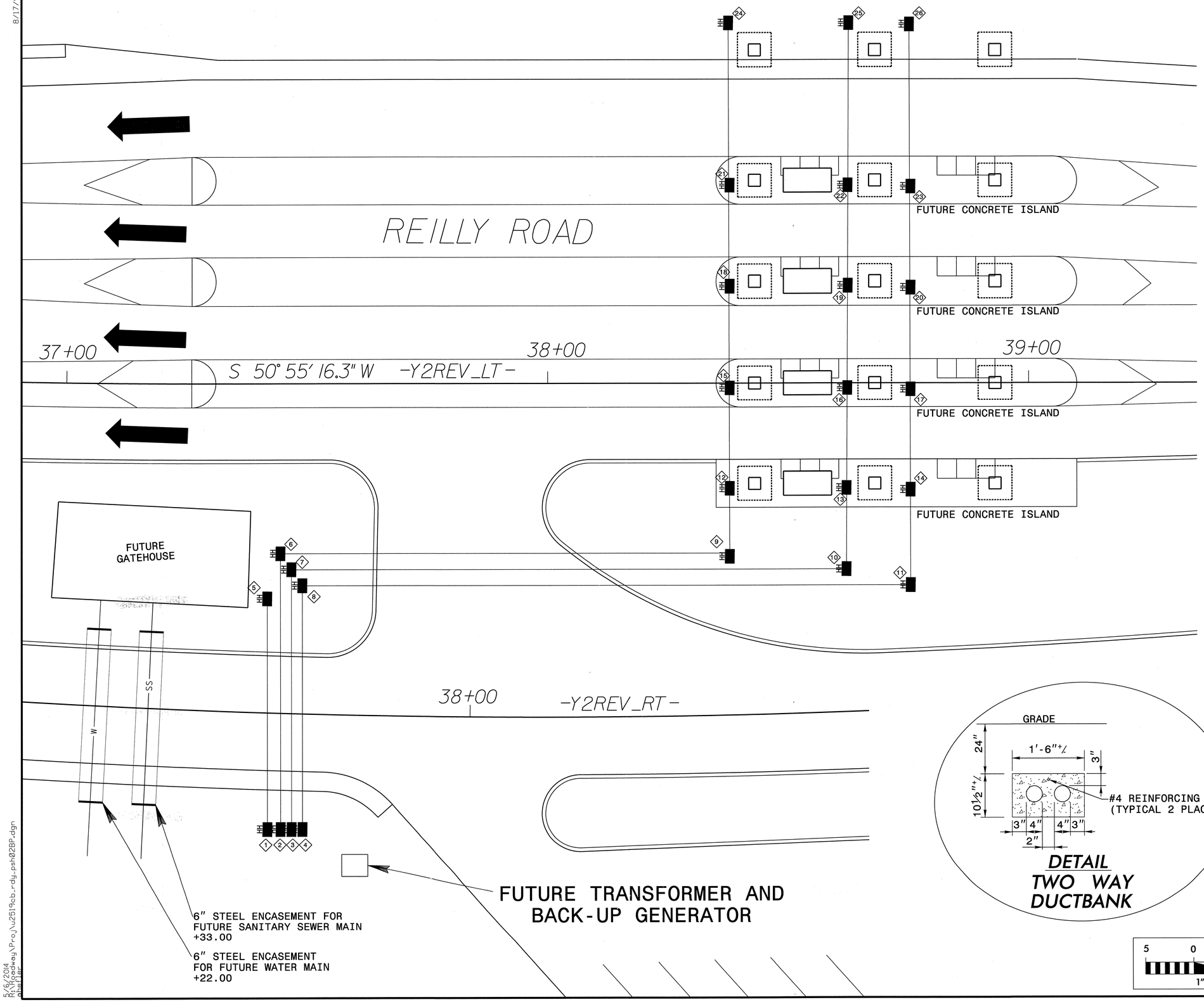
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BP
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. METRITT

5/7/2014



LEGEND

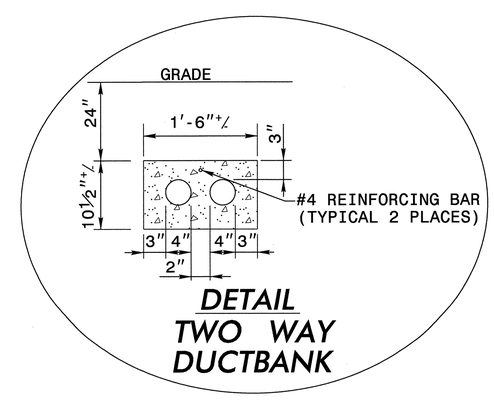
HC — HANDHOLE JUNCTION BOX - SEE NCDOT STD.1716.01

UNDERGROUND CONDUIT (TWO WAY DUCTBANK)

GENERAL NOTES:

1. EQUIPMENT AND WIRING TO BE INSTALLED BY OTHERS.
2. INSTALL PULLSTRING IN ALL EMPTY CONDUITS.

HANDHOLE	STATION MARKER / OFFSET
1	-Y2REV_RT- 37+56 / 32.5 RT
2	-Y2REV_RT- 37+59 / 32.0 RT
3	-Y2REV_RT- 37+61 / 32.0 RT
4	-Y2REV_RT- 37+63 / 32.0 RT
5	-Y2REV_RT- 37+54 / 23.5 LT
6	-Y2REV_RT- 37+57 / 33.0 LT
7	-Y2REV_RT- 37+59 / 30.0 LT
8	-Y2REV_RT- 37+61 / 26.5 LT
9	-Y2REV_LT- 38+38 / 35.5 RT
10	-Y2REV_LT- 38+62 / 39.0 RT
11	-Y2REV_LT- 38+75 / 42.0 RT
12	-Y2REV_LT- 38+38 / 22.0 RT
13	-Y2REV_LT- 38+62 / 22.0 RT
14	-Y2REV_LT- 38+75 / 22.5 RT
15	-Y2REV_LT- 38+38 / 1.0 RT
16	-Y2REV_LT- 38+62 / 1.0 RT
17	-Y2REV_LT- 38+75 / 1.5 RT
18	-Y2REV_LT- 38+38 / 20.0 LT
19	-Y2REV_LT- 38+62 / 20.0 LT
20	-Y2REV_LT- 38+75 / 19.5 LT
21	-Y2REV_LT- 38+38 / 41.0 LT
22	-Y2REV_LT- 38+62 / 41.0 LT
23	-Y2REV_LT- 38+75 / 40.5 LT
24	-Y2REV_LT- 38+38 / 74.5 LT
25	-Y2REV_LT- 38+63 / 74.5 LT
26	-Y2REV_LT- 38+75 / 74.0 LT



DETAIL TWO WAY DUCTBANK

5 0 5 10
1" = 10'

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/17/99

5/6/2014
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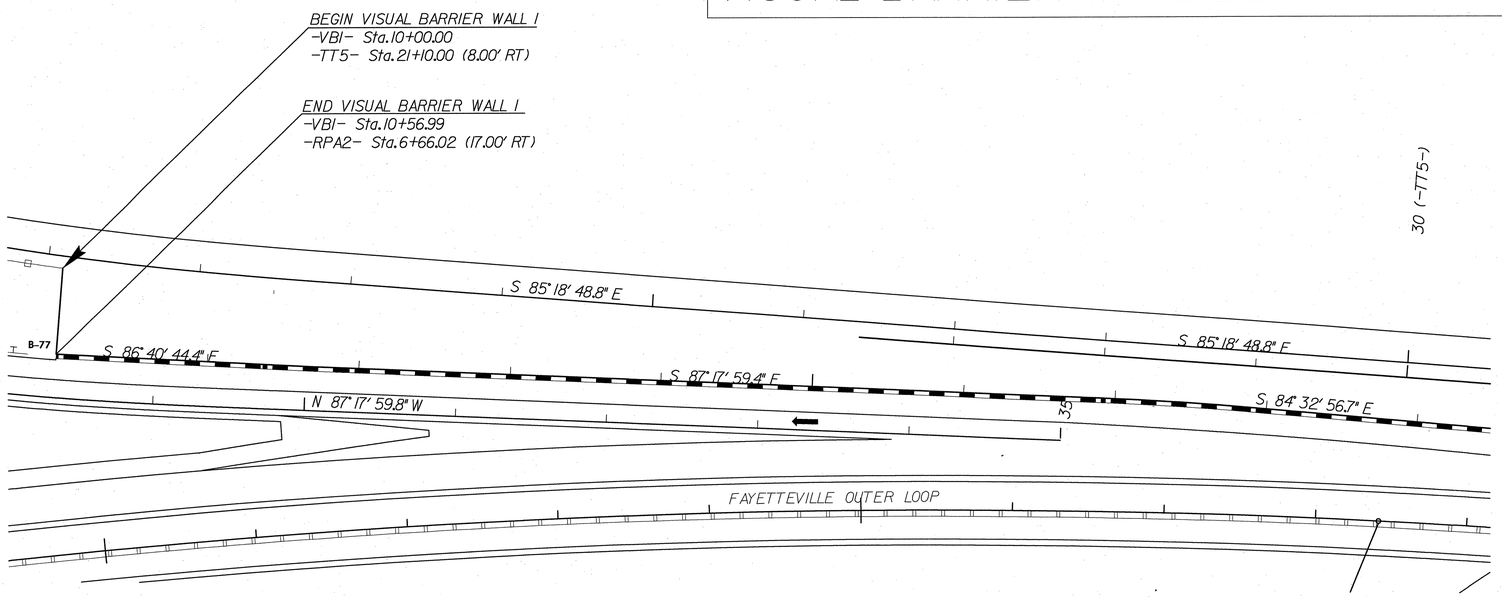
alefler

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BQ
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
8-8-14

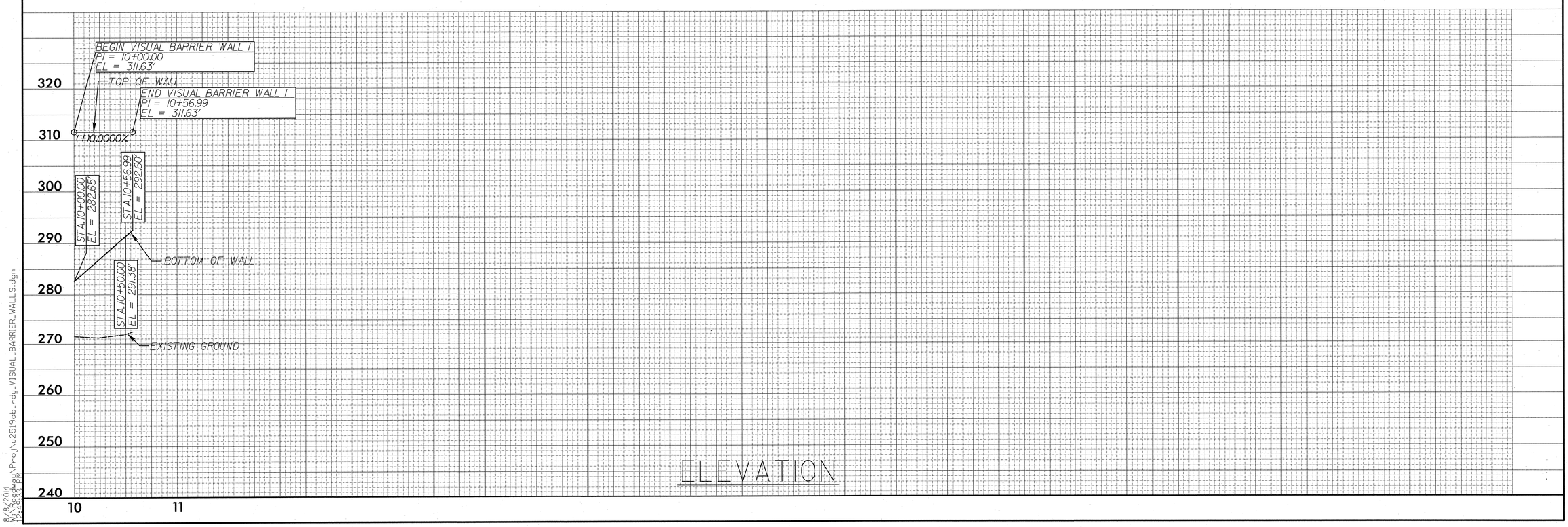
VISUAL BARRIER WALL DETAIL SHEET



NOTE: THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE FACE OF THE WALL.

PLAN

PROPOSED VISUAL BARRIER WALL 1 L= 57'



ELEVATION

8/17/99

8/8/2014
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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BR
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

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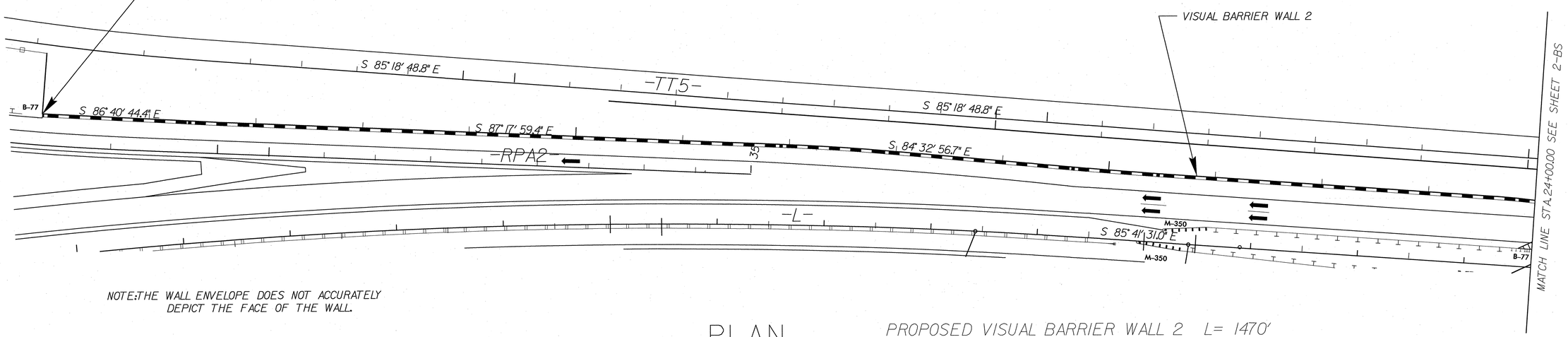
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY
8-8-14

VISUAL BARRIER WALL DETAIL SHEET

BEGIN VISUAL BARRIER WALL 2
-VB2- Sta. 10+56.99
-RPA2- Sta. 6+66.02 (17.00' RT)

-VB2- CURVE DATA

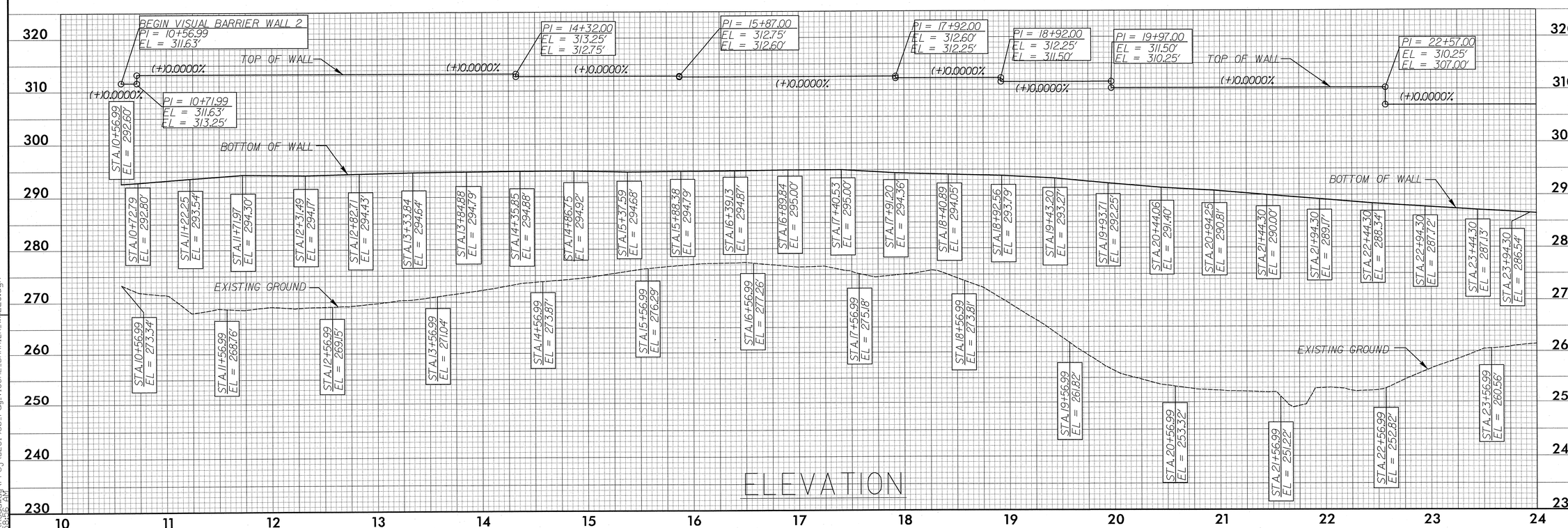
PI Sta 11+65.12	PI Sta 17+40.22	PI Sta 20+06.58
Δ = 0° 37' 15.0" (LT)	Δ = 2° 45' 02.7" (RT)	Δ = 1° 08' 34.7" (LT)
D = 1° 08' 45.3"	D = 2° 51' 53.2"	D = 1° 25' 56.6"
L = 54.18'	L = 96.02'	L = 79.79'
T = 27.09'	T = 48.02'	T = 39.90'
R = 5,000.00'	R = 2,000.00'	R = 4,000.00'



NOTE: THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE FACE OF THE WALL.

PLAN

PROPOSED VISUAL BARRIER WALL 2 L= 1470'



ELEVATION

REVISIONS

8/17/99

8/11/2014
8:15:56 AM
jasonwtalley
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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BS
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

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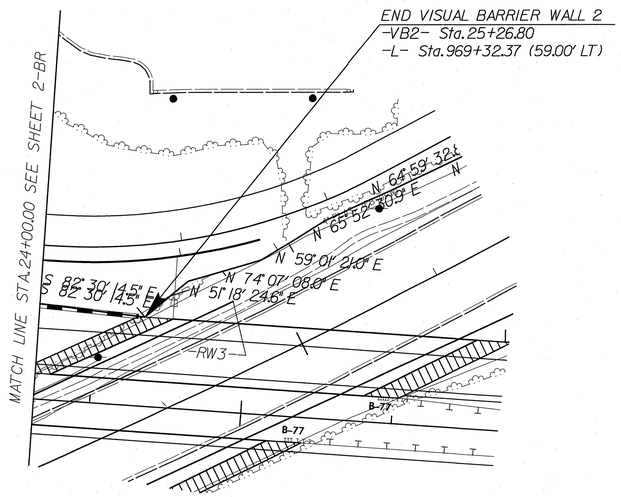
RS&H Architects-Engineers-Planners, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
8-8-14

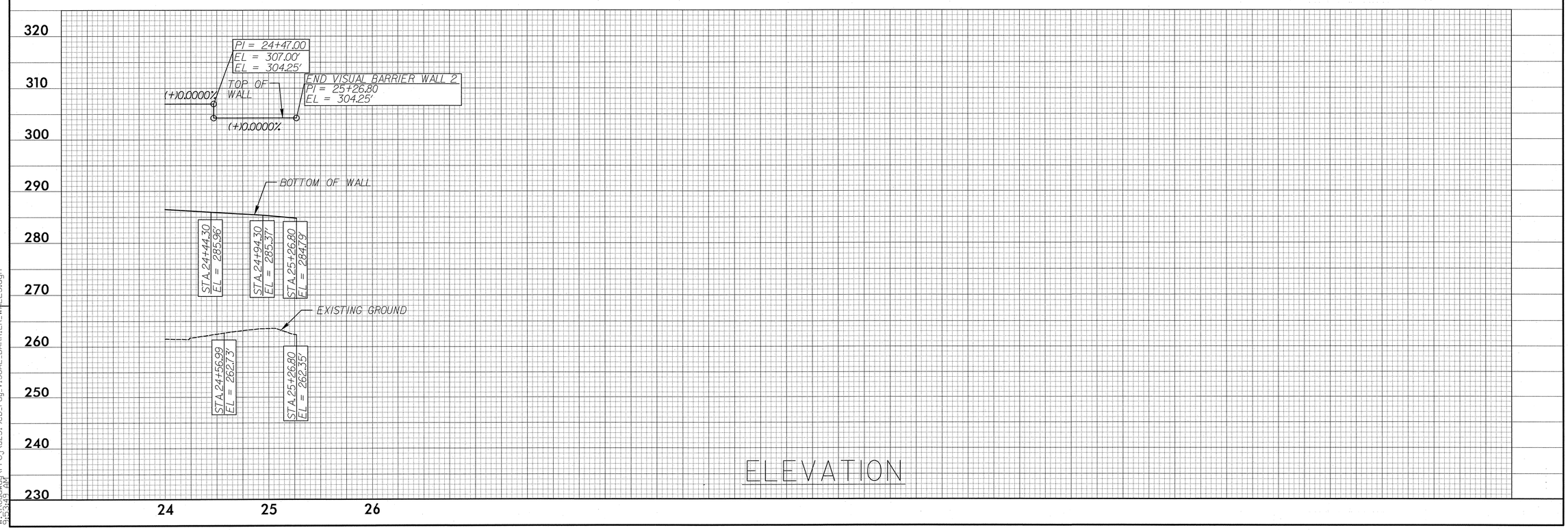
VISUAL BARRIER WALL DETAIL SHEET



NOTE: THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE FACE OF THE WALL.

PROPOSED VISUAL BARRIER WALL 2 L= 1470'

PLAN



ELEVATION

REVISIONS

8/17/99

8/11/2014
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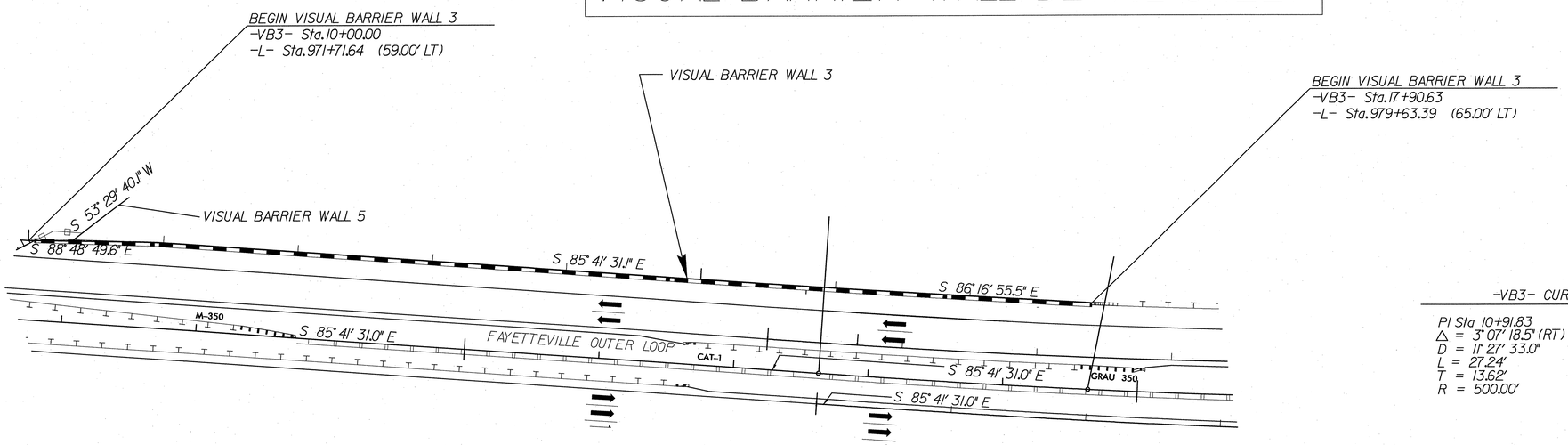
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BT
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
8-8-14

VISUAL BARRIER WALL DETAIL SHEET



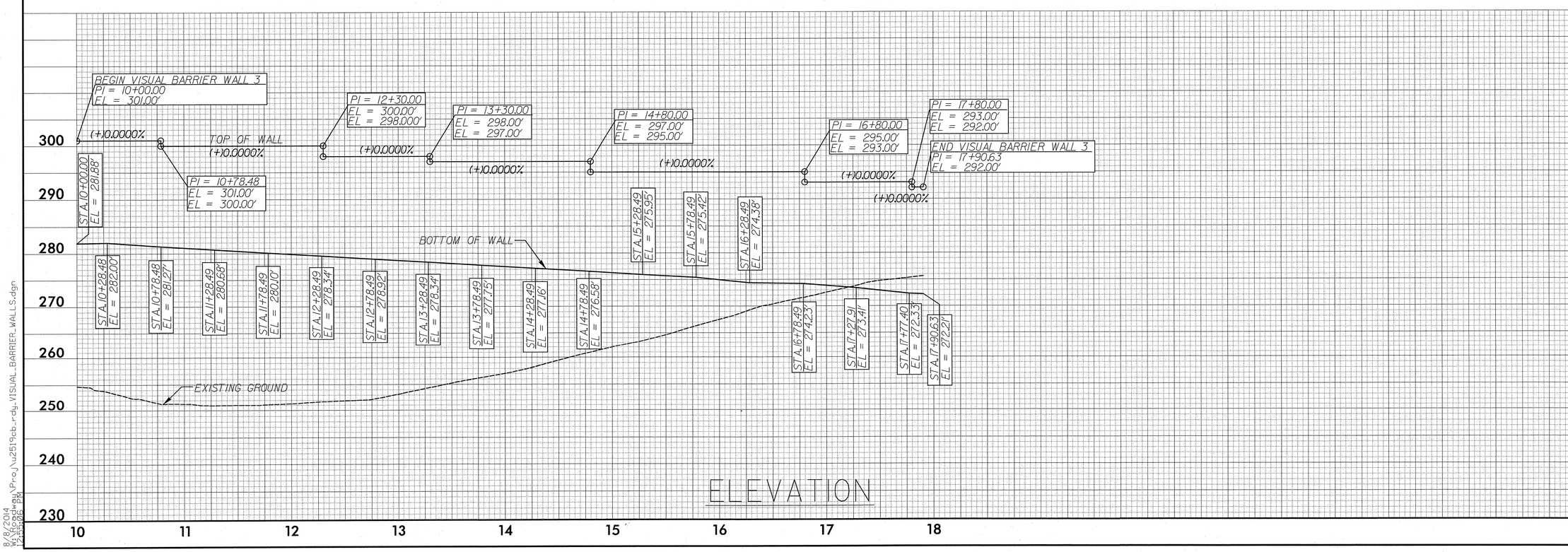
PROPOSED VISUAL BARRIER WALL 3 L= 791'

-VB3- CURVE DATA

PI Sta 10+91.83	PI Sta 15+78.50
△ = 3° 07' 18.5" (RT)	△ = 0° 35' 24.4" (LT)
D = 11° 27' 33.0"	D = 0° 17' 11.3"
L = 27.24'	L = 205.99'
T = 13.62'	T = 102.99'
R = 500.00'	R = 20,000.00'

NOTE: THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE FACE OF THE WALL.

PLAN



ELEVATION

8/17/99

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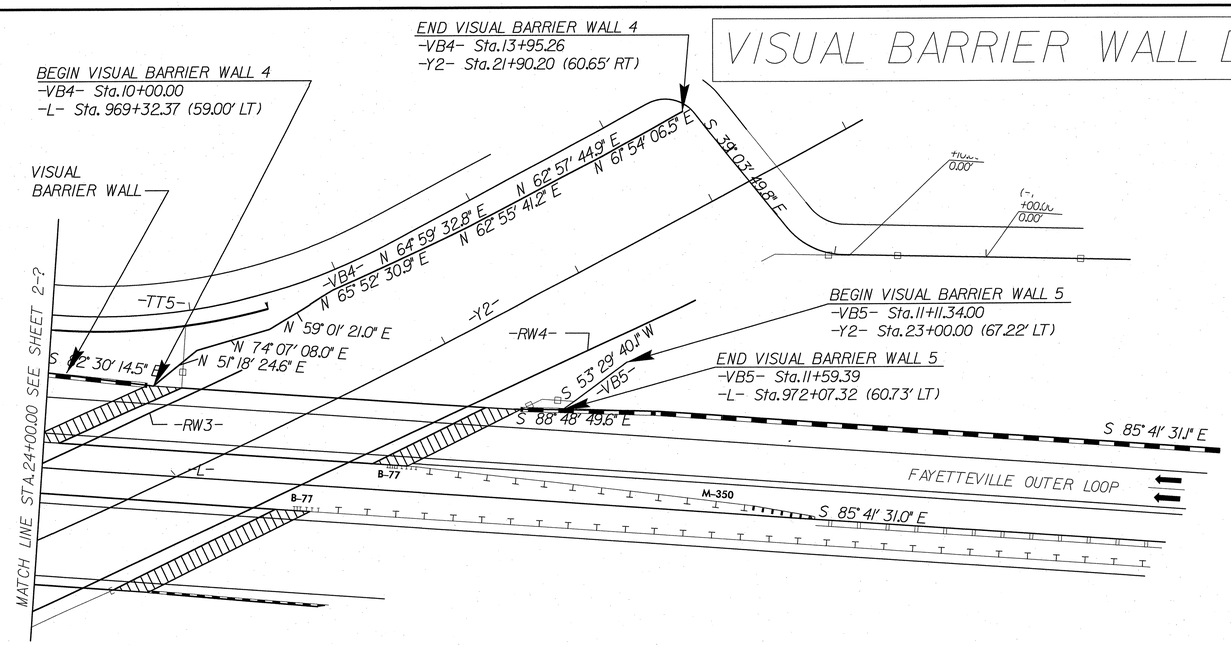
VISUAL BARRIER WALL DETAIL SHEET

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	2-BU
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY

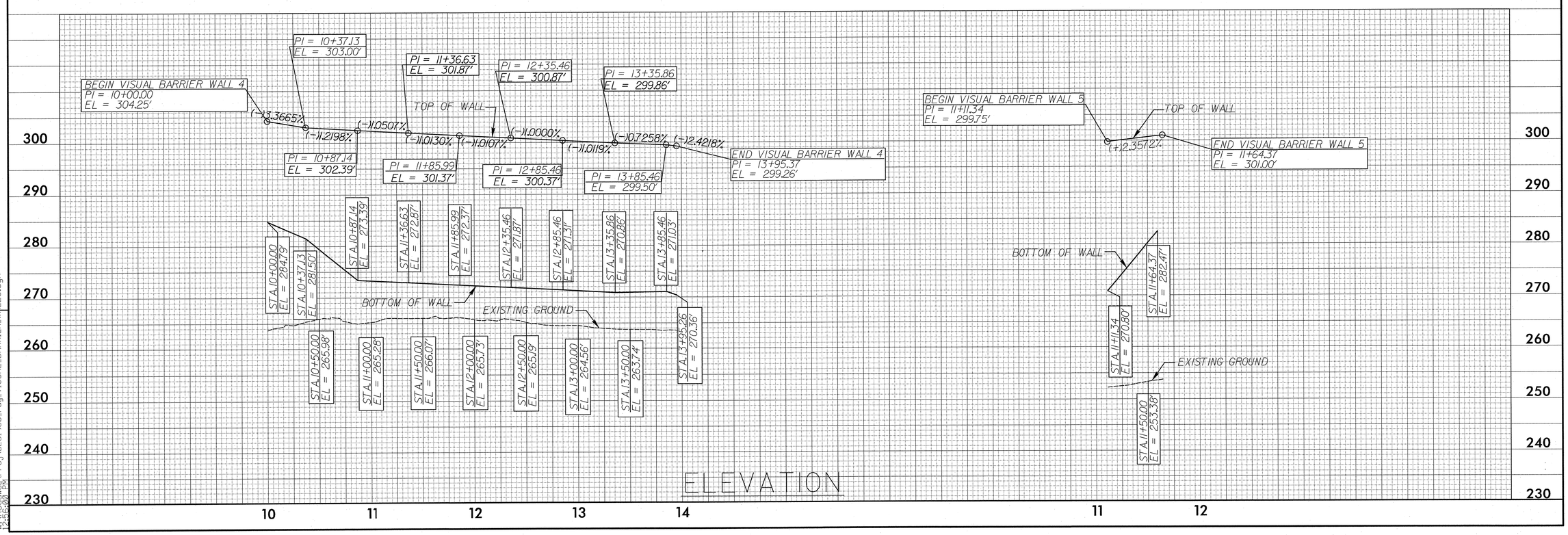
8-8-14



PROPOSED VISUAL BARRIER WALL 4 L= 395'
PROPOSED VISUAL BARRIER WALL 5 L= 48'

NOTE: THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE FACE OF THE WALL.

PLAN



ELEVATION

REVISIONS

8/17/99

8/8/2014
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RD248621

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
Sheet 4							
Y23 102+00	RT	0405		238.50			
Y23 101+87	RT	0405	OUT		236.58	235.80	
L 753+00	RT	0406		236.20			
L 753+00	RT	0406	OUT		232.00	231.19	
L 753+18	LT	IN	0407		235.30	233.50	
L 753+00	CL	0407		248.75			
L 753+00	CL	0407	0406		233.50	232.00	
Sheet 5							
L 764+17	CL						
L 766+77	CL						
RPC1 11+52	LT	0501					
RPC1 11+26	CL	0501	OUT				
LPC1 3+50	RT	0503		248.21			
LPC1 3+50	RT	0503	OUT		244.41	239.60	
LPC1 5+00	LT	IN	0502		237.80	236.60	
LPC1 5+00	LT	0502		240.60			
LPC1 5+00	CL	0502	OUT		244.41	239.60	
RPC1 18+84	LT	0505		239.00			
RPC1 18+78	CL	0505	OUT		233.60	233.00	
LPC1 9+48	LT	0506		236.90			
LPC1 9+11	CL	0506	0505		234.40	233.60	
Y5 256+25	RT	0507		240.57			
Y5 256+13	LT	IN	0508		236.50	235.67	
Y5 256+25	LT	0508		240.90			
Y5 256+45	LT	0509		241.05			
Y5 256+45	LT	0509	0508		235.77	235.67	
RPD1 18+85	LT	0510		239.00			
RPD1 18+85	CL	0510	0511		237.08	236.70	
RPD1 18+85	RT	0511		240.96			
RPD1 18+85	RT	0511	0509		236.70	235.77	
Y5 252+95	RT	0512		238.75			
Y5 249+40	RT	0514		237.76			
Y5 249+40	RT	0514	0513		235.26	235.05	
Y5 249+40	RT	0513		237.60			
Y5 249+37	LT	0515		237.76			
Y5 249+37	LT	0515	OUT				
L 766+58	RT	0516		260.63			
L 766+58	RT	0516	OUT		257.46	238.00	
RPB1 22+00	LT	0517		230.19			
RPB1 22+26	CL	0517	0518		228.27	227.72	
RPB1 22+50	RT	0518		229.89			
RPB1 22+50	RT	0518	0519		227.72	227.00	
Y5 243+86	RT	0519		234.20			
Y5 243+86	RT	0519	2809		227.00	225.98	
Y5 243+90	LT	0520		234.02			
SHEET TOTALS							

STATION	LOC.	FROM	TO	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
Sheet 4																																										
Y23 102+00	RT	0405																																								
Y23 101+87	RT	0405	OUT																														64									
L 753+00	RT	0406																																								
L 753+00	RT	0406	OUT																									112														
L 753+18	LT	IN	0407																															140								
L 753+00	CL	0407																																								
L 753+00	CL	0407	0406																																140							
Sheet 5																																										
L 764+17	CL																																									
L 766+77	CL																																									
RPC1 11+52	LT	0501																																								
RPC1 11+26	CL	0501	OUT																															144								
LPC1 3+50	RT	0503																																								
LPC1 3+50	RT	0503	OUT																						48																	
LPC1 5+00	LT	IN	0502																							52																
LPC1 5+00	LT	0502																																								
LPC1 5+00	CL	0502	OUT																							104																
RPC1 18+84	LT	0505																																								
RPC1 18+78	CL	0505	OUT																														96									
LPC1 9+48	LT	0506																																								
LPC1 9+11	CL	0506	0505																														156									
Y5 256+25	RT	0507																																								
Y5 256+13	LT	IN	0508																									32														
Y5 256+25	LT	0508																																								
Y5 256+45	LT	0509																																								
Y5 256+45	LT	0509	0508																							16																
RPD1 18+85	LT	0510																																								
RPD1 18+85	CL	0510	0511																						48																	
RPD1 18+85	RT	0511																																								
RPD1 18+85	RT	0511	0509																						124																	
Y5 252+95	RT	0512																																								
Y5 249+40	RT	0514																																								
Y5 249+40	RT	0514	0513																						12																	
Y5 249+40	RT	0513																																								
Y5 249+37	LT	0515																																								
Y5 249+37	LT	0515	OUT																						8																	
L 766+58	RT	0516																																								
L 766+58	RT	0516	OUT														100																									
RPB1 22+00	LT	0517																																								
RPB1 22+26	CL	0517	0518																														92									
RPB1 22+50	RT	0518																																								
RPB1 22+50	RT	0518	0519																							72																
Y5 243+86	RT	0519																																								
Y5 243+86	RT	0519	2809																									300														
Y5 243+90	LT	0520																																								
SHEET TOTALS																	100								240	244	112	332						408	284	140						

STATION	LOC.	FROM	TO	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.31 OR 840.32	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE
Sheet 4																																					
Y23 102+00	RT	0405		1													1		1																		
Y23 101+87	RT	0405	OUT																																		
L 753+00	RT	0406		1											1				1																		
L 753+00	RT	0406	OUT																																		
L 753+18	LT	IN	0407																																		
L 753+00	CL	0407		1	5	5.25									1				1																		
L 753+00	CL	0407	0406																																		
Sheet 5																																					
L 764+17	CL																																				
L 766+77	CL																																				
RPC1 11+52	LT	0501		1																					1												
RPC1 11+26	CL	0501	OUT																																		
LPC1 3+50	RT	0503		1												1			1																		
LPC1 3+50	RT	0503	OUT																																		
LPC1 5+00	LT	IN	0502																																		
LPC1 5+00	LT	0502		1			1			1																											
LPC1 5+00	CL	0502	OUT																																		
RPC1 18+84	LT	0505		1			1			1																											
RPC1 18+78	CL	0505	OUT																																		
LPC1 9+48	LT	0506		1			1			1																											
LPC1 9+11	CL	0506	0505																																		
Y5 256+25	RT	0507		1																			1														
Y5 256+13	LT	IN	0508																																		
Y5 256+25	LT	0508		1	0.23		1		1																												
Y5 256+45	LT	0509		1	0.28		1		1																												
Y5 256+45	LT	0509	0508																																		
RPD1 18+85	LT	0510		1													1		1																		
RPD1 18+85	CL	0510	0511																																		
RPD1 18+85	RT	0511		1			1		1																												
RPD1 18+85	RT	0511	0509																																		
Y5 252+95	RT	0512		1																			1														
Y5 249+40	RT	0514		1																			1														
Y5 249+40	RT	0514	0513																																		
Y5 249+40	RT	0513		1			1			1																											
Y5 249+37	LT	0515		1			1		1																												
Y5 249+37	LT	0515	OUT																																		
L 766+58	RT	0516		1																							1	1									
L 766+58	RT	0516	OUT																																		
RPB1 22+00	LT	0517		1													1		1																		
RPB1 22+26	CL	0517	0518																																		
RPB1 22+50	RT	0518		1													1		1																		
RPB1 22+50	RT	0518	0519																																		
Y5 243+86	RT	0519		1	2.2		1			1																											
Y5 243+86	RT	0519	2809																																		
Y5 243+90	LT	0520		1	1.42		1		1																												
SHEET TOTALS				22	9.13	5.25	10		5	5					2	1	4		7				3		1		1	1									

STATION	LOC.	FROM	TO	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 4										
Y23 102+00	RT	0405								
Y23 101+87	RT	0405	OUT							
L 753+00	RT	0406								
L 753+00	RT	0406	OUT							
L 753+18	LT	IN	0407							
L 753+00	CL	0407								
L 753+00	CL	0407	0406							
Sheet 5										
L 764+17	CL									MODIFIED CONC. FLUME, SEE DETAIL 2-AE
L 766+77	CL									MODIFIED CONC. FLUME, SEE DETAIL 2-AE
RPC1 11+52	LT	0501								
RPC1 11+26	CL	0501	OUT							
LPC1 3+50	RT	0503								
LPC1 3+50	RT	0503	OUT							
LPC1 5+00	LT	IN	0502							
LPC1 5+00	LT	0502								
LPC1 5+00	CL	0502	OUT							
RPC1 18+84	LT	0505								
RPC1 18+78	CL	0505	OUT							
LPC1 9+48	LT	0506								
LPC1 9+11	CL	0506	0505							
Y5 256+25	RT	0507								REMOVE CB CONSTRUCT TBJB W/ SLAB LID
Y5 256+13	LT	IN	0508							
Y5 256+25	LT	0508								RETAIN EXISTING 36" RCP PIPE
Y5 256+45	LT	0509								
Y5 256+45	LT	0509	0508							
RPD1 18+85	LT	0510								
RPD1 18+85	CL	0510	0511							
RPD1 18+85	RT	0511								
RPD1 18+85	RT	0511	0509							
Y5 252+95	RT	0512								REMOVE CB CONSTRUCT TBJB W/ SLAB LID
Y5 249+40	RT	0514								REMOVE CB CONSTRUCT TBJB W/ SLAB LID
Y5 249+40	RT	0514	0513							
Y5 249+40	RT	0513								
Y5 249+37	LT	0515								REMOVE CB
Y5 249+37	LT	0515	OUT			0.399				
L 766+58	RT	0516								
L 766+58	RT	0516	OUT	1 @ 15"						
RPB1 22+00	LT	0517								
RPB1 22+26	CL	0517	0518							
RPB1 22+50	RT	0518								
RPB1 22+50	RT	0518	0519							
Y5 243+86	RT	0519								
Y5 243+86	RT	0519	2809							
Y5 243+90	LT	0520			0.206		44	1		REMOVE 44' OF 15" CMP; 2 15" PLUGS; 1 24" PLUG
SHEET TOTALS				1 @ 15"	0.206	0.399	44	1		

ABBREVIATIONS

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

COMPUTED BY: CJY	DATE: 12/11/2013	PROJECT NO.	SHEET NO.
CHECKED BY: SMK	DATE: 1/2/2014	U-2519CB	3-B

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
Sheet 5																			
Y5 243+88	CL	0520	0519		227.60	227.00													
RPA1 19+00	LT	0521		234.00															
RPA1 19+00	LT	0521	0520		228.22	227.60													
LPA1 10+66	LT	0522		231.95															
LPA1 10+51	CL	0522	0521		228.95	228.22													
Y5 246+59	LT	0523		235.18															
Y5 246+59	LT	0523	0522		232.18	228.95													
RPA1 18+05	LT	0524		235.62															
RPA1 18+05	LT	0524	0521		232.62	228.22													
LPA1 7+00	LT	0525		246.10															
LPA1 7+00	LT	0525	OUT		243.10	241.79													
LPA1 5+50	CL	0526	OUT		241+00	240.20													
RPA1 12+40	CL	0527	OUT		238.70	237.80													
L 774+00	CL	0528		252.52															
L 774+00	CL	0528	OUT		249.77	239.54													
L 779+42	LT	IN	0529		432.90	242.20													
L 779+36	CL	0529		246.95															
L 779+36	CL	0529	OUT		242.20	241.60													
LPC1 6+08	RT	0504																	
LPC1 6+08	RT	0504	OUT																
Sheet 6																			
L 784+00	CL	0601		249.56															
L 784+00	CL	0601	0529		246.81	242.20													
Sheet 7																			
L 803+50	RT	0701		248.37															
L 803+50	RT	0701	0702		245.62	244.43													
L 803+50	CL	0702		247.18															
L 803+50	CL	0702	0801		244.18	241.00													
TT1 25+48	CL	0703	OUT		-	-													
L 805+22	LT	IN	0704		238.00	236.89								20					
L 805+38	LT	0704		243.14															
L 805+38	LT	0704	0801		236.89	234.30													
L 798+27	RT	0705		257.93															
L 798+27	RT	0705	OUT		254.95	250.15													
L 801+85	RT	0706		253.56															
L 801+85	RT	0706	OUT		250.81	248.93													
L 805+17	RT	0707		249.36															
L 805+17	RT	0707	OUT		246.61	246.26													
Sheet 8																			
L 806+17	CL	0801		243.80															
L 806+17	CL	0801	0802		234.30	231.71													
L 806+93	RT	0802		243.84															
L 806+93	RT	0802	OUT		231.71	231.15													
TT1 27+78	CL	0803	OUT		-	-													
L 807+00	LT	0804	0805		250.33	238.06													
L 807+00	LT	0805		241.06															
L 807+00	LT	0805	0807		238.06	234.21													
TT1 29+95	CL	0806	OUT		-	-													
														20					

STATION	FROM	TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
Sheet 5																		
Y5 243+88	0520	0519											72					
RPA1 19+00	0521																	
RPA1 19+00	0521	0520											72					
LPA1 10+66	0522																	
LPA1 10+51	0522	0521										84						
Y5 246+59	0523																	
Y5 246+59	0523	0522										152						
RPA1 18+05	0524																	
RPA1 18+05	0524	0521										104						
LPA1 7+00	0525																	
LPA1 7+00	0525	OUT										32						
LPA1 5+50	0526	OUT											160					
RPA1 12+40	0527	OUT												148				
L 774+00	0528																	
L 774+00	0528	OUT										148						
L 779+42	IN	0529											152					
L 779+36	0529																	
L 779+36	0529	OUT												160				
LPC1 6+08	0504																	
LPC1 6+08	0504	OUT										40						
Sheet 6																		
L 784+00	0601																	
L 784+00	0601	0529										460						
Sheet 7																		
L 803+50	0701																	
L 803+50	0701	0702										76						
L 803+50	0702																	
L 803+50	0702	0801											264					
TT1 25+48	0703	OUT																
L 805+22	IN	0704																
L 805+38	0704																	
L 805+38	0704	0801																
L 798+27	0705																	
L 798+27	0705	OUT										48						
L 801+85	0706																	
L 801+85	0706	OUT										32						
L 805+17	0707																	
L 805+17	0707	OUT										24						
Sheet 8																		
L 806+17	0801																	
L 806+17	0801	0802																
L 806+93	0802																	
L 806+93	0802	OUT																
TT1 27+78	0803	OUT																
L 807+00	0804	0805			36													
L 807+00	0805																	
L 807+00	0805	0807											300					
TT1 29+95	0806	OUT																
					36							1200	1020	308				

STATION	FROM	TO	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
Sheet 5																						
Y5 243+88	0520	0519																				
RPA1 19+00	0521													1	0.78							
RPA1 19+00	0521	0520																				
LPA1 10+66	0522													1			1			1		
LPA1 10+51	0522	0521																				
Y5 246+59	0523													1			1			1		
Y5 246+59	0523	0522																				
RPA1 18+05	0524													1			1			1		
RPA1 18+05	0524	0521																				
LPA1 7+00	0525													1			1			1		
LPA1 7+00	0525	OUT																				
LPA1 5+50	0526	OUT																				
RPA1 12+40	0527	OUT																				
L 774+00	0528													1								
L 774+00	0528	OUT												-								
L 779+42	IN	0529																				
L 779+36	0529													1								
L 779+36	0529	OUT																				
LPC1 6+08	0504													1								
LPC1 6+08	0504	OUT																				
Sheet 6																						
L 784+00	0601													1								
L 784+00	0601	0529																				
Sheet 7																						
L 803+50	0701													1								
L 803+50	0701	0702																				
L 803+50	0702													1								
L 803+50	0702	0801																				
TT1 25+48	0703	OUT							80													
L 805+22	IN	0704										4.5										
L 805+38	0704													1	1.25							
L 805+38	0704	0801							104													
L 798+27	0705													1								
L 798+27	0705	OUT																				
L 801+85	0706													1								
L 801+85	0706	OUT																				
L 805+17	0707													1								
L 805+17	0707	OUT																				
Sheet 8																						
L 806+17	0801													1	4.5							
L 806+17	0801	0802							104													
L 806+93	0802													1	5	2.13						
L 806+93	0802	OUT							24													
TT1 27+78	0803	OUT			32																	
L 807+00	0804	0805																				
L 807+00	0805													1								
L 807+00	0805	0807																				
TT1 29+95	0806	OUT			32																	
					64				312			4.5		18	11.53	2.13	4			4		

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE
Sheet 5																											
Y5 243+88	0520	0519																									
RPA1 19+00	0521					1			1																		
RPA1 19+00	0521	0520																									
LPA1 10+66	0522																										
LPA1 10+51	0522	0521																									
Y5 246+59	0523																										
Y5 246+59	0523	0522																									
RPA1 18+05	0524																										
RPA1 18+05	0524	0521																									
LPA1 7+00	0525																										
LPA1 7+00	0525	OUT																									
LPA1 5+50	0526	OUT																									
RPA1 12+40	0527	OUT																									
L 774+00	0528					1			1																		
L 774+00	0528	OUT																									
L 779+42	IN	0529																									
L 779+36	0529				1				1														1				
L 779+36	0529	OUT																									
LPC1 6+08	0504					1			1																		
LPC1 6+08	0504	OUT																									
Sheet 6																											
L 784+00	0601					1			1																		
L 784+00	0601	0529																									
Sheet 7																											
L 803+50	0701					1			1																		
L 803+50	0701	0702																									
L 803+50	0702					1			1																		
L 803+50	0702	0801																									
TT1 25+48	0703	OUT																									
L 805+22	IN	0704																									
L 805+38	0704					1			1																		
L 805+38	0704	0801																									
L 798+27	0705					1																		1			
L 798+27	0705	OUT																									
L 801+85	0706					1																		1			
L 801+85	0706	OUT																									
L 805+17	0707					1																		1			
L 805+17	0707	OUT																									
Sheet 8																											
L 806+17	0801					1			1																		
L 806+17	0801	0802																									
L 806+93	0802					1			1																		
L 806+93	0802	OUT																									
TT1 27+78	0803	OUT																									
L 807+00	0804	0805												1													
L 807+00	0805					1			1																		
L 807+00	0805	0807																									
TT1 29+95	0806	OUT																									
					1	13			11					1									1	3			

STATION	FROM	TO	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 5									
Y5 243+88	0520	0519							
RPA1 19+00	0521								
RPA1 19+00	0521	0520							
LPA1 10+66	0522								
LPA1 10+51	0522	0521							
Y5 246+59	0523								REMOVE AND CONSTRUCT CB
Y5 246+59	0523	0522		0.1					2 15" PLUGS
RPA1 18+05	0524								
RPA1 18+05	0524	0521							
LPA1 7+00	0525								
LPA1 7+00	0525	OUT							
LPA1 5+50	0526	OUT							
RPA1 12+40	0527	OUT							
L 774+00	0528								
L 774+00	0528	OUT							
L 779+42	IN	0529							
L 779+36	0529								
L 779+36	0529	OUT							
LPC1 6+08	0504								
LPC1 6+08	0504	OUT							
Sheet 6									
L 784+00	0601								
L 784+00	0601	0529							
Sheet 7									
L 803+50	0701								
L 803+50	0701	0702							
L 803+50	0702								
L 803+50	0702	0801							
TT1 25+48	0703	OUT							
L 805+22	IN	0704							
L 805+38	0704								
L 805+38	0704	0801							
L 798+27	0705								
L 798+27	0705	OUT							
L 801+85	0706								
L 801+85	0706	OUT							
L 805+17	0707								
L 805+17	0707	OUT							
Sheet 8									
L 806+17	0801								
L 806+17	0801	0802							
L 806+93	0802								
L 806+93	0802	OUT				74			REMOVE 74' OF EXISTING 24" CSP
TT1 27+78	0803	OUT							
L 807+00	0804	0805	1 @ 18"						0804 is a BDO
L 807+00	0805								
L 807+00	0805	0807							
TT1 29+95	0806	OUT							
			1 @ 18"	0.1		74			

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-C

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

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

Station	Location (LT, RT, or CL)	Structure No. From	Structure No. To	Top Elevation	Invert Elevation	Invert Elevation	Slope Critical	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	Do Not Use RCP	Do Not Use CSP	Do Not Use CAAP	Do Not Use HDPE	C.S. Pipe 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)
Sheet 8																											
L 810+04	LT	IN	0807		236.50	233.71																					
L 810+04	LT	0807		237.21																							
L 810+04	LT	0807	0808		233.71	231.00																					
L 810+06	CL	0808		238.87																							
L 810+06	CL	0808	OUT		226.10	210.50																					
L 816+00	LT	0809		299.66																							
L 816+00	CL	0810	0809		226.91	226.15																					
L 816+00	CL	0810		231.35																							
L 816+00	LT	0809	OUT		225.90	221.50																					
L 816+00	RT	0811		232.42																							
L 816+00	RT	0811	0810		229.67	226.15																					
TT1 38+30	CL	0812	OUT		-	-																					
L 808+48	RT	0813		245.16																							
L 808+48	RT	0813	OUT		242.41	239.34																					
L 811+80	RT	0814		240.96																							
L 811+80	RT	0814	0815		238.21	236.06																					
L 813+50	RT	0815		238.81																							
L 813+50	RT	0815	OUT		236.06	235.71																					
L 817+18	RT	0816		234.15																							
L 817+18	RT	0816	OUT		231.40	223.92																					
Sheet 9																											
L 820+50	CL	0901		225.65																							
L 820+50	CL	0901	0905		222.65	222.37																					
820+80	RT	0906		229.56																							
820+80	RT	0906	0905		226.81	224.01																					
820+50	RT	0905		229.94																							
820+50	RT	0905	OUT		222.37	213.23				68						x			x								
TT1 44+05	CL	0902	OUT		-	-																					
TT1 46+46	CL	0903	OUT		-	-																					
TT1 50+48	CL	0904	OUT		-	-																					
Sheet 10																											
L 831+61	LT	1001		213.38																							
L 831+61	LT	1001	OUT		208.38	204.34																					
L 831+62	CL	1002	1001		208.57	208.43																					
L 831+62	CL	1002		211.57																							
L 831+62	RT	1003	1002		209.47	208.72																					
L 831+62	RT	1003		214.47																							
L 836+00	RT	1004		205.72																							
L 836+00	RT	1004	1008																								
L 836+82	LT	1005	1006		207.10	201.29				20						x			x								
L 836+82	LT	1006		205.54																							
L 836+82	LT	1006	1007		201.29	200.25																					
L 836+82	CL	1007		206.63																							
L 836+82	CL	1007	1008		200.25	199.61																					
L 837+08	RT	1008		203.38																							
L 837+08	RT	1008	OUT		198.61	198.60																					
TT1 62+11	CL	1009	OUT		-	-																					
SHEET TOTALS										88																	

Station	From	To	R.C. Pipe Class III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. Pipe Class IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. Pipe Class V 48'	Endwalls (Std. 838.01, 838.11 or Std. 838.80 (unless noted otherwise)) Cu. Yards R.C.P.	C.S.P.	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
Sheet 8																								
L 810+04	IN	0807												24										
L 810+04	0807																					1		
L 810+04	0807	0808												76										
L 810+06	0808																					1	5	2.77
L 810+06	0808	OUT												156										
L 816+00	0809																					1		
L 816+00	0810	0809		76																				
L 816+00	0810																					1	0.2	
L 816+00	0809	OUT			100																			
L 816+00	0811																					1		
L 816+00	0811	0810		76																				
TT1 38+30	0812	OUT											44											
L 808+48	0813																					1		
L 808+48	0813	OUT		36																				
L 811+80	0814																					1		
L 811+80	0814	0815										168												
L 813+50	0815																					1		
L 813+50	0815	OUT		24																				
L 817+18	0816																					1		
L 817+18	0816	OUT		40																				
Sheet 9																								
L 820+50	0901																					1		
L 820+50	0901	0905											56											
820+80	0906																					1		
820+80	0906	0905										28												
820+50	0905																					1	2.57	
820+50	0905	OUT																						
TT1 44+05	0902	OUT											44											
TT1 46+46	0903	OUT																60						
TT1 50+48	0904	OUT											36											
Sheet 10																								
L 831+61	1001																					1		
L 831+61	1001	OUT		56																				
L 831+62	1002	1001		56																				
L 831+62	1002																					1		
L 831+62	1003	1002		20																				
L 831+62	1003																					1		
L 836+00	1004																					1		
L 836+00	1004	1008		108																				
L 836+82	1005	1006																						
L 836+82	1006																					1		
L 836+82	1006	1007			76																			
L 836+82	1007																					1	1.38	
L 836+82	1007	1008				72																		
L 837+08	1008																					1		
L 837+08	1008	OUT							20															
TT1 62+11	1009	OUT											64											
SHEET TOTALS				492	176	72			20			196	244	256				60				19	9.15	2.77

Station	From	To	C.B. Std. 840.01 or Std. 840.02	Frame, Grates, and Hood Standard 840.03 Type of Grate E	F	G	Concrete Transitional Section Drop Inlet	Catch Basin	D.I. Std. 840.14 or Std. 840.15	D.I. Frame and Grate Std. 840.16	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. Frame with Grate Std. 840.20	G.D.I. Frame with Two Grates Std. 840.22	G.D.I. (N.S.) Frame with Grate Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.24	J.B. Std. 840.31 or 840.32	T.B.J.B. Std. 840.46	BDO Std. 850.10 or 850.11	OTCB Std. 840.04 or 840.05	D.I. Bridge Approach Std. 840.13	G.D.I. Steel Frame Std. 840.37	TB. D.I Std. 840.36	Manhole Frame and Cover, Std. 840.54	Adjust CB	Convert CB to JB w/MH	Convert CB to DI	G.D.I. Frame with Grate Std. 840.22	G.D.I. Frame with Two Grates Std. 840.20	G.D.I. Frame with Two Grates Std. 840.29	G.D.I. Frame with Grate Std. 840.29	Preformed Scour Hole
Sheet 8																																	
L 810+04	IN	0807																															
L 810+04	0807											1			1																		
L 810+04	0807	0808																															
L 810+06	0808											1			1																		
L 810+06	0808	OUT																															
L 816+00	0809											1			1																		
L 816+00	0810	0809																															
L 816+00	0810											1			1																		
L 816+00	0809	OUT																															
L 816+00	0811											1			1																		
L 816+00	0811	0810																															
TT1 38+30	0812	OUT																															
L 808+48	0813											1																			1			
L 808+48	0813	OUT																															
L 811+80	0814											1																			1			
L 811+80	0814	0815																															
L 813+50	0815											1																			1			
L 813+50	0815	OUT																															
L 817+18	0816											1																			1			
L 817+18	0816	OUT																															
Sheet 9																																	
L 820+50	0901											1			1																		
L 820+50	0901	0905																															
820+80	0906											1																			1			
820+80	0906	0905																															
820+50	0905											1																			1			
820+50	0905	OUT																															1
TT1 44+05	0902	OUT																															
TT1 46+46	0903	OUT																															
TT1 50+48	0904	OUT																															
Sheet 10																																	
L 831+61	1001											1		1																			
L 831+61	1001	OUT																															
L 831+62	1002	1001																															
L 831+62	1002											1			1																		
L 831+62	1003	1002																															
L 831+62	1003																						1	1									
L 836+00	1004											1			1																		
L 836+00	1004	1008																															
L 836+82	1005	1006																		1													
L 836+82	1006										1			1																	1			
L 836+82	1006	1007																															
L 836+82	1007										1				1															1				
L 836+82	1007	1008																															
L 837+08	1008																	1															
L 837+08	1008	OUT																															
TT1 62+11	1009	OUT																															
SHEET TOTALS											2	15		2	9			1		1			1	1					1	7			1

Station	From	To	Side Drain Pipe Elbows No. & Size	Conc. & Brick Pipe Plug, C.Y. Std. 840.71	Conc. Collars Cl. "B" C.Y. Std. 840.72	Pipe Removal Lin. Ft.	Flowable Fill, C.Y.	Temp Steel Plate Cover for Masonry Drainage Structure	Remarks
Sheet 8									
L 810+04	IN	0807							
L 810+04	0807								
L 810+04	0807	0808							
L 810+06	0808								
L 810+06	0808	OUT							
L 816+00	0809								
L 816+00	0810	0809							
L 816+00	0810								
L 816+00	0809	OUT							
L 816+00	0811								
L 816+00	0811	0810							
TT1 38+30	0812	OUT							
L 808+48	0813								
L 808+48	0813	OUT							
L 811+80	0814								
L 811+80	0814	0815							
L 813+50	0815								
L 813+50	0815	OUT							
L 817+18	0816								
L 817+18	0816	OUT							
Sheet 9									
L 820+50	0901								
L 820+50	0901	0905							
820+80	0906								
820+80	0906	0905							
820+50	0905								
820+50	0905	OUT	2 @ 18"						
TT1 44+05	0902	OUT							
TT1 46+46	0903	OUT							
TT1 50+48	0904	OUT							
Sheet 10									
L 831+61	1001								
L 831+61	1001	OUT							
L 831+62	1002	1001							
L 831+62	1002								
L 831+62	1003	1002							
L 831+62	1003								
L 836+00	1004								
L 836+00	1004	1008							
L 836+82	1005	1006	1 @ 18"						1005 is a BDO
L 836+82	1006								
L 836+82	1006	1007							
L 836+82	1007								
L 836+82	1007	1008							
L 837+08	1008								JB WITH A SLAB LID
L 837+08	1008	OUT							
TT1 62+11	1009	OUT							
SHEET TOTALS			3 @ 18"						

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

RD248621

PROJECT NO.	SHEET NO.
U-2519CB	3-D

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
L 840+35	LT	1010	1011		206.70	205.64																					
L 840+35	LT	1011		207.81																							
L 840+35	LT	1011	1012		205.64	205.04																					
L 841+00	CL	1012																									
L 841+00	CL	1012	1013		205.04	204.54																					
L 841+00	RT	1013		208.34																							
L 841+00	RT	1013	OUT		204.54	204.30																					
Sheet 11																											
L 844+00	CL	1101		211.91																							
L 844+00	CL	1101	1012		209.16	205.29																					
L 847+50	RT	1102		216.89																							
L 847+50	RT	1102	OUT		209.20	206.00																					
L 848+25	CL	IN	1103		207.30	202.30																					
L 848+56	RT	1103		204.80																							
L 848+56	RT	1103	OUT		200.31	200.30																					
L 849+50	LT	1104		215.26																							
L 849+50	LT	1104	1105		213.34	212.75																					
L 850+22	CL	1105		216.75																							
L 850+22	CL	1105	OUT		212.75	212.20																					
Sheet 12																											
L 855+79	LT	IN	1201		218.00	213.34				32																	
L 856+00	LT	1201		215.51																							
L 856+00	LT	1201	1202		213.34	212.75																					
L 856+00	CL	1202		216.40																							
L 856+00	CL	1202	OUT		212.75	212.00																					
L 859+00	LT	1203		214.61																							
L 859+00	LT	1203	1204																								
L 859+00	CL	1204		214.28																							
L 859+00	CL	1204	OUT		209.00	208.50																					
L 860+64	CL	1205		213.90																							
L 860+64	CL	1205	1204		209.90	209.00																					
L 860+40	CL	IN	1206		208.60	203.50																					
L 860+25	RT	1206		206.50																							
L 860+25	RT	1206	OUT																								
L 865+03	CL	IN	1207		207.60	204.80																					
L 865+30	RT	1207		209.80																							
Sheet 13																											
L 870+00	LT	1301	1302		223.00	219.05																20					
L 870+00	LT	1302		222.05																							
L 870+00	LT	1302	1303		219.05	217.46																					
L 870+00	CL	1303		220.46																							
L 870+00	CL	1303	1304		217.46	213.78																					
L 869+50	RT	1304		218.03																							
L 869+50	RT	1304	OUT		213.28	212.65																					
PR1 14+35	CL	1305	OUT		-	-																					
L 877+45	LT	1306	1307		235.80	225.52																	36				
L 877+46	LT	1307		228.19																							
L 877+46	LT	1307	1308		225.52	224.15																					
L 877+50	CL	1308		226.82																							
L 877+50	CL	1308	OUT		224.15	223.55																					
SHEET TOTALS										32												20	36				

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48"	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
L 840+35			20																									
L 840+35																				1								
L 840+35			100																									
L 841+00																				1								
L 841+00			80																									
L 841+00																				1								
L 841+00			52																									
Sheet 11																												
L 844+00																				1								
L 844+00		296																										
L 847+50																				1	2.69							
L 847+50		44																										
L 848+25											192																	
L 848+56																				1								
L 848+56						24																						
L 849+50																				1								
L 849+50		104																										
L 850+22																				1								
L 850+22		92																										
Sheet 12																												
L 855+79																												
L 856+00																				1								
L 856+00			84																									
L 856+00																				1								
L 856+00			100																									
L 859+00																				1								
L 859+00		84																										
L 859+00																				1	0.28							
L 859+00			92																									
L 860+64																				1								
L 860+64			160																									
L 860+40				168																								
L 860+25																				1								
L 860+25					24																							
L 865+03								172										6										
L 865+30																				1								
Sheet 13																												
L 870+00																												
L 870+00																				1								
L 870+00			76																									
L 870+00																				1								
L 870+00			92																									
L 869+50																				1								
L 869+50				48																								
PR1 14+35											32																	
L 877+45																												
L 877+46																				1								
L 877+46												76																
L 877+50																				1								
L 877+50												96																
SHEET TOTALS		620	856	216	24	24		172			224	172						6		20	2.97							

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
L 840+35												1																				1010 is a BDO
L 840+35					1		1																									
L 840+35																																
L 841+00				1			1																									
L 841+00																																
L 841+00				1			1																									
L 841+00																																
Sheet 11																																
L 844+00				1			1																									
L 844+00																																
L 847+50				1			1																									
L 847+50																									1							
L 848+25																																
L 848+56										1																						JB WITH A SLAB LID
L 848+56																																
L 849+50					1		1																									
L 849+50																																
L 850+22				1			1																									
L 850+22																									1							
Sheet 12																																
L 855+79																																
L 856+00					1		1																									
L 856+00																																
L 856+00				1			1																									
L 856+00																																
L 859+00				1			1																									
L 859+00																																
L 859+00				1			1																									
L 859+00																																
L 860+64			1				1														1											
L 860+64																																
L 860+40																																
L 860+25										1																						JB WITH A SLAB LID
L 860+25																																
L 865+03																																
L 865+30										1																						JB WITH A SLAB LID
Sheet 13																																
L 870+00												1														1 @ 18"						1301 is a BDO
L 870+00				1			1																									
L 870+00																																
L 870+00				1			1																									
L 870+00																																
L 869+50				1			1																									
L 869+50																																
PR1 14+35																																
L 877+45												1														1 @ 24"						1306 is a BDO
L 877+46					1		1																									
L 877+46																																
L 877+50					1		1																									
L 877+50																																
SHEET TOTALS			1	11	5		17			3		3									1				2	1@18", 1@24"						

ABBREVIATIONS

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

RD248621

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-E

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

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

Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)

Station	Location (LT, RT, or CL)	Structure No. From	Structure No. To	Top Elevation	Invert Elevation	Invert Elevation	Slope Critical	12"	15"	18"	24"	30"	36"	42"	48"	Do Not Use RCP	Do Not Use CSP	Do Not Use CAAP	Do Not Use HDPE
Sheet 14																			
PR1 19+02	CL	1401	OUT		-	-													
PR1 21+60	CL	1402	OUT		-	-													
L 884+45	LT	IN	1403		222.50	219.95													
L 884+60	CL	1403		229.78															
L 884+60	CL	1403	OUT		219.95	216.70													
L 886+65	RT	1404		230.85															
L 886+65	RT	1404	OUT		227.41	215.00			56										
PR1 28+22	CL	IN	1405		-	-													
L891+14	CL	IN	1406		215.20	206.70													
L 891+25	RT	1406		209.20															
L 891+25	RT	1406	OUT		204.71	204.70													
Sheet 15																			
893+70	CL	1501		225.73															
893+70	CL	1501	1502		222.98	222.76													
893+16	RT	1502		227.60															
893+16	RT	1502	1503		222.60	222.58													
893+05	RT	1503		227.63															
893+05	RT	1503	1504		222.43	207.96			52										
893+04	RT	1504		209.96															
893+04	RT	1504	OUT		204.96	204.95						20							
903+02	LT	1506		224.42															
903+02	LT	1506	1507		219.64	218.84													
903+02	CL	1507	1601		218.69	218.07													
903+02	CL	1507		221.59															
902+38	RT	1505		223.56															
902+38	RT	1505	OUT		217.80	215.00													
Sheet 16																			
L 904+00	CL	1601		221.32															
L 904+00	CL	1601	OUT		217.32	210.50													
L 912+00	RT	1602		229.08															
L 912+00	RT	1602	1603		226.33	225.70													
L 912+00	CL	1603		230.45															
L 912+00	CL	1603	OUT		226.33	225.70													
Sheet 17																			
L 916+00	RT	1701	1702		249.00	231.80				52						x			x
L 916+00	RT	1702		234.80															
L 916+00	RT	1702	1703		231.80	231.00													
L 916+00	CL	1703		236.17															
L 916+00	CL	1703	1603		231.00	225.75													
L 918+00	CL	1704		239.03															
L 918+00	CL	1704	1703		236.28	231.00													
L 918+00	LT	1705		240.72															
L 918+00	LT	1705	1704		237.97	236.28													
PR2A 25+77	CL	1706	OUT		-	-				20									
TT4REV 38+24	LT	1707	OUT		235.16	235.03													
SHEET TOTALS									108	72		20							

C.S. Pipe (thickness or gauge shown); R.C. Pipe Class III; R.C. Pipe Class IV; R.C. Pipe Class V

Station	C.S. 12" (.064)	C.S. 15" (.064)	C.S. 18" (.064)	C.S. 24" (.064)	C.S. 30" (.079)	C.S. 36" (.079)	C.S. 42" (.109)	C.S. 48" (.109)	Cl. III 12"	Cl. III 15"	Cl. III 18"	Cl. III 24"	Cl. III 30"	Cl. III 36"	Cl. III 42"	Cl. III 48"	Cl. IV 12"	Cl. IV 15"	Cl. IV 18"	Cl. IV 24"	Cl. IV 30"	Cl. IV 36"	Cl. IV 42"	Cl. IV 48"	Cl. V 48"
Sheet 14																									
PR1 19+02																			20						
PR1 21+60																						44			
L 884+45														92											
L 884+60																									
L 884+60														108											
L 886+65																									
L 886+65																									
PR1 28+22																			28						
L891+14											180														
L 891+25																									
L 891+25													68												
Sheet 15																									
893+70																									
893+70																		76							
893+16																									
893+16																		8							
893+05																									
893+05																									
893+04																									
893+04																									
903+02																									
903+02										16															
903+02										92															
903+02																									
902+38																									
902+38										28															
Sheet 16																									
L 904+00																									
L 904+00										112															
L 912+00																									
L 912+00										76															
L 912+00																									
L 912+00												112													
Sheet 17																									
L 916+00																									
L 916+00																									
L 916+00											76														
L 916+00																									
L 916+00												396													
L 918+00																									
L 918+00										196															
L 918+00																									
L 918+00										84															
PR2A 25+77																									
TT4REV 38+24														44											
SHEET TOTALS										604	256	508	68	244				84	48			44			

Endwalls: Std. 838.01, 838.11 or Std. 838.80 (unless noted otherwise), Cu. Yards. Quantities for drainage structures: *Total L.F. for pay quantity shall be Col. 'A' + (1.3 X Col. 'B'). Frame, Grates, and Hood Standard 840.03.

Station	Endwalls R.C.P.	Endwalls C.S.P.	Per Each (0' thru 5.0')	Lin. Ft. A 5.0' thru 10.0'	Lin. Ft. B 10.0' and above	C.B. Std. 840.01 or Std. 840.02	Type of Grate E	F	G	Concrete Transitional Section: Drop Inlet	Catch Basin
Sheet 14											
PR1 19+02											
PR1 21+60											
L 884+45	2.8										
L 884+60			1	4.83							
L 884+60											
L 886+65			1								
L 886+65											
PR1 28+22											
L891+14											
L 891+25			1								
L 891+25											
Sheet 15											
893+70			1								
893+70											
893+16			1								
893+16											
893+05			1	0.2							
893+05											
893+04			1								
893+04											
903+02			1								
903+02											
903+02											
903+02			1								
902+38			1	0.76							
902+38											
Sheet 16											
L 904+00			1								
L 904+00											
L 912+00			1								
L 912+00											
L 912+00			1								
L 912+00											
Sheet 17											
L 916+00											
L 916+00			1								
L 916+00											
L 916+00			1	0.17							
L 916+00											
L 918+00			1								
L 918+00											
L 918+00			1								
L 918+00											
PR2A 25+77											
TT4REV 38+24											
SHEET TOTALS	2.8		17	5.96							

Station	D.I. Std. 840.14 or Std. 840.15	D.I. Frame and Grate Std. 840.16	G.D.I. Type "A" Std. 840.17 or 840.26	G.D.I. Type "B" Std. 840.18 or 840.27	G.D.I. Type "D" Std. 840.19 or 840.28	G.D.I. Frame with Grate Std. 840.20	G.D.I. Frame with Two Grates Std. 840.22	G.D.I. (N.S.) Frame with Grate Std. 840.24	G.D.I. (N.S.) Frame with Two Grates Std. 840.24	J.B. Std. 840.31 or 840.32	T.B.J.B. Std. 840.46	BDO Std. 850.10 or 850.11	OTCB Std. 840.04 or 840.05	D.I. Bridge Approach Std. 840.13	G.D.I. Steel Frame Std. 840.37
Sheet 14															
PR1 19+02															
PR1 21+60															
L 884+45															
L 884+60				1			1								
L 884+60															
L 886+65				1		1									
L 886+65															
PR1 28+22															
L891+14															
L 891+25										1					
L 891+25															
Sheet 15															
893+70				1			1								
893+70															
893+16				1		1									
893+16															
893+05				1		1									
893+05															
893+04										1					
893+04															
903+02															1
903+02															
903+02															
903+02				1			1								
902+38				1		1									
902+38															
Sheet 16															
L 904+00			1				1								
L 904+00															
L 912+00				1			1								
L 912+00															
L 912+00			1				1								
L 912+00															
Sheet 17															
L 916+00												1			
L 916+00				1			1								
L 916+00															
L 916+00				1			1								
L 916+00															
L 918+00				1			1								
L 918+00															
L 918+00				1			1								
L 918+00															
PR2A 25+77															
TT4REV 38+24															
SHEET TOTALS			2	12		4	10			2		1			1

Station	TB. D.I Std. 840.36	Manhole Frame and Cover, Std. 840.54	Adjust CB	Convert CB to JB w/MH	Convert CB to DI	G.D.I. Frame with Grate Std. 840.22	G.D.I. Frame with Two Grates Std. 840.20	G.D.I. Frame with Two Grates Std. 840.29	G.D.I. Frame with Grate Std. 840.29	Preformed Scour Hole	Side Drain Pipe Elbows No. & Size	Conc. & Brick Pipe Plug, C.Y. Std. 840.71	Conc. Collars Cl. "B" C.Y. Std. 840.72	Pipe Removal Lin. Ft.	Flowable Fill, C.Y.	Temp Steel Plate Cover for Masonry Drainage Structure	Remarks
Sheet 14																	
PR1 19+02																	
PR1 21+60																	
L 884+45																	
L 884+60																	
L 884+60																	
L 886+65																	
L 886+65										1							
PR1 28+22																	
L891+14																	
L 891+25																	JB WITH A SLAB LID
L 891+25																	
Sheet 15																	
893+70																	
893+70																	
893+16																	
893+16																	
893+05																	
893+05																	
893+04																	JB WITH A SLAB LID
893+04																	
903+02	1																
903+02																	
903+02																	
903+02																	
902+38																	
902+38																	
Sheet 16																	
L 904+00						1											
L 904+00																	
L 912+00																	
L 912+00																	
L 912+00																	
L 912+00																	
Sheet 17																	
L 916+00											1 @ 18"						1701 is a BDO
L 916+00																	
L 916+00																	
L 916+00																	
L 916+00																	
L 918+00																	
L 918+00																	
L 918+00																	
L 918+00																	
PR2A 25+77																	
TT4REV 38+24																	
SHEET TOTALS	1					1				1	1 @ 18"						

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-F

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
Sheet 17																			
TT4REV 38+24	LT	1707	OUT		229.00	228.10													
L 922+60	CL	1708		245.61															
L 922+60	CL	1708	OUT		239.86	235.90													
L 923+00	RT	IN	1709		247.00	241.81				32									
L 923+00	RT	1709		244.81															
L 923+00	RT	1709	1708		241.81	240.36													
PR2A 32+33	CL	1710	OUT		-	-				40									
L 925+50	LT	1711		252.60															
L 925+50	LT	1711	1712		249.84	244.00													
L 925+50	CL	1712		249.77															
L 925+50	CL	1712	1708		244.00	240.36													
L 925+50	RT	1713		247.59															
L 925+50	RT	1713	1712		244.84	244.00													
PR2A 35+94	CL	1714	OUT		-	-				28									
Sheet 18																			
RPB2 13+05	LT	1801		263.78															
RPB2 13+05	CL	1801	1802		261.03	255.06													
L 930+50	LT	1802		257.81															
L 930+50	LT	1802	1803		254.81	251.75													
L 930+50	CL	1803		256.92															
L 930+50	CL	1803	1712		250.75	244.00													
L 933+50	CL	1804		261.21															
L 933+50	CL	1804	1803		252.75	250.75													
L 933+50	RT	1805		259.00															
L 933+50	RT	1805	1804		253.75	252.75													
RPC2 7+36	RT	1806		257.04															
RPC2 7+39	CL	1806	1805		254.29	253.75													
L 936+50	LT	1807		266.40															
L 936+50	LT	1807	1808		263.65	262.76													
L 936+50	CL	1808		265.51															
L 936+50	CL	1808	1804		262.76	253.26													
RPC2 10+30	RT	1809		263.66															
RPC2 10+30	CL	1809	OUT		260.91	259.08													
RPC2 10+22	RT	1810		264.43															
RPC2 10+22	RT	1810	OUT		262.18	259.50													
Y1 45+30	RT	1811		295.12															
Y1 45+30	RT	1811	OUT		288.00	286.50													
Y1 42+75	CL	1812		287.71															
Y1 42+75	CL	1812	02BB11		277.71	276.69													
Y1 43+50	LT	1813		285.60															
Y1 43+50	LT	1813	1812		278.21	277.71													
RPA2 21+00	LT	1814		285.80															
RPA2 21+30	LT	1814	1813		279.00	278.21													
LPA2 10+10	LT	1815		292.17															
LPA2 10+10	CL	1815	1814		279.50	279.00													
LPA2 7+50	LT	1816		284.08															
LPA2 7+50	CL	1816	1815		281.08	279.50													
SHEET TOTALS										100									

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'
Sheet 17																									
TT4REV 38+24														44											
L 922+60																									
L 922+60														132											
L 923+00																									
L 923+00																									
L 923+00											88														
PR2A 32+33																									
L 925+50																									
L 925+50										68															
L 925+50																									
L 925+50													288												
L 925+50																									
L 925+50										76															
PR2A 35+94																									
Sheet 18																									
RPB2 13+05																									
RPB2 13+05										100															
L 930+50																									
L 930+50											88														
L 930+50																									
L 930+50													496												
L 933+50																									
L 933+50													296												
L 933+50																									
L 933+50												92													
RPC2 7+36																									
RPC2 7+39										72															
L 936+50																									
L 936+50										88															
L 936+50																									
L 936+50											296														
RPC2 10+30																									
RPC2 10+30										88															
RPC2 10+22																									
RPC2 10+22										48															
Y1 45+30																									
Y1 45+30										124															
Y1 42+75																									
Y1 42+75											204														
Y1 43+50																									
Y1 43+50											100														
RPA2 21+00																									
RPA2 21+30											192														
LPA2 10+10																									
LPA2 10+10																		76							
LPA2 7+50																									
LPA2 7+50																		224							
SHEET TOTALS										664	968	92	1080	176				300							

STATION	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
Sheet 17											
TT4REV 38+24											
L 922+60			1	0.75							
L 922+60											
L 923+00											
L 923+00			1								
L 923+00											
PR2A 32+33											
L 925+50			1								
L 925+50											
L 925+50			1	0.77							
L 925+50											
L 925+50			1								
L 925+50											
PR2A 35+94											
Sheet 18											
RPB2 13+05			1								
RPB2 13+05											
L 930+50			1								
L 930+50											
L 930+50			1	1.17							
L 930+50											
L 933+50			1	3.46							
L 933+50											
L 933+50			1	0.25							
L 933+50											
RPC2 7+36			1								
RPC2 7+39											
L 936+50			1								
L 936+50											
L 936+50			1								
L 936+50											
RPC2 10+30			1								
RPC2 10+30											
RPC2 10+22			1								
RPC2 10+22											
Y1 45+30			1	2.12		1		1			
Y1 45+30											
Y1 42+75			1	5						1	
Y1 42+75											
Y1 43+50			1	2.39							
Y1 43+50											
RPA2 21+00			1	1.8							
RPA2 21+30											
LPA2 10+10			1	5	2.67	1		1			
LPA2 10+10											
LPA2 7+50			1			1		1			
LPA2 7+50											
SHEET TOTALS			21	22.71	2.67	3		3		1	

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE
Sheet 17																									
TT4REV 38+24																									
L 922+60			1				1																		
L 922+60																									
L 923+00																									
L 923+00				1			1																		
L 923+00																									
PR2A 32+33																									
L 925+50				1			1																		
L 925+50																									
L 925+50			1				1																		
L 925+50																									
L 925+50				1			1																		
L 925+50																									
PR2A 35+94																									
Sheet 18																									
RPB2 13+05				1			1																		
RPB2 13+05																									
L 930+50				1			1																		
L 930+50																									
L 930+50			1				1																		
L 930+50																									
L 933+50			1				1																		
L 933+50																									
L 933+50													1												
L 933+50																									
RPC2 7+36				1			1																		
RPC2 7+39																									
L 936+50				1			1																		
L 936+50																									
L 936+50				1			1																		
L 936+50																									
RPC2 10+30				1																		1			
RPC2 10+30																									
RPC2 10+22	1	1																							
RPC2 10+22																									
Y1 45+30																									
Y1 45+30																									
Y1 42+75	1	1																							
Y1 42+75																									
Y1 43+50				1			1																		
Y1 43+50																									
RPA2 21+00				1			1																		
RPA2 21+30																									
LPA2 10+10																									
LPA2 10+10																									
LPA2 7+50																									
LPA2 7+50																									
SHEET TOTALS	2	2	4	11			14						1									1			

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 17							
TT4REV 38+24							
L 922+60				129			REMOVE 18" CONC. PIPE; REMOVE DI
L 922+60							
L 923+00							
L 923+00							
L 923+00							
PR2A 32+33							
L 925+50							
L 925+50							
L 925+50							
L 925+50							
L 925+50							
L 925+50							
PR2A 35+94							
Sheet 18							
RPB2 13+05							
RPB2 13+05							
L 930+50							
L 930+50							
L 930+50							
L 930+50							
L 933+50							
L 933+50							
L 933+50							
L 933+50							
RPC2 7+36							
RPC2 7+39							
L 936+50							
L 936+50							
L 936+50							
L 936+50							
RPC2 10+30							
RPC2 10+30							
RPC2 10+22							
RPC2 10+22							
Y1 45+30							
Y1 45+30				138			REMOVE 18" CONC. PIPE
Y1 42+75							
Y1 42+75							
Y1 43+50							
Y1 43+50							
RPA2 21+00							
RPA2 21+30							
LPA2 10+10							
LPA2 10+10							
LPA2 7+50							
LPA2 7+50							
SHEET TOTALS				267			

ABBREVIATIONS

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

COMPUTED BY: CJY	DATE: 12/11/2013	PROJECT NO.	SHEET NO.
CHECKED BY: SMK	DATE: 1/2/2014	U-2519CB	3-G

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
Sheet 18							
RPA2 17+79	LT	1817		287.24			
RPA2 17+79	LT	1817	1816		284.07	281.08	
LPC2 REV 2+87	LT	1818		270.05			
LPC2 REV 2+87	LT	1818	1819		267.05	266.75	
LPC2 REV 3+22	LT	1819		270.26			
LPC2 REV 3+22	CL	1819	OUT		266.25	259.80	
LPC2 REV 5+76	RT	1820		280.00			
LPC2 REV 5+69	CL	1820	1821		277.25	276.70	
LPC2 REV 5+65	LT	1821		279.75			
LPC2 REV 5+65	LT	1821	1819		276.55	266.75	
LPC2 REV 7+26	LT	1822		288.65			
LPC2 REV 7+26	LT	1822	1821		283.70	276.70	
LPC2 REV 7+26	RT	1823		287.00			
LPC2 REV 7+26	CL	1823	1822		284.25	283.85	
Y1 53+20	CL	1824		300.06			
Y1 53+20	CL	1824	OUT		293.70	291.70	
Y1 51+83	LT	1825		300.52			
Y1 51+83	LT	1825	OUT		297.52	275.85	
LPA2 1+30	LT	1826		279.74			
LPA2 1+38	CL	1826	1827		276.74	274.98	
L 944+65	CL	1827		278.73			
L 944+65	CL	1827	1828		274.98	274.00	
L 946+50	RT	IN	1828		275.00	274.00	
L 946+50	LT	IN	1828		275.20	274.00	
L 946+50	CL	1828		279.81			
L 946+50	CL	1828	1829		274.00	272.50	
L 948+50	CL	1829		282.68			
L 948+50	CL	1829	1830		272.50	268.50	
L 953+00	CL	1830		288.60			
L 953+00	CL	1830	1904		268.50	266.50	
RPA2 13+27	RT	1831		284.66			
RPA2 13+27	CL	1831	OUT		281.91	277.50	
RPA2 8+88	RT	1832		289.15			
RPA2 8+88	RT	1832	1909		287.23	286.97	
RPD2 9+72	LT	1833		289.00			
RPD2 9+72	LT	1833	OUT		287.08	286.00	
Y1 55+50	CL	1834		297.75			
Y1 55+50	CL	1834	2505		294.58	291.66	
Sheet 19							
RPD2 6+58	LT	1901		289.53			
RPD2 6+58	LT	1901	OUT		286.18	272.50	
TT5 20+26	CL	IN	1902		270.80	267.00	
RPA2 7+50	RT	1902		273.00			
RPA2 7+50	RT	1902	1903		267.00	266.50	
RPA2 7+95	RT	1909		290.26			
RPA2 7+95	RT	1909	1903		286.97	286.70	
RPA2 6+63	RT	1910		291.90			
RPA2 6+63	RT	1910	1903		289.15	288.54	
SHEET TOTALS							

SIZE / THICKNESS OR GAUGE

STATION	FROM	TO	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
Sheet 18																						
RPA2 17+79	1817																					
RPA2 17+79	1817	1816																				
LPC2 REV 2+87	1818																					
LPC2 REV 2+87	1818	1819																				
LPC2 REV 3+22	1819																					
LPC2 REV 3+22	1819	OUT																				
LPC2 REV 5+76	1820																					
LPC2 REV 5+69	1820	1821																				
LPC2 REV 5+65	1821																					
LPC2 REV 5+65	1821	1819																				
LPC2 REV 7+26	1822																					
LPC2 REV 7+26	1822	1821																				
LPC2 REV 7+26	1823																					
LPC2 REV 7+26	1823	1822																				
Y1 53+20	1824																					
Y1 53+20	1824	OUT																				
Y1 51+83	1825																					
Y1 51+83	1825	OUT																				
LPA2 1+30	1826																					
LPA2 1+38	1826	1827																				
L 944+65	1827																					
L 944+65	1827	1828																				
L 946+50	IN	1828																				
L 946+50	IN	1828																				
L 946+50	1828																					
L 946+50	1828	1829																				
L 948+50	1829																					
L 948+50	1829	1830																				
L 953+00	1830																					
L 953+00	1830	1904																				
RPA2 13+27	1831																					
RPA2 13+27	1831	OUT																				
RPA2 8+88	1832																					
RPA2 8+88	1832	1909																				
RPD2 9+72	1833																					
RPD2 9+72	1833	OUT																				
Y1 55+50	1834																					
Y1 55+50	1834	2505																				
Sheet 19																						
RPD2 6+58	1901																					
RPD2 6+58	1901	OUT		52																		
TT5 20+26	IN	1902																				
RPA2 7+50	1902																					
RPA2 7+50	1902	1903																				
RPA2 7+95	1909																					
RPA2 7+95	1909	1903																				
RPA2 6+63	1910																					
RPA2 6+63	1910	1903																				
SHEET TOTALS				52																		

STATION	FROM	TO	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'
Sheet 18																			
RPA2 17+79	1817																		
RPA2 17+79	1817	1816										28							
LPC2 REV 2+87	1818																		
LPC2 REV 2+87	1818	1819										32							
LPC2 REV 3+22	1819																		
LPC2 REV 3+22	1819	OUT											128						
LPC2 REV 5+76	1820																		
LPC2 REV 5+69	1820	1821										60							
LPC2 REV 5+65	1821																		
LPC2 REV 5+65	1821	1819										208							
LPC2 REV 7+26	1822																		
LPC2 REV 7+26	1822	1821										144							
LPC2 REV 7+26	1823																		
LPC2 REV 7+26	1823	1822										44							
Y1 53+20	1824																		
Y1 53+20	1824	OUT										100							
Y1 51+83	1825																		
Y1 51+83	1825	OUT		108															
LPA2 1+30	1826																		
LPA2 1+38	1826	1827										84							
L 944+65	1827																		
L 944+65	1827	1828										180							
L 946+50	IN	1828												120					
L 946+50	IN	1828												112					
L 946+50	1828																		
L 946+50	1828	1829													200				
L 948+50	1829																		
L 948+50	1829	1830													448				
L 953+00	1830																		
L 953+00	1830	1904													200				
RPA2 13+27	1831																		
RPA2 13+27	1831	OUT		152															
RPA2 8+88	1832																		
RPA2 8+88	1832	1909										88							
RPD2 9+72	1833																		
RPD2 9+72	1833	OUT		40															
Y1 55+50	1834																		
Y1 55+50	1834	2505										132							
Sheet 19																			
RPD2 6+58	1901																		
RPD2 6+58	1901	OUT																	
TT5 20+26	IN	1902																52	
RPA2 7+50	1902																		
RPA2 7+50	1902	1903																76	
RPA2 7+95	1909																		
RPA2 7+95	1909	1903										88							
RPA2 6+63	1910																		
RPA2 6+63	1910	1903										36							
SHEET TOTALS				300								1224	128	232	848			128	

STATION	FROM	TO	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
Sheet 18													
RPA2 17+79	1817				1								
RPA2 17+79	1817	1816											
LPC2 REV 2+87	1818				1			1		1			
LPC2 REV 2+87	1818	1819											
LPC2 REV 3+22	1819				1			1		1			
LPC2 REV 3+22	1819	OUT											
LPC2 REV 5+76	1820				1								
LPC2 REV 5+69	1820	1821											
LPC2 REV 5+65	1821				1			1		1			
LPC2 REV 5+65	1821	1819											
LPC2 REV 7+26	1822				1			1		1			
LPC2 REV 7+26	1822	1821											
LPC2 REV 7+26	1823				1								
LPC2 REV 7+26	1823	1822											
Y1 53+20	1824				1	1.36						1	
Y1 53+20	1824	OUT											
Y1 51+83	1825				1			1			1		
Y1 51+83	1825	OUT											
LPA2 1+30	1826				1			1		1			
LPA2 1+38	1826	1827											
L 944+65	1827				1								
L 944+65	1827	1828											
L 946+50	IN	1828											
L 946+50	IN	1828											
L 946+50	1828				1	0.81							
L 946+50	1828	1829											
L 948+50	1829				1	5	0.18						
L 948+50	1829	1830											
L 953+00	1830				1	5	10.1						
L 953+00	1830	1904											
RPA2 13+27	1831				1								
RPA2 13+27	1831	OUT											
RPA2 8+88	1832				1								
RPA2 8+88	1832	1909											
RPD2 9+72	1833				1								
RPD2 9+72	1833	OUT											
Y1 55+50	1834				1							1	
Y1 55+50	1834	2505											
Sheet 19													
RPD2 6+58	1901				1								
RPD2 6+58	1901	OUT											
TT5 20+26	IN	1902											
RPA2 7+50	1902				1	1							
RPA2 7+50	1902	1903											
RPA2 7+95	1909				1								
RPA2 7+95	1909	1903											
RPA2 6+63	1910				1								
RPA2 6+63	1910	1903											
SHEET TOTALS					22	13.17	10.28	6		5	1	2	

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE
Sheet 18																											
RPA2 17+79	1817		1	1																							
RPA2 17+79	1817	1816																									
LPC2 REV 2+87	1818																										
LPC2 REV 2+87	1818	1819																									
LPC2 REV 3+22	1819																										
LPC2 REV 3+22	1819	OUT																									
LPC2 REV 5+76	1820					1			1																		
LPC2 REV 5+69	1820	1821																									
LPC2 REV 5+65	1821																										
LPC2 REV 5+65	1821	1819																									
LPC2 REV 7+26	1822																										
LPC2 REV 7+26	1822	1821																									
LPC2 REV 7+26	1823					1			1																		
LPC2 REV 7+26	1823	1822																									
Y1 53+20	1824		1	1																							
Y1 53+20	1824	OUT																									
Y1 51+83	1825																										
Y1 51+83	1825	OUT																									
LPA2 1+30	1826																										
LPA2 1+38	1826	1827																									
L 944+65	1827				1				1														1				
L 944+65	1827	1828																									
L 946+50	IN	1828																									
L 946+50	IN	1828																									
L 946+50	1828				1				1																		
L 946+50	1828	1829																									
L 948+50	1829				1				1																		
L 948+50	1829	1830																									
L 953+00	1830				1				1																		
L 953+00	1830	1904																									
RPA2 13+27	1831					1			1																		
RPA2 13+27	1831	OUT																									
RPA2 8+88	1832					1																		1			
RPA2 8+88	1832	1909																									
RPD2 9+72	1833						1		1																		
RPD2 9+72	1833	OUT																									1
Y1 55+50	1834		1	1																							
Y1 55+50	1834	2505																									
Sheet 19																											
RPD2 6+58	1901					1																		1			
RPD2 6+58	1901	OUT																									1
TT5 20+26	IN	1902																									
RPA2 7+50	1902														1												
RPA2 7+50	1902	1903																									
RPA2 7+95	1909					1																		1			
RPA2 7+95	1909	1903																									
RPA2 6+63	1910					1																		1			
RPA2 6+63	1910	1903																									
SHEET TOTALS			3	3	4	7	1		8						1								1	4			2

STATION	FROM	TO	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 18									
RPA2 17+79	1817								
RPA2 17+79	1817	1816							
LPC2 REV 2+87	1818								
LPC2 REV 2+87	1818	1819							
LPC2 REV 3+22	1819								
LPC2 REV 3+22	1819	OUT							
LPC2 REV 5+76	1820								
LPC2 REV 5+69	1820	1821							
LPC2 REV 5+65	1821								
LPC2 REV 5+65	1821	1819							
LPC2 REV 7+26	1822								
LPC2 REV 7+26	1822	1821							
LPC2 REV 7+26	1823								
LPC2 REV 7+26	1823	1822							
Y1 53+20	1824								
Y1 53+20	1824	OUT							
Y1 51+83	1825								
Y1 51+83	1825	OUT							
LPA2 1+30	1826								
LPA2 1+38	1826	1827							
L 944+65	1827								
L 944+65	1827	1828							
L 946+50	IN	1828							
L 946+50	IN	1828							
L 946+50	1828								
L 946+50	1828	1829							
L 948+50	1829								
L 948+50	1829	1830							
L 953+00	1830					63			REMOVE 63' OF 18" CONC. PIPE
L 953+00	1830	1904							
RPA2 13+27	1831								
RPA2 13+27	1831	OUT							
RPA2 8+88	1832								
RPA2 8+88	1832	1909							
RPD2 9+72	1833								
RPD2 9+72	1833	OUT							
Y1 55+50	1834								
Y1 55+50	1834	2505							
Sheet 19									
RPD2 6+58	1901								
RPD2 6+58	1901	OUT							
TT5 20+26	IN	1902							
RPA2 7+50	1902								
RPA2 7+50	1902	1903							
RPA2 7+95	1909								
RPA2 7+95	1909	1903							
RPA2 6+63	1910								
RPA2 6+63	1910	1903							
SHEET TOTALS						63			

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-H

RD248621

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
Sheet 19							
RPA2 7+02	RT	1903		291.29			
RPA2 6+85	CL	1903	1904		266.50	265.00	
L 955+00	CL	1904		270.77			
L 955+00	CL	1904	1906		265.00	261.00	
TT5 22+53	RT	1905		279.75			
TT5 22+53	RT	1905	1902		272.75	269.75	
L 957+60	CL	1906		266.77			
L 957+60	CL	1906	02BD05		261.00	250.99	
L 964+85	CL	1907		288.41			
L 964+85	CL	1907	1908		285.66	285.00	
L 964+85	RT	1908		289.86			
L 964+85	RT	1908	2002		285.00	283.50	
RPA2 6+66	RT	1911	OUT		274.27	273.13	
L 960+02	LT	1912		284.07			
L 960+02	LT	1912	OUT		281.57	281.30	
Sheet 20							
TT5 32+23	CL	IN	2001		249.50	248.00	
L 965+80	RT	2002		289.00			
L 965+80	RT	2002	2003		272.50	251.50	
L 967+25	CL	2005		285.60			
L 967+25	CL	2005	2002		273.90	272.50	
L 968+48	LT	2006		286.02			
L 968+48	LT	2006	2019		275.10	274.75	
L 967+28	LT	2019		287.45			
L 967+28	LT	2019	2005		274.75	273.90	
TT5 34+94	RT	2007		277.60			
TT5 34+94	RT	2007	2006		275.35	275.10	
L 966+75	LT	2017		287.93			
L 966+75	LT	2017	2002		258.18	284.26	
Y2REV_LT 30+25	RT	2016		285.99			
Y2REV_LT 30+25	RT	2016	2003		251.52	248.63	
L 969+54	RT	2018		284.59			
L 969+54	RT	2018	2008		281.84	281.00	
L 970+24	RT	2008		283.82			
L 970+24	RT	2008	OUT		274.50	249.00	
L 971+50	CL	2009		280.65			
L 971+50	CL	2009	2008		275.40	274.50	
L 972+35	LT	2010		281.80			
L 972+35	LT	2010	2009		278.63	275.40	
L 972+58	CL	IN	2011		252.00	243.55	
TT5 41+78	CL	2012	OUT		-	-	
L 976+60	RT	2013		276.44			
L 976+60	RT	2013	OUT		269.74	250.95	
L 976+98	RT	2014		276.00			
L 976+98	RT	2014	2013		269.84	269.74	
L 973+12	RT	2015	OUT				
SHEET TOTALS							

SIZE / THICKNESS OR GAUGE

STATION	FROM	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
RPA2 7+02	1903																				
RPA2 6+85	1903																				
L 955+00	1904																				
L 955+00	1904																				
TT5 22+53	1905																				
TT5 22+53	1905																				
L 957+60	1906																				
L 957+60	1906																				
L 964+85	1907																				
L 964+85	1907																				
L 964+85	1908																				
L 964+85	1908																				
RPA2 6+66	1911																				
L 960+02	1912																				
L 960+02	1912		8										x								
TT5 32+23	IN																				
L 965+80	2002																				
L 965+80	2002		60							x			x								
L 967+25	2005																				
L 967+25	2005																				
L 968+48	2006																				
L 968+48	2006																				
L 967+28	2019																				
L 967+28	2019																				
TT5 34+94	2007																				
TT5 34+94	2007																				
L 966+75	2017																				
L 966+75	2017																				
Y2REV_LT 30+25	2016																				
Y2REV_LT 30+25	2016																				
L 969+54	2018																				
L 969+54	2018																				
L 970+24	2008																				
L 970+24	2008		116							x			x								
L 971+50	2009																				
L 971+50	2009																				
L 972+35	2010																				
L 972+35	2010																				
L 972+58	IN																				
TT5 41+78	2012																				
L 976+60	2013																				
L 976+60	2013		84							x			x								
L 976+98	2014																				
L 976+98	2014																				
L 973+12	2015						108														
SHEET TOTALS			268				108														

STATION	FROM	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
RPA2 7+02	1903																			
RPA2 6+85	1903																148			
L 955+00	1904																			
L 955+00	1904																260			
TT5 22+53	1905																			
TT5 22+53	1905										224									
L 957+60	1906																			
L 957+60	1906																220			
L 964+85	1907																			
L 964+85	1907										76									
L 964+85	1908																			
L 964+85	1908										92									
RPA2 6+66	1911		60																	
L 960+02	1912																			
L 960+02	1912																			
TT5 32+23	IN																104			
L 965+80	2002																			
L 965+80	2002																			
L 967+25	2005																			
L 967+25	2005										160									
L 968+48	2006																			
L 968+48	2006										116									
L 967+28	2019																			
L 967+28	2019										60									
TT5 34+94	2007																			
TT5 34+94	2007										28									
L 966+75	2017																			
L 966+75	2017										92									
Y2REV_LT 30+25	2016																			
Y2REV_LT 30+25	2016		28																	
L 969+54	2018																			
L 969+54	2018										68									
L 970+24	2008																			
L 970+24	2008																			
L 971+50	2009																			
L 971+50	2009										144									
L 972+35	2010																			
L 972+35	2010										100									
L 972+58	IN																456		6	
TT5 41+78	2012																80			
L 976+60	2013																			
L 976+60	2013																			
L 976+98	2014																			
L 976+98	2014		36																	
L 973+12	2015																			
SHEET TOTALS			124								1160						1268		6	

STATION	FROM	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
RPA2 7+02	1903	1	5	14.85						
RPA2 6+85	1903									
L 955+00	1904	1	5	0.77						
L 955+00	1904									
TT5 22+53	1905	1	2							
TT5 22+53	1905									
L 957+60	1906	1	0.77							
L 957+60	1906									
L 964+85	1907	1								
L 964+85	1907									
L 964+85	1908	1								
L 964+85	1908									
RPA2 6+66	1911									
L 960+02	1912	1								
L 960+02	1912									
TT5 32+23	IN									
L 965+80	2002	1	5	6.5						
L 965+80	2002									
L 967+25	2005	1	5	1.7						
L 967+25	2005									
L 968+48	2006	1	5	0.92						
L 968+48	2006									
L 967+28	2019	1	5	2.7						
L 967+28	2019									
TT5 34+94	2007	1								
TT5 34+94	2007									
L 966+75	2017	1								
L 966+75	2017									
Y2REV_LT 30+25	2016	1	2.47							
Y2REV_LT 30+25	2016									
L 969+54	2018	1								
L 969+54	2018									
L 970+24	2008	1	4.32							
L 970+24	2008									
L 971+50	2009	1	0.25							
L 971+50	2009									
L 972+35	2010	1								
L 972+35	2010									
L 972+58	IN									
TT5 41+78	2012									
L 976+60	2013	1	1.7							
L 976+60	2013									
L 976+98	2014	1	1.16							
L 976+98	2014									
L 973+12	2015									
SHEET TOTALS		20	42.67	27.44						

STATION	FROM	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE
RPA2 7+02	1903			1																			1			
RPA2 6+85	1903																									
L 955+00	1904										1															
L 955+00	1904																									
TT5 22+53	1905	1	1																							
TT5 22+53	1905																									
L 957+60	1906										1															
L 957+60	1906																									
L 964+85	1907				1			1																		
L 964+85	1907																									
L 964+85	1908				1																		1			
L 964+85	1908																									
RPA2 6+66	1911																									
L 960+02	1912	1	1																							
L 960+02	1912																									
TT5 32+23	IN																									
L 965+80	2002															1	1									
L 965+80	2002																									
L 967+25	2005				1			1																		
L 967+25	2005																									
L 968+48	2006				1																		1			
L 968+48	2006																									
L 967+28	2019				1																		1			
L 967+28	2019																									
TT5 34+94	2007	1	1																							
TT5 34+94	2007																									
L 966+75	2017															1	1									
L 966+75	2017																									
Y2REV_LT 30+25	2016	1	1																							
Y2REV_LT 30+25	2016																									
L 969+54	2018															1	1									
L 969+54	2018																									
L 970+24	2008															1	1									
L 970+24	2008																									1
L 971+50	2009				1																		1			
L 971+50	2009																									
L 972+35	2010				1		1																			
L 972+35	2010																									
L 972+58	IN																									
TT5 41+78	2012																									
L 976+60	2013				1																		1			
L 976+60	2013																									
L 976+98	2014				1																		1			
L 976+98	2014																									
L 973+12	2015																									
SHEET TOTALS		4	4	1	9		1	2			2					4	4						7			1

STATION	FROM	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
RPA2 7+02	1903							
RPA2 6+85	1903							
L 955+00	1904							JB WITH SLAB LID
L 955+00	1904							
TT5 22+53	1905							
TT5 22+53	1905							
L 957+60	1906				118			REMOVE 118' OF 48" CMP; JB WITH SLAB LID
L 957+60	1906							
L 964+85	1907							
L 964+85	1907							
L 964+85	1908							
L 964+85	1908							
RPA2 6+66	1911							
L 960+02	1912							
L 960+02	1912							
TT5 32+23	IN							
L 965+80	2002							
L 965+80	2002	2 @ 15"						
L 967+25	2005							
L 967+25	2005							
L 968+48	2006							
L 968+48	2006							
L 967+28	2019							
L 967+28	2019							
TT5 34+94	2007							
TT5 34+94	2007							
L 966+75	2017							
L 966+75	2017							
Y2REV_LT 30+25	2016							
Y2REV_LT 30+25	2016							
L 969+54	2018							
L 969+54	2018							
L 970+24	2008							
L 970+24	2008	2 @ 15"						
L 971+50	2009							
L 971+50	2009							
L 972+35	2010							
L 972+35	2010							
L 972+58	IN							
TT5 41+78	2012							
L 976+60	2013							
L 976+60	2013	2 @ 15"						
L 976+98	2014							
L 976+98	2014							
L 973+12	2015							
SHEET TOTALS		6 @ 15"			118			

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: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-I

RD24821

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE SIZE 12"	15"	18"	24"	30"	36"	42"	48"	THICKNESS OR GAUGE .064	.064	.084	.064	.079	.079	.109	.109	R.C. PIPE CLASS III SIZE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV SIZE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48"	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
Sheet 21																																																								
L 977+25	CL	2101		273.91																																																			
L 977+25	CL	2101	2014		270.06	269.84																														72																			
L 977+50	LT	2102		275.46																																																			
L 977+50	LT	2102	2101		270.25	270.06																														60																			
L 979+50	LT	2115		272.76																																																			
L 979+50	LT	2115	2102		270.84	270.25																																								196										
TT5 45+20	CL	2103	OUT		-	-																																									76									
L 979+00	RT	2104	OUT		253.65	253.00							152																																										
L 981+00	LT	2105		268.07																																																			
L 981+00	LT	2105	2106		265.32	264.50																														76																			
L 981+00	CL	2106		269.24																																																			
L 981+00	CL	2106	2107		264.50	262.50																														68																			
L 981+00	RT	2107		270.70																																																			
L 981+00	RT	2107	OUT		265.32	264.50			72							x			x																																					
L 983+50	LT	2108		265.02																																																			
L 983+50	LT	2108	2109		262.27	257.05																																								72									
L 983+50	CL	2109		266.06																																																			
L 983+50	CL	2109	2110		255.80	255.35																																											72								
L 983+50	RT	2110		267.77																																																			
L 983+50	RT	2110	OUT		255.35	255.00						88				x			x																																					
L 985+64	RT	2116		268.36																																																			
L 985+64	RT	2116	2110		265.61	236.45																																								216									
L 987+50	LT	2111	2112		281.45	259.05				60						x			x																																					
L 987+50	LT	2112		262.05																																																			
L 987+50	LT	2112	2113		259.05	258.00																																									92								
L 987+50	CL	2113		261.80																																																			
L 987+50	CL	2113	2109		258.00	255.80																																											400							
L 987+50	RT	2114		264.30																																																			
L 987+50	RT	2114	2113		261.55	259.25																																								96									
Sheet 22																																																								
L 989+00	CL	2201		260.68																																																			
L 989+00	CL	2201	2113		258.76	258.00																																								148									
L 989+00	RT	2202		263.37																																																			
L 989+00	RT	2202	2201		260.62	258.76																																								96									
Y3 18+15	RT	2203		285.77																																																			
Y3 18+15	RT	2203	2204		282.60	282.30																																								32									
Y3 17+80	RT	2204		285.57																																																			
Y3 17+80	RT	2204	OUT		282.30	282.12																																								20									
Y3 17+80	LT	2205		285.12																																																			
Y3 17+80	CL	2205	2204		282.66	282.30																																								72									
Y3 18+15	LT	2206		285.32																																																			
Y3 18+15	LT	2206	2205		282.82	282.66																																								32									
Y3 22+15	RT	2207		280.94																																																			
Y3 22+15	CL	2207	2208		277.94	277.49																																								76									
Y3 22+15	LT	2208		280.49																																																			
Y3 22+15	LT	2208	OUT		277.49	275.20																																								32									
Y3 23+65	RT	2209		276.25																																																			
Y3 23+65	CL	2210		276.08																																																			
Y3 23+65	LT	2210	2209		273.08	272.75																																								56									
L 995+00	LT	2211		255.50																																																			
SHEET TOTALS									72	60		88	152																							276									1144	168		472						

STATION	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	PER EACH (0' THRU 5.0')	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 21																																											
L 977+25			1									1			1																												
L 977+25																																											
L 977+50			1	0.21								1																	1														
L 977+50																																											
L 979+50			1										1																1														
L 979+50																																											
TT5 45+20																																											
L 979+00																																											
L 981+00			1									1			1																												
L 981+00																																											
L 981+00			1									1			1																												
L 981+00																																											
L 981+00			1	0.38								1																	1														
L 981+00																																							2 @ 15"				
L 983+50			1									1			1																												
L 983+50																																											
L 983+50			1	5	0.26								1			1																										
L 983+50																																											
L 983+50			1	5	2.42										1																												
L 983+50																																							2 @ 30"				
L 985+64			1												1																												
L 985+64																																											
L 987+50																				1																			1 @ 18"				2111 is a BDO
L 987+50			1										1		1																												
L 987+50																																											
L 987+50			1											1	1																												
L 987+50																																											
L 987+50			1										1		1																												
L 987+50																																											
L 987+50																																											
Sheet 22																																											
L 989+00			1											1	1																												
L 989+00																																											
L 989+00			1										1		1																												
L 989+00																																											
Y3 18+15			1																		1															1							
Y3 18+15																																											
Y3 17+80			1			1		1																																			
Y3 17+80																																											
Y3 17+80			1				1																																				
Y3 17+80																																											
Y3 18+15			1			1																																					
Y3 18+15																																											
Y3 22+15			1				1																																				
Y3 22+15																																											
Y3 22+15			1					1																																			
Y3 22+15																																											
Y3 23+65			1			1																																					
Y3 23+65																																											
Y3 23+65			1					1																																			
Y3 23+65																																											
L 995+00			1										1		1																												
SHEET TOTALS			24	10.59	2.68	7	1	3	3				1	12	3	11				1		1										5		1	1@18", 2@15", 2@30"						

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-J

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
Sheet 22																			
L 955+00	LT	2211	2212		252.50	252.06													
L 995+00	CL	2212		255.56															
L 995+00	RT	2213		257.35															
L 995+00	RT	2213	2212		254.35	252.56													
L 995+00	RT	2214	2213		269.25	254.35				36						x			x
Sheet 23																			
TT4REV 79+42	CL	2301	OUT		-	-													
TT4REV 68+27	RT	2302	OUT		298.91	298.71													
Sheet 25																			
PXROAD 18+52	LT	2501		307.79															
PXROAD 18+52	LT	2501	2502		305.04	292.60			48							x			x
PXROAD 17+73	LT	IN	2502		294.90	292.35													
PXROAD 18+50	LT	2502		294.52															
PXROAD 18+50	LT	2502	2503		292.35	291.13													
Y1 56+99	RT	2503		293.80															
Y1 56+99	RT	2503	2504		291.13	290.48													
Y1 56+99	RT	2504		294.23															
Y1 56+99	RT	2504	2505		290.48	290.29													
Y1 56+82	CL	2505		296.35															
Y1 56+82	CL	2505	OUT		289.79	289.58													
PXROAD 27+78	LT	2506		300.17															
PXROAD 27+78	LT	2506	OUT		297.42	285.90			40							x			x
Y1 21+10	CL	2507		294.05															
Y1 21+10	CL	2507	2508		290.88	289.12													
Y1 21+10	RT	2508		292.12															
Y1 21+10	RT	2508	2510		289.12	286.76													
Y1 61+00	RT	2509		289.08															
Y1 61+00	RT	2509	2510		286.83	286.76													
Y1 61+00	RT	2510		290.01															
Y1 61+00	RT	2510	2511		286.76	286.55													
Y1 61+00	CL	2511		291.94															
Y1 61+00	CL	2511	OUT		286.55	286.17													
Y1 64+00	CL	2513		288.76															
Y1 64+00	CL	2513	2512		285.59	283.99													
Y1 64+00	RT	2512		286.99															
Y1 64+00	RT	2512	2602		283.99	283.43													
Y2REV_LT 47+80	LT	2519		284.10															
Y1 64+10	LT	2520																	
Sheet 26																			
Y1 67+00	CL	2615		288.49															
Y1 67+00	CL	2615	2616		285.32	284.45													
Y1 67+00	RT	2616		287.45															
Y1 67+00	RT	2616	2603		284.45	283.43													
Y1 65+54	RT	2603		286.43															
Y1 65+54	RT	2603	2602		283.43	283.40													
SHEET TOTALS									88	36									

STATION	FROM	TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'
Sheet 22																											
L 955+00	2211	2212																			100						
L 995+00	2212																										
L 995+00	2213																										
L 995+00	2213	2212																			96						
L 995+00	2214	2213																									
Sheet 23																											
TT4REV 79+42	2301	OUT																			28						
TT4REV 68+27	2302	OUT																			40						
Sheet 25																											
PXROAD 18+52	2501																										
PXROAD 18+52	2501	2502																									
PXROAD 17+73	IN	2502																			76						
PXROAD 18+50	2502																										
PXROAD 18+50	2502	2503											192														
Y1 56+99	2503																										
Y1 56+99	2503	2504												16													
Y1 56+99	2504																										
Y1 56+99	2504	2505																				44					
Y1 56+82	2505																										
Y1 56+82	2505	OUT																					72				
PXROAD 27+78	2506																										
PXROAD 27+78	2506	OUT																									
Y1 21+10	2507																										
Y1 21+10	2507	2508																		40							
Y1 21+10	2508																										
Y1 21+10	2508	2510																		192							
Y1 61+00	2509																										
Y1 61+00	2509	2510										16															
Y1 61+00	2510																										
Y1 61+00	2510	2511																			40						
Y1 61+00	2511																										
Y1 61+00	2511	OUT											64														
Y1 64+00	2513																										
Y1 64+00	2513	2512																		36							
Y1 64+00	2512																										
Y1 64+00	2512	2602																		140							
Y2REV_LT 47+80	2519																										
Y1 64+10	2520																										
Sheet 26																											
Y1 67+00	2615																										
Y1 67+00	2615	2616																		36							
Y1 67+00	2616																										
Y1 67+00	2616	2603																		140							
Y1 65+54	2603																										
Y1 65+54	2603	2602																		8							
SHEET TOTALS												16	256	16						592	380	44	72				

STATION	FROM	TO	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24
Sheet 22																						
L 955+00	2211	2212																				
L 995+00	2212				1												1			1		
L 995+00	2213				1												1			1		
L 995+00	2213	2212																				
L 995+00	2214	2213																				
Sheet 23																						
TT4REV 79+42	2301	OUT																				
TT4REV 68+27	2302	OUT																				
Sheet 25																						
PXROAD 18+52	2501				1												1					
PXROAD 18+52	2501	2502																				
PXROAD 17+73	IN	2502																				
PXROAD 18+50	2502				1													1		1		
PXROAD 18+50	2502	2503																				
Y1 56+99	2503				1													1		1		
Y1 56+99	2503	2504																				
Y1 56+99	2504				1			1		1												
Y1 56+99	2504	2505																				
Y1 56+82	2505				1	1.56						1		1	1							
Y1 56+82	2505	OUT																				
PXROAD 27+78	2506				1												1					
PXROAD 27+78	2506	OUT																				
Y1 21+10	2507				1							1		1	1							
Y1 21+10	2507	2508																				
Y1 21+10	2508				1			1		1												
Y1 21+10	2508	2510																				
Y1 61+00	2509				1									1	1							
Y1 61+00	2509	2510																				
Y1 61+00	2510				1			1		1												
Y1 61+00	2510	2511																				
Y1 61+00	2511				1	0.39						1		1	1							
Y1 61+00	2511	OUT																				
Y1 64+00	2513				1							1		1	1							
Y1 64+00	2513	2512																				
Y1 64+00	2512				1			1		1												
Y1 64+00	2512	2602																				
Y2REV_LT 47+80	2519														1							
Y1 64+10	2520																					
Sheet 26																						
Y1 67+00	2615				1							1		1	1							
Y1 67+00	2615	2616																				
Y1 67+00	2616				1			1			1											
Y1 67+00	2616	2603																				
Y1 65+54	2603				1			1			1											
Y1 65+54	2603	2602																				
SHEET TOTALS					18	1.95		6		4	2	5		6	7		4	2		4		

STATION	FROM	TO	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 22																									
L 955+00	2211	2212																							
L 995+00	2212																								
L 995+00	2213																								
L 995+00	2213	2212																							
L 995+00	2214	2213			1														1 @ 18"						2214 is a BDO
Sheet 23																									
TT4REV 79+42	2301	OUT																							
TT4REV 68+27	2302	OUT																							
Sheet 25																									
PXROAD 18+52	2501															1									
PXROAD 18+52	2501	2502																	2 @ 15"						
PXROAD 17+73	IN	2502																							
PXROAD 18+50	2502																								
PXROAD 18+50	2502	2503																				48			REMOVE 24" RCP
Y1 56+99	2503																								
Y1 56+99	2503	2504																							
Y1 56+99	2504																								
Y1 56+99	2504	2505																							
Y1 56+82	2505																								
Y1 56+82	2505	OUT																							
PXROAD 27+78	2506															1									
PXROAD 27+78	2506	OUT																	2 @ 15"						
Y1 21+10	2507																								
Y1 21+10	2507	2508																							
Y1 21+10	2508																								
Y1 21+10	2508	2510																							
Y1 61+00	2509																								
Y1 61+00	2509	2510																							
Y1 61+00	2510																								
Y1 61+00	2510	2511																							
Y1 61+00	2511																								
Y1 61+00	2511	OUT																							
Y1 64+00	2513																								
Y1 64+00	2513	2512																							
Y1 64+00	2512																								
Y1 64+00	2512	2602																							
Y2REV_LT 47+80	2519												1									70			REMOVE 15" CONC. PIPE
Y1 64+10	2520																					40			REMOVE 12" CONC. PIPE
Sheet 26																									
Y1 67+00	2615																								
Y1 67+00	2615	2616																							
Y1 67+00	2616																					18			REMOVE 18" CONC. PIPE
Y1 67+00	2616	2603																							
Y1 65+54	2603																								
Y1 65+54	2603	2602																							
SHEET TOTALS					1								1			2			4@15" 1@18"			136			

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-K

RD248621

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
Sheet 26																			
Y1 65+43	RT	2602		286.43															
Y1 65+43	RT	2602	2604		283.40	282.99													
Y1 65+55	CL	2605		288.20															
Y1 65+55	CL	2605	2604		285.03	284.99													
Y1 65+43	CL	2604		288.20															
Y1 65+43	CL	2604	2606		282.74	281.82													
Y1 65+67	LT	2606		285.00															
Y1 66+60	RT	2607		284.80															
Y1 66+60	RT	2607	2608		282.50	282.20													
Y1 67+48	RT	2608		285.00															
Y1 67+63	LT	2609		286.00															
Y1 69+02	RT	2610		286.00															
Y1 69+02	RT	2610	2608		283.57	282.20													
Y1 70+15	RT	2611		286.20															
Y1 70+15	RT	2611	2610		283.90	283.57													
Y1 70+32	LT	2612		287.65															
Y1 69+89	CL	2613		288.70															
Y1 69+89	CL	2613	2614		285.53	284.41													
Y1 69+89	LT	2614		287.58															
Y1 68+48	LT	2617		288.19															
Y1 68+48	LT	2617	2618		285.19	284.39													
Y1 68+49	LT	2618		288.94															
Sheet 27																			
Y23 109+40	CL	2701	OUT																
Sheet 28																			
Y5 231+05	RT	2801		223.90															
Y23 128+25	LT	2802		222.60															
Y23 128+25	LT	2802	2801		217.85	217.15													
Y23 128+25	RT	2803		218.40															
Y23 128+25	RT	2803	2802		218.40	217.85													
Y23 125+00	RT	2804		226.31															
Y23 125+00	RT	2804	2803		222.81	218.40													
Y23 121+50	RT	2805		233.94															
Y23 121+50	RT	2805	2804		230.94	223.31													
Y5 238+95	RT	2806	2807		237.50	226.34				36						x			x
Y5 238+95	RT	2807		230.22															
Y5 239+50	RT	2808		230.59															
Y5 239+50	RT	2808	2807		225.55	225.34													
Y5 240+80	RT	2809		231.41															
Y5 240+80	RT	2809	2808		225.98	225.55													
Sheet 29																			
Y5 257+75	RT	2901		241.49															
Sheet 31																			
PR2B 36+65	CL	3101	OUT							20									
SHEET TOTALS										56									

STATION	FROM	TO	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
Sheet 26																		
Y1 65+43	2602																	
Y1 65+43	2602	2604																
Y1 65+55	2605																	
Y1 65+55	2605	2604																
Y1 65+43	2604																	
Y1 65+43	2604	2606																
Y1 65+67	2606																	
Y1 66+60	2607																	
Y1 66+60	2607	2608										84						
Y1 67+48	2608																	
Y1 67+63	2609																	
Y1 69+02	2610																	
Y1 69+02	2610	2608										144						
Y1 70+15	2611																	
Y1 70+15	2611	2610										112						
Y1 70+32	2612																	
Y1 69+89	2613																	
Y1 69+89	2613	2614																
Y1 69+89	2614																	
Y1 68+48	2617																	
Y1 68+48	2617	2618										8						
Y1 68+49	2618																	
Sheet 27																		
Y23 109+40	2701	OUT																
Sheet 28																		
Y5 231+05	2801																	
Y23 128+25	2802																	
Y23 128+25	2802	2801																
Y23 128+25	2803																	
Y23 128+25	2803	2802																
Y23 125+00	2804																	
Y23 125+00	2804	2803												312				
Y23 121+50	2805																	
Y23 121+50	2805	2804											336					
Y5 238+95	2806	2807																
Y5 238+95	2807																	
Y5 239+50	2808													8				
Y5 239+50	2808	2807													52			
Y5 240+80	2809											12						
Y5 240+80	2809	2808													128			
Sheet 29																		
Y5 257+75	2901																	
Sheet 31																		
PR2B 36+65	3101	OUT																
SHEET TOTALS												360	336	320	180			

STATION	FROM	TO	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
Sheet 26													
Y1 65+43	2602												
Y1 65+43	2602	2604		36									
Y1 65+55	2605												
Y1 65+55	2605	2604		8									
Y1 65+43	2604												
Y1 65+43	2604	2606			108								
Y1 65+67	2606												
Y1 66+60	2607												
Y1 66+60	2607	2608											
Y1 67+48	2608												
Y1 67+63	2609												
Y1 69+02	2610												
Y1 69+02	2610	2608											
Y1 70+15	2611												
Y1 70+15	2611	2610											
Y1 70+32	2612												
Y1 69+89	2613												
Y1 69+89	2613	2614		32									
Y1 69+89	2614												
Y1 68+48	2617												
Y1 68+48	2617	2618											
Y1 68+49	2618												
Sheet 27													
Y23 109+40	2701	OUT				72							
Sheet 28													
Y5 231+05	2801												
Y23 128+25	2802												
Y23 128+25	2802	2801					88						
Y23 128+25	2803												
Y23 128+25	2803	2802					52						
Y23 125+00	2804												
Y23 125+00	2804	2803											
Y23 121+50	2805												
Y23 121+50	2805	2804											
Y5 238+95	2806	2807											
Y5 238+95	2807												
Y5 239+50	2808												
Y5 239+50	2808	2807											
Y5 240+80	2809												
Y5 240+80	2809	2808											
Sheet 29													
Y5 257+75	2901												
Sheet 31													
PR2B 36+65	3101	OUT											
SHEET TOTALS				76	108	72	140						

STATION	FROM	TO	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
Sheet 26											
Y1 65+43	2602		1			1			1		
Y1 65+43	2602	2604									
Y1 65+55	2605		1							1	
Y1 65+55	2605	2604									
Y1 65+43	2604		1	0.46						1	
Y1 65+43	2604	2606									
Y1 65+67	2606										
Y1 66+60	2607		1								
Y1 66+60	2607	2608									
Y1 67+48	2608		1								
Y1 67+63	2609										
Y1 69+02	2610		1								
Y1 69+02	2610	2608									
Y1 70+15	2611		1								
Y1 70+15	2611	2610									
Y1 70+32	2612		1			1	1				
Y1 69+89	2613		1							1	
Y1 69+89	2613	2614									
Y1 69+89	2614		1			1	1				
Y1 68+48	2617		1			1	1				
Y1 68+48	2617	2618									
Y1 68+49	2618		1								
Sheet 27											
Y23 109+40	2701	OUT									
Sheet 28											
Y5 231+05	2801		1	1.75		1			1		
Y23 128+25	2802		1								
Y23 128+25	2802	2801									
Y23 128+25	2803		1								
Y23 128+25	2803	2802									
Y23 125+00	2804		1								
Y23 125+00	2804	2803									
Y23 121+50	2805		1								
Y23 121+50	2805	2804									
Y5 238+95	2806	2807									
Y5 238+95	2807		1			1			1		
Y5 239+50	2808		1	0.04		1			1		
Y5 239+50	2808	2807									
Y5 240+80	2809		1	0.43		1			1		
Y5 240+80	2809	2808									
Sheet 29											
Y5 257+75	2901		1	1.64		1			1		
Sheet 31											
PR2B 36+65	3101	OUT									
SHEET TOTALS			21	4.32		9	3		6	3	

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05
Sheet 26															
Y1 65+43	2602														
Y1 65+43	2602	2604													
Y1 65+55	2605		1	1											
Y1 65+55	2605	2604													
Y1 65+43	2604		1	1											
Y1 65+43	2604	2606													
Y1 65+67	2606			1											
Y1 66+60	2607		1	1											
Y1 66+60	2607	2608													
Y1 67+48	2608		1	1											
Y1 67+63	2609														
Y1 69+02	2610		1	1											
Y1 69+02	2610	2608													
Y1 70+15	2611		1	1											
Y1 70+15	2611	2610													
Y1 70+32	2612														
Y1 69+89	2613		1	1											
Y1 69+89	2613	2614													
Y1 69+89	2614														
Y1 68+48	2617														
Y1 68+48	2617	2618													
Y1 68+49	2618											1			
Sheet 27															
Y23 109+40	2701	OUT													
Sheet 28															
Y5 231+05	2801														
Y23 128+25	2802					1			1						
Y23 128+25	2802	2801													
Y23 128+25	2803					1			1						
Y23 128+25	2803	2802													
Y23 125+00	2804					1			1						
Y23 125+00	2804	2803													
Y23 121+50	2805					1			1						
Y23 121+50	2805	2804													
Y5 238+95	2806	2807												1	
Y5 238+95	2807														
Y5 239+50	2808														
Y5 239+50	2808	2807													
Y5 240+80	2809														
Y5 240+80	2809	2808													
Sheet 29															
Y5 257+75	2901														
Sheet 31															
PR2B 36+65	3101	OUT													
SHEET TOTALS			7	8		4			4			1		1	

STATION	FROM	TO	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 26																					
Y1 65+43	2602																				
Y1 65+43	2602	2604																			
Y1 65+55	2605																				
Y1 65+55	2605	2604																			
Y1 65+43	2604																				
Y1 65+43	2604	2606																			
Y1 65+67	2606								1									40			REMOVE 15" CONC. PIPE
Y1 66+60	2607																				
Y1 66+60	2607	2608																			
Y1 67+48	2608																	20			REMOVE DI
Y1 67+63	2609					1		1													REMOVE CB & CONSTRUCT JB
Y1 69+02	2610																				REMOVE DI
Y1 69+02	2610	2608																			
Y1 70+15	2611																				
Y1 70+15	2611	2610																			
Y1 70+32	2612																				
Y1 69+89	2613																				
Y1 69+89	2613	2614																			
Y1 69+89	2614																				
Y1 68+48	2617																				
Y1 68+48	2617	2618																			
Y1 68+49	2618					1															
Sheet 27																					
Y23 109+40	2701	OUT																			
Sheet 28																					
Y5 231+05	2801																				
Y23 128+25	2802																				
Y23 128+25	2802	2801																			
Y23 128+25	2803																				
Y23 128+25	2803	2802																			
Y23 125+00	2804																				
Y23 125+00	2804	2803																			
Y23 121+50	2805																				
Y23 121+50	2805	2804																			
Y5 238+95	2806	2807													1 @ 18"						2806 IS A BDO
Y5 238+95	2807																				
Y5 239+50	2808															0.298	0.553				REMOVE CB; PLUG 30" & 24" PIPES
Y5 239+50	2808	2807																60			REMOVE 60' OF 30" RCP
Y5 240+80	2809															0.232	0.399				REMOVE CB; 2 24" PLUGS
Y5 240+80	2809	2808																			
Sheet 29																					
Y5 257+75	2901																				
Sheet 31																					
PR2B 36+65	3101	OUT																			
SHEET TOTALS						2		1	1						1 @ 18"	0.53	0.952	120			

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: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-L

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
Sheet 02BA							
Y1REV_RT 30+12	LT	02BA02		305.53			
Y1REV_RT 30+12	LT	02BA02	02BA03		302.53	295.65	
Y1REV_RT 32+56	LT	02BA03		298.65			
Y1REV_RT 32+56	LT	02BA03	02BB01		295.65	293.88	
Sheet 02BB							
Y1REV_LT 32+93	LT	02BB13		292.59			
Y1REV_LT 32+93	LT	02BB13	02BB12		289.59	288.79	
Y1REV_LT 33+42	RT	02BB03		294.05			
Y1REV_LT 33+42	RT	02BB03	02BB12		291.05	290.89	
Y1REV_LT 32+90	RT	02BB12		295.69			
Y1REV_LT 32+90	RT	02BB12	02BB02		288.79	288.58	
Y1REV_RT 49+19	LT	02BB02		296.12			
Y1REV_RT 49+19	LT	02BB02	02BB01		288.58	288.36	
Y1REV_RT 33+19	LT	02BB01		296.88			
Y1REV_RT 33+19	LT	02BB01	02BB04		287.86	287.69	
Y1REV_LT 34+14	RT	02BB05		291.81			
Y1REV_LT 34+14	RT	02BB05	02BB04		288.81	288.54	
Y1REV_RT 33+75	LT	02BB04		295.30			
Y1REV_RT 33+75	LT	02BB04	OUT		287.69	287.49	
Y1REV_RT 36+58	LT	02BB06		287.30			
Y1REV_RT 36+58	LT	02BB06	02BB07		284.33	279.71	
Y1REV_RT 39+14	LT	02BB07		282.71			
Y1REV_RT 39+14	LT	02BB07	02BB08		279.71	279.51	
Y1REV_LT 39+27	LT	02BB09		280.80			
Y1REV_LT 39+27	LT	02BB09	02BB08		278.05	277.89	
Y1REV_RT 39+81	LT	02BB08		282.53			
Y1REV_RT 39+81	LT	02BB08	OUT		277.89	277.60	
Y1REV_LT 40+13	RT	02BB15		282.88			
Y1REV_LT 40+13	RT	02BB15	02BB11		279.88	279.68	
Y1REV_LT 40+78	LT	02BB14		282.00			
Y1REV_LT 40+78	LT	02BB14	02BB11		279.25	279.10	
Y1REV_LT 40+78	RT	02BB11		283.60			
Y1REV_LT 40+78	RT	02BB11	OUT		276.69	276.44	
Sheet 02BC							
Y2REV_LT 47+00	RT	IN	02BC01	285.79	285.71		
Y2REV_LT 47+00	CL	02BC02		291.74			
Y2REV_LT 47+00	CL	02BC02	02BC01		288.57	285.71	
Y2REV_LT 47+00	RT	02BC01		290.18			
Y2REV_LT 47+00	RT	02BC01	02BC03		285.71	282.17	
Y2REV_LT 45+50	CL	02BC04		288.03			
Y2REV_LT 45+50	CL	02BC04	02BC05		284.86	284.28	
Y2REV_LT 45+23	CL	02BC05		287.35			
Y2REV_LT 45+23	CL	02BC05	02BC03		284.18	282.82	
Y2REV_LT 45+23	RT	02BC03		285.82			
Y2REV_LT 45+23	RT	02BC03	02BC09		282.17	280.49	
Y2REV_LT 44+00	RT	02BC09		284.43			
Y2REV_LT 44+00	RT	02BC09	02BC06		280.49	278.98	
SHEET TOTALS							

STATION	FROM	TO	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
Sheet 02BA																						
Y1REV_RT 30+12	02BA02																					
Y1REV_RT 30+12	02BA02	02BA03																				
Y1REV_RT 32+56	02BA03																					
Y1REV_RT 32+56	02BA03	02BB01																				
Sheet 02BB																						
Y1REV_LT 32+93	02BB13																					
Y1REV_LT 32+93	02BB13	02BB12																				
Y1REV_LT 33+42	02BB03																					
Y1REV_LT 33+42	02BB03	02BB12																				
Y1REV_LT 32+90	02BB12																					
Y1REV_LT 32+90	02BB12	02BB02																				
Y1REV_RT 49+19	02BB02																					
Y1REV_RT 49+19	02BB02	02BB01																				
Y1REV_RT 33+19	02BB01																					
Y1REV_RT 33+19	02BB01	02BB04																				
Y1REV_LT 34+14	02BB05																					
Y1REV_LT 34+14	02BB05	02BB04																				
Y1REV_RT 33+75	02BB04																					
Y1REV_RT 33+75	02BB04	OUT																				
Y1REV_RT 36+58	02BB06																					
Y1REV_RT 36+58	02BB06	02BB07																				
Y1REV_RT 39+14	02BB07																					
Y1REV_RT 39+14	02BB07	02BB08																				
Y1REV_LT 39+27	02BB09																					
Y1REV_LT 39+27	02BB09	02BB08																				
Y1REV_RT 39+81	02BB08																					
Y1REV_RT 39+81	02BB08	OUT																				
Y1REV_LT 40+13	02BB15																					
Y1REV_LT 40+13	02BB15	02BB11																				
Y1REV_LT 40+78	02BB14																					
Y1REV_LT 40+78	02BB14	02BB11																				
Y1REV_LT 40+78	02BB11																					
Y1REV_LT 40+78	02BB11	OUT																				
Sheet 02BC																						
Y2REV_LT 47+00	IN	02BC01																				
Y2REV_LT 47+00	02BC02																					
Y2REV_LT 47+00	02BC02	02BC01																				
Y2REV_LT 47+00	02BC01																					
Y2REV_LT 47+00	02BC01	02BC03																				
Y2REV_LT 45+50	02BC04																					
Y2REV_LT 45+50	02BC04	02BC05																				
Y2REV_LT 45+23	02BC05																					
Y2REV_LT 45+23	02BC05	02BC03																				
Y2REV_LT 45+23	02BC03																					
Y2REV_LT 45+23	02BC03	02BC09																				
Y2REV_LT 44+00	02BC09																					
Y2REV_LT 44+00	02BC09	02BC06																				
SHEET TOTALS																						

STATION	FROM	TO	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
Sheet 02BA																					
Y1REV_RT 30+12	02BA02																				
Y1REV_RT 30+12	02BA02	02BA03										240									
Y1REV_RT 32+56	02BA03																				
Y1REV_RT 32+56	02BA03	02BB01										60									
Sheet 02BB																					
Y1REV_LT 32+93	02BB13																				
Y1REV_LT 32+93	02BB13	02BB12			104																
Y1REV_LT 33+42	02BB03																				
Y1REV_LT 33+42	02BB03	02BB12										52									
Y1REV_LT 32+90	02BB12																				
Y1REV_LT 32+90	02BB12	02BB02			24																
Y1REV_RT 49+19	02BB02																				
Y1REV_RT 49+19	02BB02	02BB01			24																
Y1REV_RT 33+19	02BB01																				
Y1REV_RT 33+19	02BB01	02BB04				56															
Y1REV_LT 34+14	02BB05																				
Y1REV_LT 34+14	02BB05	02BB04										88									
Y1REV_RT 33+75	02BB04																				
Y1REV_RT 33+75	02BB04	OUT				68															
Y1REV_RT 36+58	02BB06																				
Y1REV_RT 36+58	02BB06	02BB07										256									
Y1REV_RT 39+14	02BB07																				
Y1REV_RT 39+14	02BB07	02BB08										64									
Y1REV_LT 39+27	02BB09																				
Y1REV_LT 39+27	02BB09	02BB08										52									
Y1REV_RT 39+81	02BB08																				
Y1REV_RT 39+81	02BB08	OUT		84																	
Y1REV_LT 40+13	02BB15																				
Y1REV_LT 40+13	02BB15	02BB11										64									
Y1REV_LT 40+78	02BB14																				
Y1REV_LT 40+78	02BB14	02BB11										48									
Y1REV_LT 40+78	02BB11																				
Y1REV_LT 40+78	02BB11	OUT				84															
Sheet 02BC																					
Y2REV_LT 47+00	IN	02BC01				28															
Y2REV_LT 47+00	02BC02																				
Y2REV_LT 47+00	02BC02	02BC01										40									
Y2REV_LT 47+00	02BC01																				
Y2REV_LT 47+00	02BC01	02BC03												168							
Y2REV_LT 45+50	02BC04																				
Y2REV_LT 45+50	02BC04	02BC05										24									
Y2REV_LT 45+23	02BC05																				
Y2REV_LT 45+23	02BC05	02BC03										36									
Y2REV_LT 45+23	02BC03																				
Y2REV_LT 45+23	02BC03	02BC09												120							
Y2REV_LT 44+00	02BC09																				
Y2REV_LT 44+00	02BC09	02BC06												104							
SHEET TOTALS				84	152	236						1024		392							

STATION	FROM	TO	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24
Sheet 02BA																				
Y1REV_RT 30+12	02BA02		1			1			1											
Y1REV_RT 30+12	02BA02	02BA03																		
Y1REV_RT 32+56	02BA03		1			1			1											
Y1REV_RT 32+56	02BA03	02BB01																		
Sheet 02BB																				
Y1REV_LT 32+93	02BB13		1												1			1		
Y1REV_LT 32+93	02BB13	02BB12																		
Y1REV_LT 33+42	02BB03		1			1		1												
Y1REV_LT 33+42	02BB03	02BB12																		
Y1REV_LT 32+90	02BB12		1	1.9		1		1												
Y1REV_LT 32+90	02BB12	02BB02																		
Y1REV_RT 49+19	02BB02		1	2.5		1	1													
Y1REV_RT 49+19	02BB02	02BB01																		
Y1REV_RT 33+19	02BB01		1	4.02		1			1											
Y1REV_RT 33+19	02BB01	02BB04																		
Y1REV_LT 34+14	02BB05		1			1		1												
Y1REV_LT 34+14	02BB05	02BB04																		
Y1REV_RT 33+75	02BB04		1	2.61		1			1											
Y1REV_RT 33+75	02BB04	OUT																		
Y1REV_RT 36+58	02BB06		1			1			1											
Y1REV_RT 36+58	02BB06	02BB07																		
Y1REV_RT 39+14	02BB07		1			1			1											
Y1REV_RT 39+14	02BB07	02BB08																		
Y1REV_LT 39+27	02BB09		1												1					
Y1REV_LT 39+27	02BB09	02BB08																		
Y1REV_RT 39+81	02BB08		1			1	1													
Y1REV_RT 39+81	02BB08	OUT																		
Y1REV_LT 40+13	02BB15		1			1		1												
Y1REV_LT 40+13	02BB15	02BB11																		
Y1REV_LT 40+78	02BB14		1												1					
Y1REV_LT 40+78	02BB14	02BB11																		
Y1REV_LT 40+78	02BB11		1	1.91		1		1												
Y1REV_LT 40+78	02BB11	OUT																		
Sheet 02BC																				
Y2REV_LT 47+00	IN	02BC01																		
Y2REV_LT 47+00	02BC02		1							1		1	1							
Y2REV_LT 47+00	02BC02	02BC01																		
Y2REV_LT 47+00	02BC01		1			1			1											
Y2REV_LT 47+00	02BC01	02BC03																		
Y2REV_LT 45+50	02BC04		1							1		1	1							
Y2REV_LT 45+50	02BC04	02BC05																		
Y2REV_LT 45+23	02BC05		1							1		1	1							
Y2REV_LT 45+23	02BC05	02BC03																		
Y2REV_LT 45+23	02BC03		1			1			1											
Y2REV_LT 45+23	02BC03	02BC09																		
Y2REV_LT 44+00	02BC09		1			1			1											
Y2REV_LT 44+00	02BC09	02BC06																		
SHEET TOTALS			22	12.94		16	2	5	9	3		3	3		3			1		

STATION	FROM	TO	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 02BA																									
Y1REV_RT 30+12	02BA02																								
Y1REV_RT 30+12	02BA02	02BA03																							
Y1REV_RT 32+56	02BA03																								
Y1REV_RT 32+56	02BA03	02BB01																							
Sheet 02BB																									
Y1REV_LT 32+93	02BB13																								
Y1REV_LT 32+93	02BB13	02BB12																							
Y1REV_LT 33+42	02BB03																								
Y1REV_LT 33+42	02BB03	02BB12																							
Y1REV_LT 32+90	02BB12																								
Y1REV_LT 32+90	02BB12	02BB02																							
Y1REV_RT 49+19	02BB02																								
Y1REV_RT 49+19	02BB02	02BB01																							
Y1REV_RT 33+19	02BB01																								
Y1REV_RT 33+19	02BB01	02BB04																							
Y1REV_LT 34+14	02BB05																								
Y1REV_LT 34+14	02BB05	02BB04																							
Y1REV_RT 33+75	02BB04																								
Y1REV_RT 33+75	02BB04	OUT																							
Y1REV_RT 36+58	02BB06																								
Y1REV_RT 36+58	02BB06	02BB07																							
Y1REV_RT 39+14	02BB07																								
Y1REV_RT 39+14	02BB07	02BB08																							
Y1REV_LT 39+27	02BB09														1										
Y1REV_LT 39+27	02BB09	02BB08																							
Y1REV_RT 39+81	02BB08																								
Y1REV_RT 39+81	02BB08	OUT																1							
Y1REV_LT 40+13	02BB15																								
Y1REV_LT 40+13	02BB15	02BB11																							
Y1REV_LT 40+78	02BB14														1										
Y1REV_LT 40+78	02BB14	02BB11																							
Y1REV_LT 40+78	02BB11																								
Y1REV_LT 40+78	02BB11	OUT																							
Sheet 02BC																									
Y2REV_LT 47+00	IN	02BC01																							
Y2REV_LT 47+00	02BC02																								
Y2REV_LT 47+00	02BC02	02BC01																							
Y2REV_LT 47+00	02BC01																								
Y2REV_LT 47+00	02BC01	02BC03																							
Y2REV_LT 45+50	02BC04																								
Y2REV_LT 45+50	02BC04	02BC05																							
Y2REV_LT 45+23	02BC05																								
Y2REV_LT 45+23	02BC05	02BC03																							
Y2REV_LT 45+23	02BC03																								
Y2REV_LT 45+23	02BC03	02BC09																							
Y2REV_LT 44+00	02BC09																								
Y2REV_LT 44+00	02BC09	02BC06																							
SHEET TOTALS															2			1							

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-M

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
Sheet 02BC																											
Y2REV_LT 42+93	RT	02BC06		282.63																							
Y2REV_LT 42+93	RT	02BC06	02BC07		278.88	272.88																					
Y2REV_LT 41+06	RT	02BC07		277.63																							
Y2REV_LT 41+06	RT	02BC07	02BC08		272.88	272.54																					
Y2REV_LT 41+07	RT	02BC08		279.77																							
Y2REV_LT 41+07	RT	02BC08	02BC10		272.54	270.25																					
Y2REV_LT 41+07	LT	02BC10		275.00																							
Y2REV_LT 41+07	LT	02BC10	02BD03		269.25	265.10																					
Y2REV_LT 45+98	LT	02BC11		282.50																							
Y2REV_LT 43+45	LT	02BC12		279.75																							
Y2REV_LT 41+98	LT	02BC13		278.87																							
Sheet 02BD																											
Y2REV_LT 38+76	RT	02BD01		274.44																							
Y2REV_LT 38+76	RT	02BD01	02BD02		271.44	270.96																					
Y2REV_LT 38+15	RT	02BD02		273.96																							
Y2REV_LT 38+15	RT	02BD02	02BD03		270.96	266.85																					
Y2REV_LT 38+15	LT	02BD03		270.85																							
Y2REV_LT 38+15	LT	02BD03	02BD04		265.10	263.85																					
Y2REV_LT 37+50	LT	02BD04		269.60																							
Y2REV_LT 37+50	LT	02BD04	02BD08		263.85	247.05																					
Y2REV_LT 34+52	LT	02BD10		265.41																							
Y2REV_LT 34+52	LT	02BD10	02BD09		262.66	262.59																					
Y2REV_LT 34+75	LT	02BD09		265.41																							
Y2REV_LT 34+75	LT	02BD09	02BD08		252.08	248.80																					
Y2REV_LT 37+00	RT	02BD07		271.87																							
Y2REV_LT 37+00	RT	02BD07	02BD06		268.87	265.82																					
Y2REV_LT 37+00	RT	02BD06		268.57																							
Y2REV_LT 37+00	RT	02BD06	OUT		265.82	252.85			118							x			x								
Y2REV_LT 35+90	RT	02BD11		271.90																							
Y2REV_LT 35+90	RT	02BD11	02BD12		268.90	263.43																					
Y2REV_LT 33+91	LT	02BD12		266.43																							
Y2REV_LT 33+37	RT	02BD12	02BD13		263.43	257.24																					
Y2REV_LT 31+64	RT	02BD13		260.24																							
Y2REV_LT 31+64	RT	02BD13	02BD14		257.24	252.71																					
Y2REV_LT 31+50	RT	02BD14		255.46																							
Y2REV_LT 31+50	RT	02BD14	2003		252.46	248.38																					
Y2REV_LT 30+42	RT	02BD15		256.90																							
Y2REV_LT 30+42	RT	02BD15	2016		253.90	253.72																					
SHEET TOTALS									118																		

STATION	STRUCTURE NO. FROM	TO	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
Sheet 02BC																														
Y2REV_LT 42+93	02BC06																					1			1			1		
Y2REV_LT 42+93	02BC06	02BC07				188																								
Y2REV_LT 41+06	02BC07																					1								
Y2REV_LT 41+06	02BC07	02BC08				56																								
Y2REV_LT 41+07	02BC08																					1	2.23		1		1			
Y2REV_LT 41+07	02BC08	02BC10				108																								
Y2REV_LT 41+07	02BC10																					1	0.75							
Y2REV_LT 41+07	02BC10	02BD03						288																						
Y2REV_LT 45+98	02BC11																													
Y2REV_LT 43+45	02BC12																													
Y2REV_LT 41+98	02BC13																													
Sheet 02BD																														
Y2REV_LT 38+76	02BD01																					1			1		1			
Y2REV_LT 38+76	02BD01	02BD02		68																										
Y2REV_LT 38+15	02BD02																					1			1			1		
Y2REV_LT 38+15	02BD02	02BD03										100																		
Y2REV_LT 38+15	02BD03																					1	0.75							
Y2REV_LT 38+15	02BD03	02BD04						64																						
Y2REV_LT 37+50	02BD04																					1	0.75							
Y2REV_LT 37+50	02BD04	02BD08						232																						
Y2REV_LT 34+52	02BD10																					1								
Y2REV_LT 34+52	02BD10	02BD09										20																		
Y2REV_LT 34+75	02BD09																					1	5	3.33						
Y2REV_LT 34+75	02BD09	02BD08		32																										
Y2REV_LT 37+00	02BD07																					1			1		1			
Y2REV_LT 37+00	02BD07	02BD06										48																		
Y2REV_LT 37+00	02BD06																					1								
Y2REV_LT 37+00	02BD06	OUT																												
Y2REV_LT 35+90	02BD11																					1			1		1			
Y2REV_LT 35+90	02BD11	02BD12		204																										
Y2REV_LT 33+91	02BD12																					1			1		1			
Y2REV_LT 33+37	02BD12	02BD13										224																		
Y2REV_LT 31+64	02BD13																					1			1		1			
Y2REV_LT 31+64	02BD13	02BD14										52																		
Y2REV_LT 31+50	02BD14																					1								
Y2REV_LT 31+50	02BD14	2003			144																									
Y2REV_LT 30+42	02BD15																					1			1			1		
Y2REV_LT 30+42	02BD15	2016		20																										
SHEET TOTALS				324	144	352		584				444										17	9.48	3.33	9		6	3		

STATION	STRUCTURE NO. FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 02BC																																		
Y2REV_LT 42+93	02BC06																																	
Y2REV_LT 42+93	02BC06	02BC07																																
Y2REV_LT 41+06	02BC07				1				1																									
Y2REV_LT 41+06	02BC07	02BC08																																
Y2REV_LT 41+07	02BC08																																	
Y2REV_LT 41+07	02BC08	02BC10																													222			PIPE REMOVAL
Y2REV_LT 41+07	02BC10				1				1																									REMOVE CB
Y2REV_LT 41+07	02BC10	02BD03																																
Y2REV_LT 45+98	02BC11			1																		1												
Y2REV_LT 43+45	02BC12			1																		1												
Y2REV_LT 41+98	02BC13			1																		1												
Sheet 02BD																																		
Y2REV_LT 38+76	02BD01																																	
Y2REV_LT 38+76	02BD01	02BD02																													295			REMOVE 18" CONC. PIPE
Y2REV_LT 38+15	02BD02																																	
Y2REV_LT 38+15	02BD02	02BD03																																
Y2REV_LT 38+15	02BD03				1				1																									
Y2REV_LT 38+15	02BD03	02BD04																																
Y2REV_LT 37+50	02BD04				1				1																									
Y2REV_LT 37+50	02BD04	02BD08																																
Y2REV_LT 34+52	02BD10					1																		1										
Y2REV_LT 34+52	02BD10	02BD09																																
Y2REV_LT 34+75	02BD09					1																		1										
Y2REV_LT 34+75	02BD09	02BD08																																
Y2REV_LT 37+00	02BD07																														200			REMOVE 24" CMP
Y2REV_LT 37+00	02BD07	02BD06																																
Y2REV_LT 37+00	02BD06					1			1																									
Y2REV_LT 37+00	02BD06	OUT																										2 @ 15"						
Y2REV_LT 35+90	02BD11																																	
Y2REV_LT 35+90	02BD11	02BD12																																
Y2REV_LT 33+91	02BD12																																	
Y2REV_LT 33+37	02BD12	02BD13																																
Y2REV_LT 31+64	02BD13																																	
Y2REV_LT 31+64	02BD13	02BD14																																
Y2REV_LT 31+50	02BD14					1			1																									
Y2REV_LT 31+50	02BD14	2003																																
Y2REV_LT 30+42	02BD15																																	
Y2REV_LT 30+42	02BD15	2016																																
SHEET TOTALS				3	4	4			6													3		2				2 @ 15"			717			

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: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-N

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RD248621

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
Sheet 2-Q 1 OF 2																			
Y1DETREV 10+00	CL	2Q01	OUT		273.39	257.27				180							x	x	x
Y1DETREV 14+08	LT	2Q02	2Q03		296.75	289.04				24						x		x	x
Y1DETREV 14+00	LT	2Q03			292.04														
Y1DETREV 14+00	CL	2Q03	OUT		289.04	288.79				84						x		x	x
Y1DETREV 40+68																			
Sheet 2-R 1 OF 2																			
Y3DETREV 10+09	LT	2R01		285.89															
		2R01	EXIST		284.22	283.90													
		2R02	OUT		278.82	278.44													
Sheet 2-R 2 OF 2																			
Y3DETREV 23+88	LT	2R201		275.59															
Y3DETREV 23+88	LT	2R201	EXIST		272.84	272.48			64										x
Y3DETREV 27+80	RT	2R202	EXIST		269.65	269.30			28										x
Y3DETREV 24+55	LT																		
Y3DETREV 25+26	LT																		
Sheet Totals									92	288									

STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
Sheet 2-Q 1 OF 2																											
Y1DETREV 10+00																											
Y1DETREV 14+08																											
Y1DETREV 14+00																											
Y1DETREV 14+00																											
Y1DETREV 40+68																											
Sheet 2-R 1 OF 2																											
Y3DETREV 10+09																											
									100																		
																			128								
Sheet 2-R 2 OF 2																											
Y3DETREV 23+88																											
Y3DETREV 23+88																											
Y3DETREV 27+80																											
Y3DETREV 24+55																											
Y3DETREV 25+26																											
Sheet Totals									100										128								

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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24
Sheet 2-Q 1 OF 2																		
Y1DETREV 10+00																		
Y1DETREV 14+08																		
Y1DETREV 14+00	1												1					
Y1DETREV 14+00																		
Y1DETREV 40+68																		
Sheet 2-R 1 OF 2	1												1			1		
Y3DETREV 10+09																		
Sheet 2-R 2 OF 2	1												1			1		
Y3DETREV 23+88																		
Y3DETREV 23+88																		
Y3DETREV 27+80																		
Y3DETREV 24+55																		
Y3DETREV 25+26																		
Sheet Totals	3												3			2		

STATION	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 2-Q 1 OF 2																							
Y1DETREV 10+00																				180			
Y1DETREV 14+08																				24			2Q02 is a BDO
Y1DETREV 14+00													1										
Y1DETREV 14+00																				84			
Y1DETREV 40+68																1							
Sheet 2-R 1 OF 2																							
Y3DETREV 10+09																							
																				100			
																				128			
Sheet 2-R 2 OF 2																							
Y3DETREV 23+88																							
Y3DETREV 23+88																				64			
Y3DETREV 27+80																				28			
Y3DETREV 24+55																						1	
Y3DETREV 25+26																						1	
Sheet Totals													1			1				608		2	REMOVE TEMP DRAINAGE

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: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-O

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RD248621

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
Sheet 22-A							
L 995+00	CL	2212	2			247.6	
L 35+43	CL	2		252.4			
L 35+43	LT	1	2		249.4	248.3	
L 35+43	LT	1		251.4			
L 35+43	RT	3	2		249.4	248.3	
L 35+43	RT	3		251.5			
L 35+43	CL	2	5		247.1	244.3	
L 39+37	CL	5		249.6			
L 39+37	LT	4	5		245.7	244.6	
L 39+37	LT	4		248.5			
L 39+37	RT	6		248.8			
L 39+37	RT	6	5		246.0	244.6	
L 39+37	CL	5	8		243.8		
L 43+96	CL	8		244.5			
L 43+96	LT	7	8		241.2	240.2	
L 43+96	LT	7		243.4			
L 43+96	RT	9		243.7			
L 43+96	RT	9	8		241.7	240.4	
L 43+96	CL	8	12		238.7	232.9	
Sheet 22-B							
COL2 49+21	CL	12		238.7			
COL2 49+21	LT	12	10		232.9	230.8	
COL2 49+22	LT	10		236.6			
COL2 49+22	LT	10	11		230.8	211.0	
L 47+90	RT	13		242.3			
L 47+90	RT	13	14		239.5	237.3	
L 49+87	RT	14		240.1			
L 49+87	RT	14	15		237.3	235.2	
L 51+80	RT	15	OUT		235.2	234.6	
L 51+80	RT	15		238.0			
COL2 51+84	LT	16		237.3			
COL2 51+84	LT	16	17		234.5	233.0	
COL2 53+15	LT	17		235.8			
COL2 53+15	LT	17	18		233.0	231.3	
COL2 54+35	LT	18		234.1			
COL2 54+35	LT	18	19		231.3	230.9	
COL2 54+45	LT	19	OUT		229.0	219.0	
COL2 54+45	LT	19		234.1			
COL2 54+45	CL	20		232.9			
COL2 54+45	CL	20	19		229.6	229.0	
COL2 54+45	RT	21		232.1			
COL2 54+45	RT	21	20		230.1	229.6	
TT4DA 54+07	CL	34	OUT		205.1	204.4	
TT4DA 54+15	CL	33	OUT		205.1	204.4	
SHEET TOTALS							

STATION (SIZE)	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE													.064	.064	.064	.064	.079	.079	.109	.109
Sheet 22-A																				
L 995+00																				
L 35+43																				
L 35+43																				
L 35+43																				
L 35+43																				
L 35+43																				
L 35+43																				
L 39+37																				
L 39+37																				
L 39+37																				
L 39+37																				
L 39+37																				
L 39+37																				
L 43+96																				
L 43+96																				
L 43+96																				
L 43+96																				
L 43+96																				
L 43+96																				
Sheet 22-B																				
COL2 49+21																				
COL2 49+21																				
COL2 49+22																				
COL2 49+22																				
L 47+90																				
L 47+90																				
L 49+87																				
L 49+87																				
L 51+80																				
L 51+80																				
COL2 51+84																				
COL2 51+84																				
COL2 53+15																				
COL2 53+15																				
COL2 54+35																				
COL2 54+35																				
COL2 54+45															52					
COL2 54+45																				
COL2 54+45																				
COL2 54+45																				
COL2 54+45																				
COL2 54+45																				
TT4DA 54+07																				
TT4DA 54+15																				
SHEET TOTALS															52					

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
Sheet 22-A																			
L 995+00												520							
L 35+43																			
L 35+43										108									
L 35+43																			
L 35+43										104									
L 35+43																			
L 35+43													396						
L 39+37																			
L 39+37										116									
L 39+37																			
L 39+37																			
L 39+37										104									
L 39+37														460					
L 43+96																			
L 43+96											116								
L 43+96																			
L 43+96																			
L 43+96										104									
L 43+96														524					
Sheet 22-B																			
COL2 49+21																			
COL2 49+21														128					
COL2 49+22																			
COL2 49+22														348					
L 47+90																			
L 47+90										196									
L 49+87																			
L 49+87										196									
L 51+80										32									
L 51+80																			
COL2 51+84																			
COL2 51+84										132									
COL2 53+15																			
COL2 53+15										120									
COL2 54+35																			
COL2 54+35										8									
COL2 54+45																			
COL2 54+45																			
COL2 54+45																			
COL2 54+45										124									
COL2 54+45																			
COL2 54+45										100									
TT4DA 54+07																	104	8	
TT4DA 54+15																	104		
SHEET TOTALS										1444	116	520	396	1460			208	8	

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	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
Sheet 22-A									
L 995+00									
L 35+43	1								
L 35+43									
L 35+43	1								
L 35+43									
L 35+43	1								
L 35+43									
L 39+37	1								
L 39+37									
L 39+37	1								
L 39+37	1								
L 39+37									
L 39+37									
L 43+96	1								
L 43+96									
L 43+96	1								
L 43+96	1								
L 43+96									
L 43+96									
Sheet 22-B									
COL2 49+21	1	0.8							
COL2 49+21									
COL2 49+22	1	0.8							
COL2 49+22									
L 47+90	1								
L 47+90									
L 49+87	1								
L 49+87									
L 51+80									
L 51+80	1								
COL2 51+84	1								
COL2 51+84									
COL2 53+15	1								
COL2 53+15									
COL2 54+35	1								
COL2 54+35									
COL2 54+45									
COL2 54+45	1								
COL2 54+45	1								
COL2 54+45									
COL2 54+45	1								
COL2 54+45									
TT4DA 54+07									
TT4DA 54+15									
SHEET TOTALS	20	1.6							

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE
Sheet 22-A																									
L 995+00																									
L 35+43			1				1																		
L 35+43																									
L 35+43					1		1																		
L 35+43																									
L 35+43					1		1																		
L 35+43																									
L 39+37			1				1																		
L 39+37																									
L 39+37				1			1																		
L 39+37				1			1																		
L 39+37																									
L 39+37																									
L 43+96			1				1																		
L 43+96																									
L 43+96					1		1																		
L 43+96					1		1																		
L 43+96																									
L 43+96																									
Sheet 22-B																									
COL2 49+21			1				1																		
COL2 49+21																									
COL2 49+22			1				1																		
COL2 49+22																									
L 47+90				1																		1			
L 47+90																									
L 49+87				1																		1			
L 49+87																									
L 51+80																									
L 51+80				1																		1			
COL2 51+84				1																		1			
COL2 51+84																									
COL2 53+15				1																		1			
COL2 53+15																									
COL2 54+35				1																		1			
COL2 54+35																									
COL2 54+45																									
COL2 54+45				1																		1			
COL2 54+45				1			1																		
COL2 54+45																									
COL2 54+45					1		1																		
COL2 54+45																									
TT4DA 54+07																									
TT4DA 54+15																									
SHEET TOTALS			5	10	5		13															7			

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 22-A							
L 995+00							
L 35+43							
L 35+43							
L 35+43							
L 35+43							
L 35+43							
L 35+43							
L 39+37							
L 39+37							
L 39+37							
L 39+37							
L 39+37							
L 39+37							
L 43+96							
L 43+96							
L 43+96							
L 43+96							
L 43+96							
L 43+96							
Sheet 22-B							
COL2 49+21							
COL2 49+21							
COL2 49+22							
COL2 49+22							
L 47+90							
L 47+90							
L 49+87							
L 49+87							
L 51+80							
L 51+80							
COL2 51+84							
COL2 51+84							
COL2 53+15							
COL2 53+15							
COL2 54+35							
COL2 54+35							
COL2 54+45							
COL2 54+45							
COL2 54+45							
COL2 54+45							
COL2 54+45							
COL2 54+45							
TT4DA 54+07							
TT4DA 54+15							
SHEET TOTALS							

ABBREVIATIONS

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

RD248621

COMPUTED BY: CJY DATE: 12/11/2013

CHECKED BY: SMK DATE: 1/2/2014

PROJECT NO.	SHEET NO.
U-2519CB	3-P

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
Sheet 22-C																											
COL2 60+37	LT	22		225.0																							
COL2 60+37	LT	22	OUT		216.2	213.3																					
COL2 60+37	RT	23		227.0																							
COL2 60+37	RT	23	22		216.7	216.2																					
L 60+37	CL	24		226.4																							
L 60+37	LT	24	23		217.2	216.7																					
L 60+37	RT	25		225.6																							
COL1 60+37	RT	25	24		217.8	217.2																					
COL1 60+37	RT	26		228.7																							
COL1 60+37	RT	26	25		228.7	218.3																		48			
COL1 60+37	RT	27		223.3																							
COL1 60+37	RT	27	25		220.3	219.3																					
COL1 60+37	RT	28		226.3																							
COL1 60+37	RT	28	27		226.3	220.3																40					
COL2 65+63	LT	29		222.6																							
COL2 65+63	LT	29	OUT		215.2	200.2																	68				
COL2 65+63	RT	30		221.4																							
COL2 65+63	RT	30	29		215.6	215.2																					
COL1 65+63	CL	31		220.6																							
COL1 65+63	RT	31	30		216.1	215.6																					
COL1 65+63	RT	32		219.4																							
COL1 65+63	RT	32	31		217.2	216.6																					
SHEET TOTALS																						40	68	48			
Totals																											
Sheet																											
Sheet 3-A																					100						
Sheet 3-B														20								36					
Sheet 3-C										88																	
Sheet 3-D										32												20	36				
Sheet 3-E									108	72		20															
Sheet 3-F										100																	
Sheet 3-G									52																		
Sheet 3-H									268				108														
Sheet 3-I									72	60		88	152														
Sheet 3-J									88	36																	
Sheet 3-K										56																	
Sheet 3-L																											
Sheet 3-M									118																		
Sheet 3-N									92	288																	
Sheet 3-O																						52					
Sheet 3-P																						40	68	48			
TOTAL									798	732		108	260	20							100	148	104	48			
SAY																											

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V 48'	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	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
Sheet 22-C																						
COL2 60+37																				1	3.8	
COL2 60+37														136								
COL2 60+37																				1	5	0.3
COL2 60+37														84								
L 60+37																				1	4.2	
L 60+37														84								
L 60+37																				1	2.8	
COL1 60+37														104								
COL1 60+37																						
COL1 60+37																						
COL1 60+37																				1		
COL1 60+37											200											
COL1 60+37																						
COL1 60+37																						
COL2 65+63																				1	2.4	
COL2 65+63																						
COL2 65+63																				1	0.8	
COL2 65+63												68										
COL1 65+63																				1		
COL1 65+63												84										
COL1 65+63																				1		
COL1 65+63											112											
SHEET TOTALS											312	152		408						9	19	0.3
Totals																						
Sheet																						
Sheet 3-A		240	244	112	332					408	284	140								22	9.13	5.25
Sheet 3-B		1200	1020	308							64				312			4.5		18	11.53	2.13
Sheet 3-C		492	176	72			20			196	244	256				60				19	9.15	2.77
Sheet 3-D		620	856	216	24	24		172			224	172						6		20	2.97	
Sheet 3-E		604	256	508	68	244				84	48			44				2.8		17	5.96	
Sheet 3-F		664	968	92	1080	176				300										21	22.71	2.67
Sheet 3-G		300								1224	128	232	848			128				22	13.17	10.28
Sheet 3-H		124								1160						1268		6		20	42.67	27.44
Sheet 3-I		276								1144	168		472							24	10.59	2.68
Sheet 3-J		16	256	16						592	380	44	72							18	1.95	
Sheet 3-K		360	336	320	180					76	108	72	140							21	4.32	
Sheet 3-L		84	152	236						1024		392								22	12.94	
Sheet 3-M		324	144	352		584				444										17	9.48	3.33
Sheet 3-N	100										128									3		
Sheet 3-O										1444	116	520	396	1460			208	8		20	1.6	
Sheet 3-P											312	152		408						9	19	0.3
TOTAL	100	5304	4408	2232	1684	1028	20	172		8096	2204	1980	1928	1912	312	1456	208	27.3		293	177.17	56.85
SAY																		28			PAY 251 LF	

STATION	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24
Sheet 22-C															
COL2 60+37									1				1		
COL2 60+37															
COL2 60+37										1			1		
COL2 60+37															
L 60+37										1			1		
L 60+37															
L 60+37										1			1		
COL1 60+37															
COL1 60+37															
COL1 60+37															
COL1 60+37										1			1		
COL1 60+37															
COL1 60+37															
COL1 60+37															
COL2 65+63										1					
COL2 65+63															
COL2 65+63										1			1		
COL2 65+63															
COL1 65+63										1			1		
COL1 65+63															
COL1 65+63											1		1		
COL1 65+63															
SHEET TOTALS									1	7	1		8		
Totals															
Sheet															
Sheet 3-A	10		5	5					2	1	4		7		
Sheet 3-B	4			4					1	13			11		
Sheet 3-C									2	15		2	9		
Sheet 3-D									1	11	5		17		
Sheet 3-E									2	12		4	10		
Sheet 3-F	3		3		1		2	2	4	11			14		
Sheet 3-G	6		5	1	2		3	3	4	7	1		8		
Sheet 3-H							4	4	1	9		1	2		
Sheet 3-I	7	1	3	3					1	12	3		11		
Sheet 3-J	6		4	2	5		6	7		4	2		4		
Sheet 3-K	9	3		6	3		7	8		4			4		
Sheet 3-L	16	2	5	9	3		3	3		3			1		
Sheet 3-M	9		6	3				3	4	4			6		
Sheet 3-N										3			2		
Sheet 3-O									5	10	5		13		
Sheet 3-P									1	7	1		8		
TOTAL	70	6	31	33	14		25	30	28	126	21	7	127		
SAY															

STATION	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.46	BDO STD. 850.10 OR 850.11	OTCB STD. 840.04 OR 840.05	D.I. BRIDGE APPROACH STD. 840.13	G.D.I. STEEL FRAME STD. 840.37	TB. D.I STD. 840.36	MANHOLE FRAME AND COVER, STD. 840.54	ADJUST CB	CONVERT CB TO JB w/MH	CONVERT CB TO DI	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.29	G.D.I. FRAME WITH GRATE STD. 840.29	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	FLOWABLE FILL, C.Y.	TEMP STEEL PLATE COVER FOR MASONRY DRAINAGE STRUCTURE	REMARKS
Sheet 22-C																							
COL2 60+37																							
COL2 60+37																							
COL2 60+37																							
COL2 60+37																							
L 60+37																							
L 60+37																							
L 60+37																							
COL1 60+37																							
COL1 60+37			1																				
COL1 60+37																							
COL1 60+37																							
COL1 60+37																							
COL1 60+37			1																				
COL1 60+37																							
COL2 65+63													1										
COL2 65+63																							
COL2 65+63																							
COL2 65+63																							
COL1 65+63																							
COL1 65+63																							
COL1 65+63																							
COL1 65+63																							
SHEET TOTALS			2										1										
Totals																							
Sheet																							
Sheet 3-A		3		1		1	1										1 @ 15"	0.206	0.399	44	1		
Sheet 3-B			1									1	3				1 @ 18"	0.1		74			
Sheet 3-C	1		1			1	1					1	7			1	3 @ 18"						
Sheet 3-D	3		3									1				2	1@18", 1@24"						
Sheet 3-E	2		1			1	1					1				1	1 @ 18"						
Sheet 3-F				1									1							267			
Sheet 3-G				1								1	4			2				63			
Sheet 3-H	2					4	4						7			1	6 @ 15"			118			
Sheet 3-I			1		1								5		1		1@18", 2@15", 2@30"						
Sheet 3-J			1								1			2			4@15", 1@18"			136			
Sheet 3-K	1		1					2		1	1						1 @ 18"	0.53	0.952	120			
Sheet 3-L													2			1							
Sheet 3-M											3		2				2 @ 15"						
Sheet 3-N													1			1				608		2	REMOVE TEMP. DRAINAGE
Sheet 3-O													7										
Sheet 3-P			2										1										
TOTAL	9	3	11	3	1	7	7	2		1	5	5	40	2	1	9	15@15" 9@18"	0.836	1.351	1430	1	2	
SAY																	1@24" 2@30"	1.5	1.5				

ABBREVIATIONS

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

COMPUTED BY: CJY DATE: 12/11/2013
CHECKED BY: SMK DATE: 1/2/2014

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2519CB	3-Q

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE 54"	CLASS III R.C. PIPE 60"	CLASS III R.C. PIPE 66"	CLASS III R.C. PIPE 72"	CLASS III R.C. PIPE 78"	CLASS III R.C. PIPE 84"	CLASS IV R.C. PIPE 54"	CLASS IV R.C. PIPE 60"	CLASS IV R.C. PIPE 66"	CLASS IV R.C. PIPE 72"	CLASS IV R.C. PIPE 78"	CLASS IV R.C. PIPE 84"	CLASS V R.C. PIPE 54"	CLASS V R.C. PIPE 60"	CLASS V R.C. PIPE 66"	CLASS V R.C. PIPE 72"	CLASS V R.C. PIPE 78"	CLASS V R.C. PIPE 84"	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE F	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	JUNCTION BOX	MANHOLE FRAME AND COVER, STD. 840.54	OTCB	JUNCTION BOX, STD. 840.31 OR 840.32	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
Sheet 12																																															
L 865+30	RT	1207	OUT		202.41	202.40		20																																							
Sheet 19																																															
L 964+65	LT	IN	2001		253.00	248.00									108																																
Sheet 20																																															
L 965+62	LT	2001																										4.52									1									
L 965+62	CL	2001	2003		248.00	244.13															228																										
L 965+62	RT	2003																										13.1									1									SEE DETAIL 2-AH
L 965+62	RT	2003	2004		244.13	241.66										116																															
L 966+72	RT	2004	OUT		241.66	241.50										32																															
L 966+72	RT	2004		254.62																								9.24		1	1																
L 970+65	RT	2011	OUT		243.55	243.50								48																																	
L 970+65	RT	2011																										3.57									1									
Sheet 22-B																																															
COL2 52+80	LT	IN	11		222.5	209.0									408																																
COL2 52+80	LT	11		223.5	209.0																							4.42							1		1									
COL2 52+80	LT	11	OUT		209.0	206.9									64																																
Sheet 24																																															
TT4REV 55+69	CL	IN	2413		248.21	246.29											56																														
TT4REV 55+69	CL	2413		253.78																							7.1	7																			SEE DETAIL 2-AJ
TT4REV 55+69	CL	2413	OUT		246.29	246.26					32																																				
Sheet 02BB																																															
Y1REV_RT 40+49	CL	IN	02BB10		261.00	257.27											120										7.1	7																			SEE DETAIL 2-AJ
Sheet 02BD																																															
PXROAD 33+00	LT	02BD05			257.32																							4.2								1										SEE DETAIL 2-AG
PXROAD 33+00	RT	02BD05	OUT		250.99	250.47				104																																					
Y2REV_LT 35+08	RT	IN	02BD08		250.15	245.05					212																																				
Y2REV_LT 35+08	LT	02BD08			252.55																						7.1	6.6									1										SEE DETAIL 2-AI
Y2REV_LT 35+08	LT	02BD08	OUT		245.05	244.00					16																																				
SHEET TOTALS								20		104	260			48	580	148	176				228						21.3	59.65	1	1					1	1	5									
SAY																											**24**	**63**																			

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

COMPUTED BY: SMK
CHECKED BY: CJY
DATE: 12/12/2013
DATE: 1/3/2014

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+25%	BORROW	WASTE
SUMMARY NO. 1							
-L- (INCLUDES PARTS OF Y23, RPC1, RPB1 & LPC1)	741+50.00	764+40.97 (BR)	15,289	0	282,421	267,132	0
-Y23-	101+73.79	129+08.28	23,852	759	10,828	0	13,784
-RPB1-	4+09.53	23+27.67	33,256	1,889	17,415	0	17,730
-RPC1-	5+22.21	20+49.94	4,246	416	16,885	13,273	1,050
-LPC1-	1+34.69	10+46.00	5,187	528	21,946	18,452	2,221
-Y5RT-	238+95.19	257+77.18	4,938	856	2,918	0	2,877
		TOTAL	86,768	4,448	352,413	298,857	37,662
SUMMARY NO. 2							
-Y5- LT	243+87.18	261+34.69	10,584	552	2,550	0	8,586
-LPA1-	1+76.49	11+30.00	8,277	551	31,870	25,857	2,785
-RPA1-	4+58.46	19+67.61	8,759	0	36,015	27,256	0
-RPD1- (INCLUDES GRADING PLAN QUAD D)	4+40.31	20+18.57	27,437	0	4,535	0	22,902
-TT1-	41+23.00	52+62.00	444	0	1,543	1,099	0
-L- (INCLUDES PARTS OF RPA1, LPA1, RPD1, TT1)	766+13.84 (BR)	796+50.00	8,917	0	265,575	256,658	0
-L-	796+50.00	821+14.63 (BR)	33,940	6,528	98,259	84,289	26,498
		TOTAL	98,358	7,601	440,347	395,159	60,771
SUMMARY NO. 3							
-L- (INCLUDES PORTIONS OF TT1, TT2)	831+15.38 (BR)	861+50.00	109,339	3,981	67,956	0	45,364
-L-	861+50.00	867+50.00	2,172	2,524	24,671	24,667	4,692
-L- (INCLUDES PORTIONS OF PR1)	867+50.00	896+00.00 (BR)	81,345	3,459	116,144	46,522	15,182
-PR1-	10+50.00	12+53.20	93	0	8	0	86
-PR1-	33+69.62	37+23.84	40	0	55	15	0
		TOTAL	192,989	9,964	208,834	71,204	65,324
SUMMARY NO. 4							
-L- (INCL. PORTIONS OF PR2A,TT4REV,RPB2,RPC2)	901+50.00 (BR)	931+50.00	127,064	3,769	60,813	0	70,021
-Y4REV-	11+00.00	11+92.00	130	0	0	0	130
-PR2A-	34+72.11	38+54.39	3	0	231	228	0
-PR2B-	35+00.00	38+55.81	11	124	325	314	124
-RPB2- (INCLUDES PORTIONS OF TT4REV)	6+99.37	14+08.17	28,578	61	3,614	0	25,025
		TOTAL	155,786	3,954	64,983	542	95,300
SUMMARY NO. 5							
-L-	931+50.00	945+00.00	341,038	0	0	0	341,038
-RPB2-	14+08.17	24+32.85	49,439	854	1,241	0	49,052
-TT4REV-	48+00.00	63+00.00	14	4,016	19,544	19,530	4,016
-TT4REV-	75+50.00	79+71.00	32	0	184	152	0
-LPC2_REV-	1+35.75	9+37.79	64,266	0	21	0	64,245
-RPC2-	5+50.37	19+29.09	132,522	850	1,093	0	132,280
-Y1REV_LT-	23+00.00	41+23.91	3,347	2,706	79,569	76,222	2,706
-Y1-	41+16.00	48+34.10 (BR)	3,293	0	13,768	10,475	0
-Y1-	50+70.35 (BR)	70+75.00	4,151	0	10,328	6,177	0
		TOTAL	598,102	8,426	125,748	112,556	593,337
SUMMARY NO. 6							
-Y1DET-	10+00.00	24+25.28	13,115	0	3,693	0	9,423
		TOTAL	13,115	0	3,693	0	9,423
SUMMARY NO. 7							
-L-	945+00.00	961+50.00	128,505	1,769	190,223	83,572	23,623
-L-	961+50.00	968+42.38 (BR)	4	2,346	198,505	198,501	2,346
-RPA2- (INCLUDES PORTIONS OF TT5)	4+87.22	21+73.22	96,310	3,129	36,038	0	63,402
-LPA2-	1+14.87	11+00.00	78,049	397	496	0	77,950
-RPD2-	5+40.80	16+17.45	19,318	0	13,720	0	5,598
-Y2-	22+00.00	25+50.00	0	0	4,625	4,625	0
-Y2REV_LT-	29+32.90	48+74.79	11,414	0	28,658	17,244	0
-PXROAD	15+21.17	20+50.12 (BR)	389	0	19,431	19,042	0
-PXROAD-	21+51.37 (BR)	36+50.00	2,168	0	48,208	46,040	0
-TT5-	10+00.00	11+80.05	122	0	0	0	0
-TT5-	36+48.68	39+92.76	49	0	56	7	0
		TOTAL	336,328	7,641	539,960	369,041	172,919

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

PROJECT REFERENCE NO. U-2519CB
SHEET NO. 3-R

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

EST. DDE = 53,810 CY
EST. SHALLOW UNDERCUT = 2,000 CY
TOTAL SHALLOW UNDERCUT = 2,000 CY
CLASS IV SUBGRADE STABILIZATION = 4,300 TONS

LOCATION	STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+25%	BORROW	WASTE
SUMMARY NO. 8							
–L–	970+49.38 (BR)	989+50.00	131,736	2,245	185,238	98,214	46,957
–TT5–	40+54.28	41+24.00	0	0	365	365	0
–TT5–	52+48.90	56+65.28	110	0	79	0	31
		TOTAL	131,736	2,245	185,682	98,579	46,988
SUMMARY NO. 9							
–L–	989+50.00	996+82.82	117,557	547	920	0	117,184
–Y3– (INCLUDES –Y3DETREV–)	11+00.00	18+46.26 (BR)	4,645	0	341	0	4,304
–Y3– (INCLUDES –Y3DETREV–)	21+24.01 (BR)	25+50.00	1,073	0	2,775	1,702	0
–TT5REV–	56+65.28	67+50.00	19	0	583	564	0
–L–	32+15.22	66+27.28	216,016	19,505	123,043	0	112,479
–TT4DA–	33+46.45	55+60.47	2,377	0	2,976	599	0
		TOTAL	341,687	20,052	130,638	2,865	233,967
SUMMARY TOTALS			1,954,979	64,331	2,052,298	1,348,793	1,315,691
LOSS DUE TO CLEARING AND GRUBBING			–25,000			25,000	
WASTE TO BE USED IN LIEU OF BORROW						–846,104	–846,104
MATERIAL FOR SHOULDER CONSTRUCTION					49,219	49,219	
ADDITIONAL UNDERCUT				16,000		20,000	16,000
SELECT MATERIAL USED TO BACKFILL UNDERCUT					–101,000	–101,000	
PROJECT TOTAL			1,929,979	80,331	2,020,517	495,908	485,587
EST. 5% TO REPL. TOP SOIL ON BORROW PIT						24,795	
GRAND TOTALS			1,929,979	80,331	2,020,517	520,703	485,587
SAY			1,930,500	80,800		521,200	
PAVEMENT STRUCTURE VOL ASPHALT			150,999				

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

COMPUTED BY: SMK
CHECKED BY: GPI
DATE: 12/12/013
DATE: 1/14/2014

PROJECT REFERENCE NO. U-2519CB
SHEET NO. 3-S

COMPUTED BY: SMK DATE: 12/11/2013
CHECKED BY: JMT DATE: 1/4/2014

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	3-T

"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

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	III	TYPE 350	B-77	M-350	CAT-1	TES			NO.	PERMITTED G	PERMITTED NG				
-LPC1-/-L-	-LPC1- 1+99.00	-L- 764+28.02 (BR)	LT/RT	343.75			-L- 764+28.02 (BR)		6	9	50		1			1	1												
-L-	762+18.36	764+37.11 (BR)	MED RT	218.75			764+37.11 (BR)		6	9	162.5		10.833				1	1											
-L-	766+07.84 (BR)	768+01.59	MED RT	193.75				766+07.84 (BR)	6	9		137.5		9.167			1	1											
-L-	794+08.29	794+89.54	RT	81.25			794+89.54		13.5	16.5	50		1			1	1												TIE TO SINGLE FACED BARRIER
-L-	818+95.88	821+14.63 (BR)	MED RT	218.75			821+14.63 (BR)		6	9	162.5		10.833				1	1											
-L-	819+20.88	821+14.63 (BR)	MED LT	193.75				821+14.63 (BR)	6	9		37.5		4			1	1											
-L-	831+15.34 (BR)	834+46.59	LT	331.25			831+15.34 (BR)		12	15	50		1			1	1												
-L-	831+15.34 (BR)	833+59.09	MED LT	243.75			831+15.34 (BR)		6	9	187.5		12.5				1	1											
-L-	831+15.41 (BR)	833+34.16	MED RT	218.75				831+15.41 (BR)	6	9		37.5		4			1	1											
-L-	846+18.75	854+25.00	RT	806.25			847+75.00	854+25.00	14	17	50		1			1			1										
-L-	882+64.14	893+45.39 (BR)	RT	1081.25			884+50.00		14	17	50		1			1	1												
-L-	890+25.60	894+50.60 (BR)	LT	425			890+50.50		14	17							1		1										
-L-	891+62.58	893+81.33 (BR)	MED RT	218.75			893+81.33 (BR)		6	9	162.5		10.833				1	1											
-L-	891+59.76	894+16.01 (BR)	MED LT	256.25				894+16.01 (BR)	6	9		37.5		4			1	1											
-L-	902+87.40 (BR)	909+31.15	LT	643.75				906+85.00	14	17	50		1			1	1												
-L-	902+52.76 (BR)	904+96.51	MED LT	243.75			902+52.76 (BR)		6	9	187.5		12.5				1	1											
-L-	902+29.67 (BR)	904+60.92	MED RT	231.25				902+29.67 (BR)	6	9		37.5		4			1	1											
-L-	942+05.36	942+61.61	MED LT	56.25				942+61.61	19	23		37.5		3			1						1						TIE TO SINGLE FACED BARRIER
-L-	942+05.36	942+61.61	MED RT	56.25			942+61.61		19	23	37.5		3				1												TIE TO SINGLE FACED BARRIER
-L-	943+82.45	944+38.70	MED LT	56.25			943+82.45		19	23	37.5		3				1						1						TIE TO SINGLE FACED BARRIER
-L-	943+82.45	944+38.70	MED RT	56.25				943+82.45	19	23		37.5		3			1												TIE TO SINGLE FACED BARRIER
-RPA2-	6+66.00	9+03.50	RT	237.5			6+66.00	9+03.50	15.5	18.5							1		1										
-L-/-RPD2-	-RPD2- 8+77.27	-L- 967+00.06 (BR)	RT	1381.25			-RPD2- 7+33.95	-L- 967+00.00 (BR)	14	17	50		1			1	1												
-L-	964+93.22	968+11.97 (BR)	MED RT	318.75			968+11.97 (BR)		6	9							1	1											
-L-	965+16.53	968+72.78 (BR)	MED LT	356.25			968+72.78 (BR)		6	9							1	1											
-L-	976+61.50	980+05.25	MED LT	343.75			976+61.50		6	9	50		1			1			1										SIGN SUPPORT
-L-	970+80.65 (BR)	973+74.40	MED LT	293.75			970+80.65 (BR)		6	9							1	1											
-L-	970+18.10 (BR)	976+68.10	MED RT	650.00				970+18.10 (BR)	6	9							1		1										GUARDRAIL EXTENDED FOR SIGN SUPPORTS
-L-	979+63.00	981+81.75	LT	218.75			979+63.00		15.5	18.5	50		1			1	1												TIE TO SINGLE FACED BARRIER
-L-	990+21.01	990+89.76	MED LT	68.75				990+89.76	28.5	32		50		3			1						1						TIE TO SINGLE FACED BARRIER
-L-	990+21.01	990+89.76	MED RT	68.75			990+89.76		28	32	50		3				1												TIE TO SINGLE FACED BARRIER
-L-	991+94.02	992+62.77	MED LT	68.75			991+94.02		29	32	50		3				1						1						
-L-	991+94.02	992+62.77	MED RT	68.75				991+94.02	29	32		50		3			1												
-L-	44+17.60	52+11.35	RT	793.75			47+33.72	52+17.03	14	21.65	50		1			1			1										
-L-	86+00.96	88+32.21 (BR)	MED RT	231.25			88+32.21 (BR)		6	9	175		11.667				1	1											
-L-	95+26.14 (BR)	98+32.39	LT	306.25			95+26.14 (BR)		12	15	50		1			1	1												
-L-	95+33.01 (BR)	97+51.76	MED LT	218.75			95+33.01 (BR)		6	9	162.5		10.833				1	1											
-COL1-	84+74.09	88+05.34 (BR)	RT	331.25			88+05.34 (BR)		17	20							1												TIES TO IMPACT ATT. ON -RP1C-
			TOTAL THIS SHEET	12131.25												11	35	15	6				4						

u2519cb_rdy_sum.dgn

COMPUTED BY: SMK DATE: 12/11/2013
CHECKED BY: JMT DATE: 1/4/2014

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	3-U

"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

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	III	TYPE 350	B-77	M-350	CAT-1	TES	AT-1		NO.	PERMITTED G	PERMITTED NG	
-COL1-	85+61.59	88+05.34 (BR)	LT	243.75			88+05.34 (BR)		6	9	187.5		12.5				1						1			
-L-	85+63.45	88+32.21 (BR)	RT	268.75			88+32.20 (BR)		12	15	187.5		12.5				1									
-COL1-/-LP1D-	-COL1- 95+61.93 (BR)	-LP1D- 35+91.20	RT	387.50				-COL1- 95+61.93 (BR)	6	9							1		1							
-COL1-	95+54.07 (BR)	96+41.57	LT	87.5				95+54.07 (BR)	6	9							1		1							
-L-	95+49.38 (BR)	96+36.88	RT	87.5				95+49.38 (BR)	12	15							1		1							
-Y1-	37+90.75	42+72.00	LT	162.50			41+75.00	37+18.75	12	14' BERM	50'		1			1			1							
-Y1-	45+77.64	48+08.89 (BR)	RT	231.25			48+08.89 (BR)		7.5	14' BERM	206.25		4.13		1	1										
-Y1-	50+96.37 (BR)	53+27.62	LT	231.25			50+96.37 (BR)		7.5	14' BERM	206.25		4.13		1	1										
-Y2REV_LT-	34+93.75	37+00.00	LT	206.25			34+93.75		8	11'						1			1							
-Y3-	16+71.42	18+27.67 (BR)	RT	156.25			18+27.67 (BR)		7.5	14' BERM	131.25		2.63		1	1										
-Y3-	21+56.58 (BR)	23+12.83	LT	156.25			21+56.58 (BR)		7.5	14' BERM	131.25		2.63		1	1										
-Y4REV-	11+92.21		CL	37.5																2						GUARDRAIL AT DEAD END
-Y5-	248+12.50	249+31.25	MED LT	118.75				249+31.25	1.5	6.4' BERM		100'		6.667			1						1			TIE TO SINGLE FACED BARRIER
-Y5-	248+12.50	249+31.25	MED RT	118.75			249+31.25		1.5	6.4' BERM	100'		6.667				1									TIE TO SINGLE FACED BARRIER
-Y5-	250+90.50	252+09.25	MED LT	118.75			250+90.50		1.5	6.4' BERM	100'		6.667				1						1			TIE TO SINGLE FACED BARRIER
-Y5-	250+90.50	252+09.25	MED RT	118.75				250+90.50	1.5	6.4' BERM		100'		6.667			1									TIE TO SINGLE FACED BARRIER
-RPA1-	8+46.52	14+15.27	RT	568.75			9+96.52	14+15.27	14	17	50		1			1			1							
-RPC2-	7+88.75	10+20.00	RT	231.25			10+20.00		11.5	14.5	50		1			1	1									TIE TO SINGLE FACED BARRIER
-COL1-/-RP1C-	-COL1- 68+56.59	-RP1C- 41+14.17 (BR)	RT	1943.75			-COL1- 71+41.66	-RP1C- 41+14.17 (BR)	14	21.65	50		1			1	1									
-RP1C-	37+82.92	41+14.17 (BR)	LT	331.25			41+14.17 (BR)		4	7	150		10				1						1			
-RP1C-	49+01.56 (BR)	52+10.17	RT	318.75			49+01.56 (BR)		12	15							1									TIE TO EXISTING GUARDRAIL ON U-2519DA
-PXROAD-	18+22.48	20+50.12 (BR)	LT	206.25	37.5			20+50.12 (BR)	8	11					1						1					SHOP CURVE AROUND DRIVE
-PXROAD-	21+51.37 (BR)	25+32.62	LT	381.25			21+51.37 (BR)		8	11					1	1										
-PXROAD-	18+18.87	20+50.12 (BR)	RT	231.25			20+50.12 (BR)		8	11						1	1									
-PXROAD-	21+51.37 (BR)	25+32.62	RT	381.25				21+51.37 (BR)	8	11						1	1									
-RP1B-/-COL2-	-RP1B- 42+71.95 (BR)	-COL2- 61+43.39	RT/LT	2512.50			-RP1B- 42+71.95 (BR)	-COL2- 61+43.39	12	15							1		1							
-COL2-	50+04.81	54+98.56	LT	493.75			53+98.56	50+07.81	14	17	50		1			1			1							
-RP1B-	39+82.34	41+26.09 (BR)	RT	143.75			41+26.09 (BR)		10	13	50		1			1	1									
-RP1B-	39+77.56	41+21.31 (BR)	LT	143.75			41+21.31 (BR)		4	7	50		1			1	1									
-RP1DB-	44+41.67	47+93.07 (BR)	LT	356.25			47+93.07 (BR)		12	15							1									TIE TO EXISTING GUARDRAIL ON U-2519DA
-RP1DB-	44+62.05	47+93.07 (BR)	RT	331.25			47+93.07 (BR)		12	15							1						1			TIE TO EXISTING GUARDRAIL ON U-2519DA
-L-	34+78.75	36+72.50	RT	193.75			36+60.00		14	17	50		1			1			1							SIGN SUPPORT GUARDRAIL
-L-	33+03.75	36+72.50	MED RT	368.75			36+60.00		6	9	50		1			1			1							SIGN SUPPORT GUARDRAIL
-L-	61+18.75	63+12.50	RT	193.75			63+00.00		14	17	50		1			1			1							SIGN SUPPORT GUARDRAIL
-L-	59+43.75	63+12.50	MED RT	368.75			63+00.00		6	9	50		1			1			1							SIGN SUPPORT GUARDRAIL
-L-	77+68.75	81+37.50	MED RT	368.75			81+37.50		6	9	50		1			1			1							SIGN SUPPORT GUARDRAIL
-COL1-	127+72.00	131+28.25	LT	356.25			131+28.25		6	9	50		1			1			1							SIGN SUPPORT GUARDRAIL
-COL1-	127+72.00	131+28.25	RT	356.25			131+28.25		6	9	50		1			1			1							SIGN SUPPORT GUARDRAIL
-L-	165+98.25	167+79.50	RT	181.25			167+79.50		12	15	50		1			1			1							SIGN SUPPORT GUARDRAIL
-L-	114+91.25	116+72.50	RT	181.25			116+60.00		12	15	50		1			1			1							SIGN SUPPORT GUARDRAIL
			TOTAL THIS SHEET	14193.75	37.5										6	24	20		17	2	1		5			
			TOTAL SHEET 1	12131.25												11	35	15	6				4			
			COMBINED TOTAL	26,325											6	35	55	15	23	2	1		9			
	LESS ANCHOR DEDUCTIONS																									
	III	6 @ 18.75'	=	-112.50'																						
	TYPE 350	35 @ 50'	=	-1750'																						
	B-77	55 @ 18.75'	=	-1031.25'																						
	M-350	15 @ 37.5'	=	-562.50'																						
	CAT-1	23 @ 6.25'	=	-143.75'																						
	TES	2 @ 0'	=	0'																						
TOTAL				22,725.00	37.5'										6	35	55	15	23	2	1		9			
			SAY	23,000'	37.5'																					
	(25 ADDITIONAL GUARDRAIL POSTS)																									

u2519cb_rdy_sum.dgn

COMPUTED BY: SMK DATE: 12/11/2013
CHECKED BY: JMT DATE: 1/4/2014

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	3-V

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-Y1-	36+70.00	41+40.00	RT	2110.29
-Y1-	45+16.00	46+70.00	RT	372.44
-Y1-	45+17.00	54+69.00	LT	5332.09
-Y2REV_LT-	44+41.00	49+13.00	LT	4003.80
-L-	774+80.00	775+05.00	CL	2064.75
-L-	904+42.00	908+89.00	LT	1053.75
-Y1-	54+58.00	57+54.00	RT	4880.13
-RPB2-	19+70.00	22+91.00	LT	149.44
-L-	907+65.00	940+13.00	CL	8693.43
-L-	940+42.00	963+84.00	CL	6626.62
-Y1DET-	10+00.00	21+46.00	CL	3466.69
-Y3DET-	10+44.00	27+65.00	CL	7966.17
-Y3-	17+50.00	23+75.00	CL	5072.22
-TT4REV- CROSSING -Y1-			CL	106.15
-TT5- CROSSING -Y2-			CL	136.71
-TT5REV- CROSSING -Y3-			CL	157.36
-PXROAD-	15+48.00	16+28.00	LT	99.91
-PXROAD-	16+56.00	17+83.00	LT	289.59
-PXROAD-	18+54.00	18+84.00	LT	13.10
-PXROAD-	19+85.00	20+12.00	LT	53.43
-PXROAD-	20+19.00	20+46.00	LT	40.56
-PXROAD-	25+77.00	27+32.00	RT	1322.81
-PXROAD-	16+50.00	17+00.00	CL	251.75
-Y5-	244+00.61	249+05.24	RT	471.67
-Y5-	251+05.18	256+12.38	LT	481.94
-PXROAD- DET	17+99.39	20+56.91	LT	692.23
-PXROAD- DET	20+56.91	21+35.70	LT	231.52
-PXROAD- DET	21+35.70	22+25.92	LT	156.55
			TOTAL:	56,297.12
			SAY:	56,500.00

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-PXROAD-	17+50	20+50.00	CL	1858.92
-Y1-	41+40.00	44+00.00	CL	1710.73
			TOTAL:	3569.65
			SAY:	3570.00

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	STATION	STATION	MONTHS
-RPC1- BRIDGE #16	41+14.17	49+01.57	1

CABLE GUIDERAIL SUMMARY

SURVEY LINE	STATION	STATION	LENGTH	END ANCHOR UNIT	INTERMEDIATE ANCHOR UNIT	COMMENTS
-L-	766+56.42	818+76.30	5219.88	2	2	
-L-	833+78.75	891+22.99	5744.24	2	2	
-L-	905+17.96	941+63.84	3645.88	2	1	
-L-	944+79.70	964+73.67	1993.97	2	-	
-L-	973+92.05	989+83.20	1591.15	2	-	
-L-	992+99.41	996+86.94	387.53	2	-	
-L-	32+15.22	88+01.35	5586.13	1	2	
-L-	95+83.46	103+01.82	718.36	1	-	
		SUBTOTAL:	24,887.14	14	7	
		LESS TERMINAL ANCHOR UNITS - 14 @ 25'	- 350			
		GRAND TOTALS:	24,537.14			
		SAY:	25,000	14	7	

10 ADDITIONAL GUIDERAIL POSTS

4" CONCRETE SIDEWALK SUMMARY

SURVEY LINE	STATION	STATION	LENGTH	WIDTH	SQUARE YARDS
YADKIN ROAD					
-Y3- LT	17+98.00	18+55.00	57.00	5	31.67
-Y3- LT	21+77.00	22+83.00	106.00	5	58.89
CLIFFDALE ROAD					
-Y5- RT	232+85.00	243+25.00	1040.00	5	577.78
-Y5- LT	232+85.00	243+18.00	1033.00	5	573.89
-Y5- RT	243+78.00	255+02.00	1124.00	5	624.44
-Y5- LT	243+81.00	245+12.00	131.00	5	72.78
-Y5- LT	245+23.00	256+541.00	1131.00	5	628.33
-Y5- RT	255+15.00	256+59.00	144.00	5	80.00
-Y5- LT	257+14.00	261+35.00	421.00	5	233.89
-Y5- RT	257+17.00	261+30.00	413.00	5	229.44
				TOTAL:	3111.11
				SAY:	3120

CONCRETE EXPRESSWAY GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- RT	766+24.00	766+61.00	37.00
		TOTAL:	37.00
		SAY:	40.00

SUMMARY OF SUBSURFACE DRAINAGE

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	DRAIN TYPE* UD/BD/SD	LF
-RPC2-	0+00.00	19+00.00	LT/RT	SD	1,900
-PR1-	26+00.00	32+00.00	LT/RT	SD	600
-PR2A-	14+00.00	20+50.00	LT/RT	SD	650
-PR2B-	35+00.00	37+50.00	LT/RT	SD	250
-TT1-	44+00.00	46+00.00	LT/RT	SD	200
-TT5-	12+00.00	15+00.00	LT/RT	SD	300
		CONTINGENCY		SD	11,500
				TOTAL:	15,400

*UD = UNDERDRAIN
*BD = BLIND DRAIN
*SD = SUBSURFACE DRAIN

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- LT	831+40.00	831+60.00	20.00
-L- RT	831+40.00	831+60.00	20.00
-L- RT	47+24.00	51+84.00	460.00
-COL2- LT	50+10.00	54+49.00	439.00
-COL2- LT	61+48.00	69+18.00	770.00
-RP1DB- RT	76+11.00	82+09.00	598.00
-COL1- RT	71+52.00	79+67.00	815.00
-L- RT	846+68.75	854+23.00	754.3
-L- RT	884+50.00	893+21.00	871.00
-L- LT	902+78.00	902+96.00	18.00
-L- RT	902+17.00	902+41.00	24.00
-RP1DB- LT	44+41.00	47+69.00	328.00
-RP1DB- LT	64+17.00	64+27.00	10.00
-RP1C- RT	32+80.00	40+90.00	810.00
-RPD2- LT	0+00.00	8+00.00	800.00
-RPA2- RT	6+66.00	8+90.00	224.00
-L- RT	961+96.00	966+77.00	481.00
-COL1- RT	87+10.00	87+81.00	71.00
-RP1C- RT	49+25.00	52+10.00	285.00
-PXROAD- LT	18+50.00	19+90.00	140.00
-PXROAD- LT	22+25.00	24+80.00	255.00
ACP			250.00
		TOTAL:	8443.3
		SAY:	8450

CONCRETE VALLEY GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-LP1D- LT	36+90.00	38+48.00	158.00
		TOTAL:	158.00
		SAY:	160.00

12/06/07
7/28/2014 10:56:25 AM
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PROJ. REFERENCE NO.	SHEET NO.
U-2519CB	3-W

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RIGHT OF WAY PARCEL INDEX

PARCEL NUMBER	SHEET NUMBER	PROPERTY OWNER NAME
1	4,5,27,28,29	JULIAN & W.T. SAUNDERS
2	5–26,30,31, 2–N,2–Q,2–R	FT. BRAGG MILITARY RESERVATION
3	12,13	JOHN H. McILWINEN, JR. HEIRS
4	25	J & B DEVELOPMENT
5	25	LARRY WILSON & WIFE, AE IN WILSON
6	25	JAMES TRAVIS BROWN & WIFE, LINDA LEE
7	25	LUCIOUS WASHINGTON & WIFE, JANNIE M.
8	25	JAE Y. YI & WIFE, SHANA B. YI
9	25	JOEL NADEAU & WIFE, DOROTHY R.
17		NOT USED
18	25,26	CECIL B. HEAVNER
19	2–R	CECIL WORSLEY JR.
20	2–R	RUPERT CREECH JR.
21	2–R	ROBERT A. BELL & JAMES R. BELL
22	2–R	LENNON FAMILY LIMITED

7/2/99

REVISIONS

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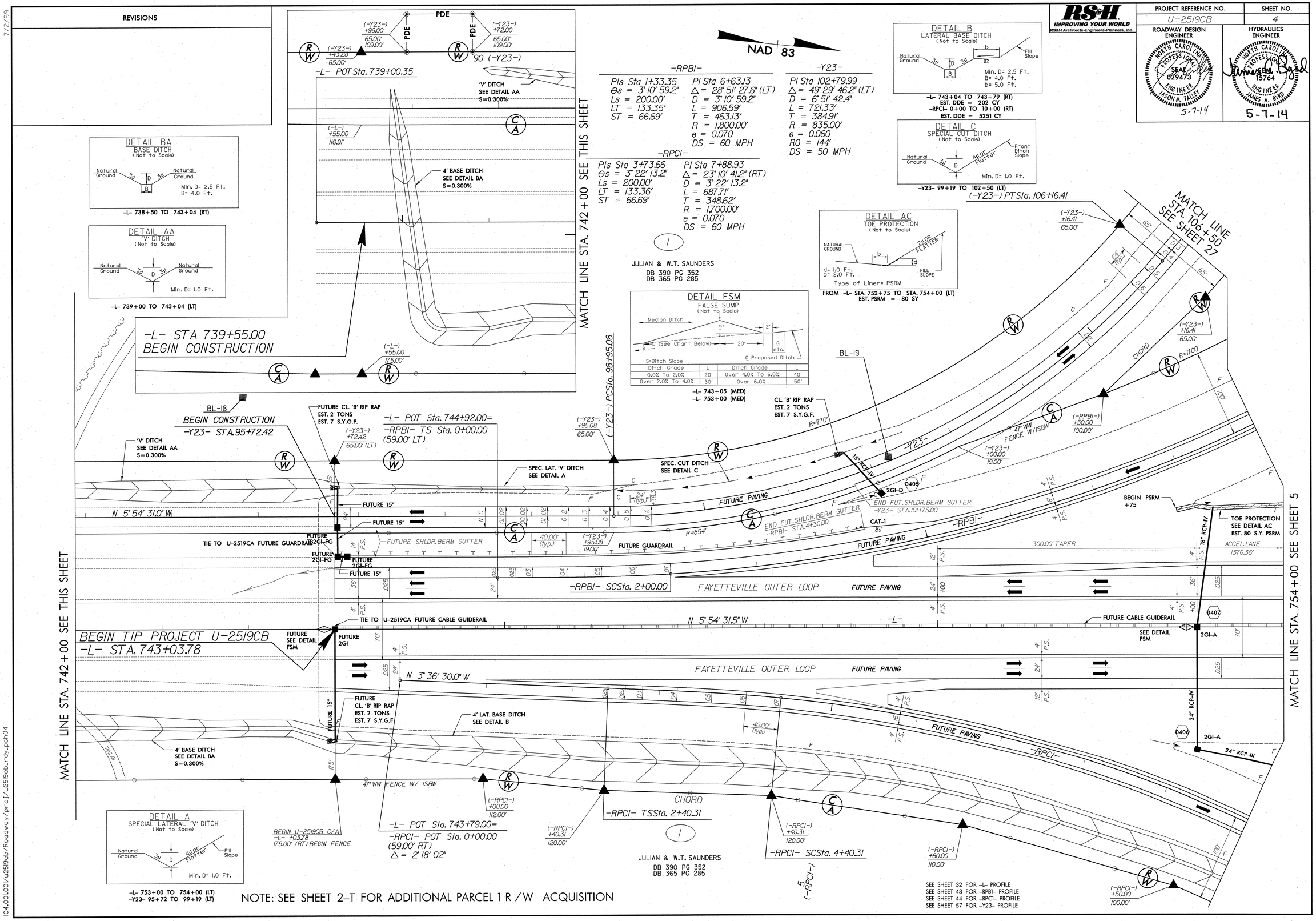
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	4

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



NOTE: SEE SHEET 2-T FOR ADDITIONAL PARCEL 1 R/W ACQUISITION

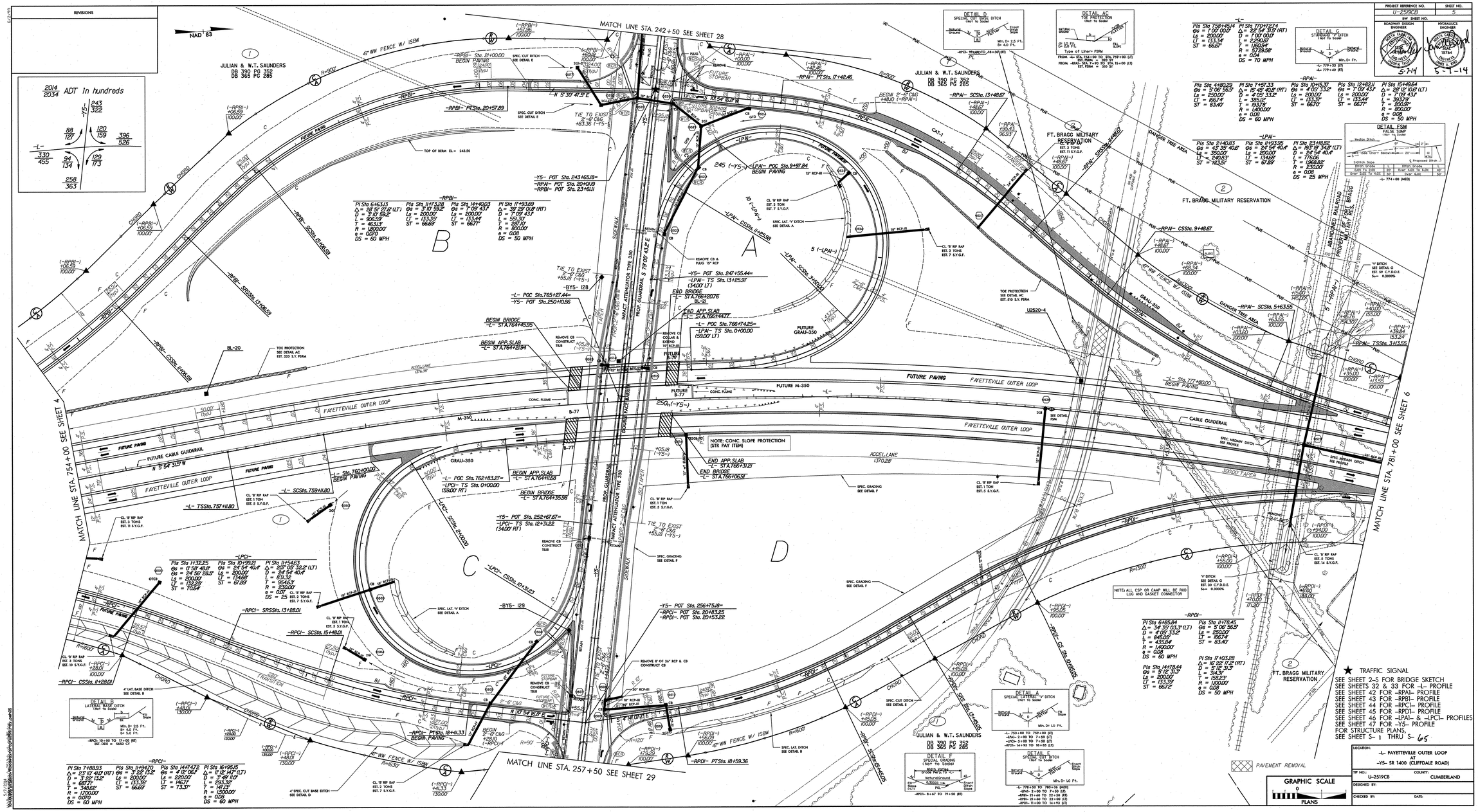
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh04

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 032824 ENGINEERING — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEERING — 5-7-14

REVISIONS



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REVISIONS

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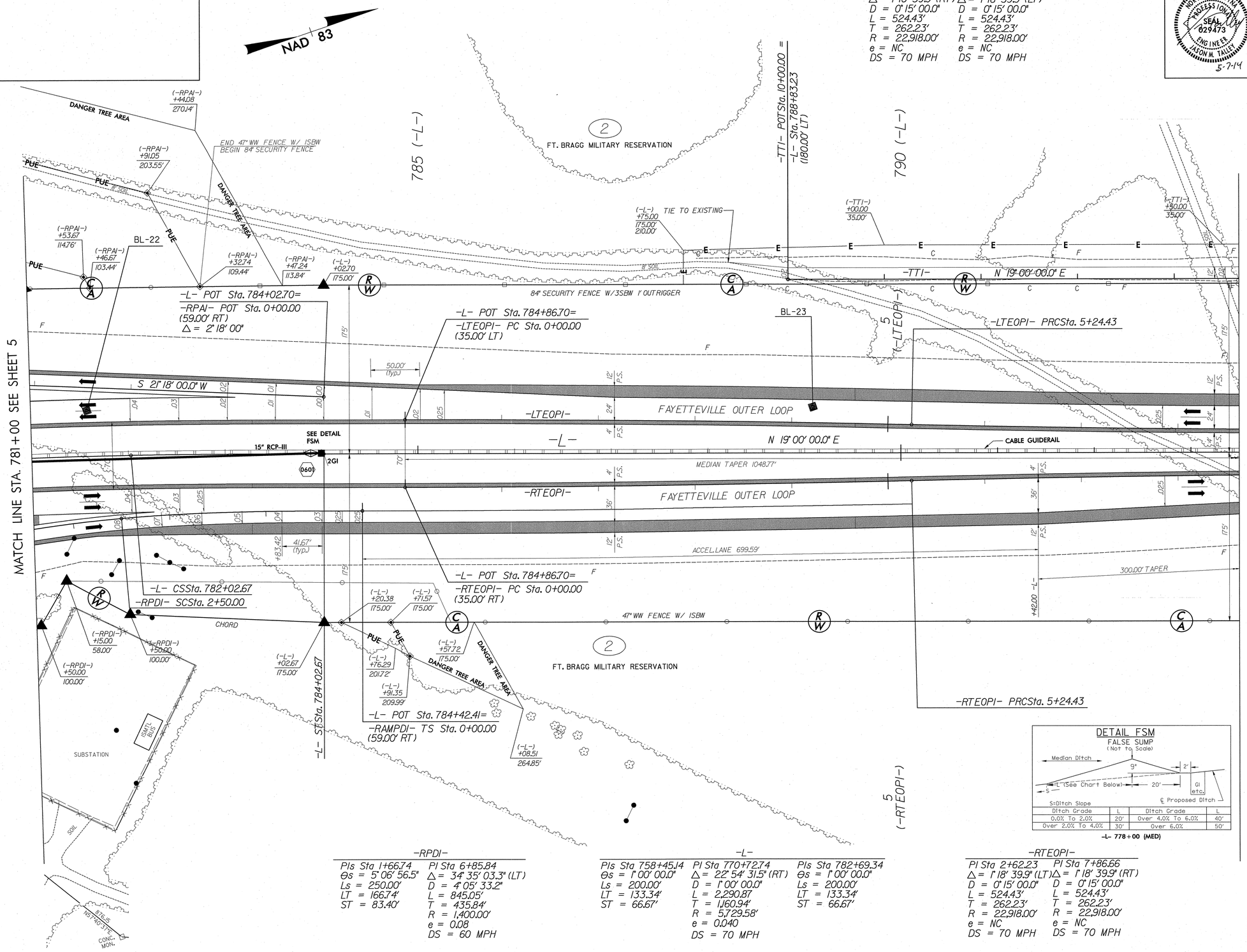
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	6

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 JASON W. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15764 JAMES A. BYRD 5-7-14



DETAIL FSM
FALSE SUMP
(Not to Scale)

S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 778+00 (MED)

-LTEOPI-

PI Sta 2+62.23	PI Sta 7+86.66
Δ = 1° 18' 39.9" (RT)	Δ = 1° 18' 39.9" (LT)
D = 0° 15' 00.0"	D = 0° 15' 00.0"
L = 524.43'	L = 524.43'
T = 262.23'	T = 262.23'
R = 22,918.00'	R = 22,918.00'
e = NC	e = NC
DS = 70 MPH	DS = 70 MPH

-RPDI-

PIs Sta 1+66.74	PI Sta 6+85.84
Θs = 5° 06' 56.5"	Δ = 34° 35' 03.3" (LT)
Ls = 250.00'	D = 4° 05' 33.2"
LT = 166.74'	L = 845.05'
ST = 83.40'	T = 435.84'
	R = 1,400.00'
	e = 0.08
	DS = 60 MPH

-L-

PIs Sta 758+45.14	PI Sta 770+72.74	PIs Sta 782+69.34
Θs = 1° 00' 00.0"	Δ = 22° 54' 31.5" (RT)	Θs = 1° 00' 00.0"
Ls = 200.00'	D = 1° 00' 00.0"	Ls = 200.00'
LT = 133.34'	L = 2,290.87	LT = 133.34'
ST = 66.67'	T = 1,160.94'	ST = 66.67'
	R = 5,729.58'	
	e = 0.040	
	DS = 70 MPH	

-RTEOPI-

PI Sta 2+62.23	PI Sta 7+86.66
Δ = 1° 18' 39.9" (LT)	Δ = 1° 18' 39.9" (RT)
D = 0° 15' 00.0"	D = 0° 15' 00.0"
L = 524.43'	L = 524.43'
T = 262.23'	T = 262.23'
R = 22,918.00'	R = 22,918.00'
e = NC	e = NC
DS = 70 MPH	DS = 70 MPH

SEE SHEET 33 FOR -L- PROFILE
SEE SHEET 42 FOR -RPAI- PROFILE
SEE SHEET 45 FOR -RPDI- PROFILE
SEE SHEET 62 FOR -TTI- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh06

7/2/99

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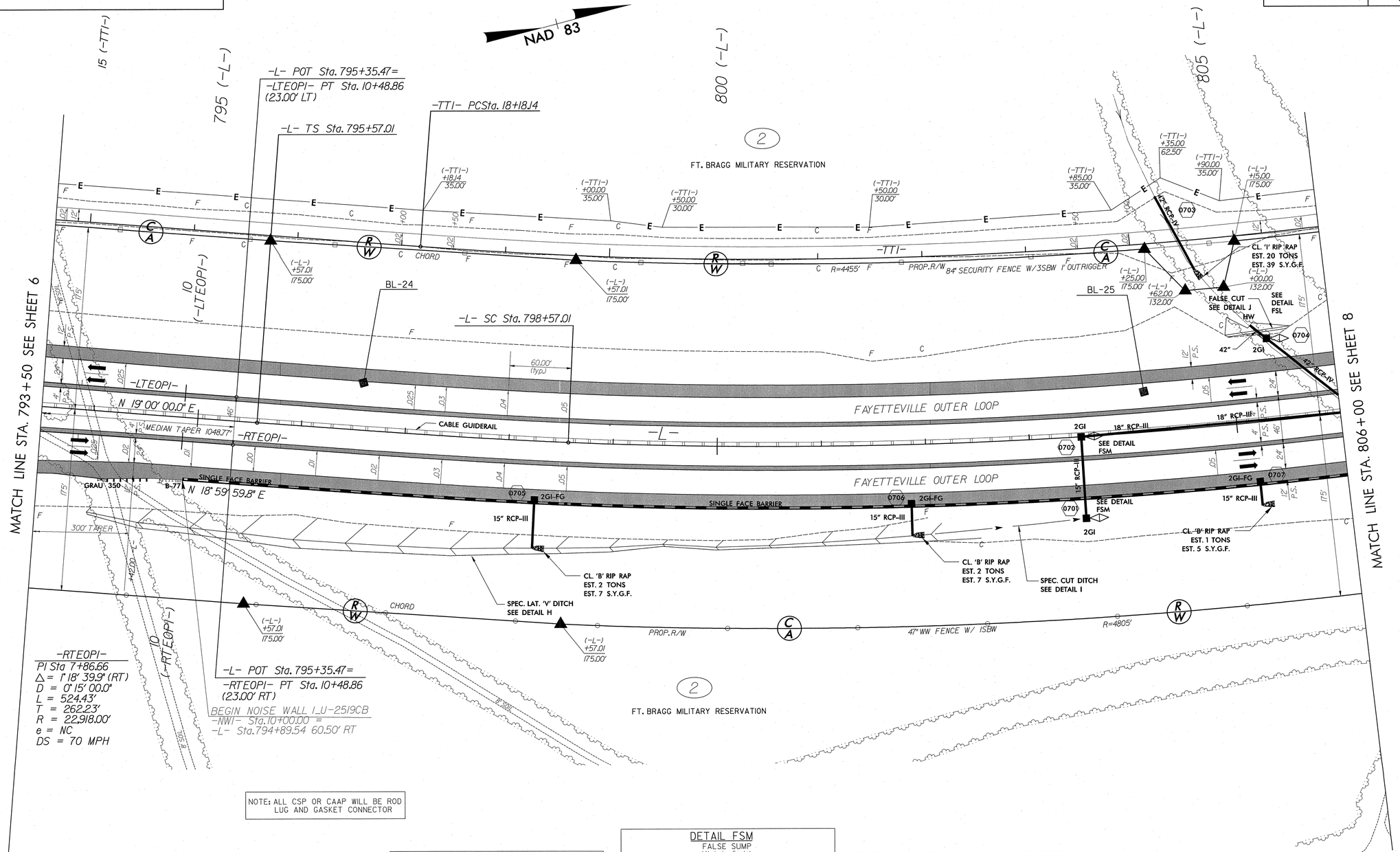
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 16704 ENGINEER JAMES A. BYRD 5-7-14

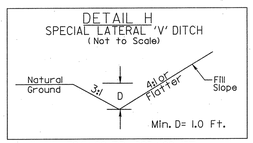
-LTEOPI-
PI Sta 7+86.66
Δ = 1° 18' 39.9" (LT)
D = 0° 15' 00.0"
L = 524.43'
T = 262.23'
R = 22,918.00'
e = NC
DS = 70 MPH

-L-
PIs Sta 797+57.02 PI Sta 815+21.68
Θs = 1° 51' 22.4" Δ = 39° 33' 04.0" (LT)
Ls = 300.00' D = 1° 14' 15.0"
LT = 200.01' L = 3,196.08
ST = 100.01' T = 1,664.67'
R = 4,630.00'
e = 0.050
DS = 70 MPH

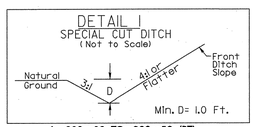
-TTI-
PI Sta 30+17.35
Δ = 30° 04' 02.0" (LT)
D = 1° 16' 59.6"
L = 2,343.11'
T = 1,199.20'
R = 4,465.00'



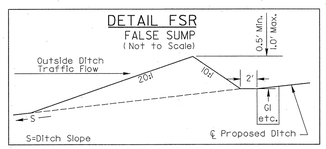
NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR



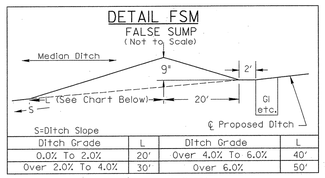
-L- 794+00 TO 802+00 (RT)



-L- 802+00 TO 803+50 (RT)

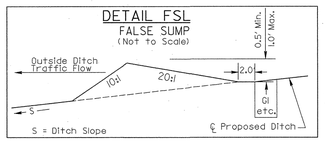


-L- 803+50 (RT)

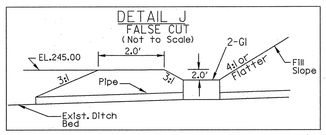


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 803+50 (MED)



-L- 805+36 (LT)



-L- 804+97 TO 805+60 (LT)

SEE SHEETS 33 & 34 FOR -L- PROFILE
SEE SHEET 62 & 63 FOR -TTI- PROFILE

104.001.001/U2519cb/Roadway/proj/u2519cb_rdy.psh07

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY 5-7-14

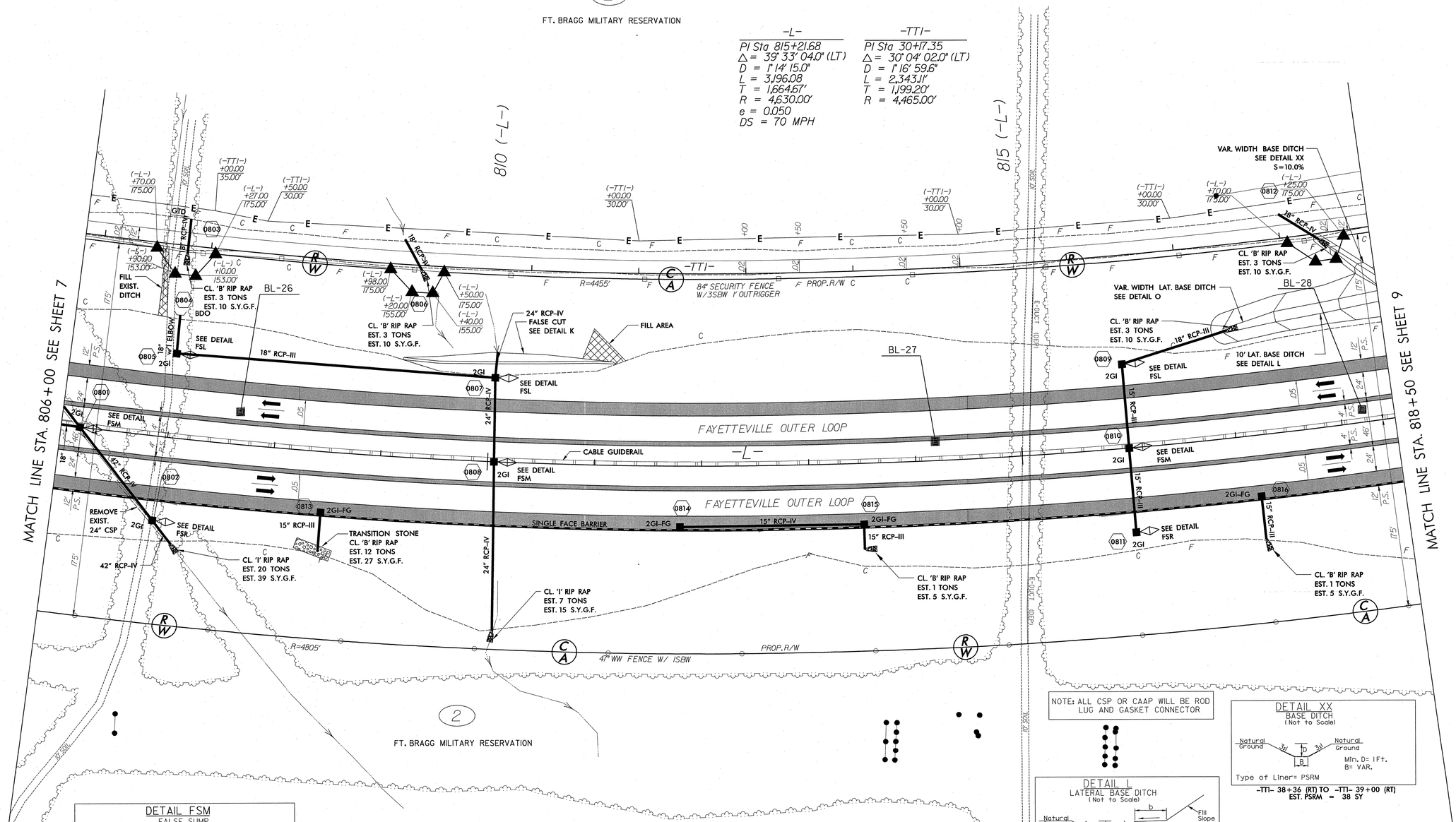
NORTH CAROLINA PROFESSIONAL SEAL 19164 ENGINEER JAMES A. BYRD 5-7-14

NAD 83

FT. BRAGG MILITARY RESERVATION

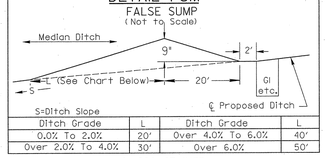
-L-
PI Sta 815+21.68
Δ = 39° 33' 04.0" (LT)
D = 1° 14' 15.0"
L = 3,196.08
T = 1,664.67'
R = 4,630.00'
e = 0.050
DS = 70 MPH

-TTI-
PI Sta 30+17.35
Δ = 30° 04' 02.0" (LT)
D = 1° 16' 59.6"
L = 2,343.11'
T = 1,199.20'
R = 4,465.00'



NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

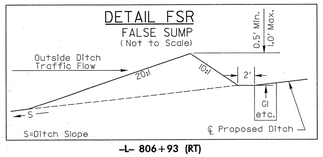
DETAIL FSM
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

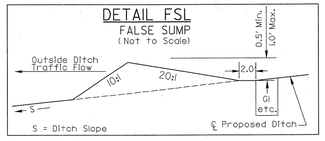
-L- 806+17 (MED)
-L- 810+06 (MED)
-L- 816+00 (MED)

DETAIL FSR
FALSE SUMP
(Not to Scale)



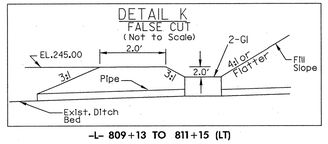
-L- 806+93 (RT)
-L- 816+00 (RT)

DETAIL FSL
FALSE SUMP
(Not to Scale)



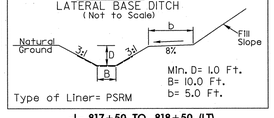
-L- 807+00 (LT)
-L- 810+04 (LT)
-L- 816+00 (LT)

DETAIL K
FALSE CUT
(Not to Scale)



-L- 809+13 TO 811+15 (LT)

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 10.0 Ft.
b= 5.0 Ft.
Type of Liner= PSRM

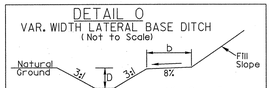
-L- 817+50 TO 818+50 (LT)
EST. DDE = 96 CY
EST. PSRM = 111 SY

DETAIL XX
BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
B= VAR.
Type of Liner= PSRM

-TTI- 38+36 (RT) TO -TTI- 39+00 (RT)
EST. PSRM = 38 SY

DETAIL O
VAR. WIDTH LATERAL BASE DITCH
(Not to Scale)



Min. D= - Ft.
B= * Ft.
b= 5.0 Ft.

-L- 817+00 TO 817+50 (LT)
EST. DDE = 41 CY
* B VARIES (2' TO 10')

SEE SHEET 34 FOR -L- PROFILE
SEE SHEET 63 & 64 FOR -TTI- PROFILE

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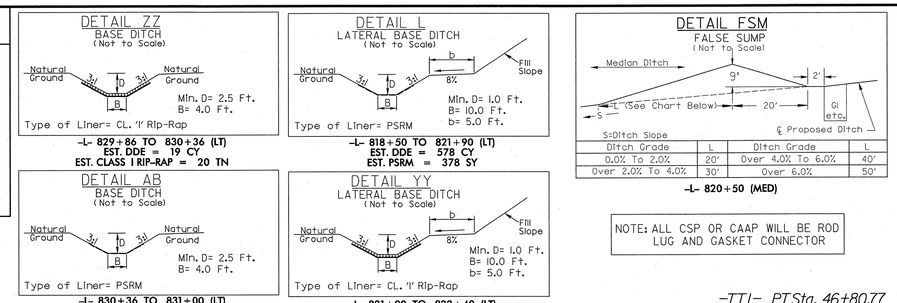
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	9

RS&H IMPROVING YOUR WORLD — RS&H Architects-Engineers-Planners, Inc.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18764 ENGINEER JAMES A. BYRD — 5-7-14



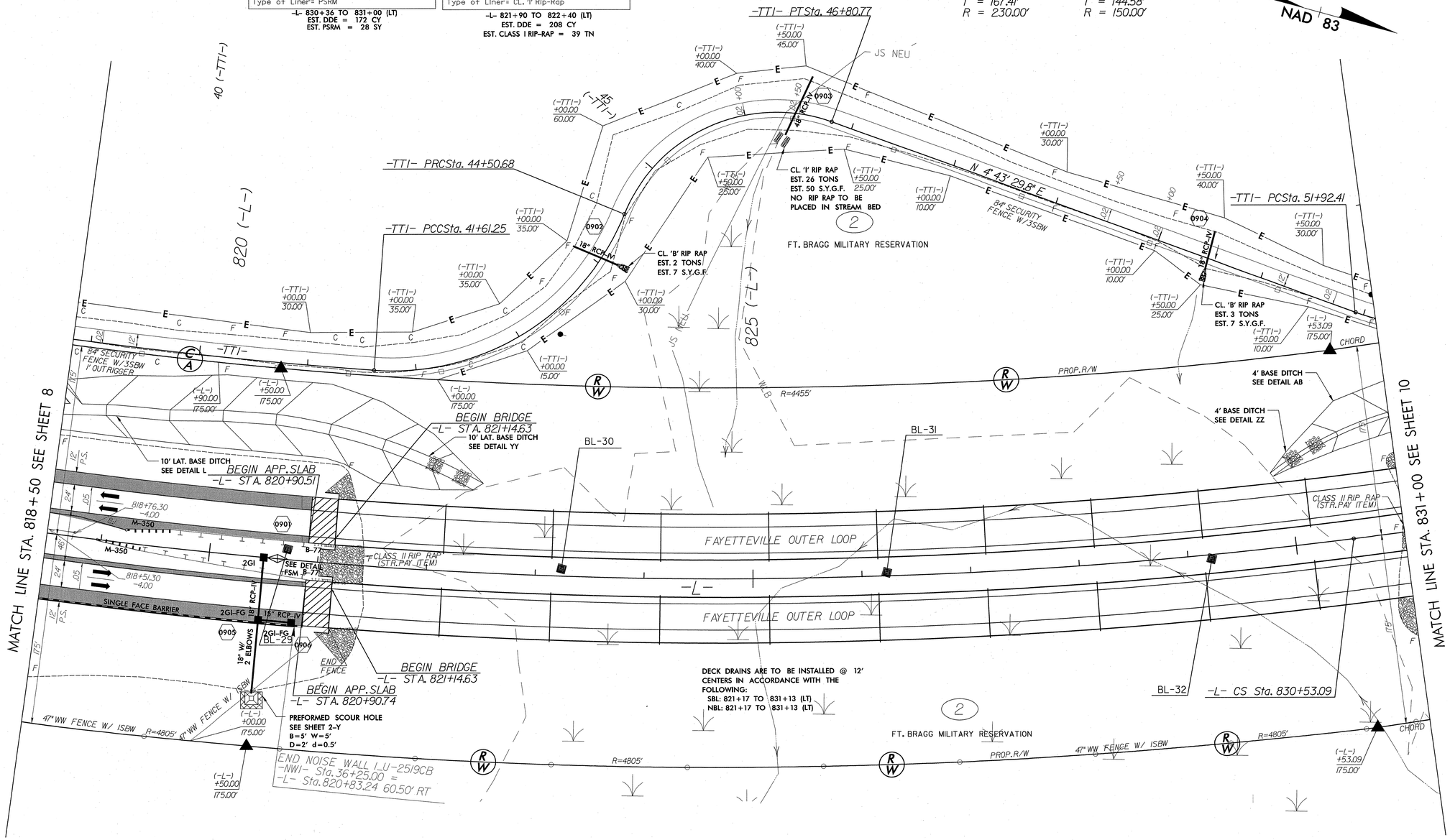
NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

-L-

PIs Sta 831+53.10	PI Sta 815+21.68
Θs = 1° 51' 22.4"	Δ = 39° 33' 04.0" (LT)
Ls = 300.00'	D = 1° 14' 15.0"
LT = 200.01'	L = 3,196.08
ST = 100.01'	T = 1,664.67'
	R = 4,630.00'
	e = 0.050
	DS = 70 MPH

-TTI-

PI Sta 43+28.66	PI Sta 45+95.25
Δ = 72° 05' 56.3" (LT)	Δ = 87° 53' 28.1" (RT)
D = 24° 54' 40.4"	D = 38° 11' 49.9"
L = 289.42'	L = 230.10'
T = 167.41'	T = 144.58'
R = 230.00'	R = 150.00'



SEE SHEETS 34 & 35 FOR -L- PROFILE
SEE SHEET 64 FOR -TTI- RPOFILE
SEE SHEET 2-S FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEETS S-66 THRU S-171

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh09

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REVISIONS

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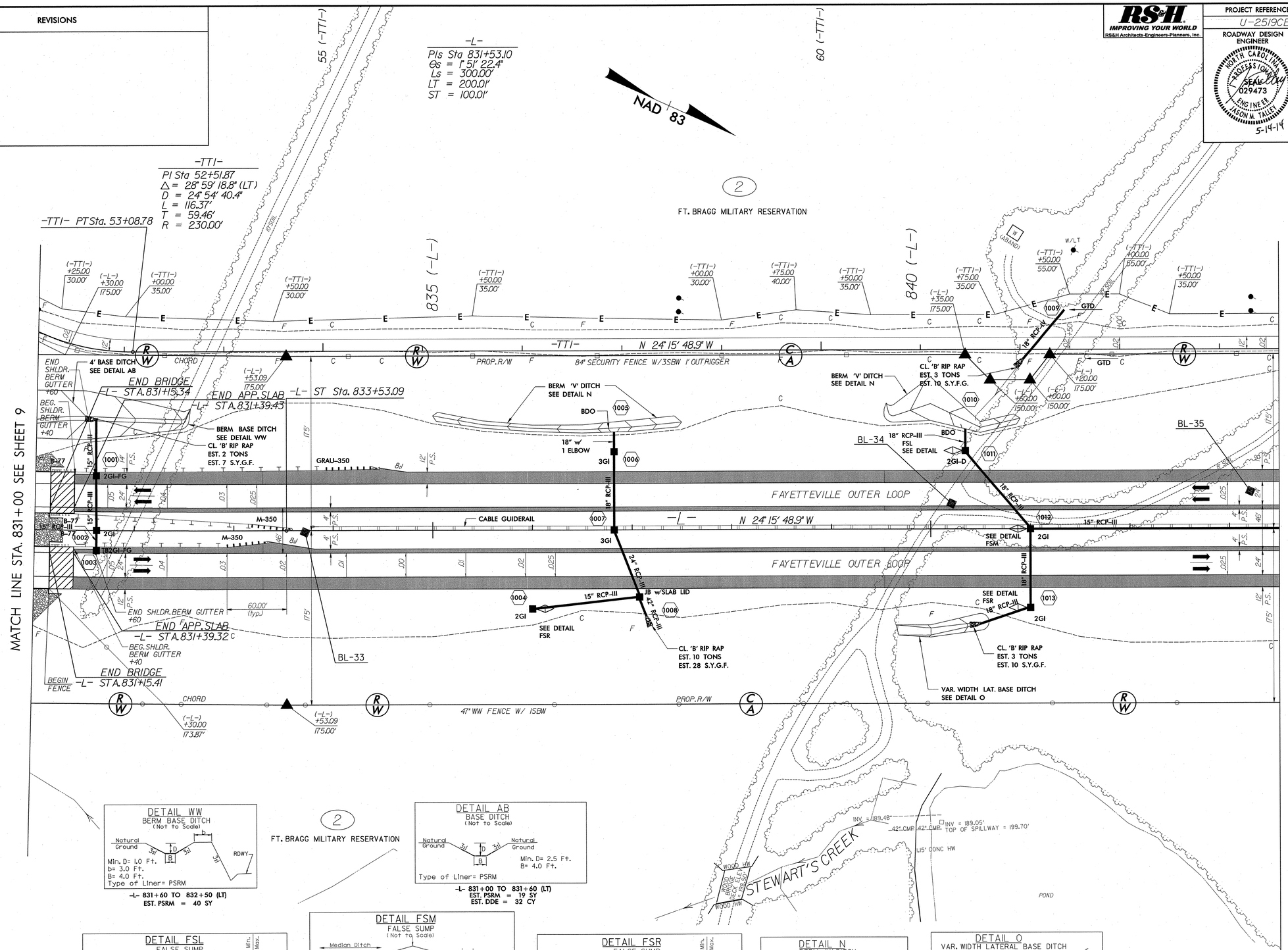
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-14-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-14-14



104.00.001/U2519cb/Roadway/proj/U2519cb_rdy.pshl0

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REVISIONS

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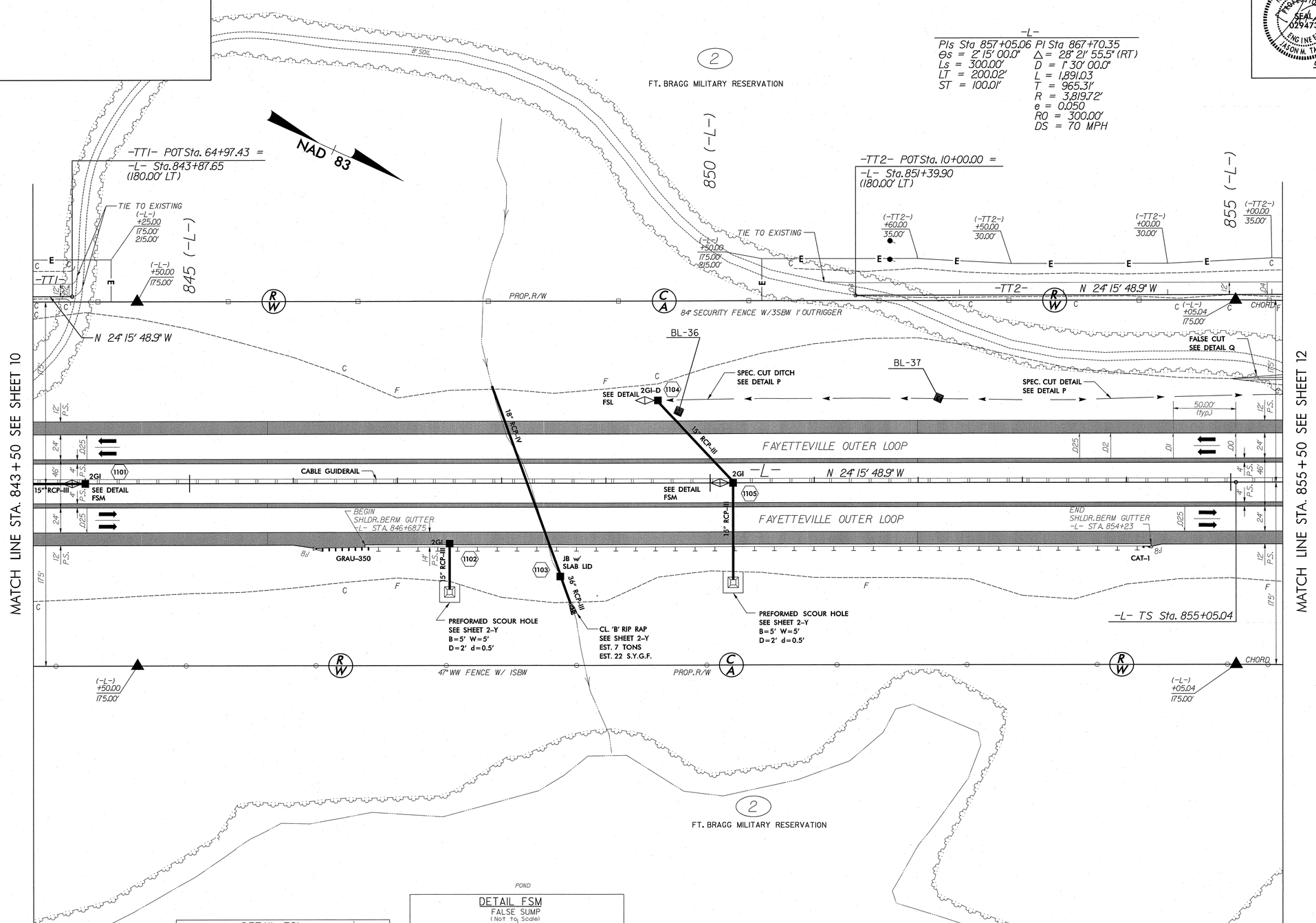
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-14-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
5-14-14



SEE SHEETS 35 & 36 FOR -L- PROFILE
SEE SHEET 64 FOR -TT1- PROFILE
SEE SHEET 65 FOR -TT2- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pshll

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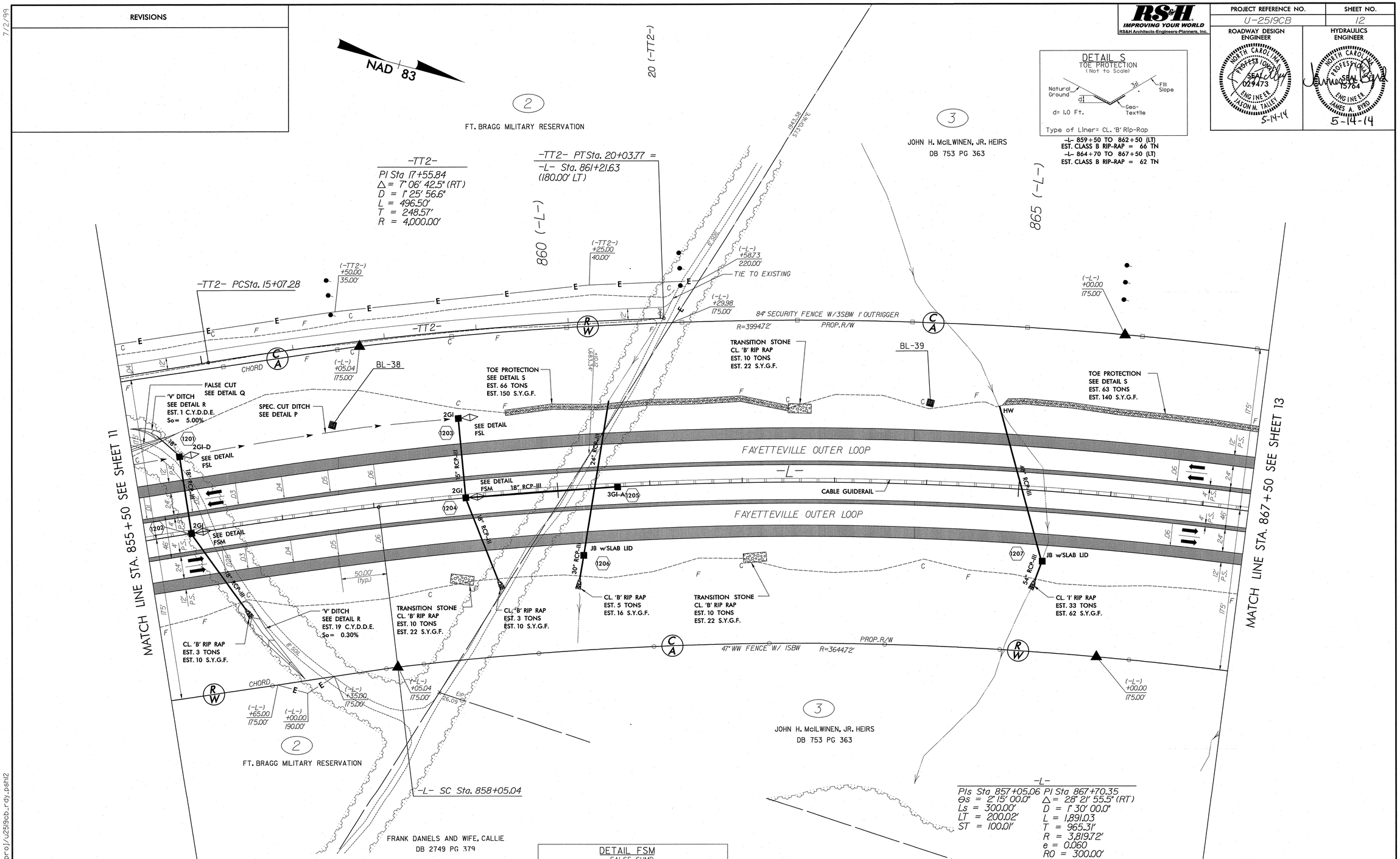
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 JASON M. TALLEY 5-14-14

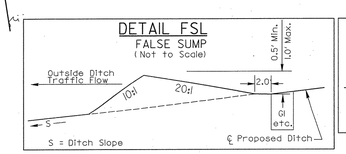
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15764 JAMES A. BYRD 5-14-14



DETAIL S
TOE PROTECTION
(Not to Scale)

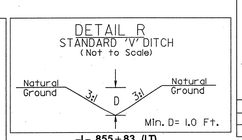
-L- 859+50 TO 862+50 (LT)
EST. CLASS B RIP-RAP = 66 TN
-L- 864+70 TO 867+50 (LT)
EST. CLASS B RIP-RAP = 62 TN

DETAIL FSL
FALSE SUMP
(Not to Scale)



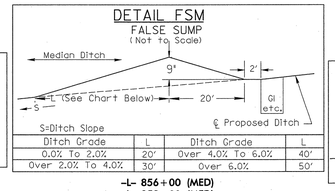
-L- 856+00 (LT)
-L- 859+00 (LT)

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



-L- 855+83 (LT)
-L- 856+43 (RT)

DETAIL FSM
FALSE SUMP
(Not to Scale)

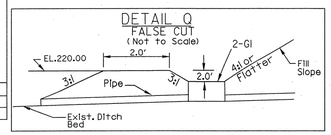


S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

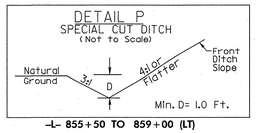
-L- 856+00 (MED)
-L- 859+00 (MED)

DETAIL Q
FALSE CUT
(Not to Scale)



-L- 855+00 TO 855+95 (LT)

DETAIL P
SPECIAL CUT DITCH
(Not to Scale)



-L- 855+50 TO 859+00 (LT)

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 65 FOR -TT2- PROFILE

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REVISIONS

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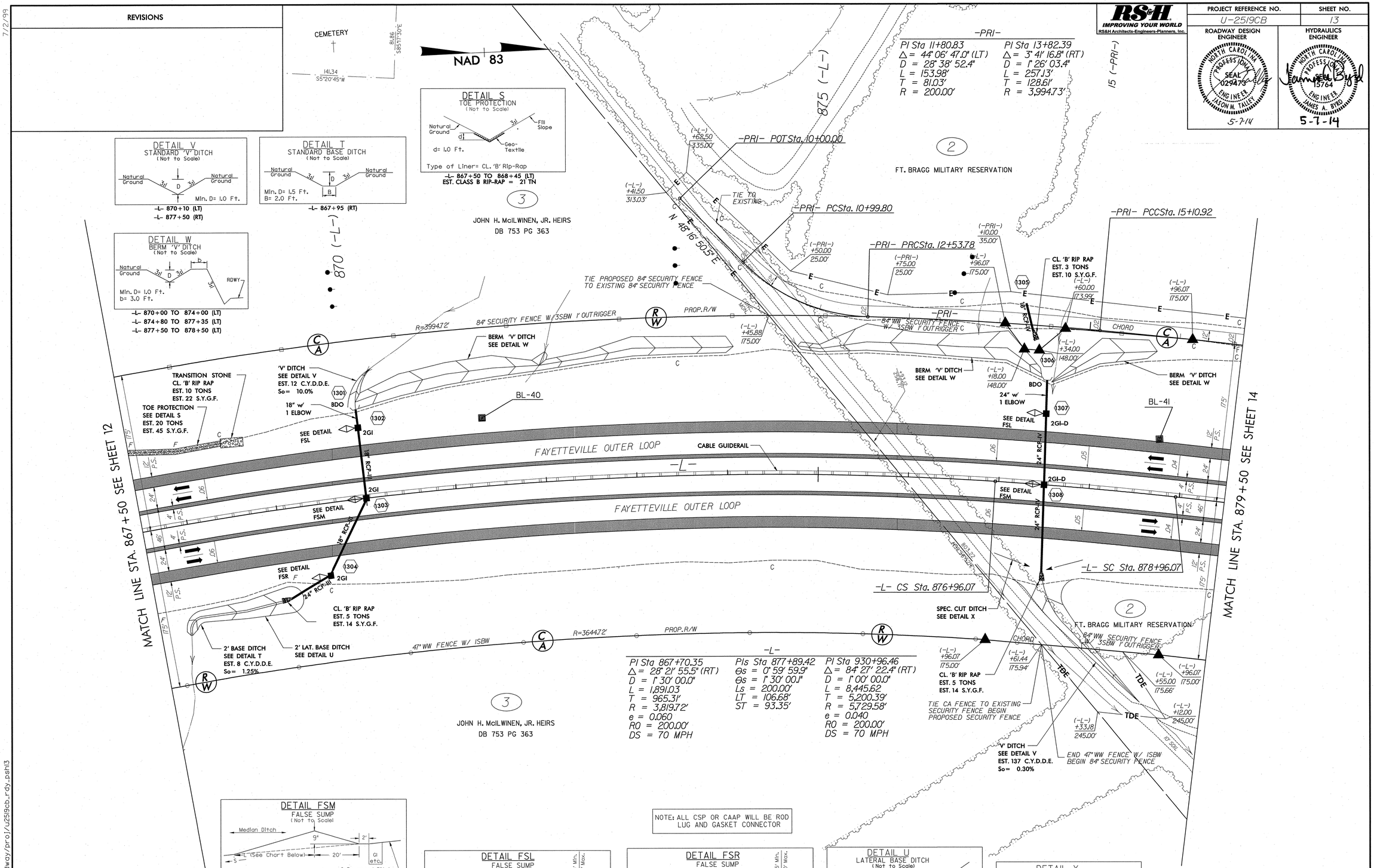
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



SEE SHEETS 36 & 37 FOR -L- PROFILE
SEE SHEET 59 FOR -PRI- PROFILE

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pshl3

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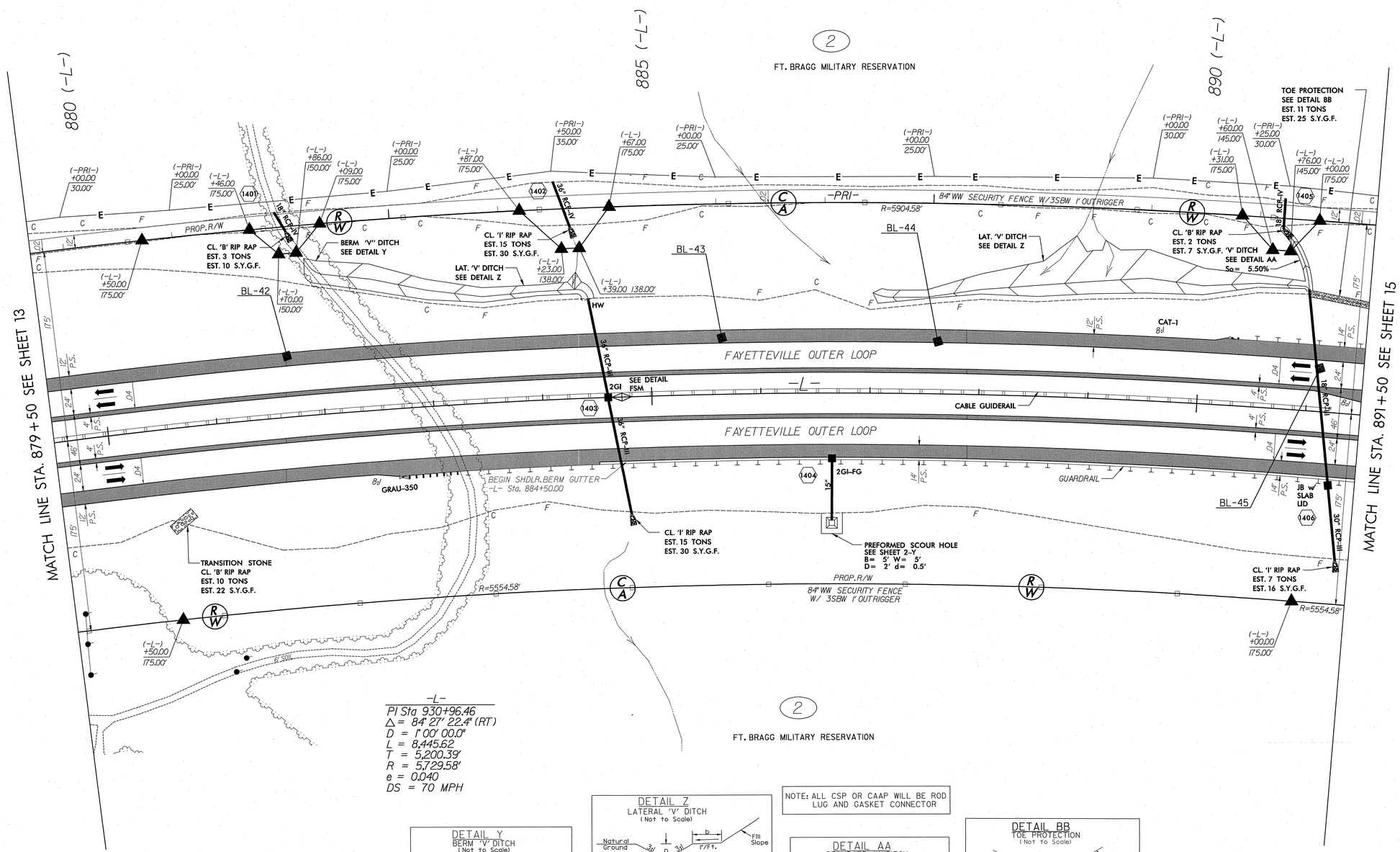
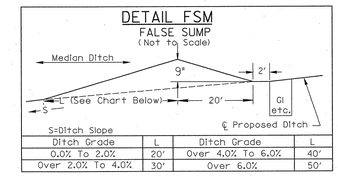
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	14

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
5-7-14



DETAIL FSM
FALSE SUMP
(Not To Scale)

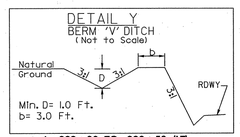


S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

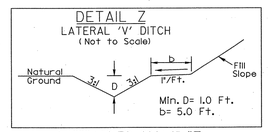
-L- 884+60 (MED)

DETAIL Y
BERM 'V' DITCH
(Not to Scale)



-L- 882+00 TO 883+50 (LT)

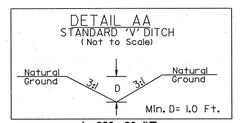
DETAIL Z
LATERAL 'V' DITCH
(Not to Scale)



-L- 883+50 TO 884+45 (LT)
EST. DDE = 56 CY
-L- 887+00 TO 890+95 (LT)
EST. DDE = 923 CY

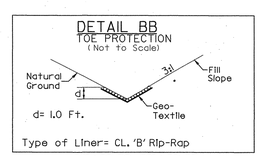
NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

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



-L- 890+90 (LT)

DETAIL BB
TOE PROTECTION
(Not to Scale)



-L- 891+00 TO 891+50 (LT)
EST. CLASS B RIP-RAP = 11 TN

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 59 FOR -PRI- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pshl4

REVISIONS

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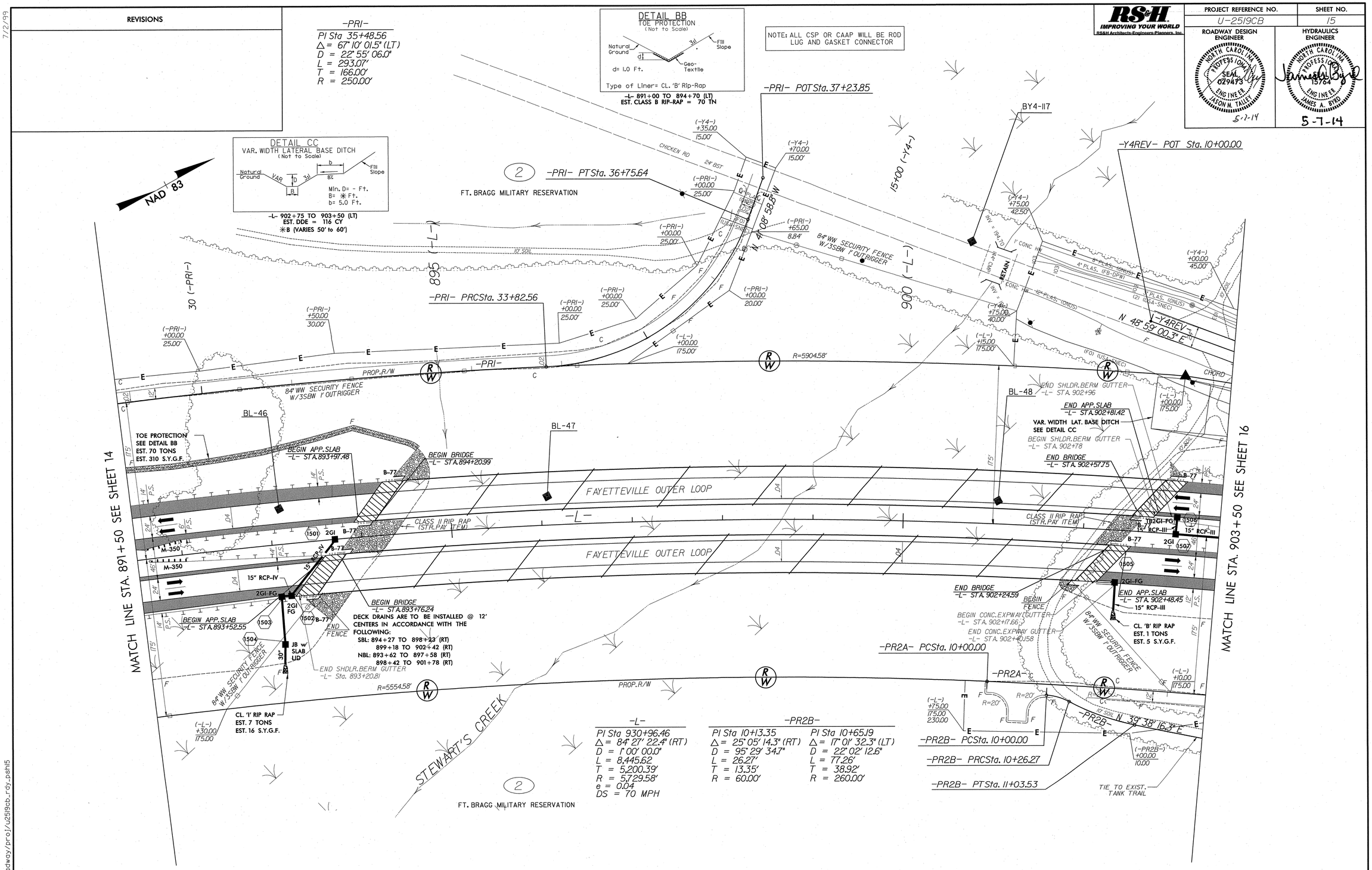
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 59 FOR -PRI- PROFILE
SEE SHEET 60 FOR -PR2A- PROFILE
SEE SHEET 2-S FOR BRIDGE SKETCH 172
FOR STRUCTURE PLANS, SEE SHEET S- THRU S-283

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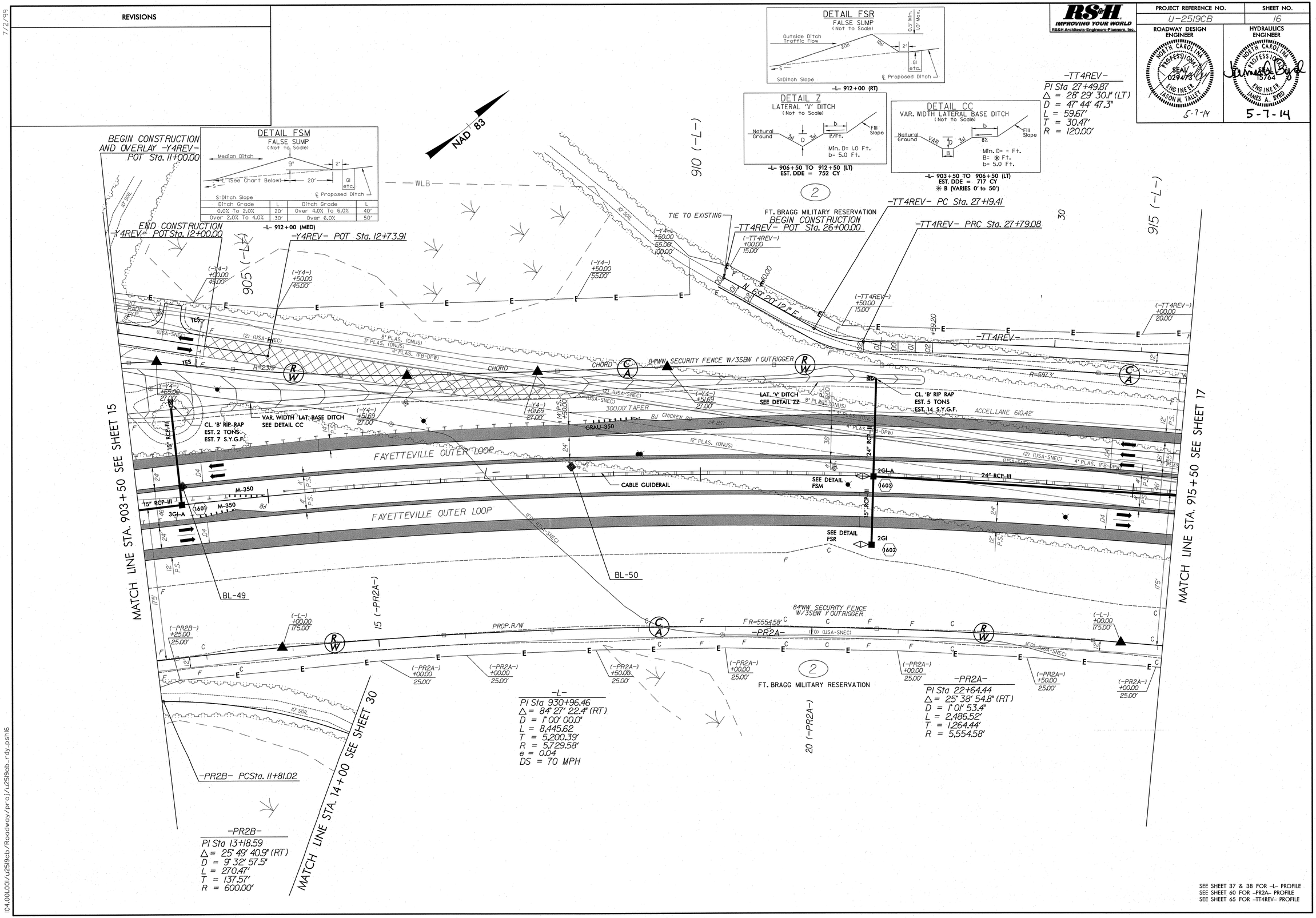
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



SEE SHEET 37 & 38 FOR -L- PROFILE
SEE SHEET 60 FOR -PR2A- PROFILE
SEE SHEET 65 FOR -TT4REV- PROFILE

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pshl6

REVISIONS

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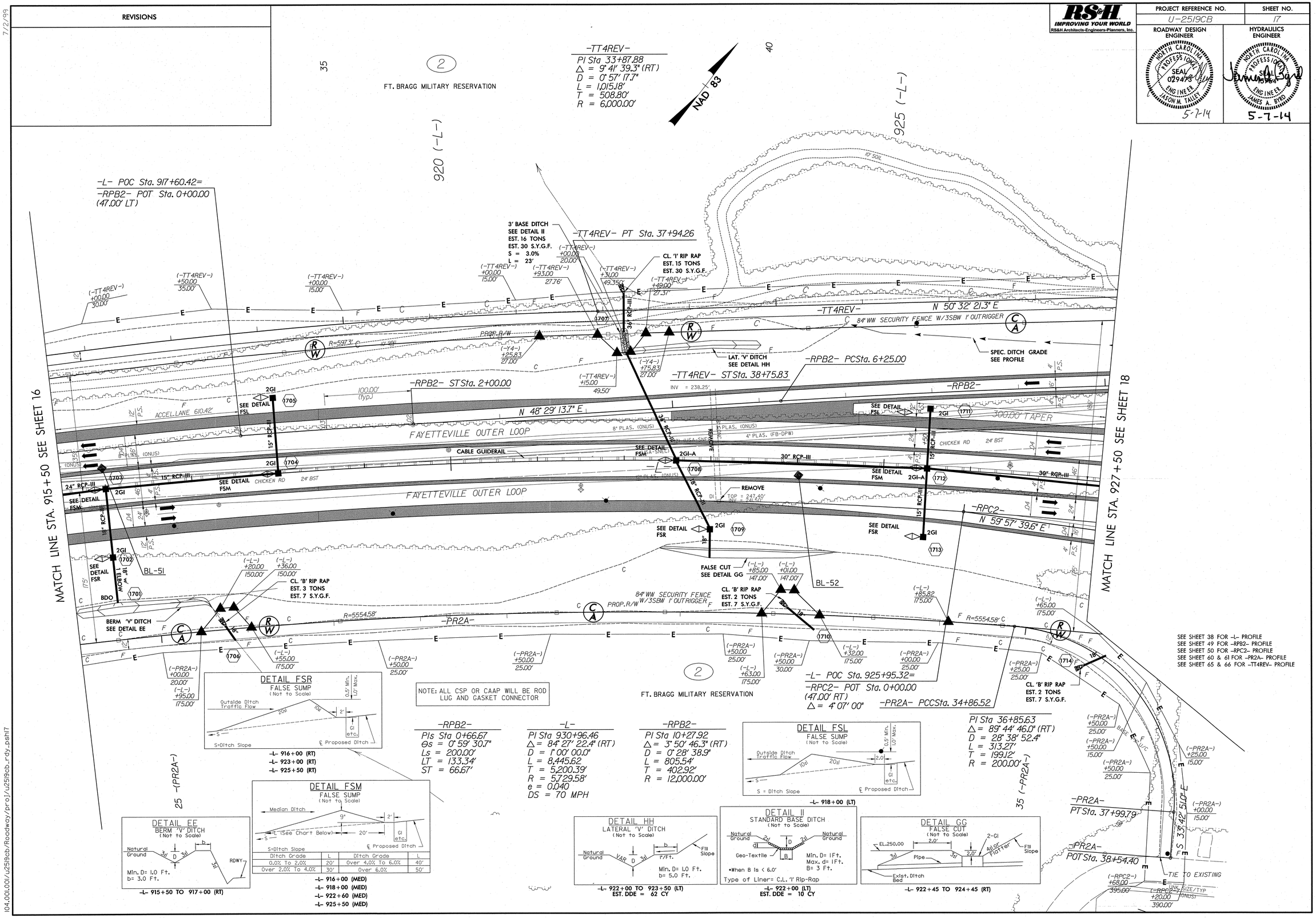
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 19964 ENGINEER JAMES A. BYRD 5-7-14



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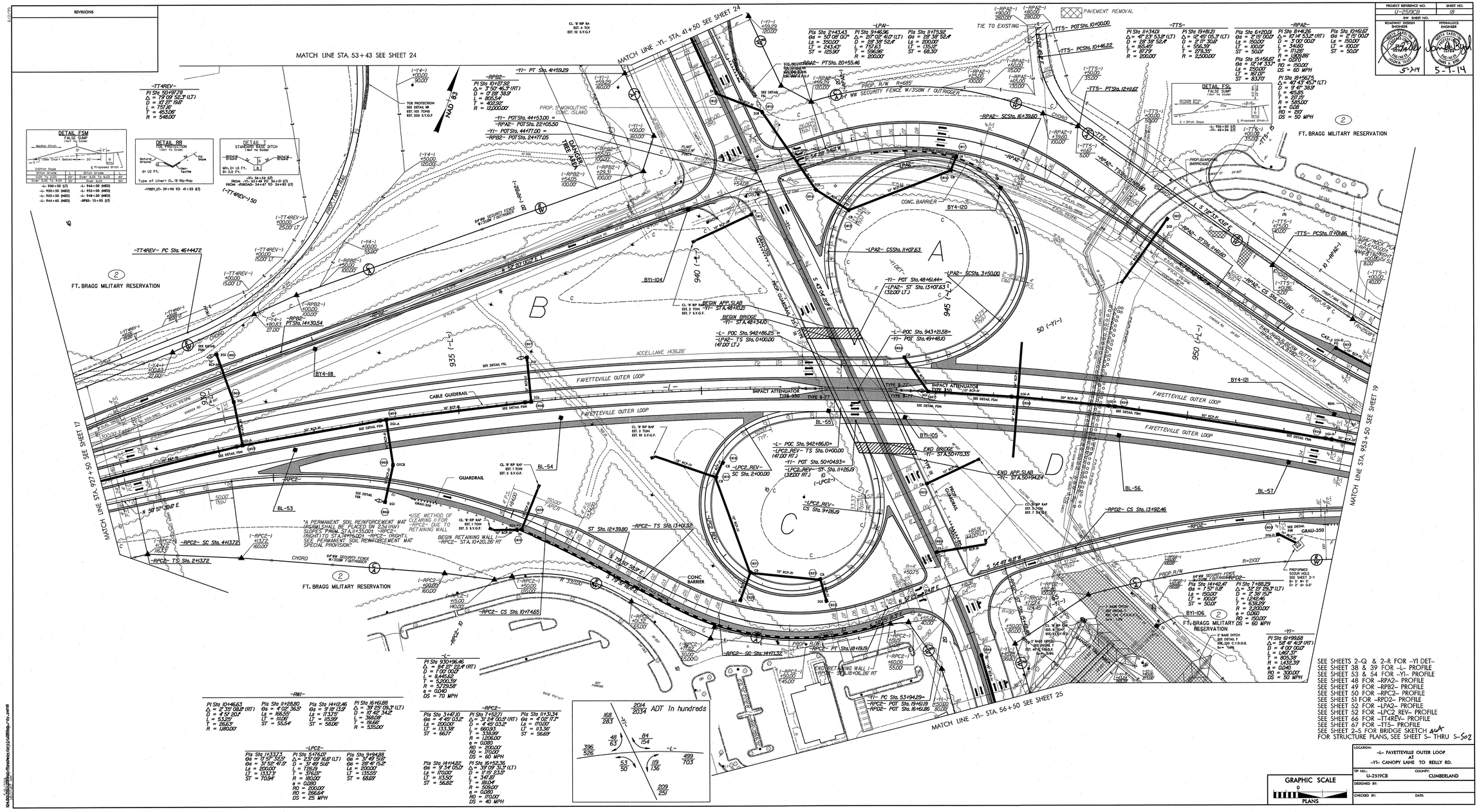
104.00.001/u2519cb/Roadway/proj/u2519cb_rdy.pshl7



SEE SHEETS 2-Q & 2-R FOR -Y1 DET-
SEE SHEET 38 & 39 FOR -L- PROFILE
SEE SHEET 53 & 54 FOR -Y1- PROFILE
SEE SHEET 48 FOR -RPA2- PROFILE
SEE SHEET 49 FOR -RPB2- PROFILE
SEE SHEET 50 FOR -RPC2- PROFILE
SEE SHEET 51 FOR -RPD2- PROFILE
SEE SHEET 52 FOR -LPA2- PROFILE
SEE SHEET 52 FOR -LPC2 REV- PROFILE
SEE SHEET 66 FOR -TT4REV- PROFILE
SEE SHEET 67 FOR -TT5- PROFILE
SEE SHEET 2-S FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEET S- THRU S-502

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5-7-14	5-7-14

LOCATION: -L- FAYETTEVILLE OUTER LOOP AT -Y1- CANOPY LANE TO REILLY RD.

TIP NO.: U-2519CB COUNTY: CUMBERLAND

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE 0 PLANS

REVISIONS

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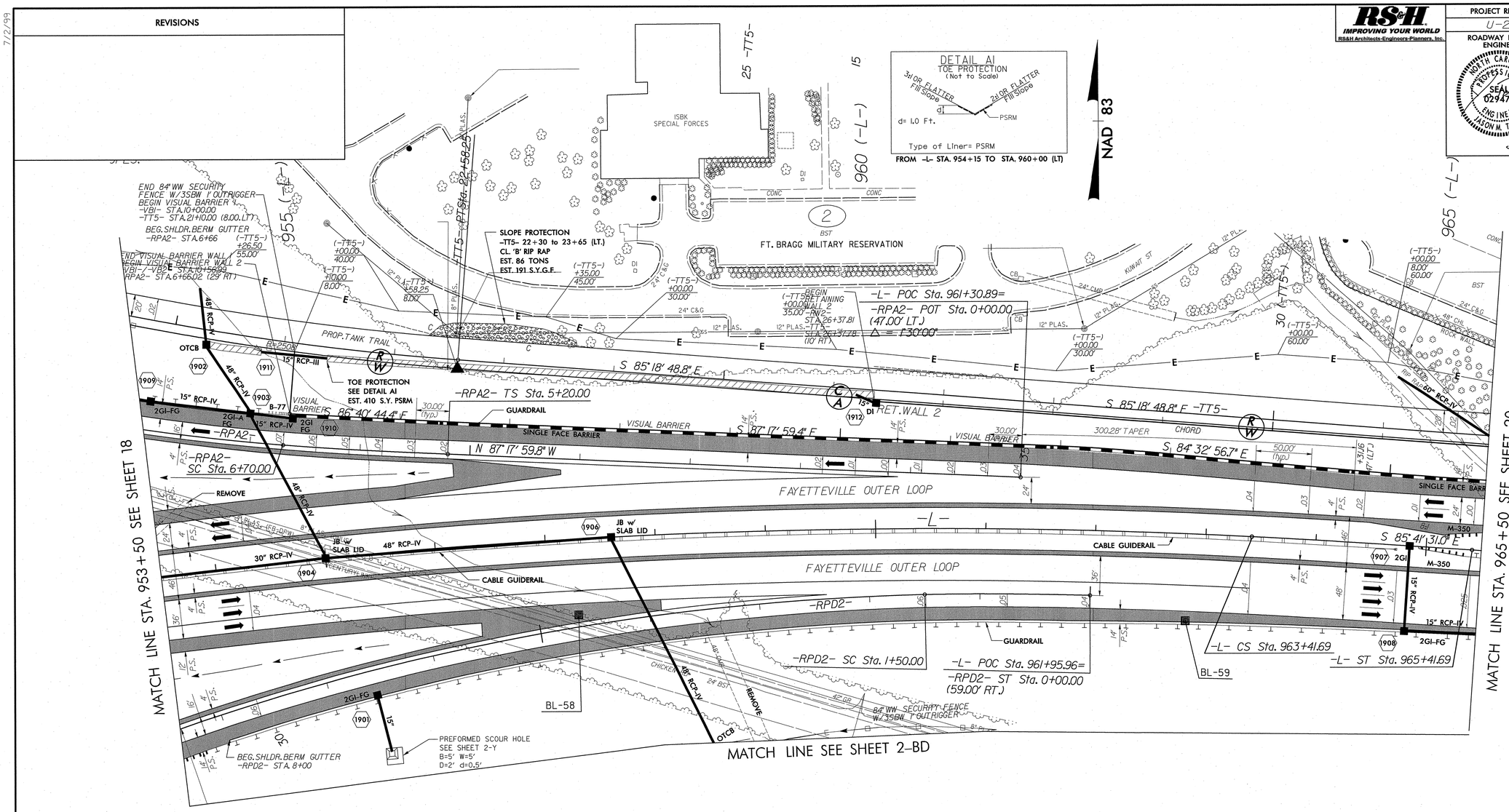
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



-RPA2-

PI Sta 8+41.29	PIs Sta 6+20.01
Δ = 10° 14' 53.2" (RT)	Θs = 2° 15' 00.0"
D = 3° 00' 00.0"	Ls = 150.00'
L = 341.60	LT = 100.01'
T = 171.29'	ST = 50.01'
R = 1,909.86'	
e = 0.070	
R0 = 150.00'	
DS = 60 MPH	

-RPD2-

PI Sta 7+88.29	PIs Sta 0+86.04
Δ = 32° 21' 29.3" (LT)	Θs = 0° 45' 27.8"
D = 2° 36' 15.7"	Θs = 1° 57' 12.0"
L = 1,242.46	Ls = 150.00'
T = 638.29'	LT = 86.04'
R = 2,200.00'	ST = 63.99'
e = 0.060	
R0 = 150.00'	
DS = 60 MPH	

-L-

PI Sta 930+96.46	PIs Sta 964+08.36
Δ = 84° 27' 22.4" (RT)	Θs = 1° 00' 00.0"
D = 1° 00' 00.0"	Ls = 200.00'
L = 8,445.62	LT = 133.34'
T = 5,200.39'	ST = 66.67'
R = 5,729.58'	
e = 0.040	
R0 = 200.00'	
DS = 70 MPH	

SEE SHEETS 39 & 40 FOR -L- PROFILE
SEE SHEET 48 FOR -RPA2- PROFILE
SEE SHEET 51 FOR -RPD2- PROFILE
SEE SHEET 67 & 68 FOR -TT5- PROFILE

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104.00.001/u2519cb/Roadway/proj/u2519cb_rdy.pshl9

7/2/99

REVISIONS

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RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	20

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 019862 ENGINEER JAMES A. BYRD — 5-7-14

-TT5-

PI Sta 36+26.83	PI Sta 39+53.40	PI Sta 40+86.12
Δ = 32° 11' 20.2" (LT)	Δ = 78° 26' 19.2" (RT)	Δ = 49° 23' 16.5" (LT)
D = 14° 19' 26.2"	D = 229° 10' 59.2"	D = 114° 35' 29.6"
L = 224.72'	L = 34.23'	L = 43.10'
T = 115.41'	T = 20.40'	T = 22.99'
R = 400.00'	R = 25.00'	R = 50.00'

"A PERMANENT REINFORCEMENT MAT SHALL BE PLACED FROM STA.25+25.00± -Y2- TO STA. 25+75.00± -Y2- (RIGHT/LEFT AND RIGHT OF VISUAL BARRIER WALL)." EXTEND PERMANENT SOIL REINFORCEMENT MAT LIMITS TO 2.5:1 SLOPES."

END VISUAL BARRIER WALL 4
-VB4- STA.13+95.37
-Y2- STA.21+90.09 (60.65' RT)

"USE ROCK PLATING DETAIL NO.4 FROM STA.21+75.00± -Y2- TO STA.25+25.00± -Y2- (RIGHT/LEFT OF VISUAL BARRIER WALL 4)."

END RETAINING WALL 2
-RW2- STA.36+53.50
-TT5- STA.36+53.50 (10' RT)
-Y2- STA.24+97.75 (73.91' RT)

-TT5- PCSta. 35+11.42
-TT5- PTSta. 37+36.14
-TT5- PCSta. 39+33.00
-TT5- PTSta. 39+67.23

CONSTRUCT EARTH BERM TO EL. 260.00'

END VISUAL BARRIER WALL 2
BEGIN VISUAL BARRIER WALL 4
-VB2- STA.25+26.80
-VB4- STA.10+00.00
-L- STA.969+32.37 (59' LT)

BEGIN APP.SLAB
-L- STA.968+61.04

BEGIN BRIDGE
-L- STA.968+83.97

POT. Sta. 24+69.81
POT Sta.10+00.00

FT. BRAGG MILITARY RESERVATION

'V' DITCH
SEE DETAIL KK
EST. 12 C.Y.D.D.E.
So= 0.00%

-Y2- POT Sta. 21+72.29=
-TT5- POT Sta. 40+24.24

S 62° 23' 22.3" W

BY2-112

CL. 'I' RIP RAP
EST. 26 TONS
EST. 50 S.Y.G.F.
NO RIP RAP TO BE PLACED IN STREAM BED

84" WW SECURITY FENCE W/ 3SBW 1' OUTRIGGER

-TT5- S 88° 27' 06.3" E

BEGIN VISUAL BARRIER WALL 5
-VB5- STA.11+11.34
-Y2- STA.23+00.00
(67.22' LT)

END VISUAL BARRIER WALL 5
-VB5- STA.11+64.37
-L- STA.972+03.55 (60.74' LT)

-TT5- PTSta. 41+06.22
-TT5- PCSta. 40+63.12

REMOVE 20 SY
48" RCP

S 85° 18' 48.8" E

PROP.R/W
RET.WALL 2
S 85° 41' 31.4" E
VISUAL BARRIER
S 85° 41' 31.1" E
SINGLE FACE BARRIER
2GI-FG
15" RCP-IV
FAYETTEVILLE OUTER LOOP
CABLE GUIDERAIL
CAT-1
SEE DETAIL FSM
BEGIN APP.SLAB
-L- ST.A.967+77.86
BEGIN BRIDGE
-L- ST.A.968+00.78
-Y2- CS Sta. 26+32.90
BEGIN VISUAL BARRIER WALL 3
-VB3- STA.10+00.00
-L- STA.971+71.64 (59.00' LT)
END APP.SLAB
-L- ST.A.971+13.91
S 87° 58' 54.6" E
300.00' TAPER
GUARDRAIL
S 84° 48' 31.0" E
END APP.SLAB
-L- STA.970+30.72
END BRIDGE
-L- STA.970+07.78
END BRIDGE
-L- STA.970+90.97
BL-60
15" w/2 ELBOWS
TB2GI-FG
BY2-111
-RW4-
84" WW SECURITY FENCE W/ 3SBW 1' OUTRIGGER
END SECURITY FENCE
BEGIN C/A FENCE
-Y2- SRS Sta. 27+82.90
-L- POT Sta. 969+51.52=
-Y2- POC Sta. 25+98.54
REMOVE CB
CONSTRUCT CB
BEGIN NOISE WALL 2 U-2519CB
-NW2- Sta.10+00.00 =
-L- Sta.969+50.59 77.55' RT
PREFORMED SCOUR HOLE
SEE SHEET 2-Y
B=5' W=5'
D=2' d=0.5'
CL. 'I' RIP RAP
EST. 33 TONS
EST. 62 S.Y.G.F.
NO RIP RAP TO BE PLACED IN STREAM BED
CL. 'I' RIP RAP
EST. 48 TONS
EST. 89 S.Y.G.F.
NO RIP RAP TO BE PLACED IN STREAM BED
-Y2REV_RT- PC Sta. 29+32.90 =
-Y2- SC Sta.29+32.90 (18.53' LT)
-Y2REV_LT- POT Sta. 29+32.90 =
-Y2- SC Sta.29+32.90
4' BASE DITCH
SEE DETAIL LL
So= 3.00%
VAR. WIDTH LAT. BASE DITCH
SEE DETAIL MM
END SHLDR/BERM GUTTER
-L- STA.974+00.00
CL. 'B' RIP RAP
EST. 2 TONS
EST. 7 S.Y.G.F.
41" WW FENCE W/ 1SBW
REMOVE EXISTING PIPE
CL. 'I' RIP RAP
EST. 15 TONS
EST. 30 S.Y.G.F.
DECK DRAINS ARE TO BE INSTALLED @ 3' CENTERS IN ACCORDANCE WITH THE FOLLOWING:
NBL: 968+79 TO 968+94 (RT)
FT. BRAGG MILITARY RESERVATION
MATCH LINE STA. 965+50 SEE SHEET 19
MATCH LINE STA. 977+00 SEE SHEET 21
MATCH LINE -Y2REV LT- +30.00 SEE SHEET 2-BD
NAD 83

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

DETAIL KK
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — Natural Ground
Min. D= 1.0 Ft.
-Y2 REV- 24+50 (RT)

DETAIL MM
VAR. WIDTH LATERAL BASE DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — Fill Slope — 8% — b — B
Min. D= 2.0 Ft.
B= ✳ Ft.
b= 5.0 Ft.
-L- 973+50 TO 977+00 (RT)
EST. DDE = 13123 CY
✳ B (VARIES 57' TO 47')

DETAIL FSM
FALSE SUMP
(Not to Scale)
Median Ditch — 9' — 2' — 20' — S — L (See Chart Below) — GI etc. — ℄ Proposed Ditch
S=Ditch Slope

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 870+00 (MED)

DETAIL LL
STANDARD BASE DITCH
(Not to Scale)
Natural Ground — 3:1 — D — 3:1 — Natural Ground
Min. D= 1.5 Ft.
B= 4.0 Ft.
-L- 971+00 (RT)
EST. DDE = 5 CY

-Y2- CURVE DATA

PI Sta 24+94.98	PIs Sta 26+82.90	PIs Sta 28+82.91
Δ = 3° 24' 00.0" (RT)	Θs = 0° 55' 26.9"	Θs = 1° 17' 53.7"
D = 1° 13' 55.8"	Ls = 150.00'	Ls = 150.00'
L = 275.94'	LT = 100.00'	LT = 100.00'
T = 138.01'	ST = 50.00'	ST = 50.00'
R = 4,650.00'		

SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 68 FOR -TT5- PROFILE
SEE SHEET 2-T FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEET S-284 THRU S-340

104.00.001/u2519cb/Roadway/proj/u2519cb_rdy.psh20

7/2/99

REVISIONS

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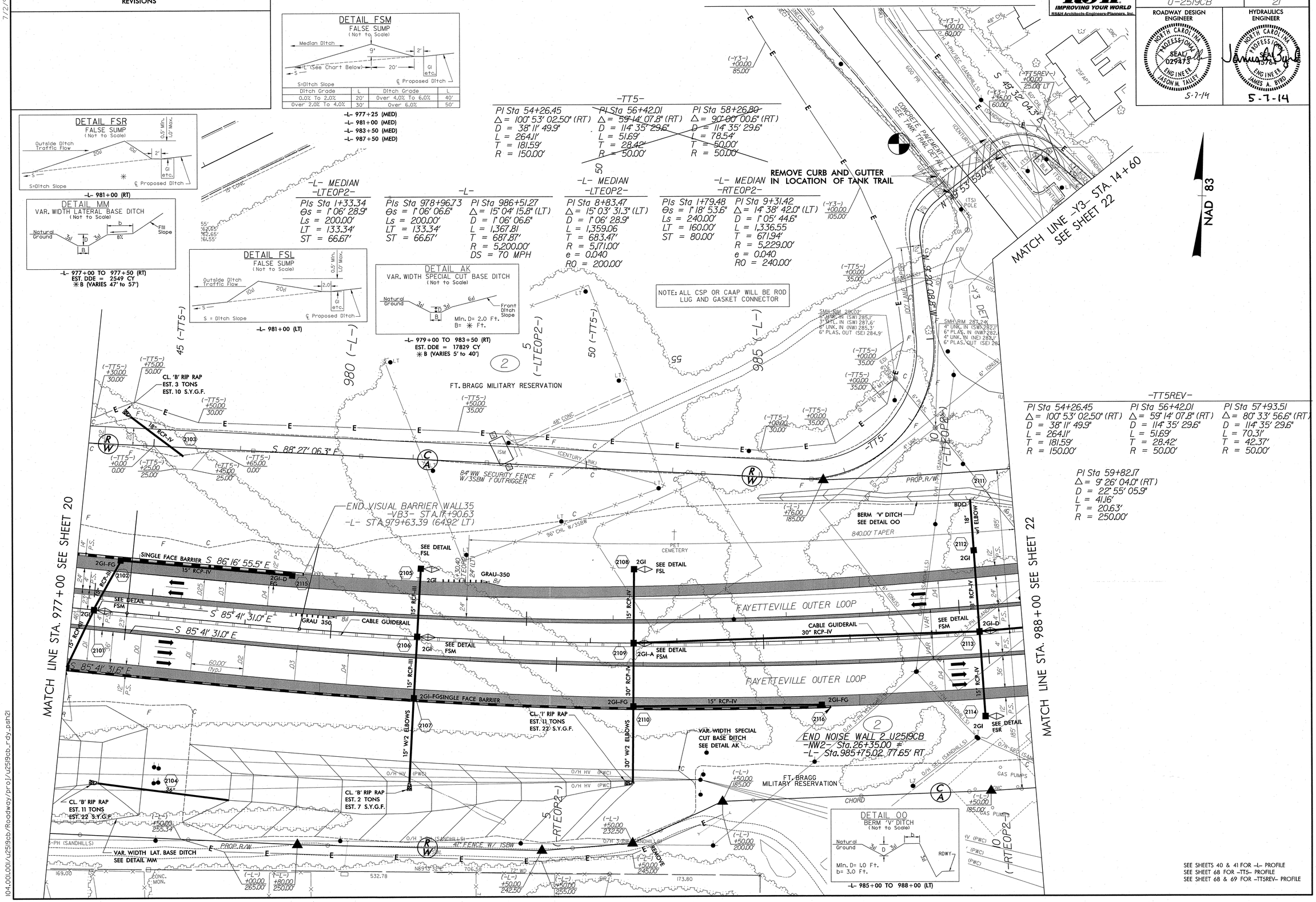
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	21

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 — JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15764 — JAMES A. BYRD — 5-7-14



SEE SHEETS 40 & 41 FOR -L- PROFILE
SEE SHEET 68 FOR -TT5- PROFILE
SEE SHEET 68 & 69 FOR -TT5REV- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh21

7/2/99

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22

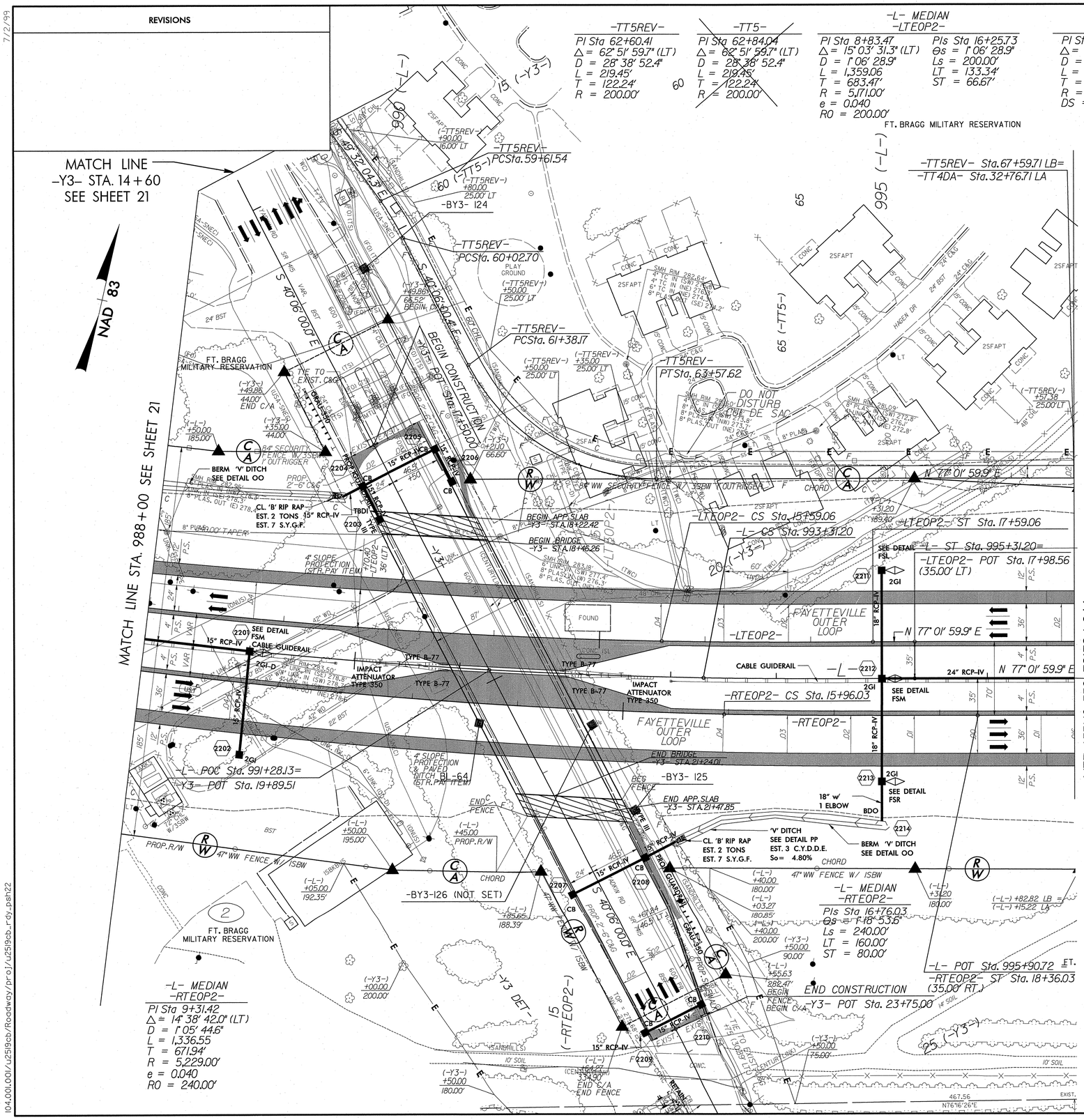
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

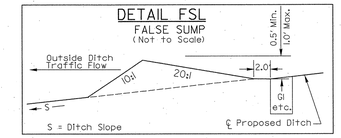
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — 5-7-14

-L- MEDIAN
-LTEOP2-

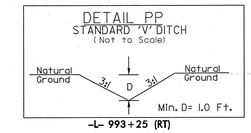
-TT5REV-	-TT5-	-LTEOP2-	-LTEOP2-	-L-	-L-
PI Sta 62+60.41	PI Sta 62+84.04	PI Sta 8+83.47	PIs Sta 16+25.73	PI Sta 986+51.27	PIs Sta 993+97.87
Δ = 62° 51' 59.7" (LT)	Δ = 62° 51' 59.7" (LT)	Δ = 15° 03' 31.3" (LT)	Θs = 1° 06' 28.9"	Δ = 15° 04' 15.8" (LT)	Θs = 1° 06' 06.6"
D = 28° 38' 52.4"	D = 28° 38' 52.4"	D = 1° 06' 28.9"	Ls = 200.00'	D = 1° 06' 06.6"	Ls = 200.00'
L = 219.45'	L = 219.45'	L = 1,359.06	LT = 133.34'	L = 1,367.81	LT = 133.34'
T = 122.24'	T = 122.24'	T = 683.47'	ST = 66.67'	T = 687.87'	ST = 66.67'
R = 200.00'	R = 200.00'	R = 5,171.00'		R = 5,200.00'	
		e = 0.040		DS = 70 MPH	
		RO = 200.00'			

FT. BRAGG MILITARY RESERVATION

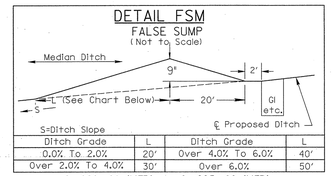




-L- 995+00 (LT)

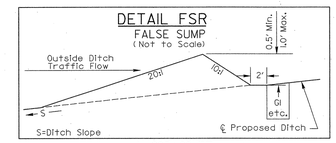


-L- 993+25 (RT)

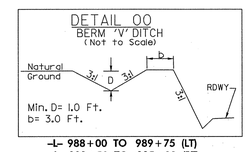


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-L- 989+00 (MED) -L- 995+00 (MED)



-L- 995+00 (RT)



-L- 988+00 TO 989+75 (LT)
-L- 993+50 TO 995+00 (RT)

SEE SHEET 41 FOR -L- PROFILE
SEE SHEET 55 FOR -Y3- PROFILE
SEE SHEET 69 FOR -TT5REV- PROFILE
SEE SHEET 2-T FOR BRIDGE SKETCH
FOR STRUCTURE PLANS, SEE SHEETS S-503 THRU S-541

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh22

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14

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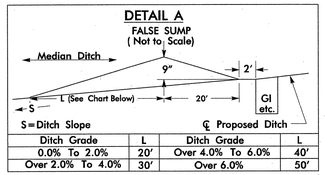
Right of Way for this Plan Sheet has been acquired under metric TIP Project U-2519DA. Right of Way authorization was May 19, 2006. Right of Way shown is for information purposes only.

NAD 83

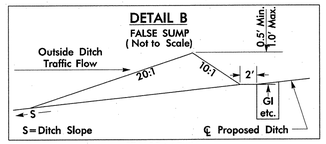
DETAIL A
FALSE SUMP (Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

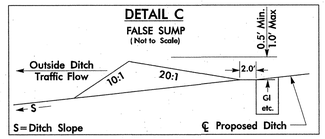
STA. 35+48
STA. 39+41
STA. 44+01

DETAIL B
FALSE SUMP (Not to Scale)



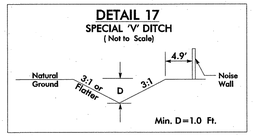
STA. 35+67 RT
STA. 39+60 RT
STA. 44+19 RT

DETAIL C
FALSE SUMP (Not to Scale)



STA. 35+50 LT
STA. 39+41 LT
STA. 44+01 LT

DETAIL 17
SPECIAL 'V' DITCH (Not to Scale)

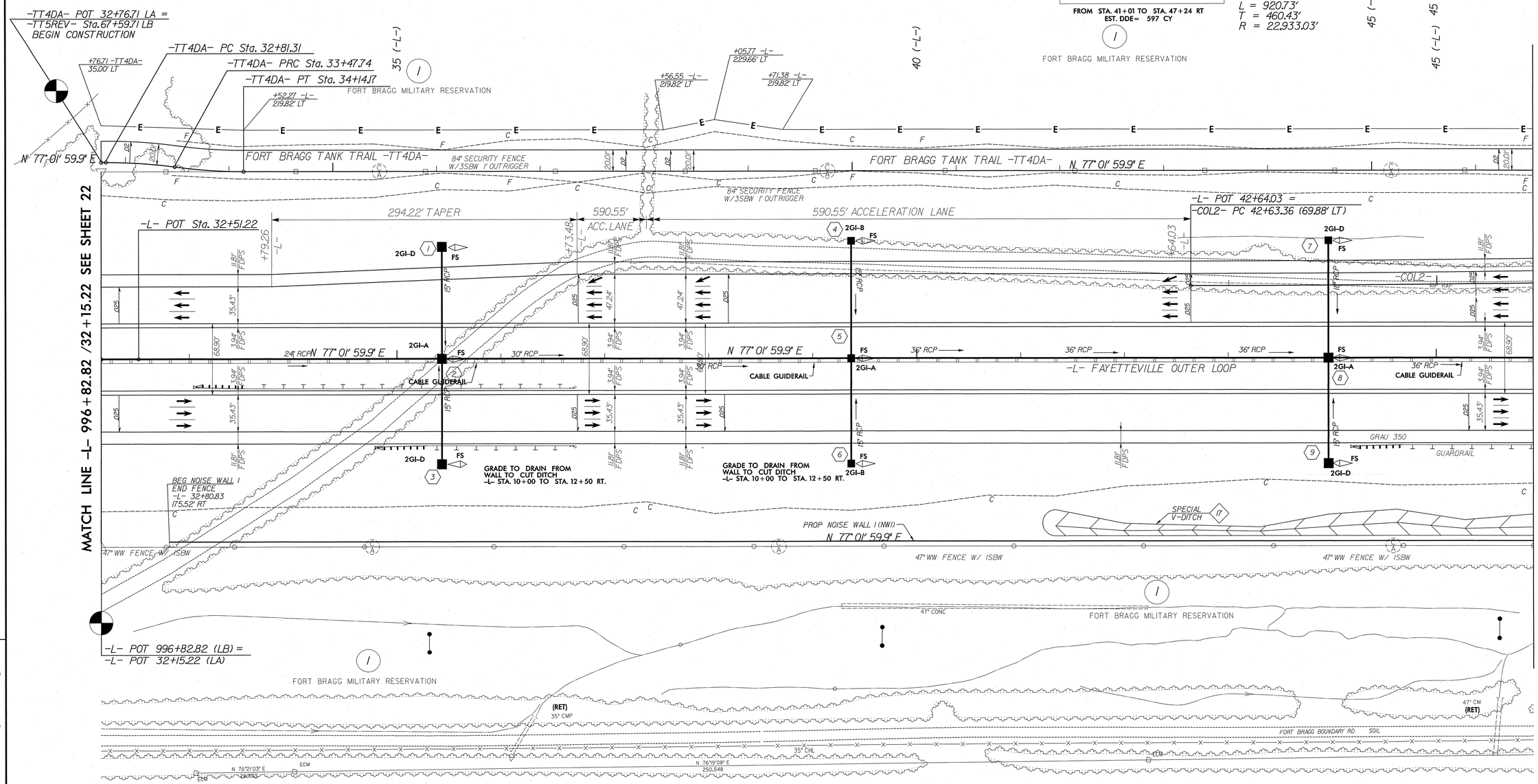


FROM STA. 41+01 TO STA. 47+24 RT
EST. DDE= 597 CY

-TT4DA-
PI Sta 33+14.58
△ = 7° 44' 02.7" (RT)
D = 11° 38' 33.1"
L = 66.43'
T = 33.27'
R = 492.13'

PI Sta 33+81.01
△ = 7° 44' 02.7" (LT)
D = 11° 38' 33.1"
L = 66.43'
T = 33.27'
R = 492.12'

-COL2-
PI Sta 47+23.78
△ = 2° 18' 01.2" (LT)
D = 0° 14' 59.4"
L = 920.73'
T = 460.43'
R = 22,933.03'



SEE SHEET 41A FOR -L- PROFILE
SEE SHEET 70 FOR -TT4DA- PROFILE
SEE SHEET 74 FOR -COL2- PROFILE

REVISIONS

5/7/2014
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REVISIONS

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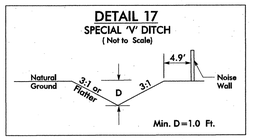
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-14-14

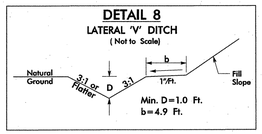
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — 5/16/14

DETAIL 17
SPECIAL 'V' DITCH
(Not to Scale)



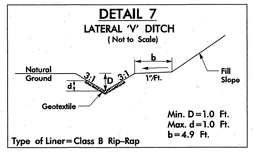
FROM STA. 41+01 TO STA. 47+24 RT
EST. DDE = 597 CY

DETAIL 8
LATERAL 'V' DITCH
(Not to Scale)



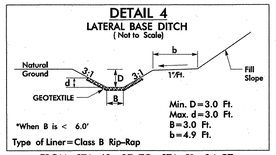
FROM STA. 47+24 TO STA. 48+98 RT
EST. DDE = 60 CY

DETAIL 7
LATERAL 'V' DITCH
(Not to Scale)



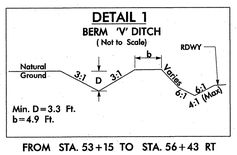
FROM STA. 49+31 TO STA. 49+74 RT
EST. CLASS B RIP-RAP= 17 TN
EST. FILTER FABRIC= 27 SY
EST. DDE= 13 CY
FROM STA. 53+97 TO STA. 54+46 LT
EST. CLASS B RIP-RAP= 28 TN
EST. FILTER FABRIC= 33 SY
EST. DDE= 13 CY

DETAIL 4
LATERAL BASE DITCH
(Not to Scale)



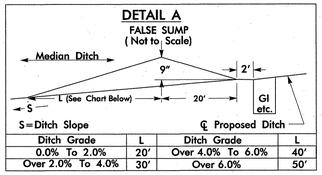
FROM STA. 49+87 TO STA. 51+84 RT
EST. CLASS B RIP-RAP= 79 TN
EST. FILTER FABRIC= 443 SY
EST. DDE= 509 CY

DETAIL 1
BERM 'V' DITCH
(Not to Scale)



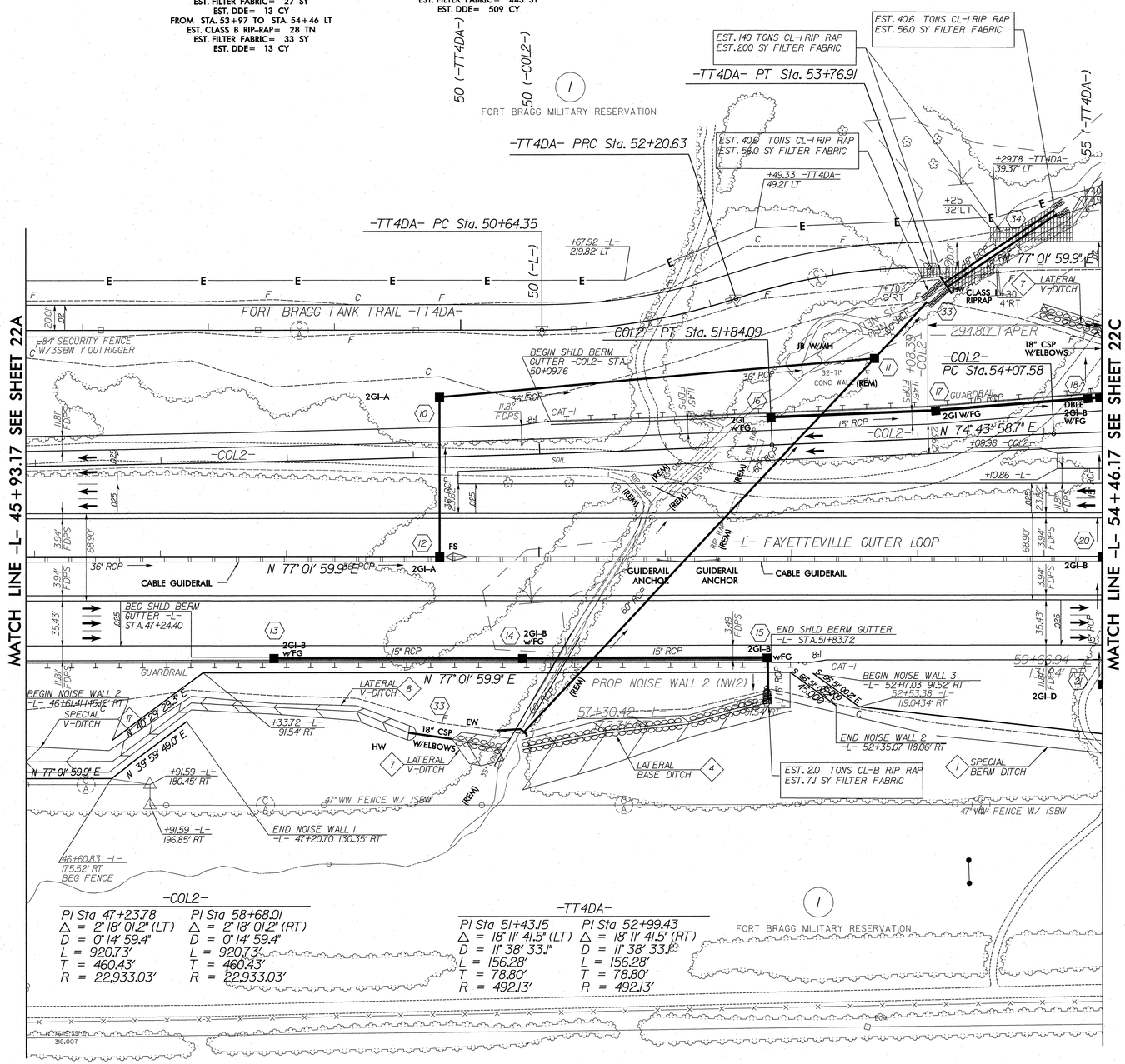
FROM STA. 53+15 TO STA. 56+43 RT

DETAIL A
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

STA. 49+26



-COL2-

PI Sta 47+23.78	PI Sta 58+68.01
△ = 2° 18' 01.2" (LT)	△ = 2° 18' 01.2" (RT)
D = 0° 14' 59.4"	D = 0° 14' 59.4"
L = 920.73'	L = 920.73'
T = 460.43'	T = 460.43'
R = 22,933.03'	R = 22,933.03'

-TT4DA-

PI Sta 51+43.15	PI Sta 52+99.43
△ = 18° 11' 41.5" (LT)	△ = 18° 11' 41.5" (RT)
D = 11° 38' 33.1"	D = 11° 38' 33.1"
L = 156.28'	L = 156.28'
T = 78.80'	T = 78.80'
R = 492.13'	R = 492.13'

Right of Way for this Plan Sheet has been acquired under metric TIP Project U-2519DA. Right of Way authorization was May 19, 2006. Right of Way shown is for information purposes only.

SEE SHEET 41A FOR -L- PROFILE
SEE SHEET 74 FOR -COL2- PROFILE
SEE SHEET 70 FOR -TT4DA- PROFILE

5/14/2014
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REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22C
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER, JOHN W. LEE, JR. 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 20571 ENGINEER, MICHAEL S. LOVE 5/16/14

DETAIL A
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	30'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

STA. 54+50
STA. 60+41
STA. 60+66

DETAIL B
FALSE SUMP
(Not to Scale)

STA. 54+68 RT
STA. 60+32 RT
STA. 62+57 RT
STA. 65+85 RT

DETAIL C
FALSE SUMP
(Not to Scale)

STA. 60+41 LT
STA. 65+66 LT

DETAIL 3
BERM "V" DITCH
(Not to Scale)

FROM STA. 53+15 TO STA. 56+43 RT
FROM STA. 59+71 TO STA. 61+68 RT
FROM STA. 62+34 TO STA. 64+96 RT

DETAIL 6
BERM "V" DITCH
(Not to Scale)

Type of Liner=Class B Rip-Rap
FROM STA. 61+68 TO STA. 62+34 RT

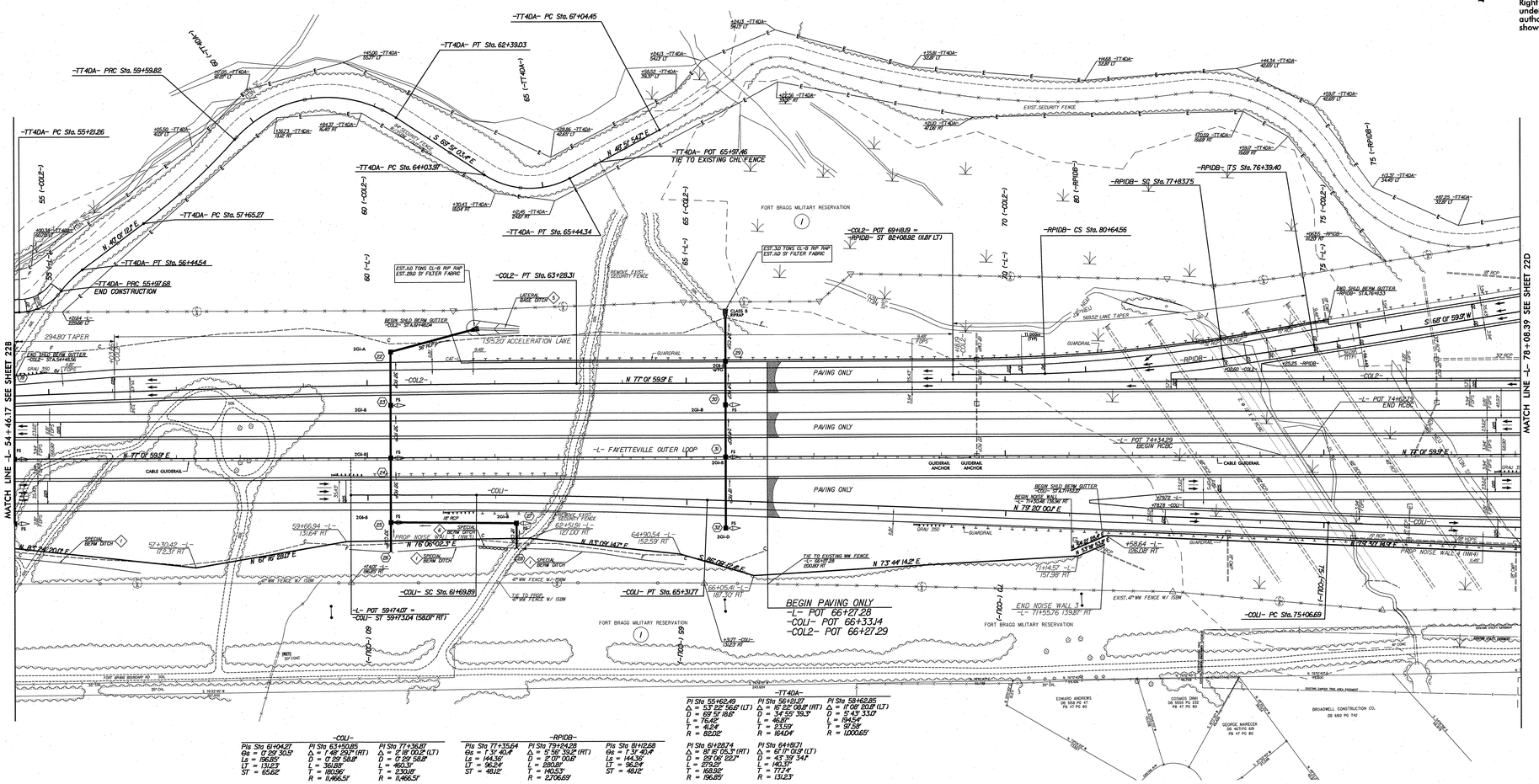
DETAIL 5
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 61+68 TO STA. 62+38 LT
EST. DDE= 79 CY

NAD 83

SEE SHEETS 41A-41B FOR -L- PROFILE
SEE SHEET 72 FOR -COL1- PROFILE
SEE SHEETS 74-75 FOR -COL2- PROFILE
SEE SHEET 80 FOR -RPIDB- PROFILE
SEE SHEET 70 FOR -TT4DA- PROFILE

Right of Way for this Plan Sheet has been acquired under metric TIP Project U-2519DA. Right of Way authorization was May 19, 2006. Right of Way shown is for information purposes only.



-COU-

PI Sta 61+04.27	PI Sta 63+50.85	PI Sta 77+36.87
Θs = 0° 59' 30.5"	Δ = 1° 48' 29.7" (RT)	Δ = 2° 18' 00.0" (LT)
Ls = 196.85'	D = 0° 59' 58.8"	D = 0° 59' 58.8"
LT = 131.23'	L = 361.69'	L = 460.31'
ST = 65.62'	T = 180.96'	T = 230.18'
	R = 11,466.51'	R = 11,466.51'

-RPIDB-

PI Sta 77+35.64	PI Sta 79+24.28	PI Sta 81+12.68
Θs = 1° 31' 40.4"	Δ = 5° 56' 39.2" (RT)	Θs = 1° 31' 40.4"
Ls = 144.36'	D = 2° 01' 00.0"	Ls = 144.36'
LT = 96.24'	L = 290.68'	LT = 96.24'
ST = 48.12'	T = 145.53'	ST = 48.12'
	R = 2,706.69'	

-TT4DA-

PI Sta 55+62.49	PI Sta 56+21.27	PI Sta 58+62.85	
Δ = 53° 22' 58.8" (LT)	Δ = 16° 22' 08.8" (RT)	Δ = 11° 08' 20.8" (LT)	
D = 69° 51' 18.8"	D = 34° 55' 39.3"	D = 5° 43' 33.0"	
L = 76.42'	L = 46.81'	L = 194.54'	
T = 41.24'	T = 23.59'	T = 97.38'	
R = 82.02'	R = 164.04'	R = 1,000.65'	

PI Sta 61+28.74	PI Sta 64+18.71	
Δ = 15° 16' 05.3" (RT)	Δ = 6° 17' 01.9" (LT)	
D = 39° 06' 22.7"	D = 43° 39' 34.1"	
L = 279.21'	L = 140.37'	
T = 168.92'	T = 71.74'	
R = 146.85'	R = 131.23'	

EDWARD ANDREWS
DB 1558 PG 47
PB 47 PG 80

COSMOS CRAIG
DB 1665 PG 232
PB 47 PG 80

GEORGE MARECEK
DB 4675 PG 108
PB 47 PG 80

BROADWELL CONSTRUCTION CO.
DB 6812 PG 742

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: FAYETTEVILLE OUTER LOOP FROM SOUTH OF SR 1400 (CLIFFDALE RD.) TO EAST OF ALL AMERICAN FREEWAY

TIP NO.: U-2519CB	COUNTY: CUMBERLAND
DESIGNED BY:	
CHECKED BY:	DATE:

5/7/2014
w:\Projects\U-2519CB\Rdwy\sht\U2519DA_Rdwy.sht:22C:dgn

REVISIONS

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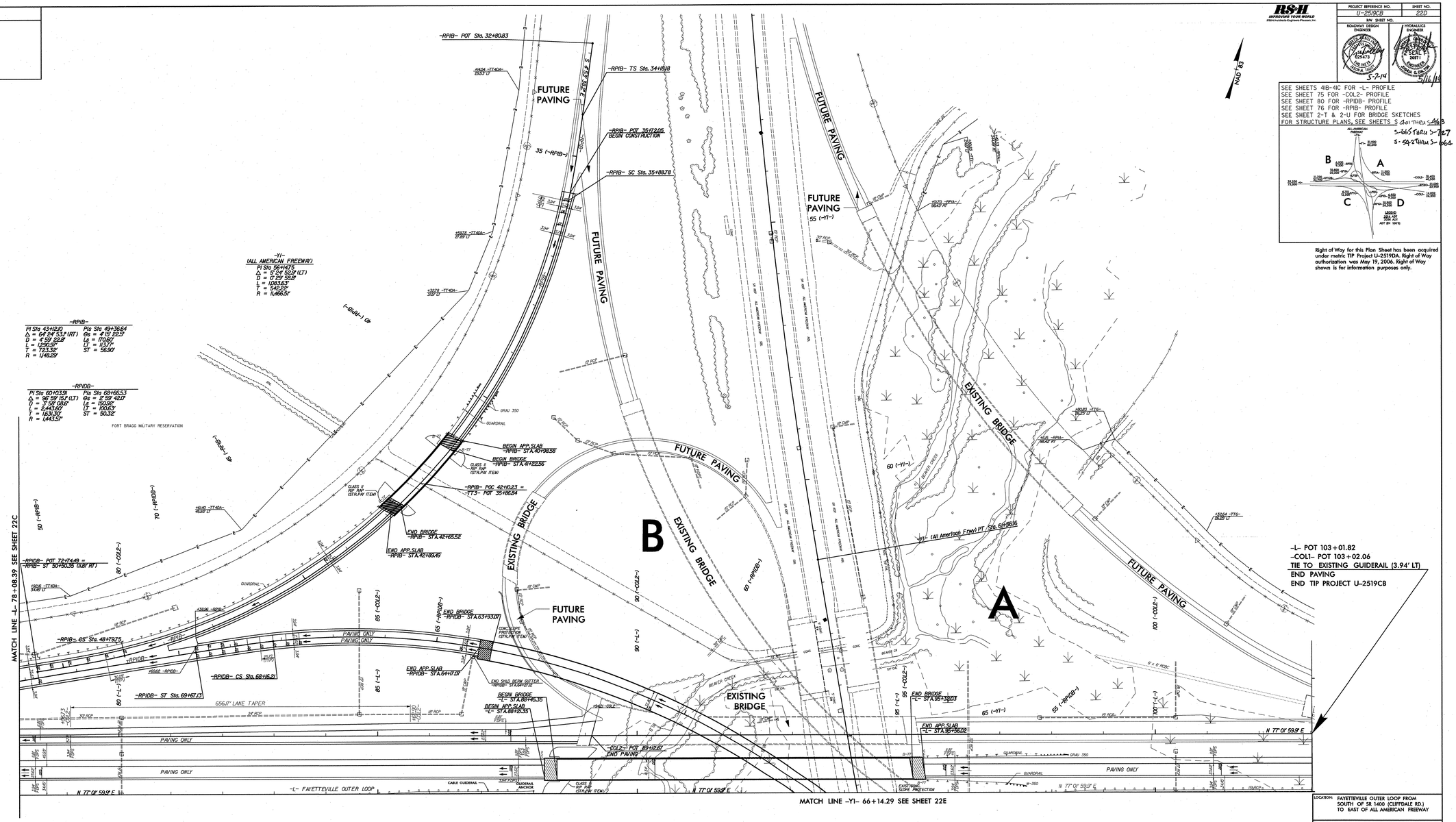
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: 029473 — 5-7-14

HYDraulics ENGINEER: 26971 — 5/14/14

SEE SHEETS 41B-41C FOR -L- PROFILE
SEE SHEET 80 FOR -RPIDB- PROFILE
SEE SHEET 76 FOR -RPIB- PROFILE
SEE SHEET 2-T & 2-U FOR BRIDGE SKETCHES
FOR STRUCTURE PLANS, SEE SHEETS S-101 THRU S-463
S-665 THRU S-727
S-842 THRU S-664

Right of Way for this Plan Sheet has been acquired under metric TIP Project U-2519DA. Right of Way authorization was May 19, 2006. Right of Way shown is for information purposes only.



GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: FAYETTEVILLE OUTER LOOP FROM SOUTH OF SR 1400 (CLIFFDALE RD.) TO EAST OF ALL AMERICAN FREEWAY

TIP NO.: U-2519CB COUNTY: CUMBERLAND

DESIGNED BY:

CHECKED BY: DATE:

5/7/2014
M:\Highway\Projects\U2519CB\U2519CB_R&Sg_sht-22D.dgn

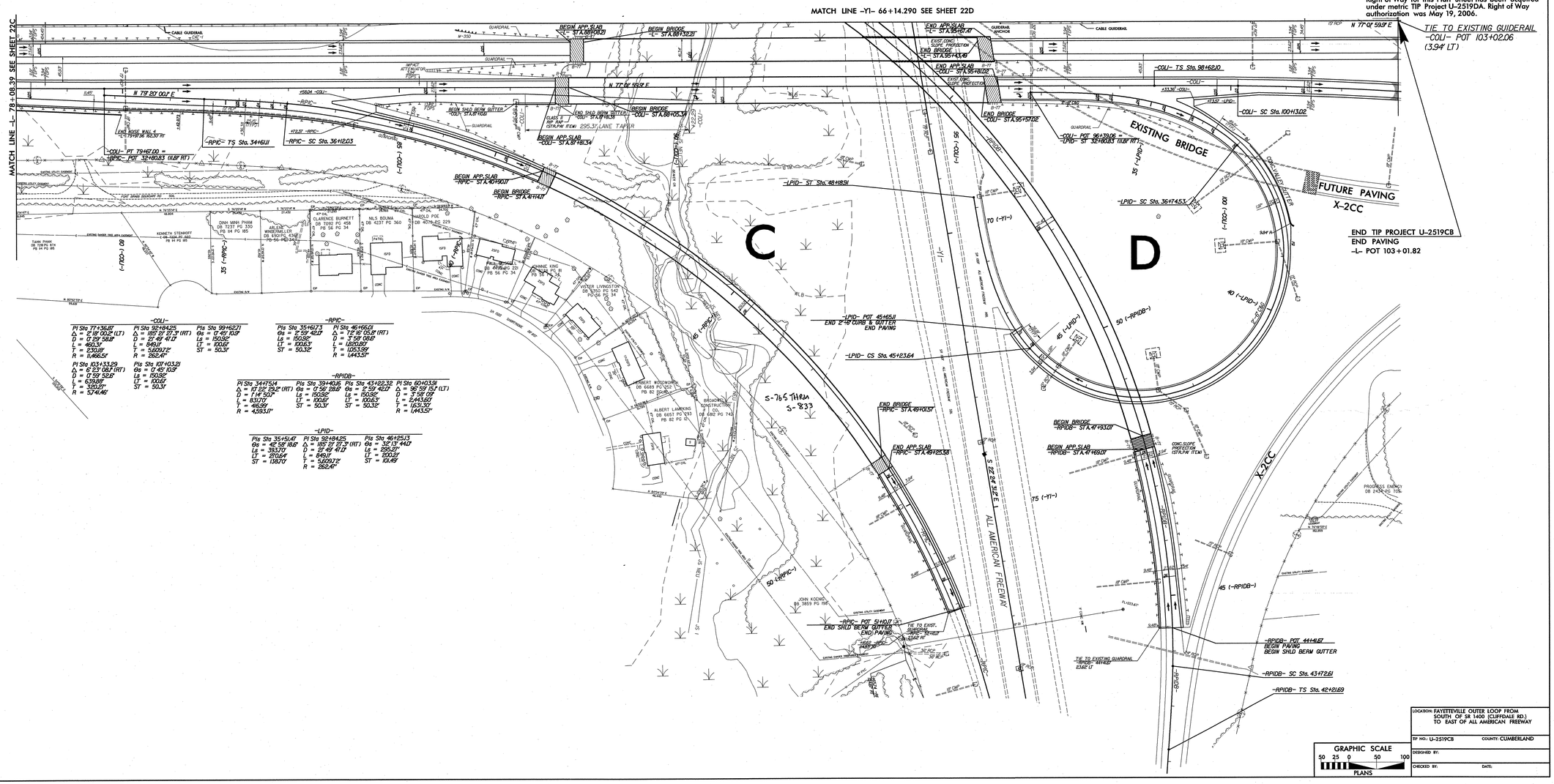
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	22E
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: 5-7-14

HYDRAULICS ENGINEER: 5/16/14

SEE SHEETS 41B-41C FOR -L- PROFILE
SEE SHEETS 72-73 FOR -COLI- PROFILE
SEE SHEET 79 FOR -RPIDB- PROFILE
SEE SHEET 77 FOR -RPIC- PROFILE
SEE SHEET 78 FOR -LPID- PROFILE
SEE SHEET 2-T & 2-U FOR BRIDGE SKETCHES
FOR STRUCTURE PLANS, SEE SHEETS S-562 THRU S-664

Right of Way for this Plan Sheet has been acquired under metric TIP Project U-2519DA. Right of Way authorization was May 19, 2006.



-COLI-

PI Sta 77+36.87	PI Sta 92+84.25	PI Sta 99+62.71
Δ = 2° 18' 00.2" (LT)	Δ = 185° 21' 27.3" (RT)	Θs = 0° 45' 10.9"
D = 0° 29' 58.8"	D = 21° 49' 47.0"	Ls = 150.92'
L = 460.31'	L = 849.11'	LT = 100.61'
T = 230.18'	T = 5,609.72'	ST = 50.31'
R = 11,466.51'	R = 262.47'	
PI Sta 103+33.29	PI Sta 107+03.21	
Δ = 6° 23' 08.1" (RT)	Θs = 0° 45' 10.9"	
D = 0° 59' 52.6"	Ls = 150.92'	
L = 639.88'	LT = 100.61'	
T = 320.27'	ST = 50.31'	
R = 5,741.46'		

-RPIC-

PI Sta 35+61.73	PI Sta 46+66.01
Θs = 2° 59' 42.0"	Δ = 72° 16' 05.8" (RT)
Ls = 150.92'	D = 3° 58' 08.6"
LT = 100.63'	L = 1,820.80'
ST = 50.32'	T = 1,053.99'
	R = 1,443.57'

-RPIDB-

PI Sta 34+75.14	PI Sta 39+40.16	PI Sta 43+22.32	PI Sta 60+03.91
Δ = 10° 22' 29.2" (RT)	Θs = 0° 56' 28.6"	Θs = 2° 59' 42.0"	Δ = 96° 59' 15.1" (LT)
D = 1° 14' 50.7"	Ls = 150.92'	Ls = 150.92'	D = 3° 58' 09"
L = 831.70'	LT = 100.61'	LT = 100.63'	L = 2,443.60'
T = 416.99'	ST = 50.31'	ST = 50.32'	T = 1,631.30'
R = 4,593.11'			R = 1,443.57'

-LPID-

PI Sta 35+51.47	PI Sta 92+84.25	PI Sta 46+25.13
Θs = 42° 58' 18.6"	Δ = 185° 21' 27.3" (RT)	Θs = 32° 13' 44.0"
Ls = 393.70'	D = 21° 49' 47.0"	Ls = 295.27'
LT = 270.64'	L = 849.11'	LT = 200.21'
ST = 138.70'	T = 5,609.72'	ST = 101.49'
	R = 262.47'	

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: FAYETTEVILLE OUTER LOOP FROM SOUTH OF SR 1400 (CLIFFDALE RD.) TO EAST OF ALL AMERICAN FREEWAY

TIP NO.: U-2519CB COUNTY: CUMBERLAND

DESIGNED BY:

CHECKED BY: DATE:

7/2/99

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

SEE SHEET 2-BB FOR CANOPY LANE ACP

2

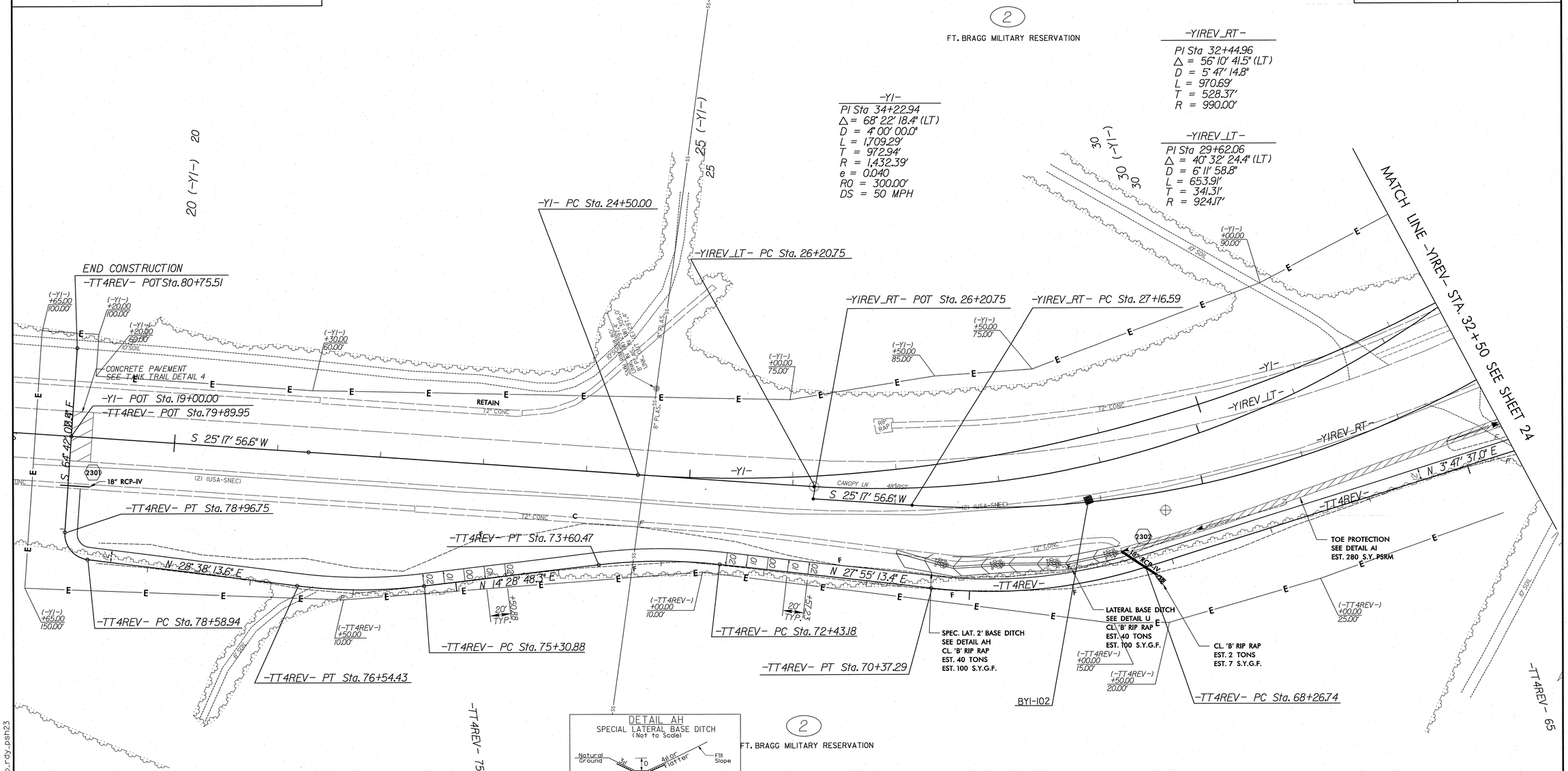
FT. BRAGG MILITARY RESERVATION

NAD 83

-YIREV_RT-
PI Sta 32+44.96
Δ = 56° 10' 41.5" (LT)
D = 5° 47' 14.8"
L = 970.69'
T = 528.37'
R = 990.00'

-YI-
PI Sta 34+22.94
Δ = 68° 22' 18.4" (LT)
D = 4° 00' 00.0"
L = 1,709.29'
T = 972.94'
R = 1,432.39'
e = 0.040
RO = 300.00'
DS = 50 MPH

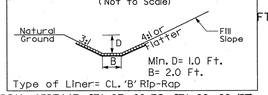
-YIREV_LT-
PI Sta 29+62.06
Δ = 40° 32' 24.4" (LT)
D = 6° 11' 58.8"
L = 653.91'
T = 341.31'
R = 924.17'



2

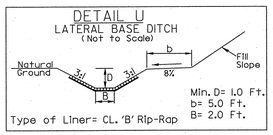
FT. BRAGG MILITARY RESERVATION

DETAIL AH
SPECIAL LATERAL BASE DITCH
(Not to Scale)



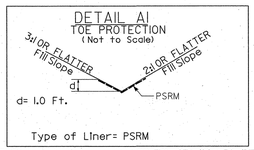
FROM -YIREV_LT- STA. 27+00 TO STA. 28+00 (RT)

DETAIL U
LATERAL BASE DITCH
(Not to Scale)



FROM -YIREV_LT- STA. 28+00 TO STA. 29+00 (RT)

DETAIL AI
TOE PROTECTION
(Not to Scale)



FROM -YIREV_LT- STA. 29+00 TO STA. 32+50 (RT)

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

-TT4REV-

PI Sta 78+82.53	PI Sta 75+92.97	PI Sta 73+02.10	PI Sta 69+33.60
Δ = 86° 39' 43.9" (RT)	Δ = 14° 09' 25.4" (RT)	Δ = 13° 26' 25.1" (LT)	Δ = 24° 07' 36.4" (RT)
D = 229° 10' 59.2"	D = 11° 27' 33.0"	D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 37.81'	L = 123.54'	L = 117.29'	L = 210.55'
T = 23.58'	T = 62.09'	T = 58.91'	T = 106.86'
R = 25.00'	R = 500.00'	R = 500.00'	R = 500.00'

SEE SHEET 2-Q FOR -Y1 DET-
SEE SHEET 53 FOR -Y1- PROFILE
SEE SHEET 66 & 67 FOR -TT4REV- PROFILE

104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_psh23

REVISIONS

SEE SHEET 2-BC FOR CANOPY LANE ACP

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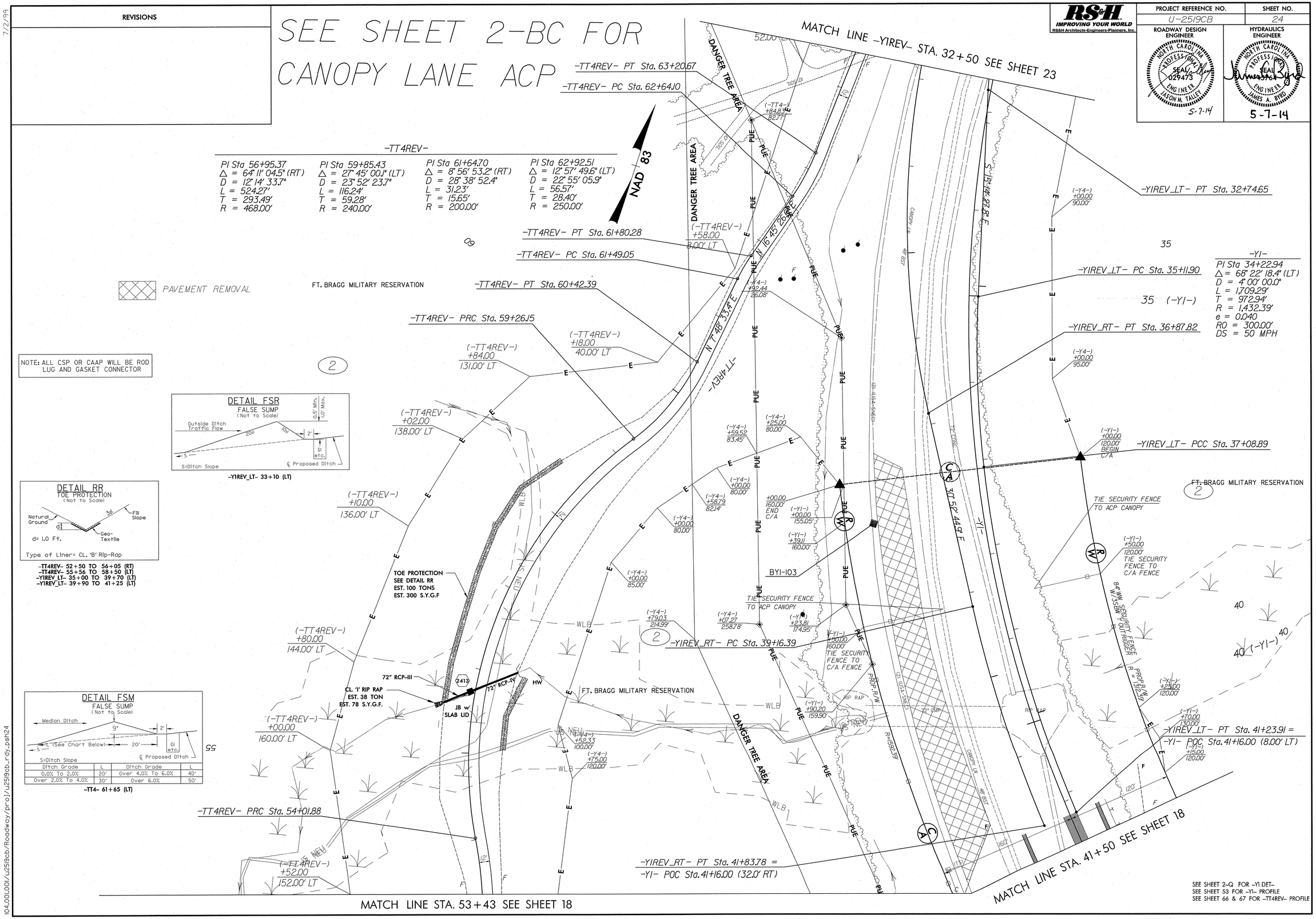
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	24

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 033764 ENGINEER JAMES A. BYRD — 5-7-14



SEE SHEET 2-Q FOR -YI DET-
SEE SHEET 53 FOR -YI- PROFILE
SEE SHEET 66 & 67 FOR -TT4REV- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh24

7/2/99

REVISIONS

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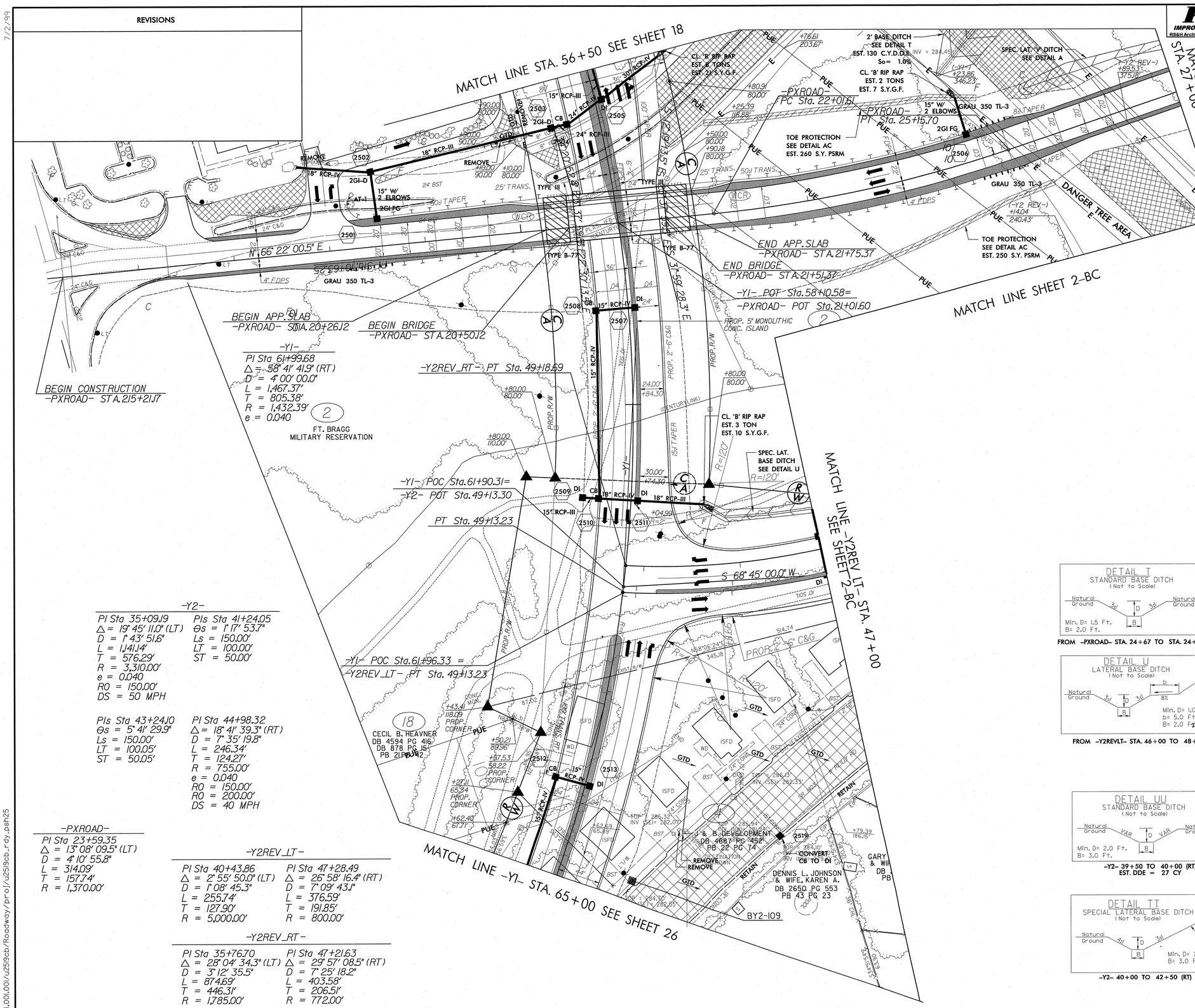
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JAMES A. BYRD 5-7-14



-Y2-

PI Sta 35+09.19
Δ = 19° 45' 11.0" (LT)
D = 1° 43' 51.6"
L = 1,141.14'
T = 576.29'
R = 3,310.00'
e = 0.040
R0 = 150.00'
DS = 50 MPH

PIs Sta 41+24.05
Θs = 1° 17' 53.7"
Ls = 150.00'
LT = 100.00'
ST = 50.00'

PIs Sta 43+24.10
Θs = 5° 41' 29.9"
Ls = 150.00'
LT = 100.05'
ST = 50.05'

PI Sta 44+98.32
Δ = 18° 41' 39.3" (RT)
D = 7° 35' 19.8"
L = 246.34'
T = 124.27'
R = 755.00'
e = 0.040
R0 = 150.00'
R0 = 200.00'
DS = 40 MPH

-PXROAD-

PI Sta 23+59.35
Δ = 13° 08' 09.5" (LT)
D = 4° 10' 55.8"
L = 314.09'
T = 157.74'
R = 1,370.00'

-Y2REV_LT-

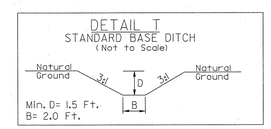
PI Sta 40+43.86
Δ = 2° 55' 50.0" (LT)
D = 1° 08' 45.3"
L = 255.74'
T = 127.90'
R = 5,000.00'

PI Sta 47+28.49
Δ = 26° 58' 16.4" (RT)
D = 7° 09' 43.1"
L = 376.59'
T = 191.85'
R = 800.00'

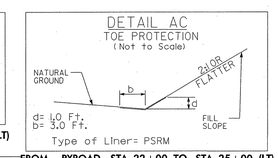
-Y2REV_RT-

PI Sta 35+76.70
Δ = 28° 04' 34.3" (LT)
D = 3° 12' 35.5"
L = 874.69'
T = 446.31'
R = 1,785.00'

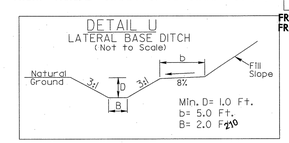
PI Sta 47+21.63
Δ = 29° 57' 08.5" (RT)
D = 7° 25' 18.2"
L = 403.58'
T = 206.51'
R = 772.00'



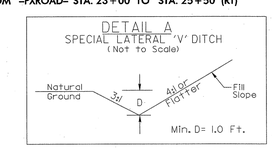
FROM -PXROAD- STA. 24+67 TO STA. 24+83 (LT)



FROM -PXROAD- STA. 22+00 TO STA. 25+00 (LT)
FROM -PXROAD- STA. 23+00 TO STA. 25+50 (RT)

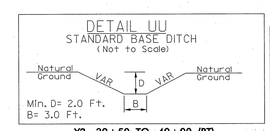


FROM -Y2REVLT- STA. 46+00 TO 48+27 (RT)

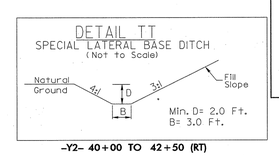


FROM -PXROAD- STA. 25+50 TO STA. 27+25 (LT)

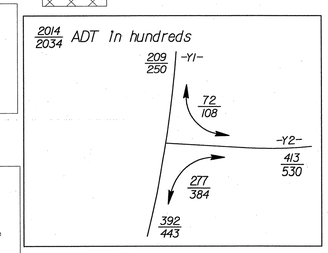
PAVEMENT REMOVAL



-Y2- 39+50 TO 40+00 (RT)
EST. DDE = 27 CY



-Y2- 40+00 TO 42+50 (RT)



SEE SHEET 54 FOR -Y1- PROFILE
SEE SHEET 56 FOR -PXROAD- PROFILE
SEE SHEET 2-U FOR BRIDGE SKETCH
SEE SHEET S-854 THRU S-856 FOR STRUCTURE

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_psh25

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	26

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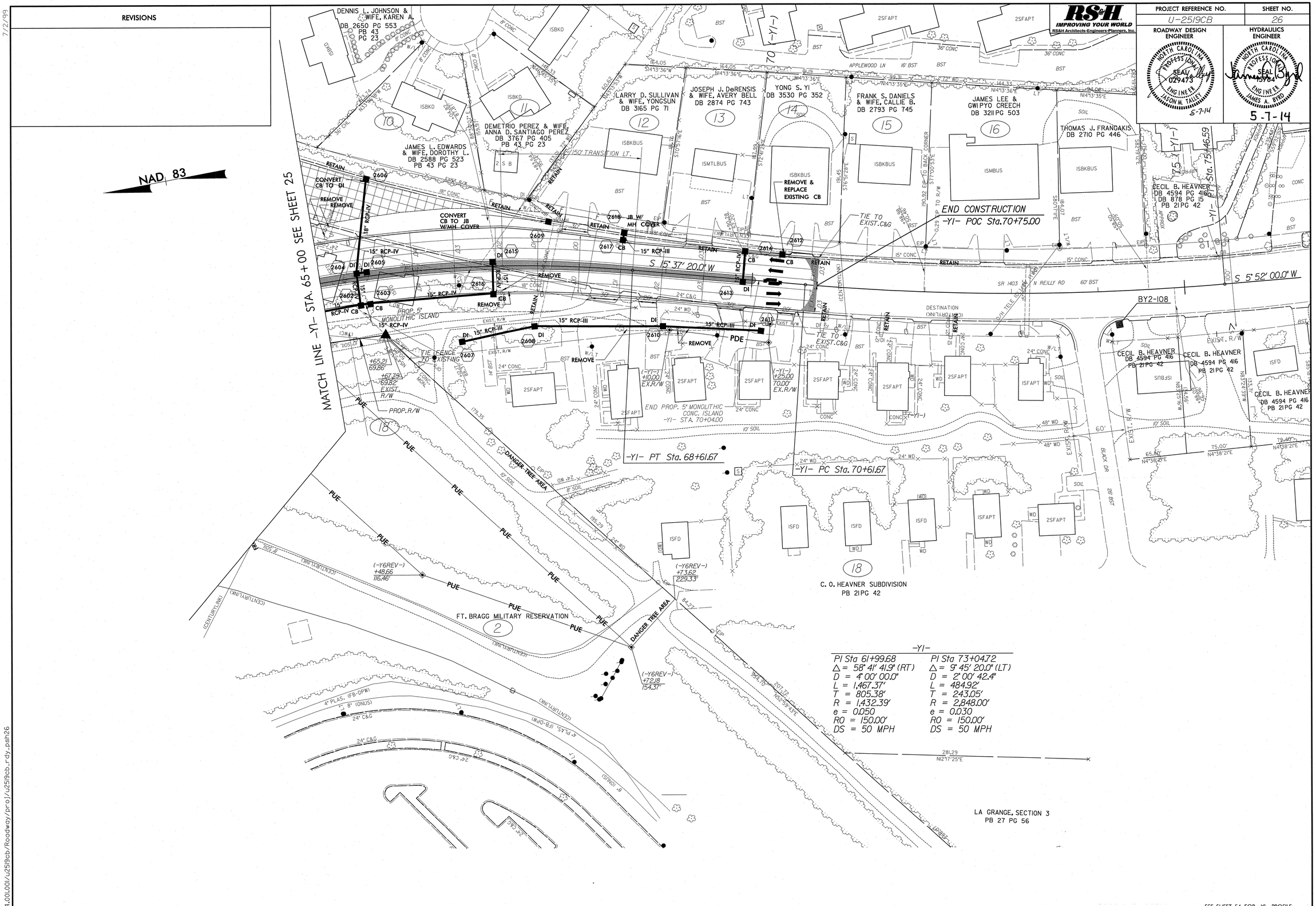
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15784 ENGINEER JAMES A. BYRD
5-7-14

REVISIONS

7/2/99



-Y1-

PI Sta 61+99.68	PI Sta 73+04.72
Δ = 58° 41' 41.9" (RT)	Δ = 9° 45' 20.0" (LT)
D = 4° 00' 00.0"	D = 2° 00' 42.4"
L = 1,467.37'	L = 484.92'
T = 805.38'	T = 243.05'
R = 1,432.39'	R = 2,848.00'
e = 0.050	e = 0.030
RO = 150.00'	RO = 150.00'
DS = 50 MPH	DS = 50 MPH

SEE SHEET 54 FOR -Y1- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh26

7/2/99

REVISIONS

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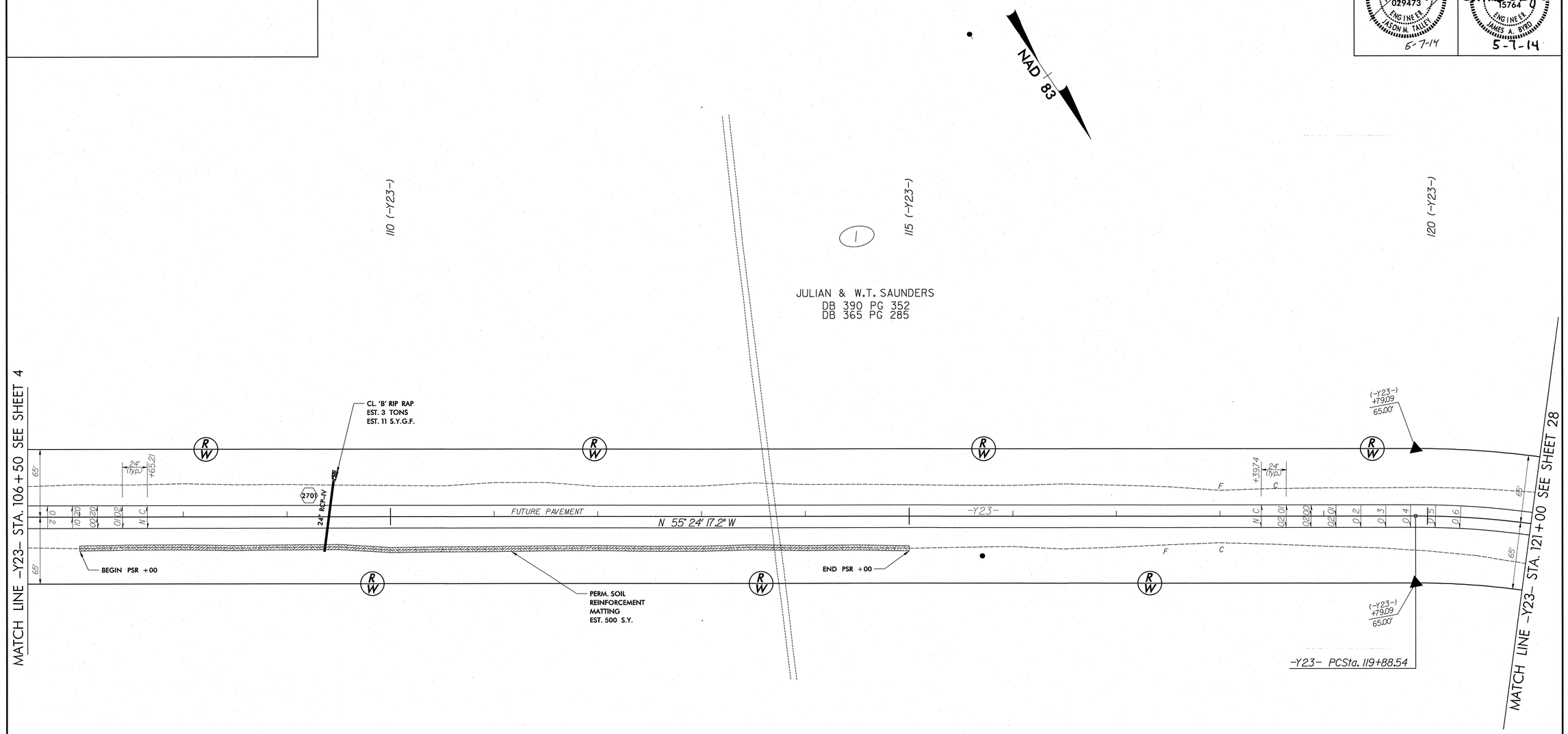
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER MASON N. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



1
JULIAN & W.T. SAUNDERS
DB 390 PG 352
DB 365 PG 285

104.001.001/u2519cb/Roadway/proj/u2519cb rdy pshs27

SEE SHEET 57 & 58 FOR -Y23- PROFILE

7/2/99

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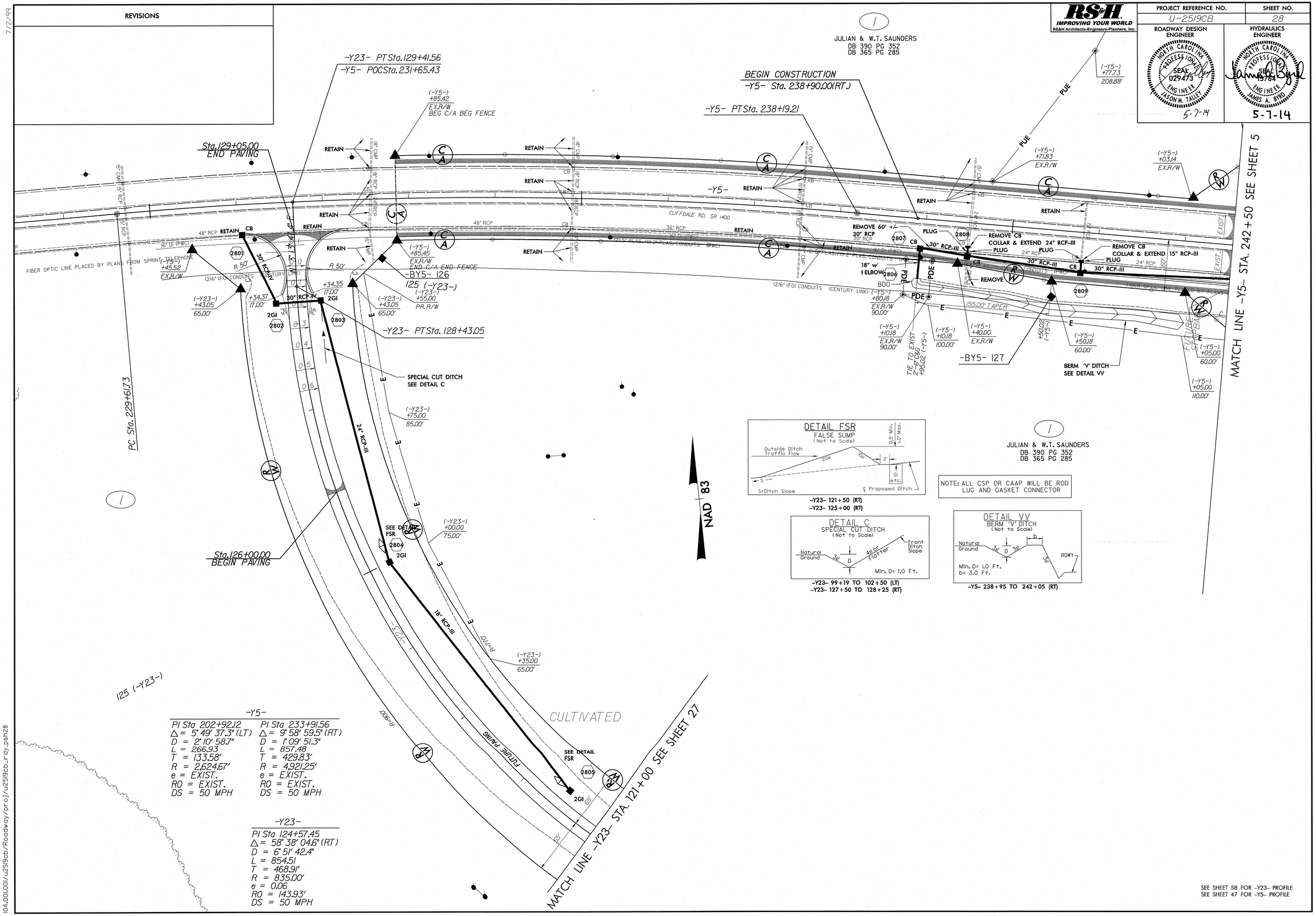
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	28

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19764 ENGINEER JAMES A. BYRD — 5-7-14



DETAIL FSR
FALSE SUMP
(Not to Scale)

-Y23- 121+50 (RT)
-Y23- 125+00 (RT)

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

-Y23- 99+19 TO 102+50 (LT)
-Y23- 127+50 TO 128+25 (RT)

JULIAN & W.T. SAUNDERS
DB 390 PG 352
DB 365 PG 285

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

DETAIL VV
BERM 'V' DITCH
(Not to Scale)

-Y5- 238+95 TO 242+05 (RT)

-Y5-

PI Sta 202+92.12	PI Sta 233+91.56
Δ = 5° 49' 37.3" (LT)	Δ = 9° 58' 59.5" (RT)
D = 2° 10' 58.7"	D = 1° 09' 51.3"
L = 266.93	L = 857.48
T = 133.58'	T = 429.83'
R = 2,624.67'	R = 4,921.25'
e = EXIST.	e = EXIST.
RO = EXIST.	RO = EXIST.
DS = 50 MPH	DS = 50 MPH

-Y23-

PI Sta 124+57.45
Δ = 58° 38' 04.6" (RT)
D = 6° 51' 42.4"
L = 854.51
T = 468.91'
R = 835.00'
e = 0.06
RO = 143.93'
DS = 50 MPH

SEE SHEET 58 FOR -Y23- PROFILE
SEE SHEET 47 FOR -Y5- PROFILE

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.psh28

REVISIONS

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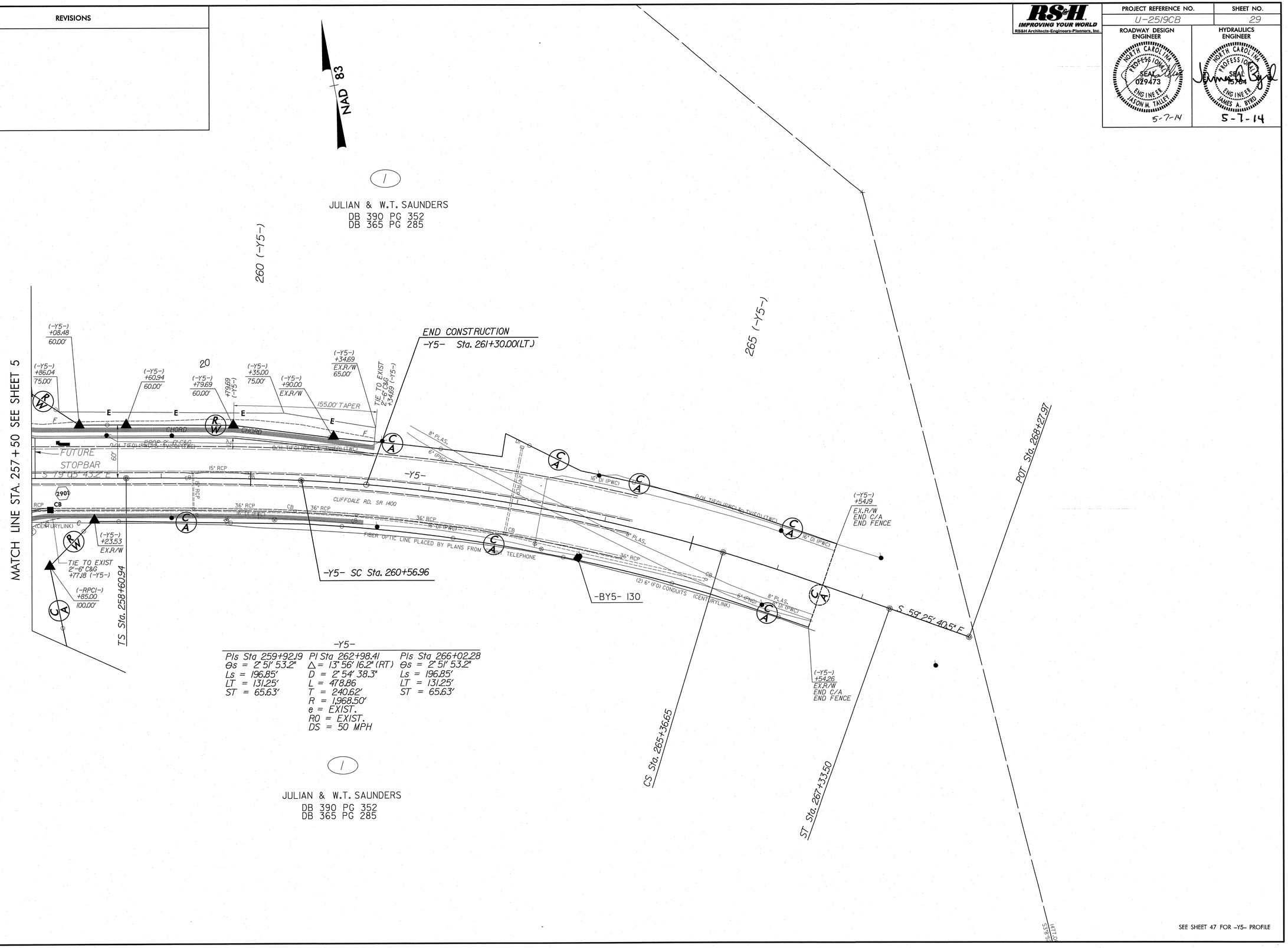
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15184 ENGINEER JAMES A. BYRD 5-7-14



SEE SHEET 47 FOR -Y5- PROFILE

7/2/99

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_psh29

REVISIONS

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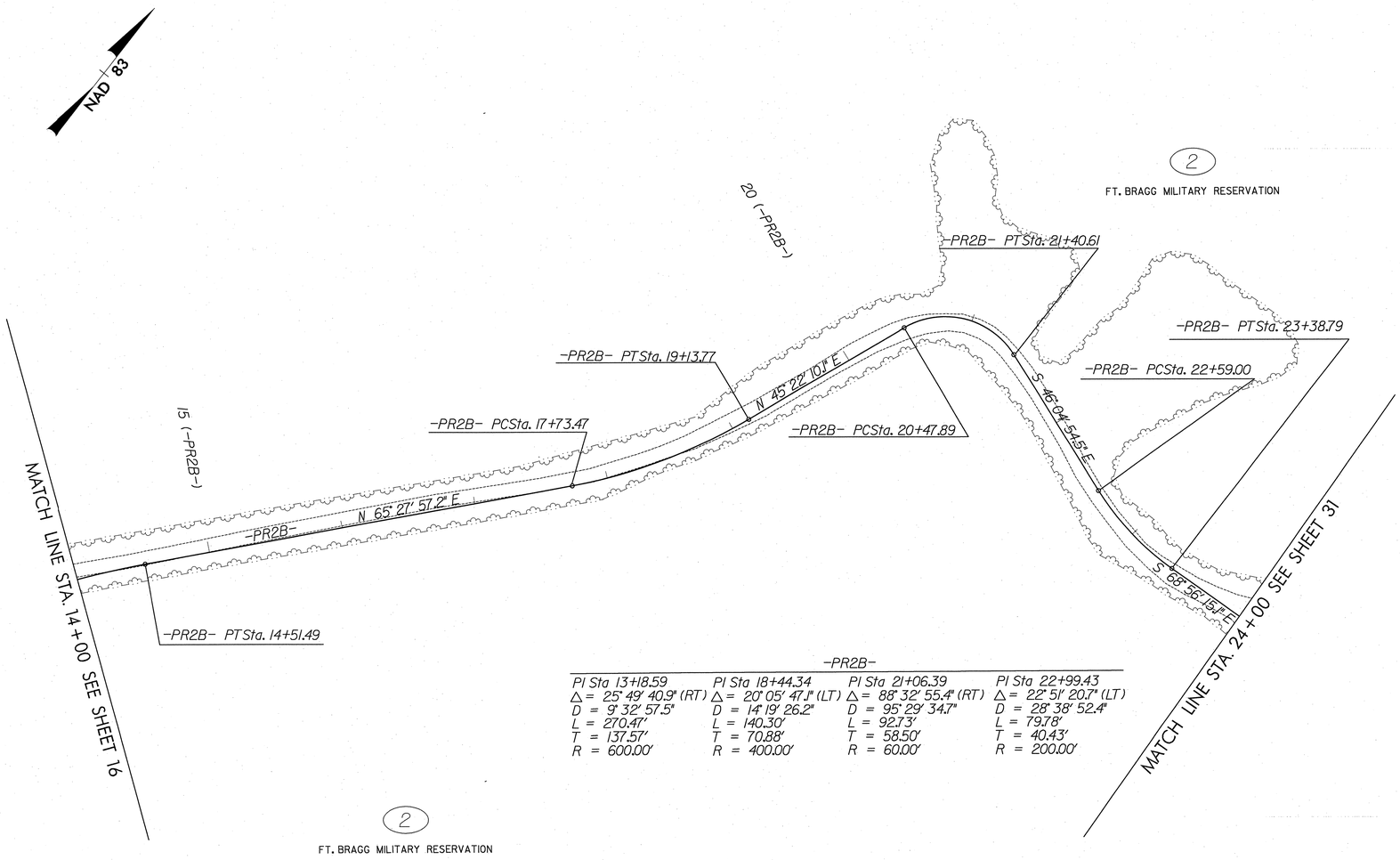
RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



-PR2B-

PI Sta 13+18.59	PI Sta 18+44.34	PI Sta 21+06.39	PI Sta 22+99.43
Δ = 25° 49' 40.9" (RT)	Δ = 20° 05' 47.1" (LT)	Δ = 88° 32' 55.4" (RT)	Δ = 22° 51' 20.7" (LT)
D = 9° 32' 57.5"	D = 14° 19' 26.2"	D = 95° 29' 34.7"	D = 28° 38' 52.4"
L = 270.47'	L = 140.30'	L = 92.73'	L = 79.78'
T = 137.57'	T = 70.88'	T = 58.50'	T = 40.43'
R = 600.00'	R = 400.00'	R = 60.00'	R = 200.00'

THIS PAGE IS FOR INFORMATIONAL PURPOSES ONLY

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104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_psh30

7/2/99

REVISIONS

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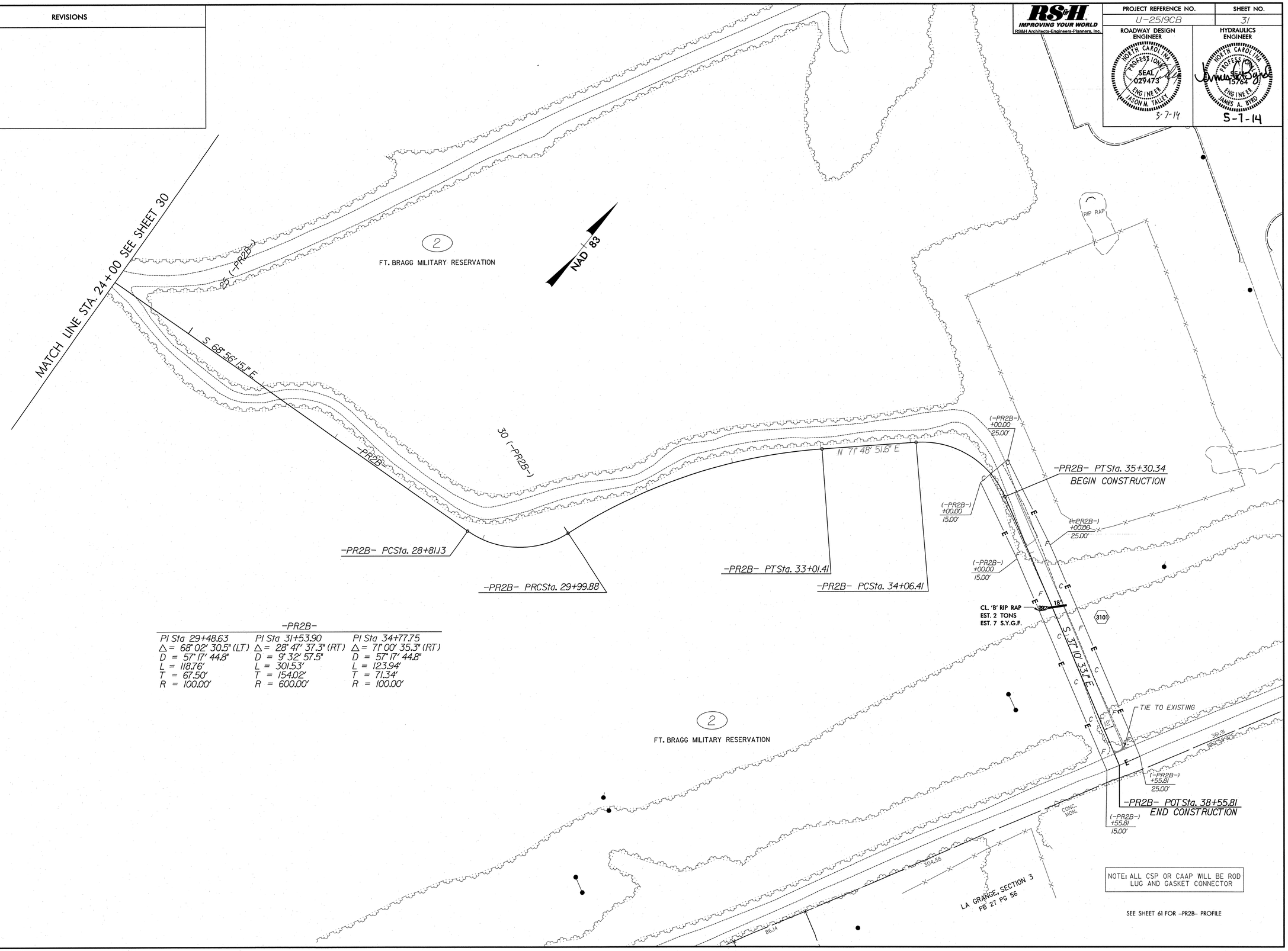
RS&H Architects-Engineers-Planners, Inc.

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



-PR2B-

PI Sta 29+48.63	PI Sta 31+53.90	PI Sta 34+77.75
Δ = 68° 02' 30.5" (LT)	Δ = 28° 47' 37.3" (RT)	Δ = 71° 00' 35.3" (RT)
D = 57° 17' 44.8"	D = 9° 32' 57.5"	D = 57° 17' 44.8"
L = 118.76'	L = 301.53'	L = 123.94'
T = 67.50'	T = 154.02'	T = 71.34'
R = 100.00'	R = 600.00'	R = 100.00'

NOTE: ALL CSP OR CAAP WILL BE ROD LUG AND GASKET CONNECTOR

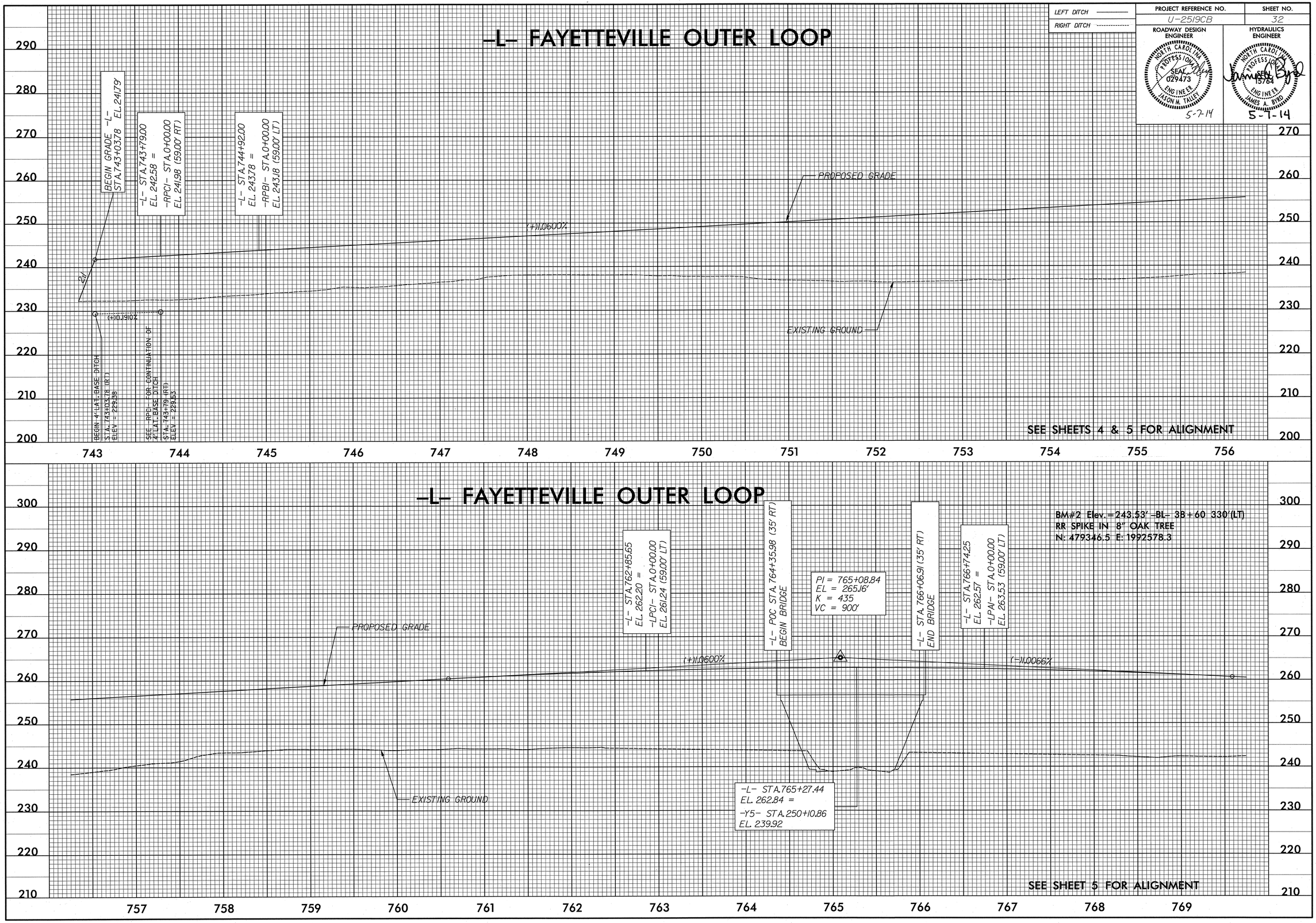
SEE SHEET 61 FOR -PR2B- PROFILE

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.psh31

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	32

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

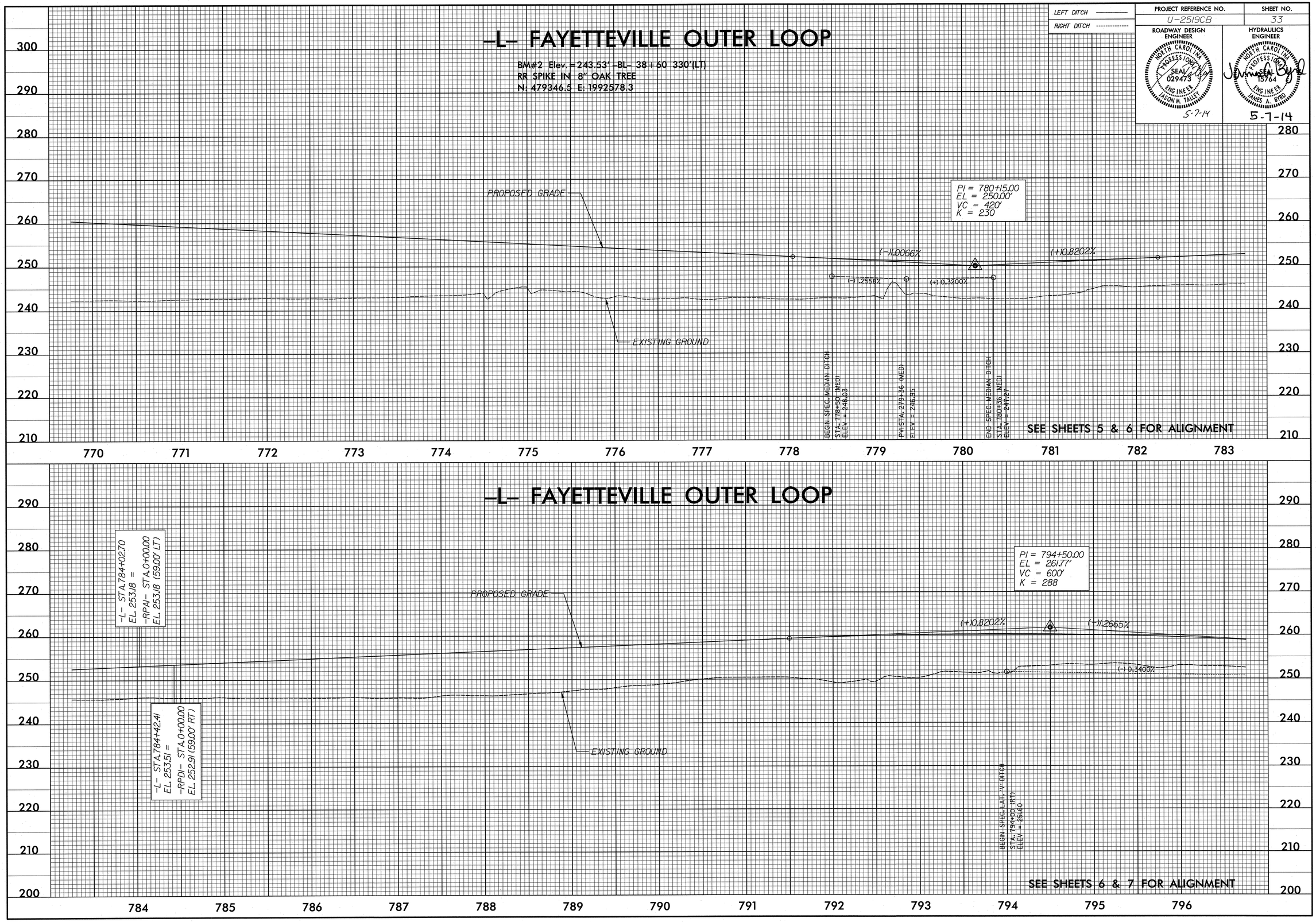


104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr032

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	33

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — 5-7-14



104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pro33

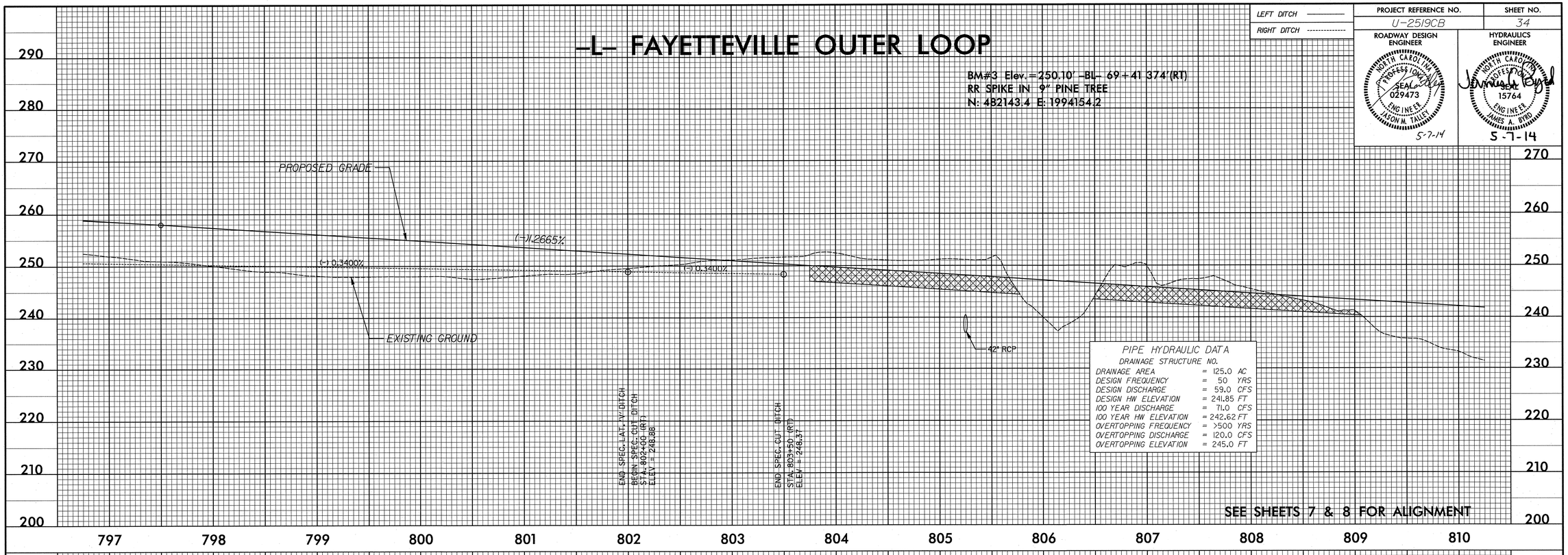
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	34

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER MASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRUM — 5-7-14

-L- FAYETTEVILLE OUTER LOOP

BM#3 Elev.=250.10' -BL- 69+41.374'(RT)
RR SPIKE IN 9" PINE TREE
N: 482143.4 E: 1994154.2



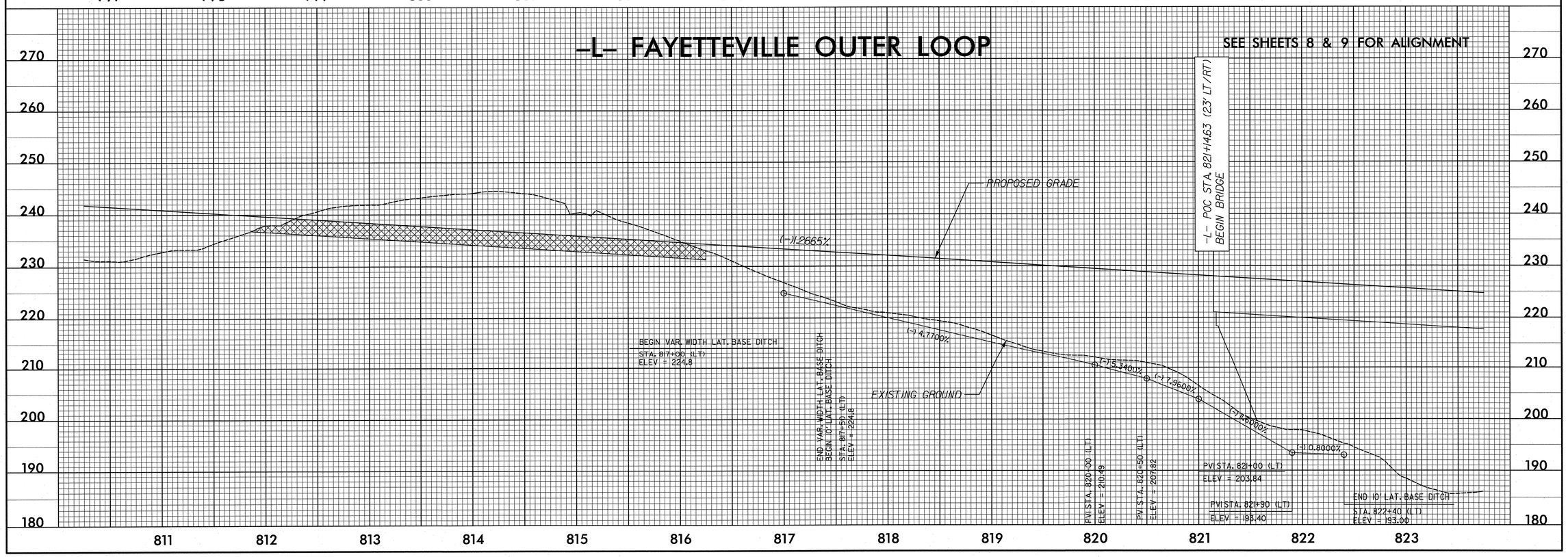
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 125.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 59.0	CFS
DESIGN HW ELEVATION	= 241.85	FT
100 YEAR DISCHARGE	= 71.0	CFS
100 YEAR HW ELEVATION	= 242.62	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 120.0	CFS
OVERTOPPING ELEVATION	= 245.0	FT

SEE SHEETS 7 & 8 FOR ALIGNMENT

-L- FAYETTEVILLE OUTER LOOP

SEE SHEETS 8 & 9 FOR ALIGNMENT

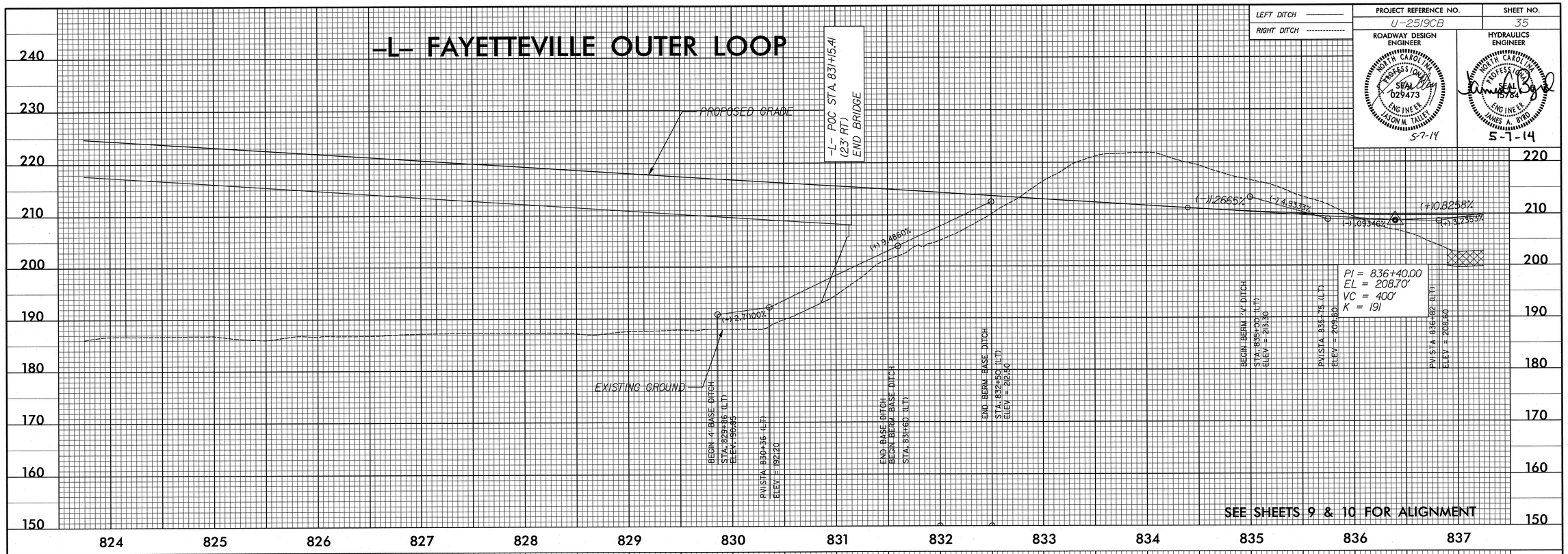


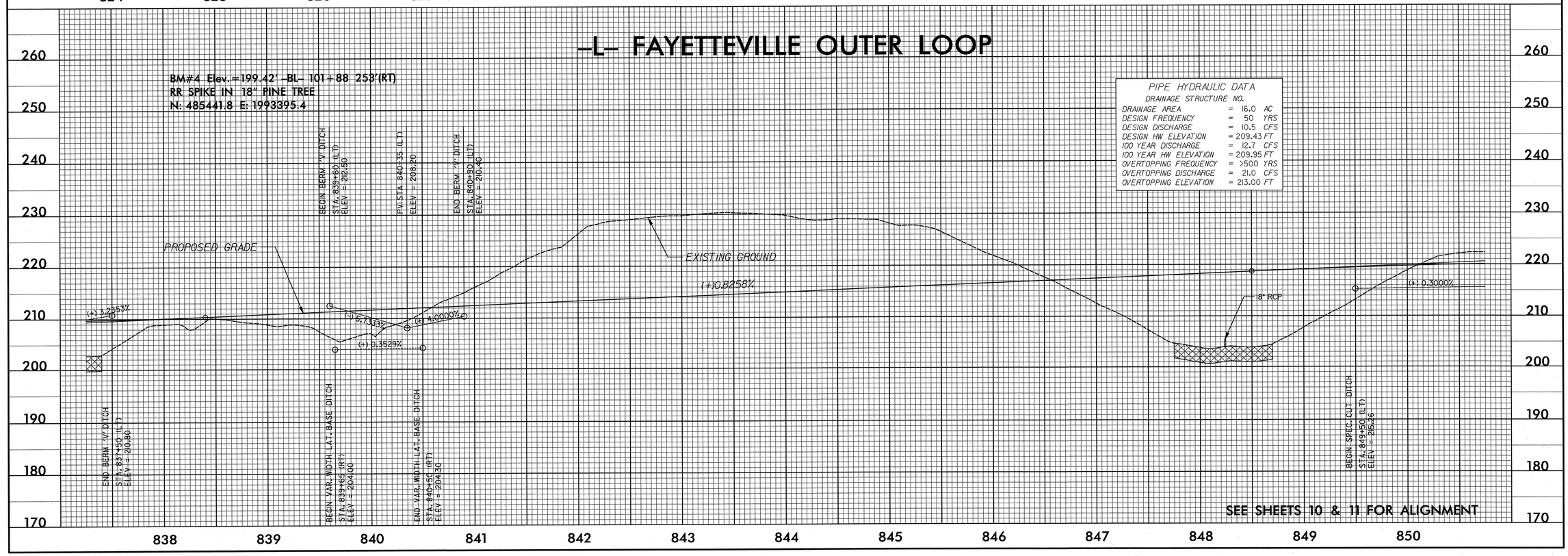
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pro34

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	35

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14





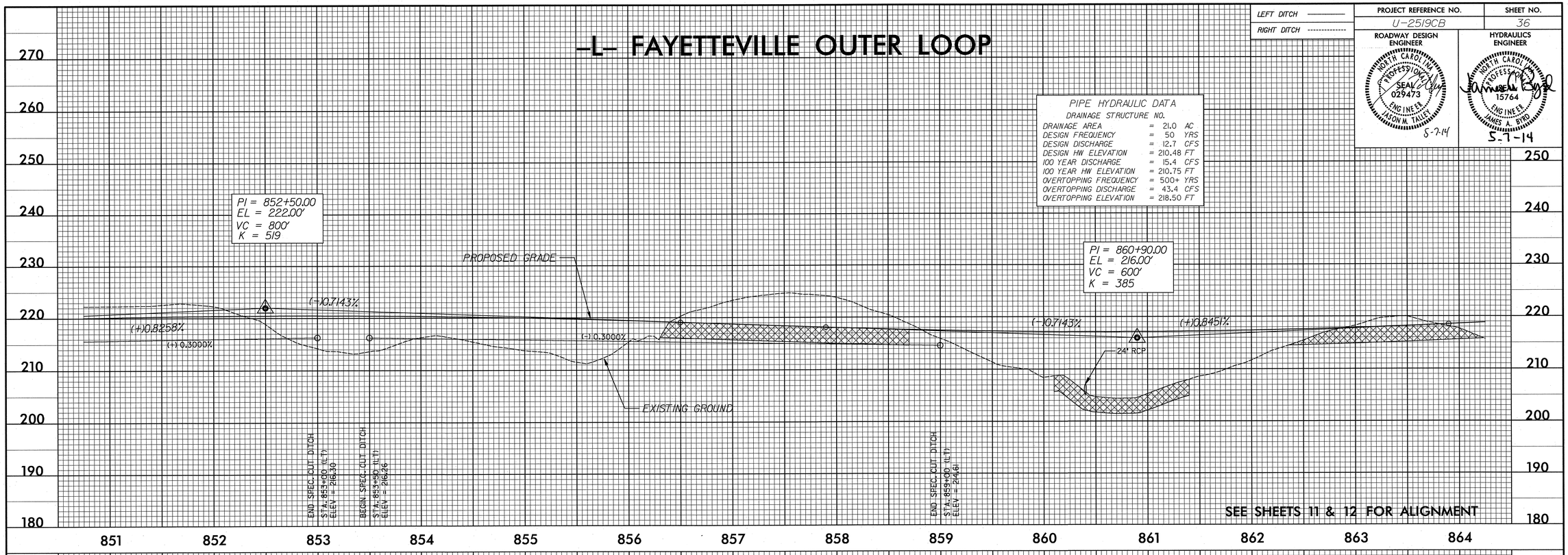
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr035

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	36

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

-L- FAYETTEVILLE OUTER LOOP

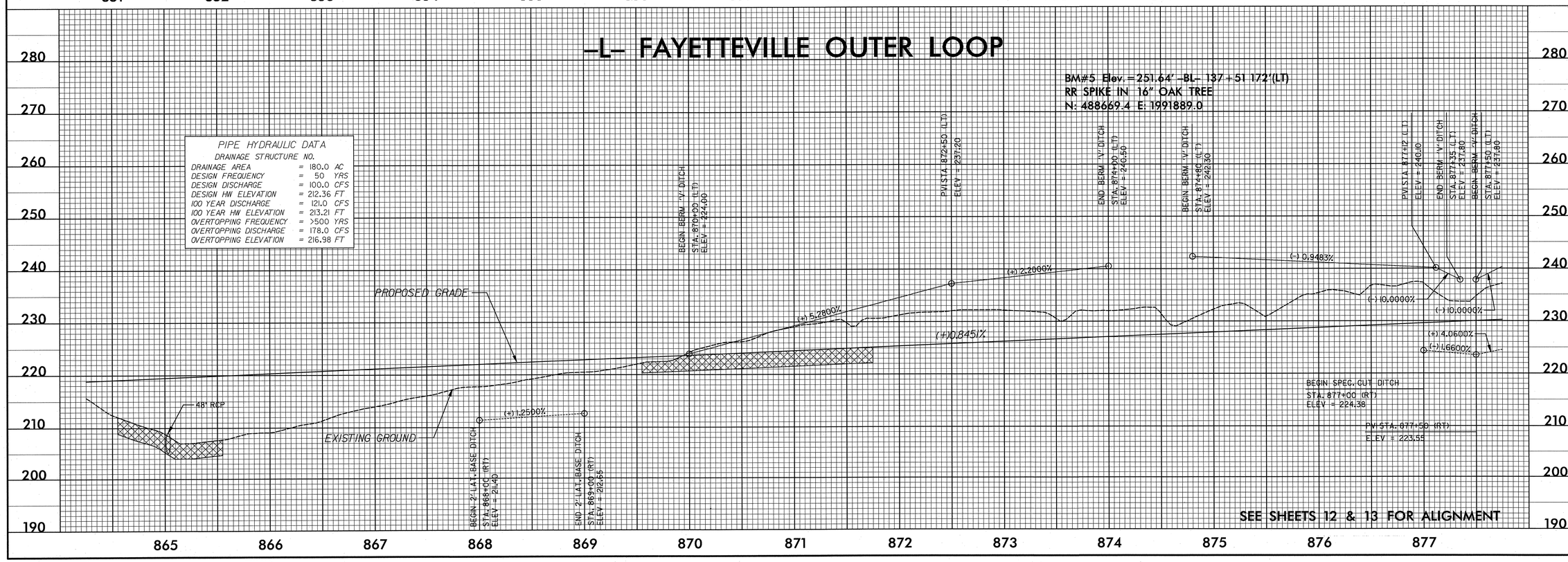


PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	21.0 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	12.7 CFS
DESIGN HW ELEVATION	=	210.48 FT
100 YEAR DISCHARGE	=	15.4 CFS
100 YEAR HW ELEVATION	=	210.75 FT
OVERTOPPING FREQUENCY	=	500+ YRS
OVERTOPPING DISCHARGE	=	43.4 CFS
OVERTOPPING ELEVATION	=	218.50 FT

-L- FAYETTEVILLE OUTER LOOP



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

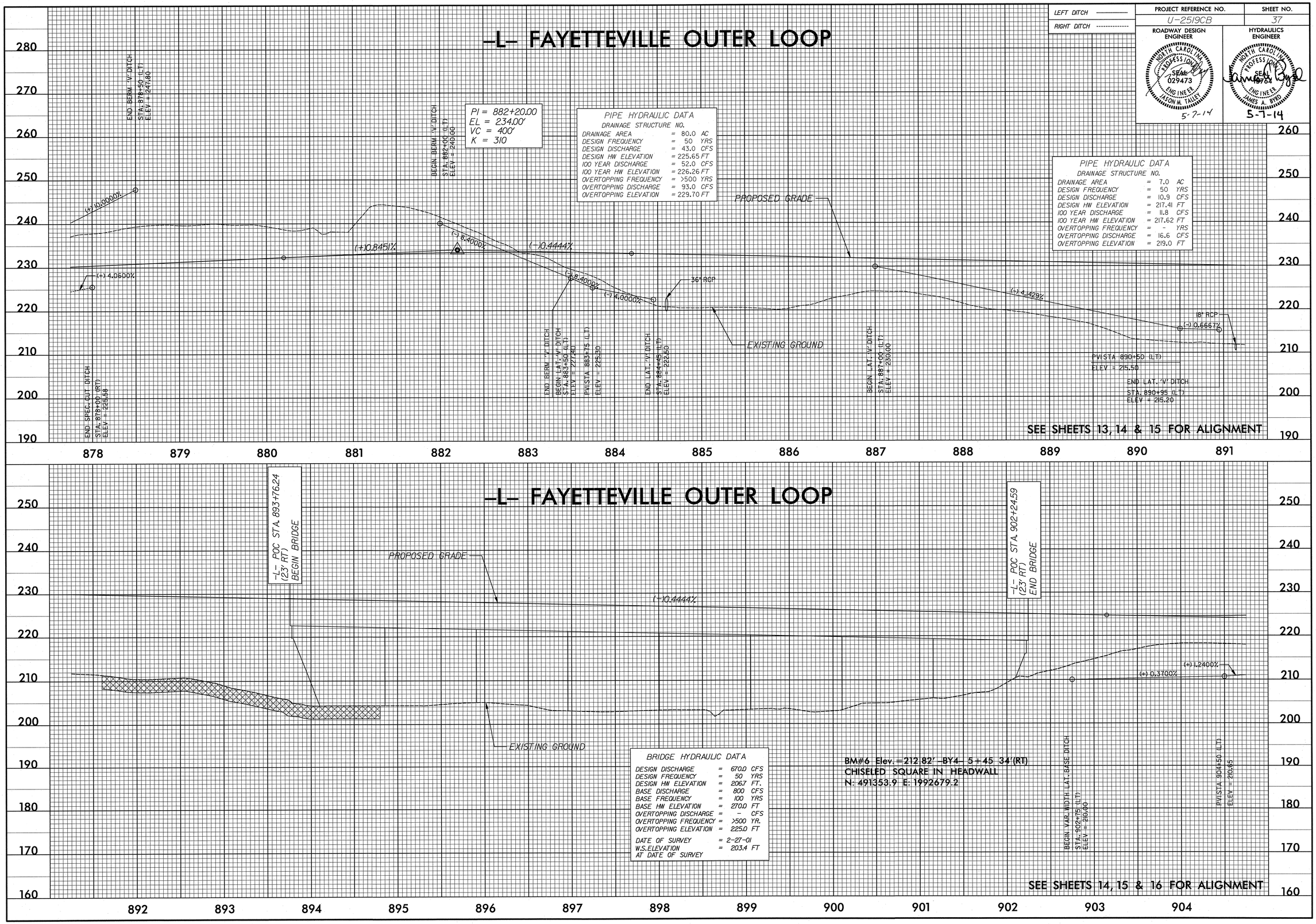
DRAINAGE AREA	=	180.0 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	100.0 CFS
DESIGN HW ELEVATION	=	212.36 FT
100 YEAR DISCHARGE	=	121.0 CFS
100 YEAR HW ELEVATION	=	213.21 FT
OVERTOPPING FREQUENCY	=	>500 YRS
OVERTOPPING DISCHARGE	=	178.0 CFS
OVERTOPPING ELEVATION	=	216.98 FT

104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_pr036

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	37

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19764 ENGINEER JAMES A. BYRD 5-7-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr037

LEFT DITCH	
RIGHT DITCH	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	38

ROADWAY DESIGN ENGINEER

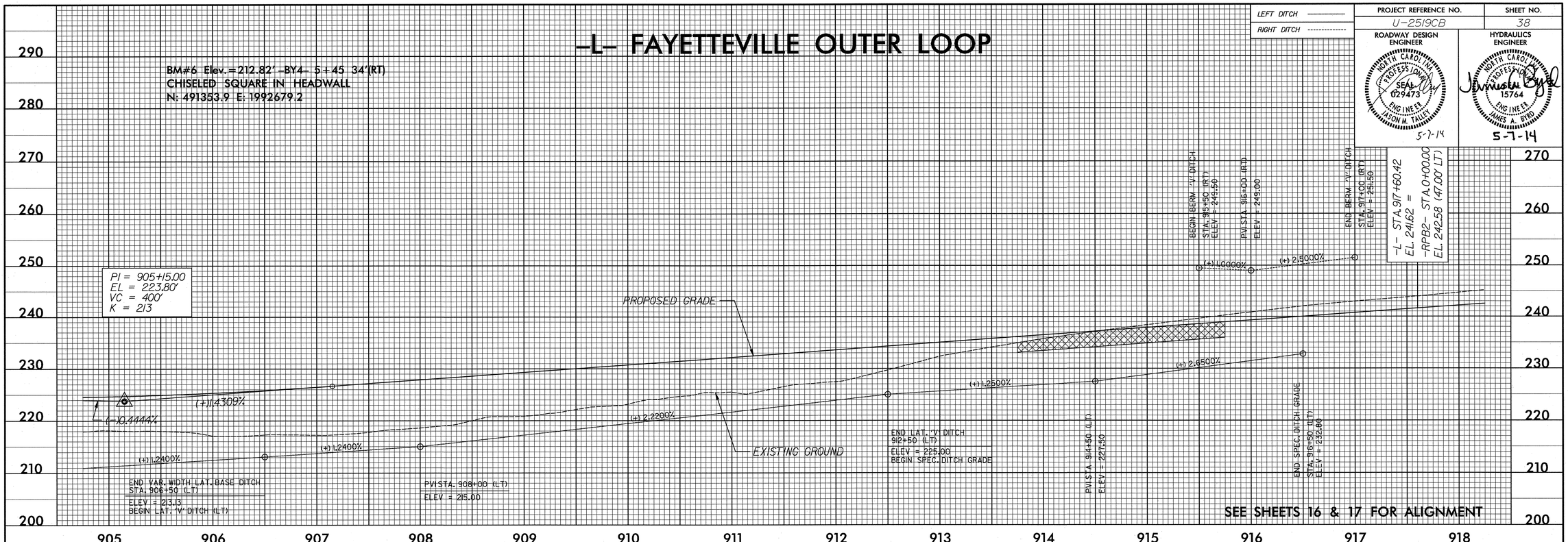
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

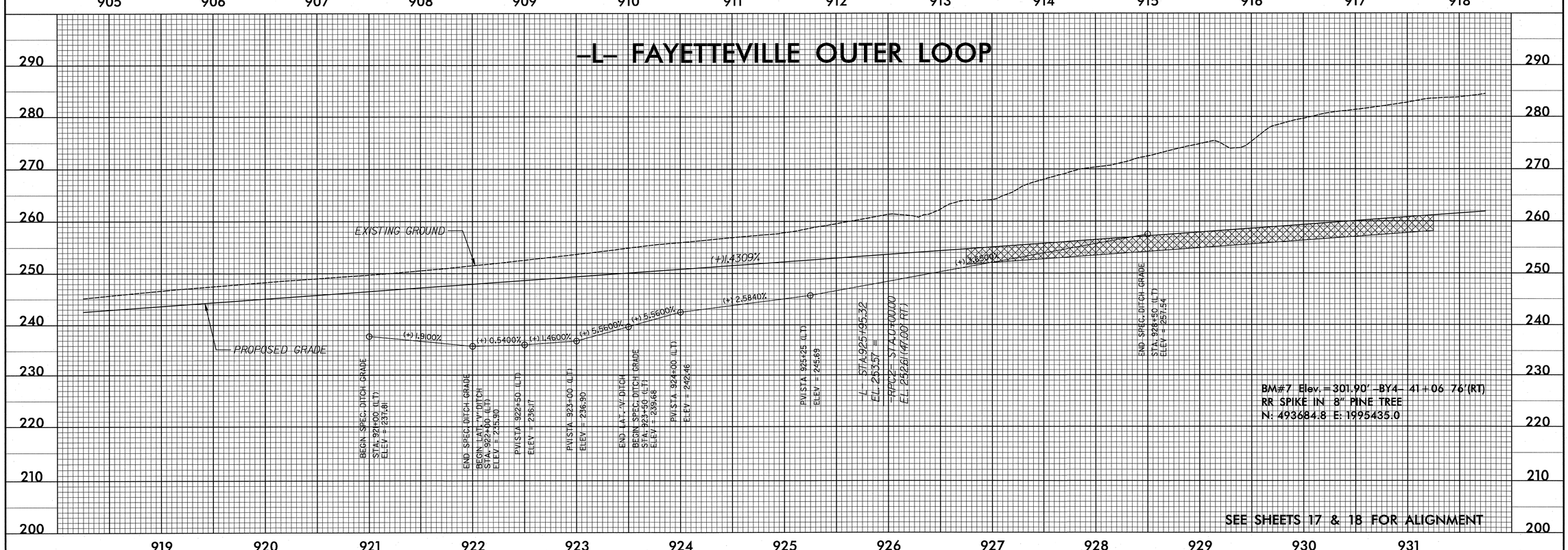
5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14





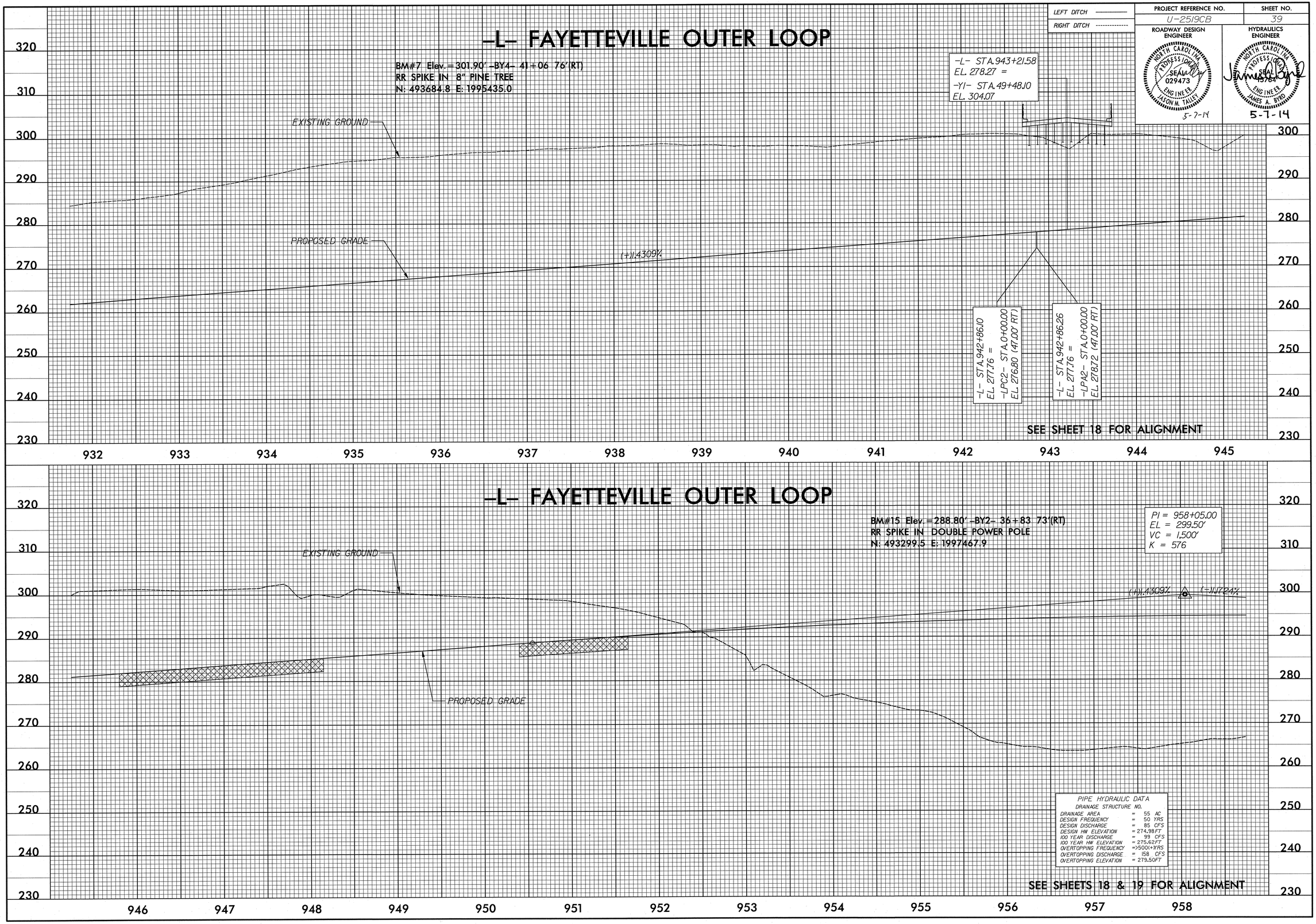
104.00.001/U2519cb/Roadway/proj/U2519cb_rdy_pro38

LEFT DITCH ———
RIGHT DITCH - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	39

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19764 ENGINEER JAMES A. BYRD
5-7-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr039

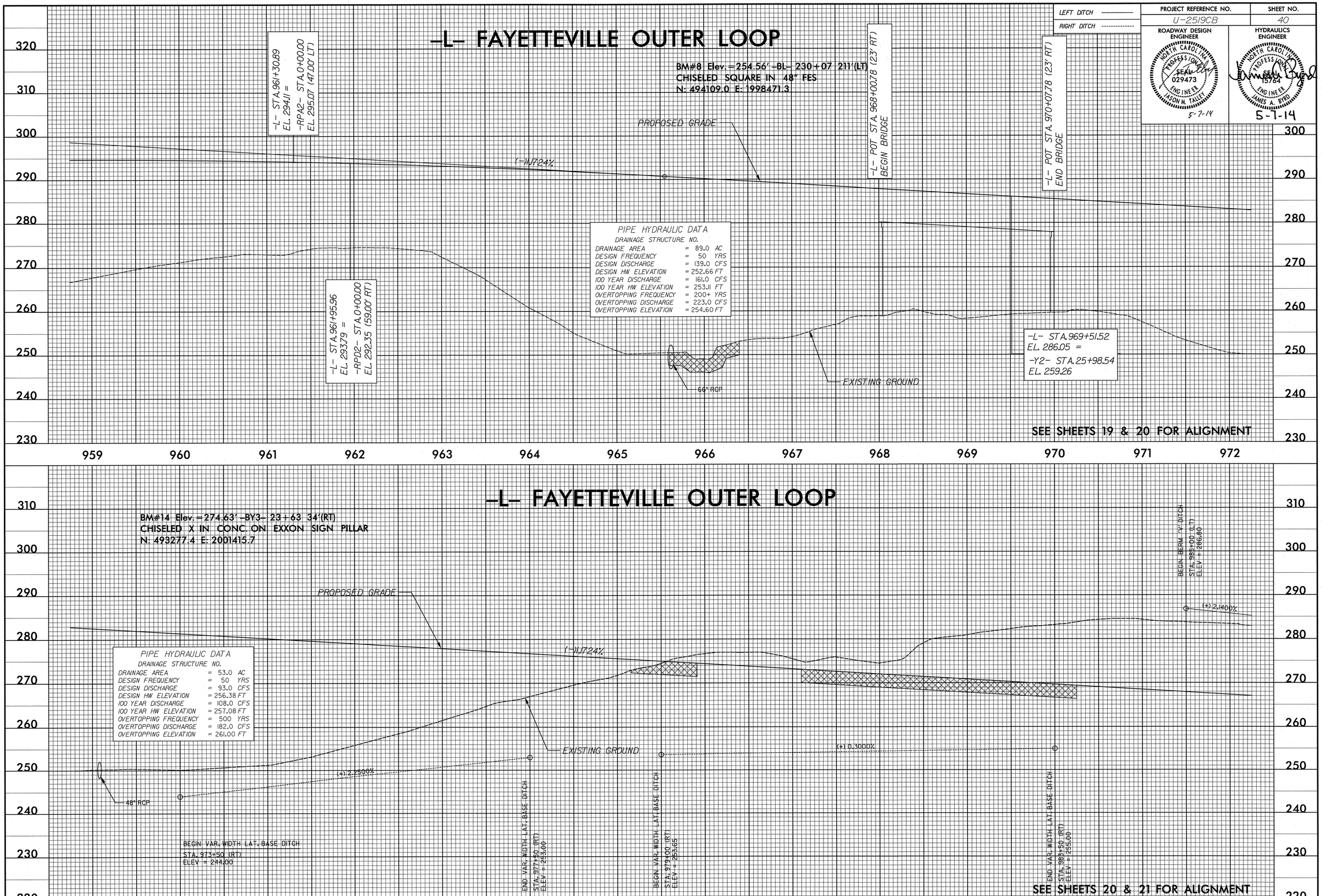
LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	40

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

-L- FAYETTEVILLE OUTER LOOP

BM#8 Elev. = 254.56' -BL- 230+07 211'(LT)
CHISELED SQUARE IN 48" FES
N: 494109.0 E: 1998471.3



-L- FAYETTEVILLE OUTER LOOP

BM#14 Elev. = 274.63' -BY3- 23+63 34'(RT)
CHISELED X IN CONC. ON EXXON SIGN PILLAR
N: 493277.4 E: 2001415.7

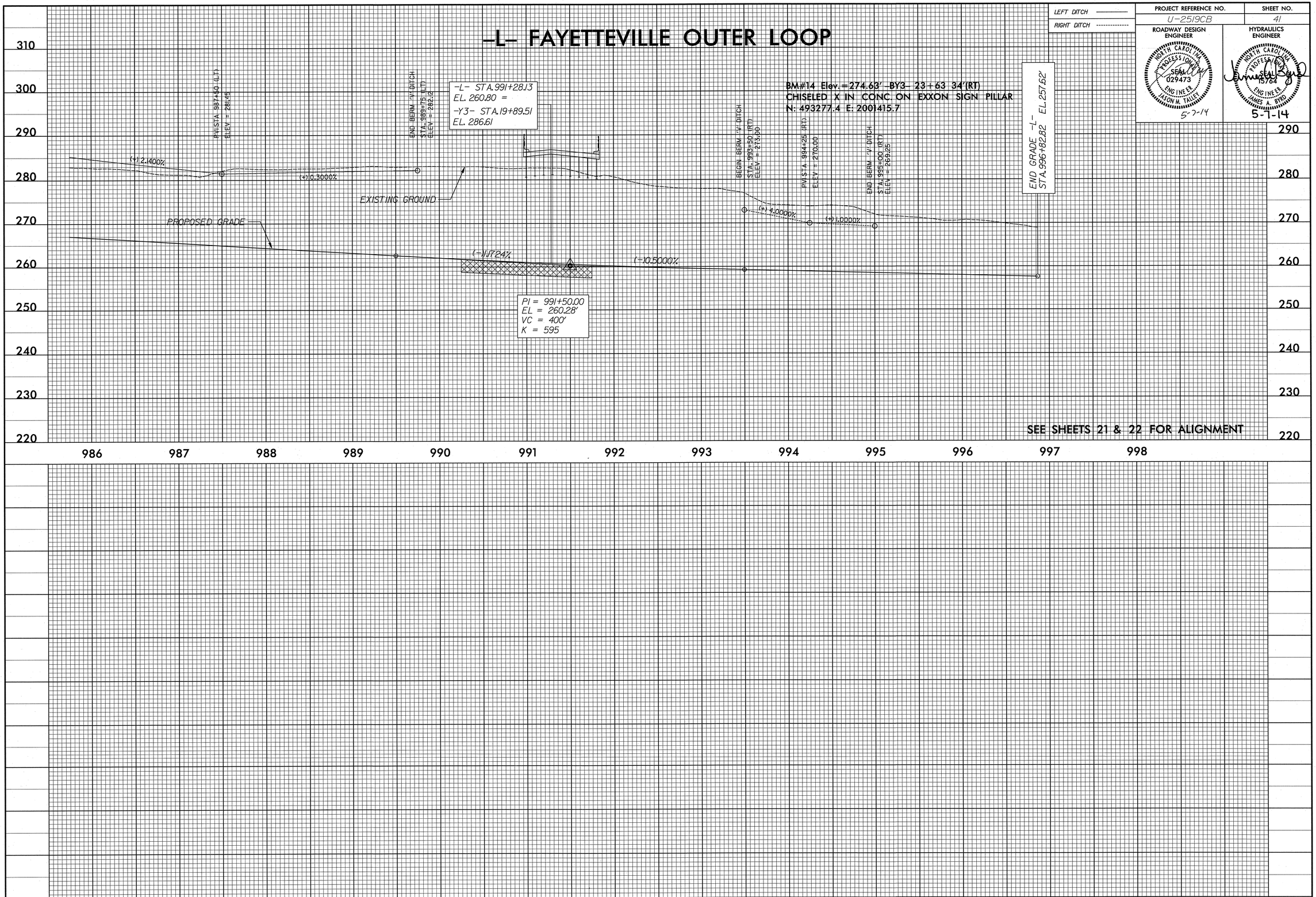
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro40

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	41

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER MASON W. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15762 ENGINEER JAMES A. BYRD 5-7-14

-L- FAYETTEVILLE OUTER LOOP

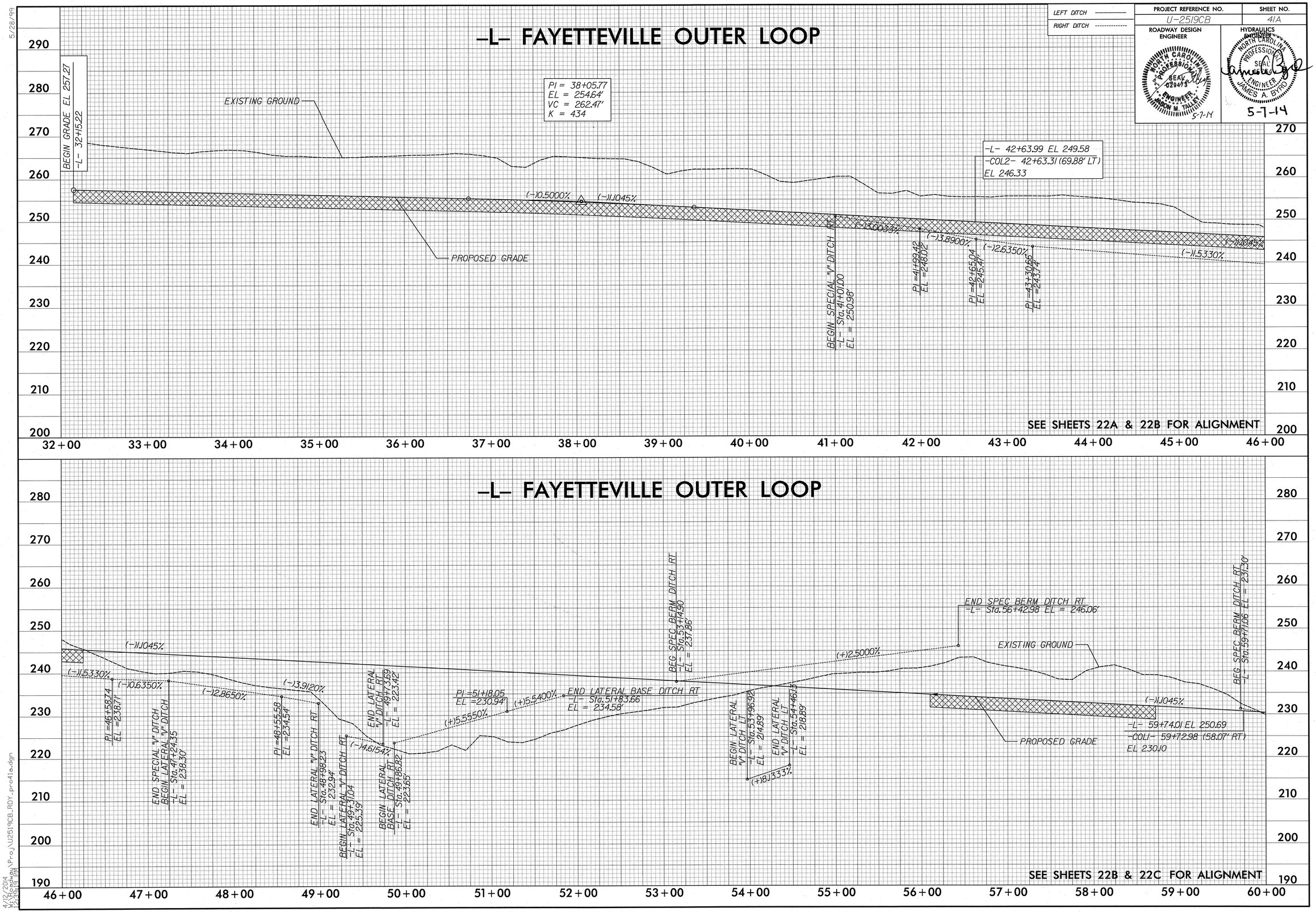


104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro41

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	41A

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JAMES A. BYRD — 5-7-14



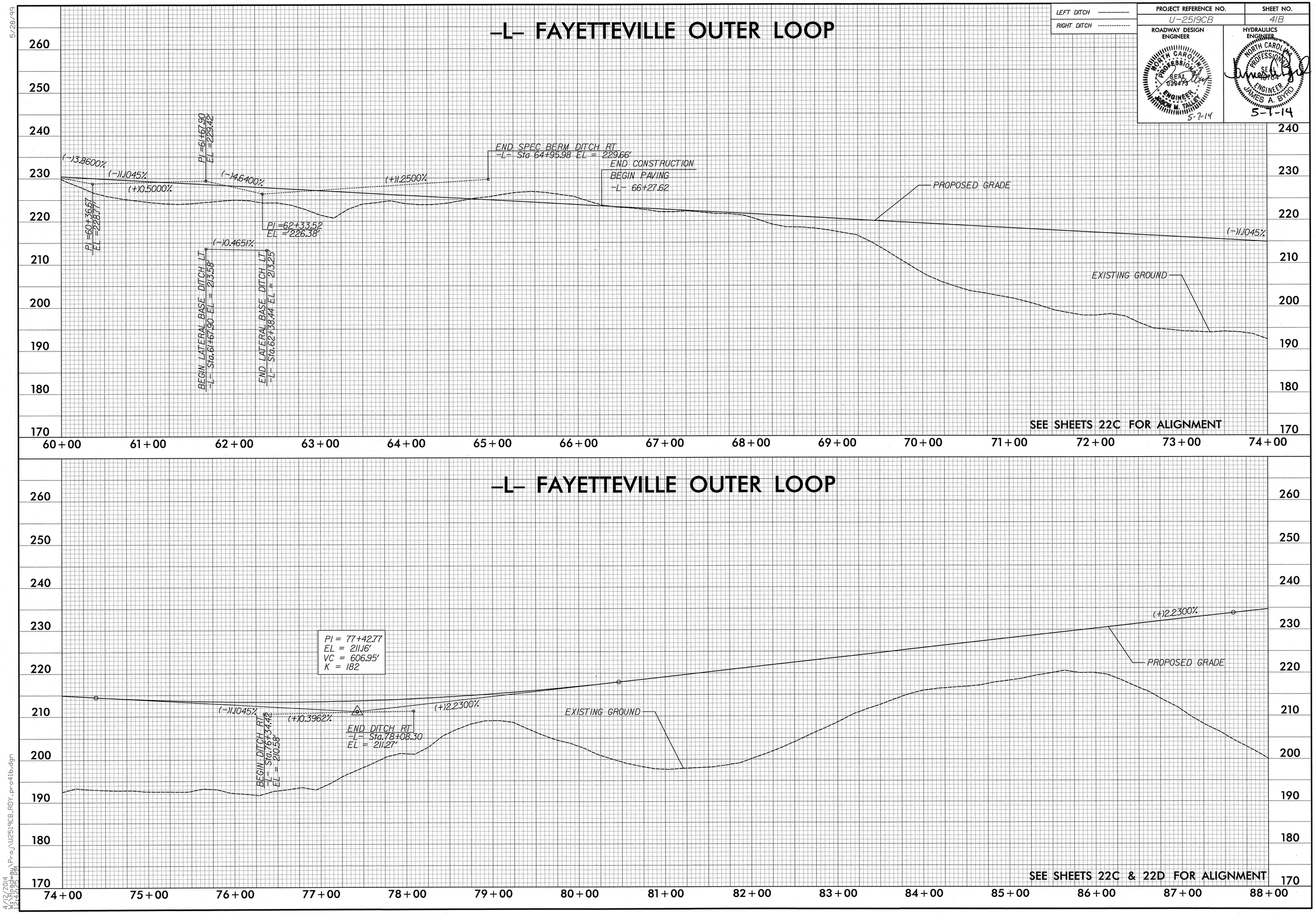
5/28/99

4/12/2014
W:\Roadway\Proj\U2519CB_RDY_pro41a.dgn
12:39:19 PM

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	41B
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JACK M. TALLEY 5-2-14

NORTH CAROLINA PROFESSIONAL SEAL 19764 ENGINEER JAMES A. BYRD 5-1-14



5/28/99

4/12/2014
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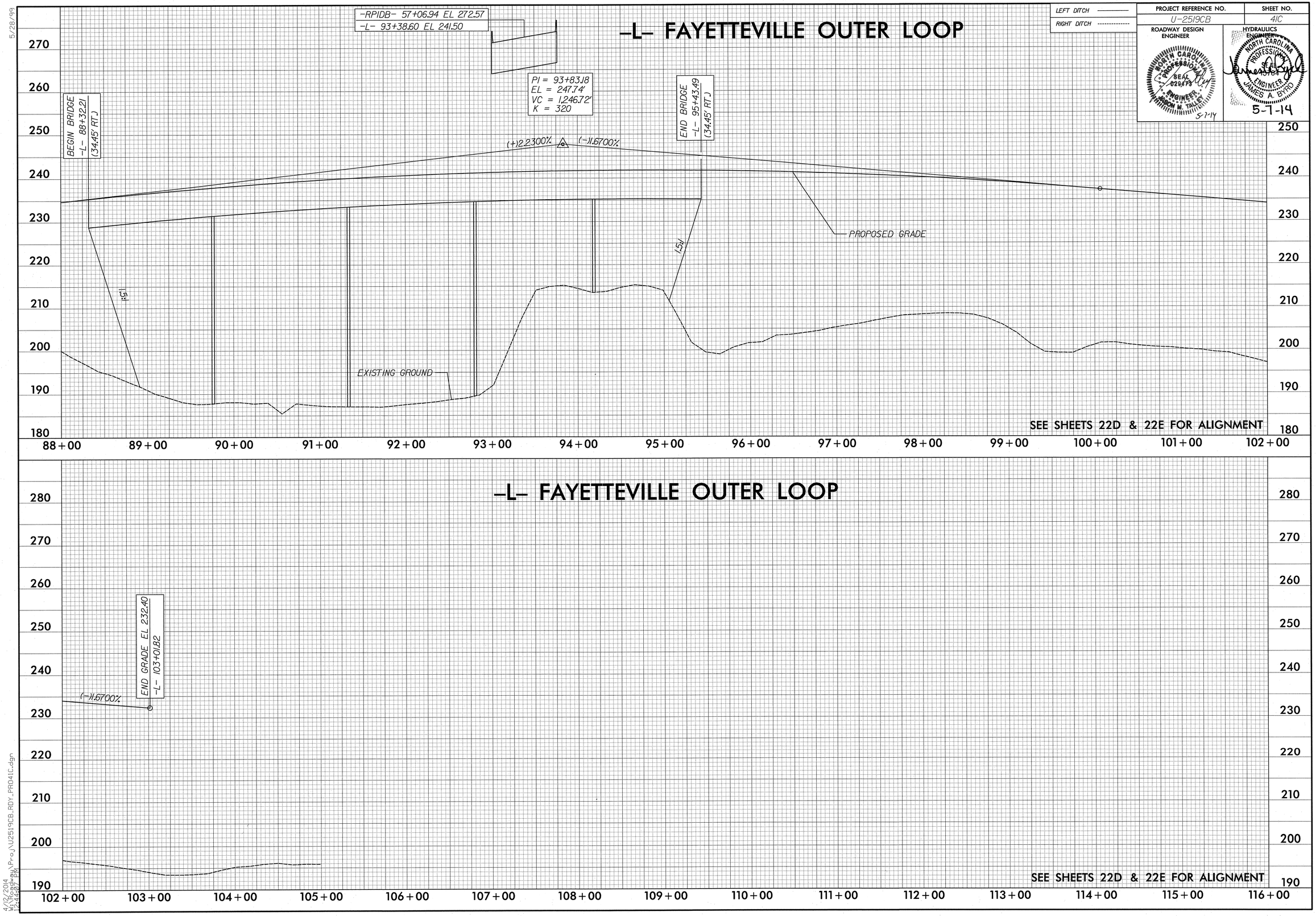
LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	41C

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 13784 ENGINEER JAMES A. BYRD 5-7-14



5/28/99

4/12/2014
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12:44:07 PM

LEFT DITCH	
RIGHT DITCH	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	42

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

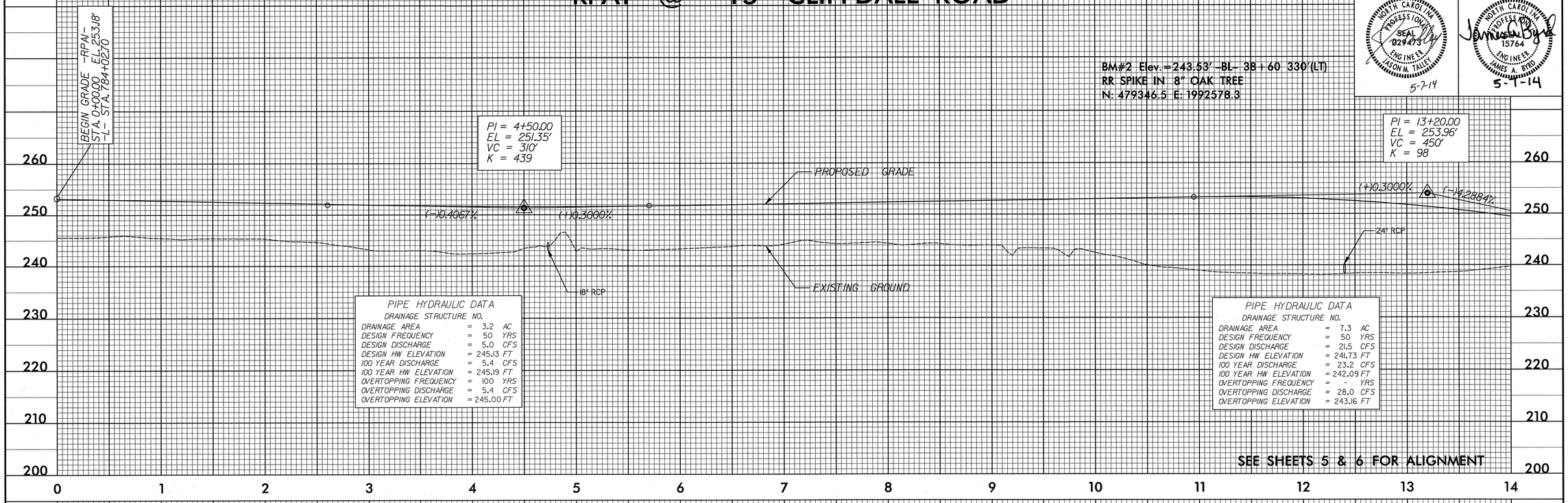
5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14

-RPA1- @ -Y5- CLIFFDALE ROAD



BM#2 Elev.=243.53' -BL- 38+60 330'(LT)
RR SPIKE IN 8" OAK TREE
N: 479346.5 E: 1992578.3

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

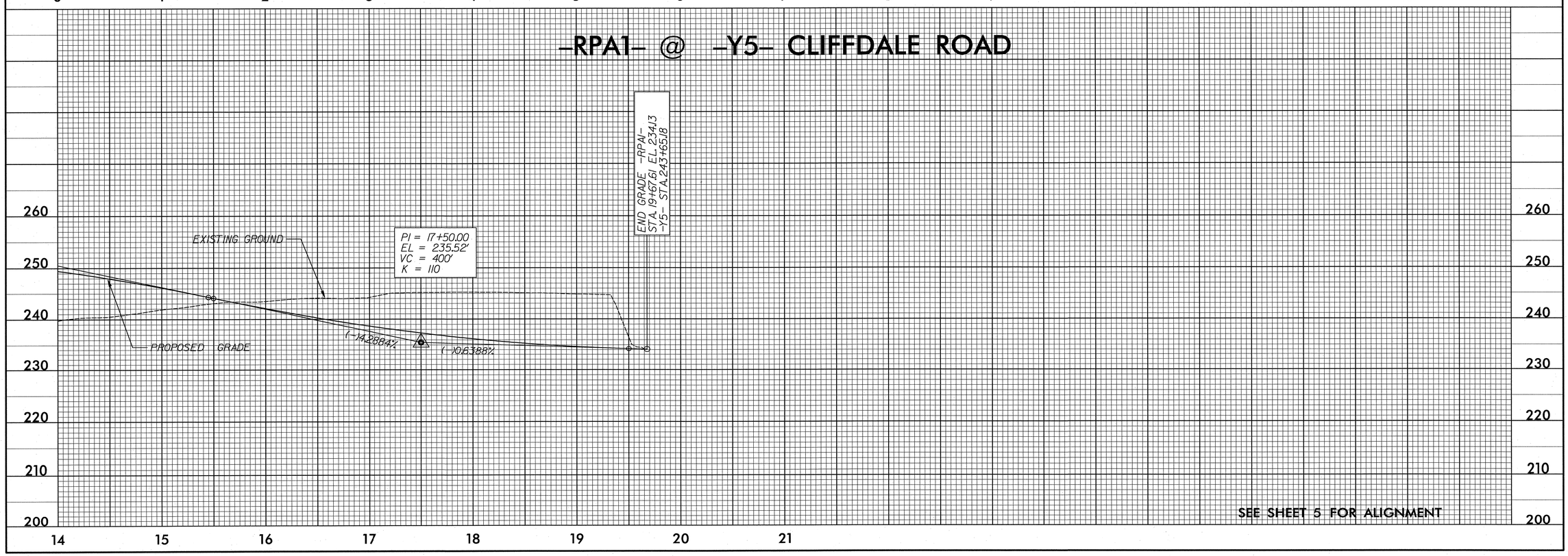
DRAINAGE AREA	=	3.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.0	CFS
DESIGN HW ELEVATION	=	245.13	FT
100 YEAR DISCHARGE	=	5.4	CFS
100 YEAR HW ELEVATION	=	245.19	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	5.4	CFS
OVERTOPPING ELEVATION	=	245.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	7.3	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	21.5	CFS
DESIGN HW ELEVATION	=	241.73	FT
100 YEAR DISCHARGE	=	23.2	CFS
100 YEAR HW ELEVATION	=	242.09	FT
OVERTOPPING FREQUENCY	=	-	YRS
OVERTOPPING DISCHARGE	=	28.0	CFS
OVERTOPPING ELEVATION	=	243.16	FT

SEE SHEETS 5 & 6 FOR ALIGNMENT

-RPA1- @ -Y5- CLIFFDALE ROAD



SEE SHEET 5 FOR ALIGNMENT

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro42

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	43

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

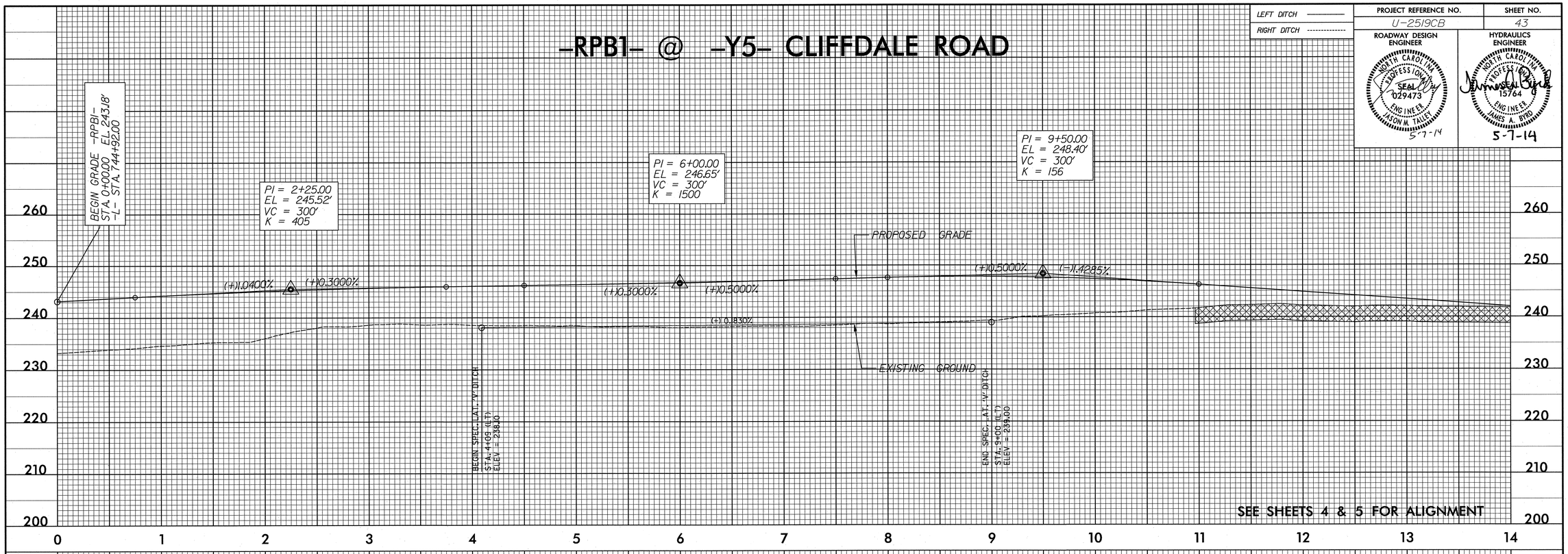
5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

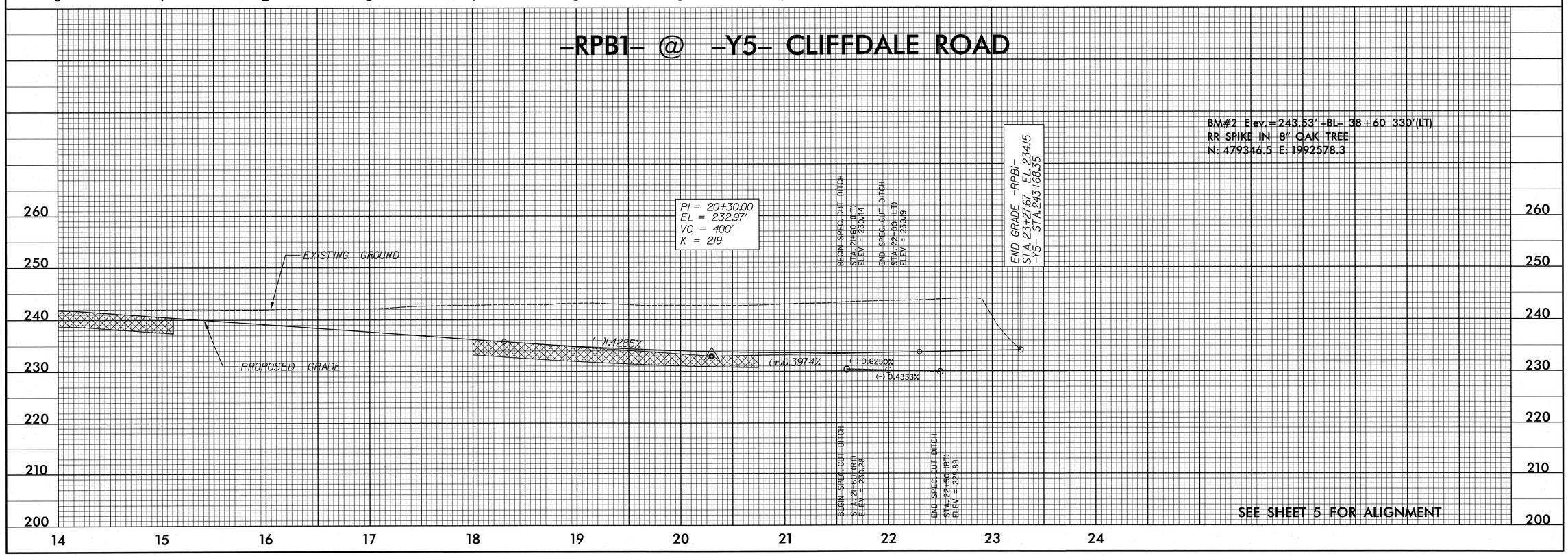
5-7-14

-RPB1- @ -Y5- CLIFFDALE ROAD



SEE SHEETS 4 & 5 FOR ALIGNMENT

-RPB1- @ -Y5- CLIFFDALE ROAD



SEE SHEET 5 FOR ALIGNMENT

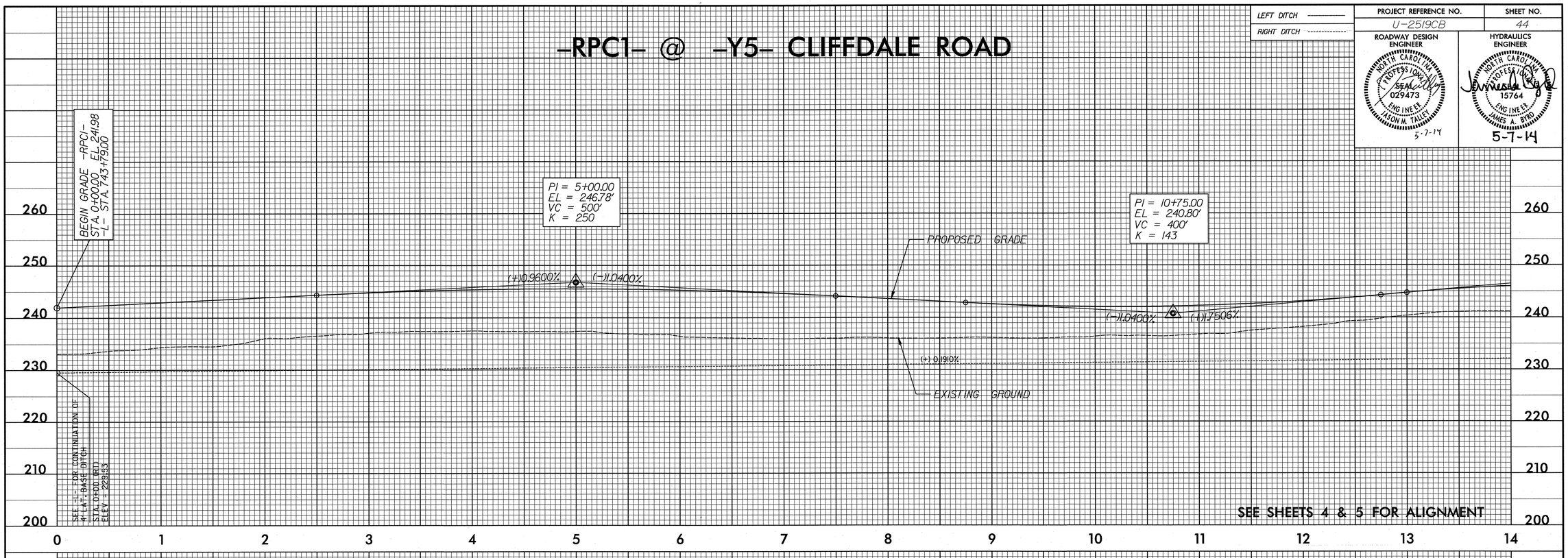
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr043

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	44

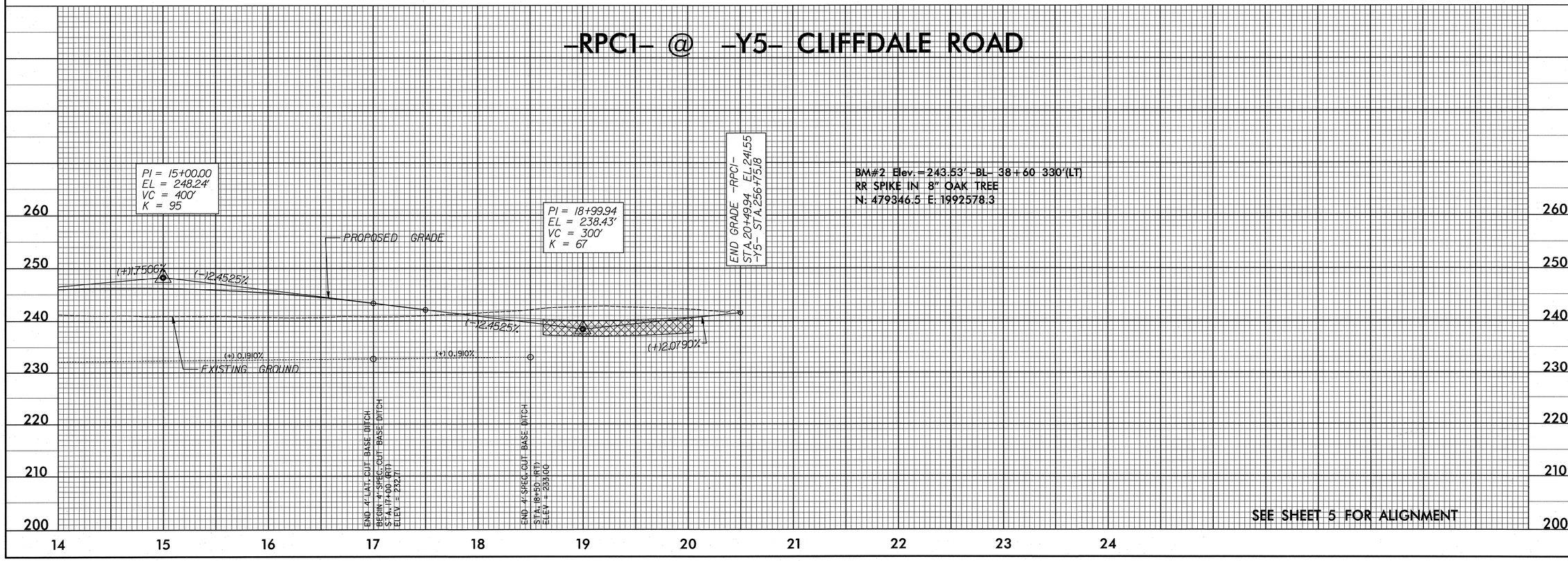
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

-RPC1- @ -Y5- CLIFFDALE ROAD



-RPC1- @ -Y5- CLIFFDALE ROAD



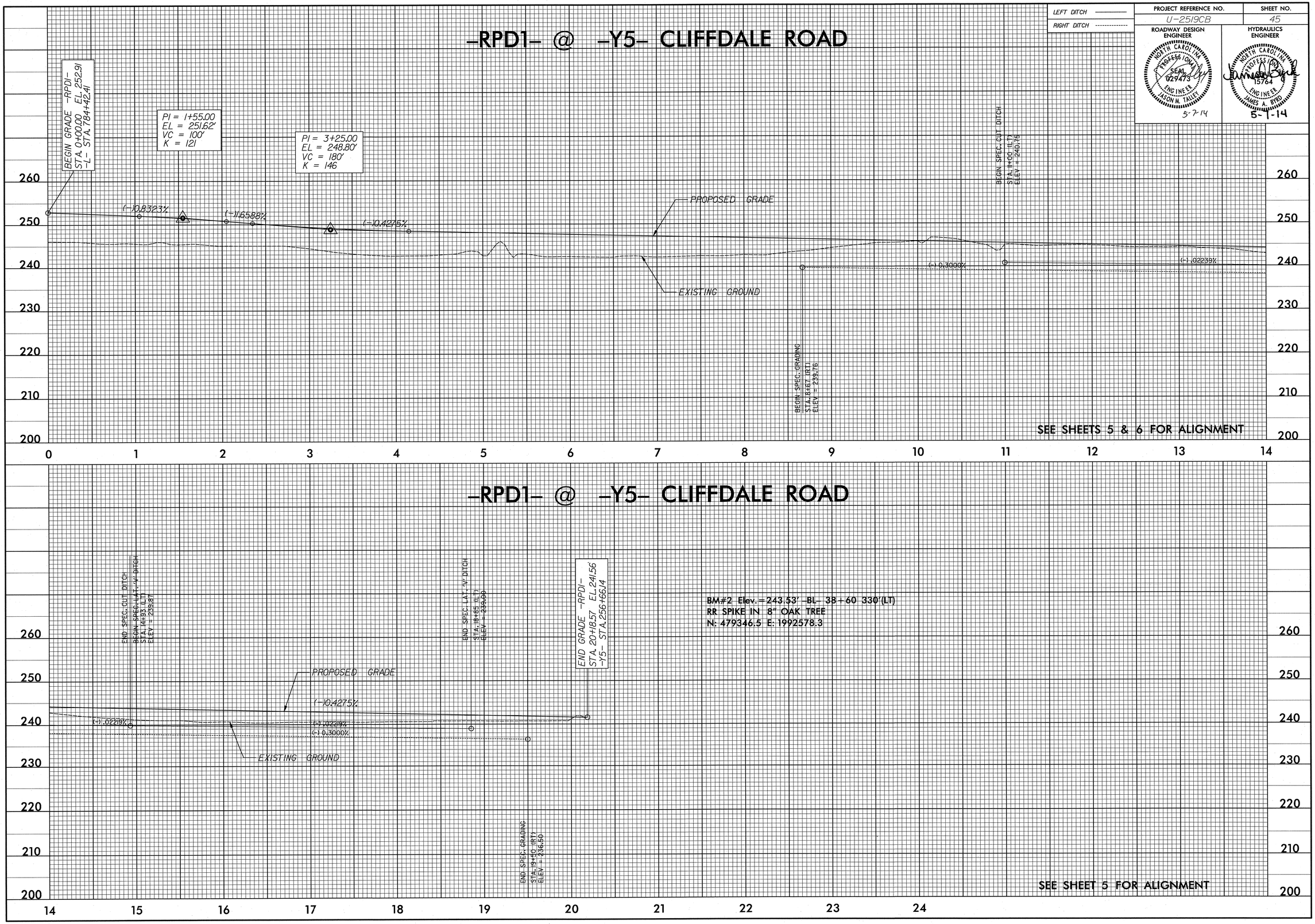
104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr044

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	45

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-1-14

-RPD1- @ -Y5- CLIFFDALE ROAD



-RPD1- @ -Y5- CLIFFDALE ROAD

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pr045

LEFT DITCH	
RIGHT DITCH	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	46

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TAILLE

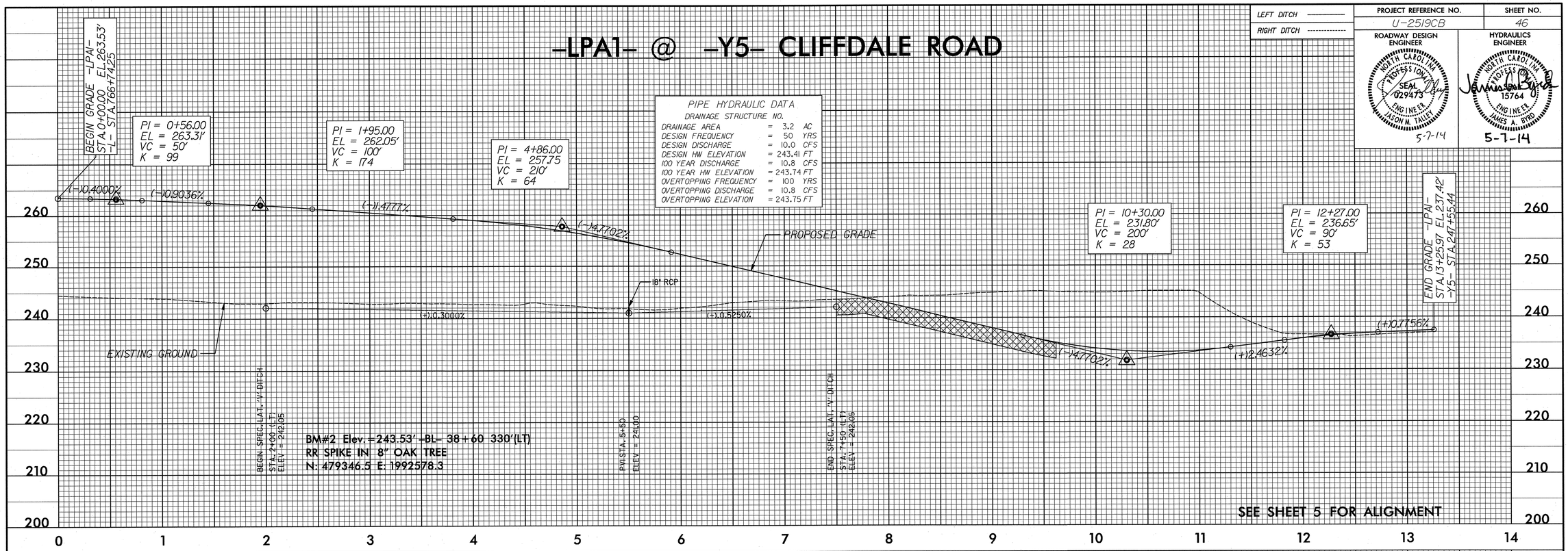
5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

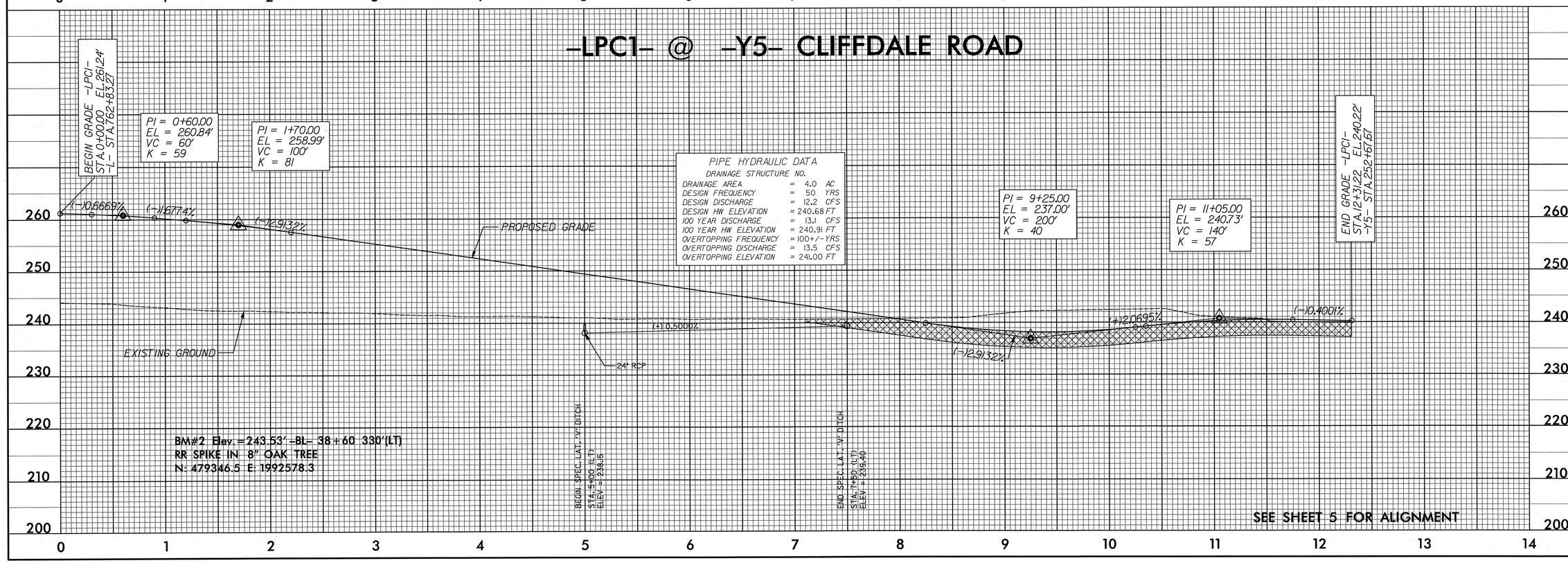
5-7-14

-LPA1- @ -Y5- CLIFFDALE ROAD



PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 3.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 10.0	CFS
DESIGN HW ELEVATION	= 243.41	FT
100 YEAR DISCHARGE	= 10.8	CFS
100 YEAR HW ELEVATION	= 243.74	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 10.8	CFS
OVERTOPPING ELEVATION	= 243.75	FT

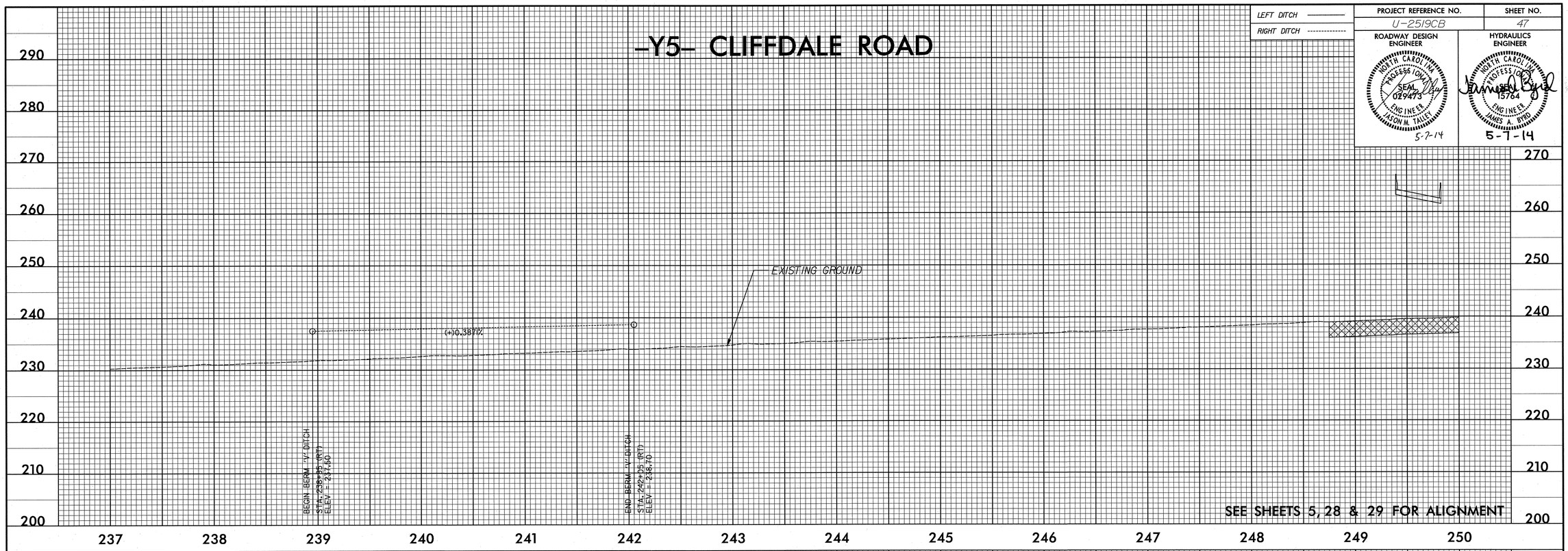
-LPC1- @ -Y5- CLIFFDALE ROAD

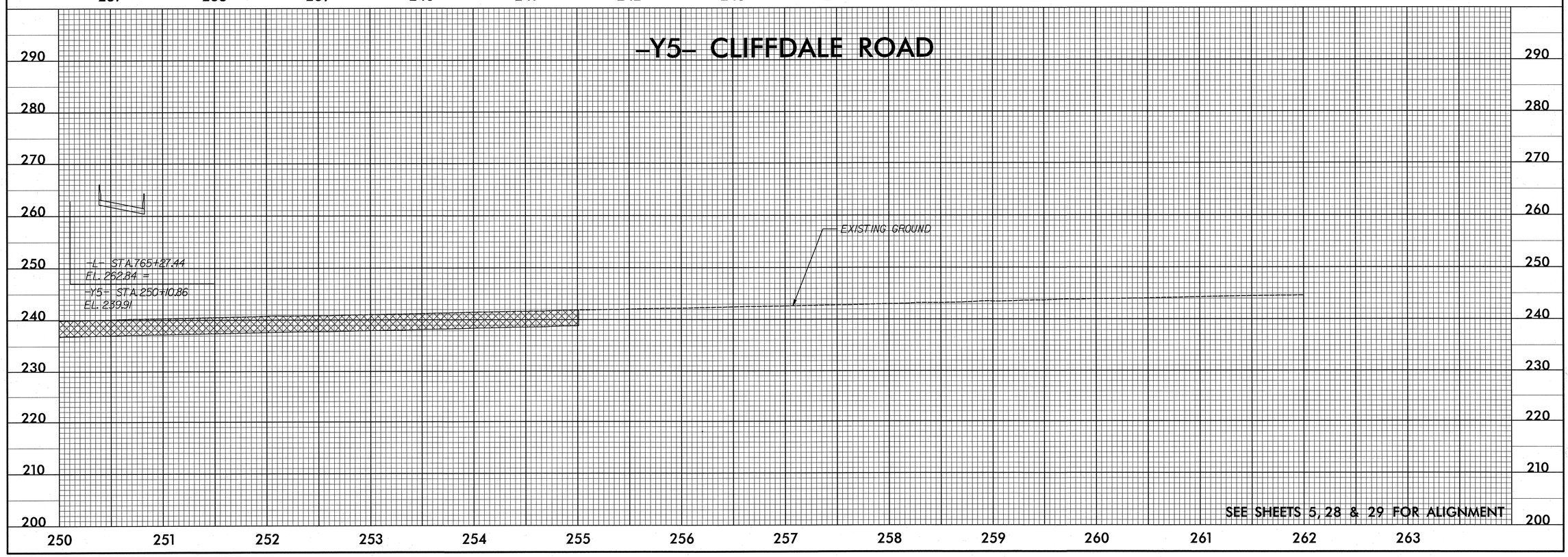


PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 4.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12.2	CFS
DESIGN HW ELEVATION	= 240.68	FT
100 YEAR DISCHARGE	= 13.1	CFS
100 YEAR HW ELEVATION	= 240.91	FT
OVERTOPPING FREQUENCY	= 100+/-	YRS
OVERTOPPING DISCHARGE	= 13.5	CFS
OVERTOPPING ELEVATION	= 241.00	FT

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pro46

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	47
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14





104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pro47

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	48

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

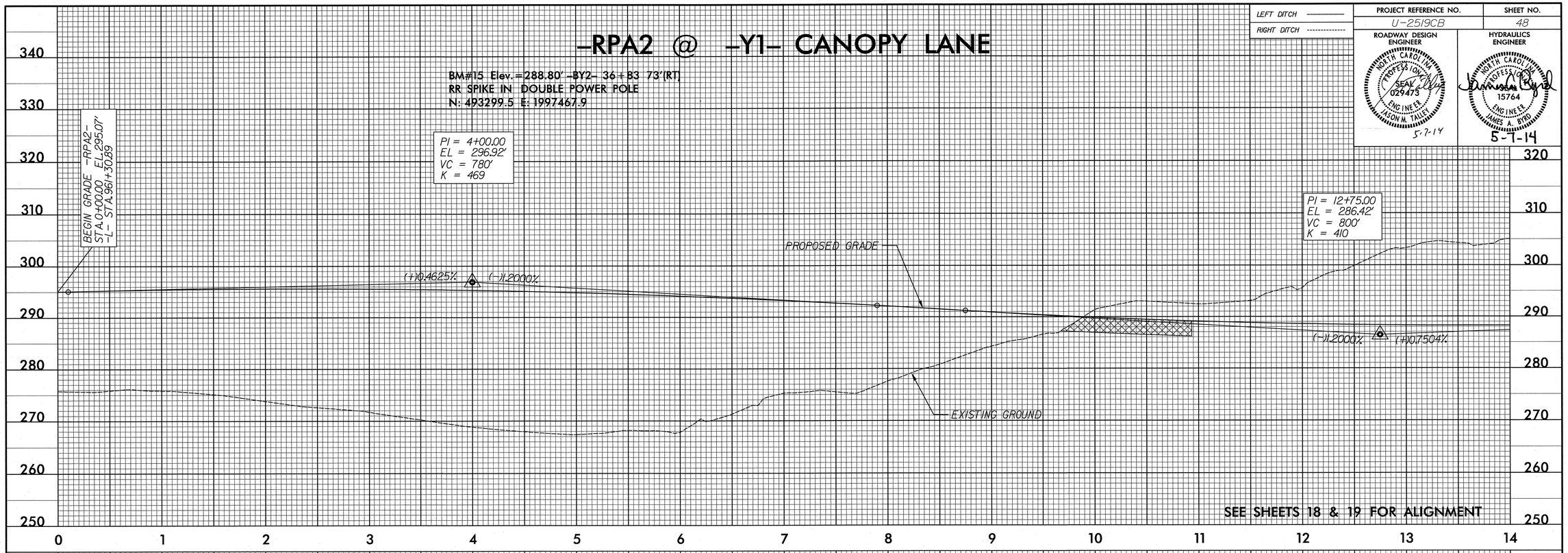
5-7-14

HYDRAULICS ENGINEER

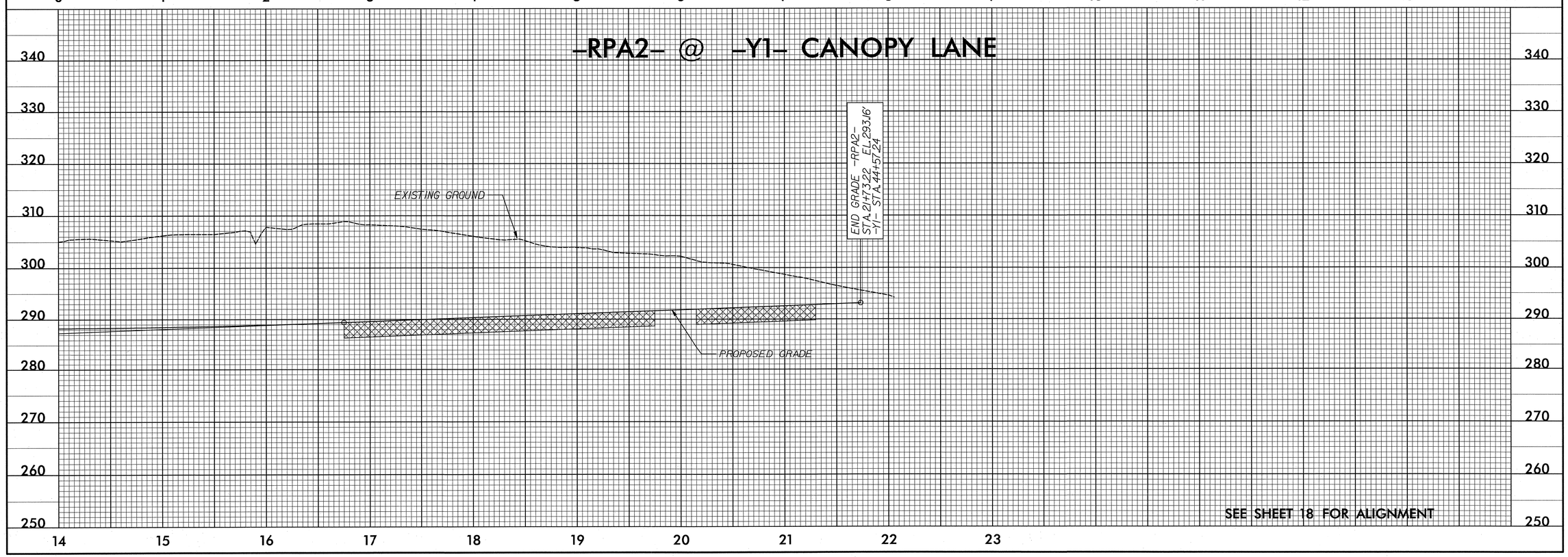
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14

-RPA2 @ -Y1- CANOPY LANE



-RPA2- @ -Y1- CANOPY LANE



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pro48

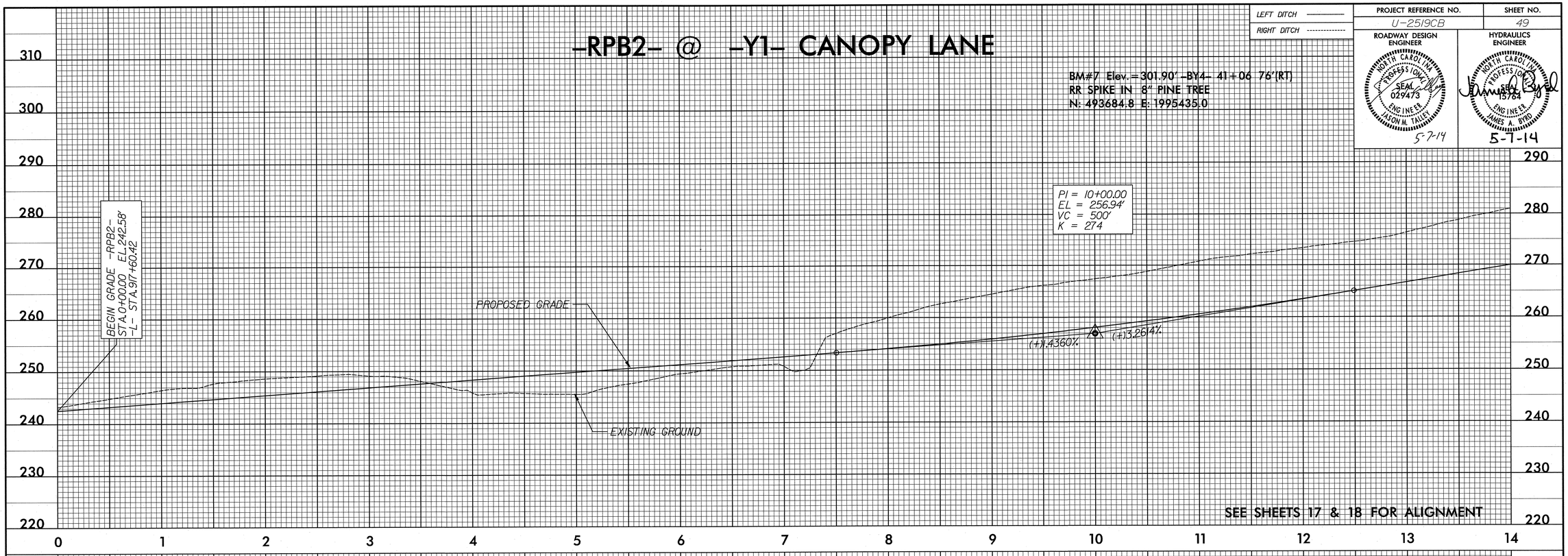
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	49

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY — 5-7-14

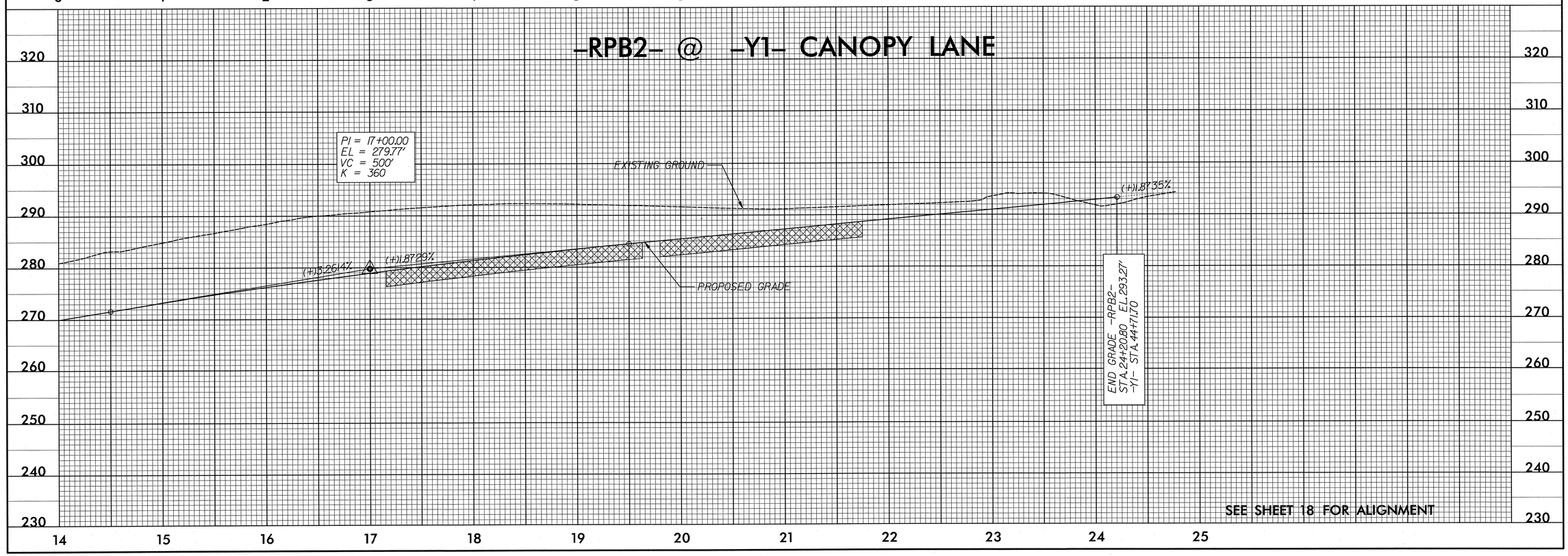
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — 5-7-14

-RPB2- @ -Y1- CANOPY LANE

BM#7 Elev. = 301.90' -BY4- 41+06 76'(RT)
RR SPIKE IN 8" PINE TREE
N: 493684.8 E: 1995435.0



-RPB2- @ -Y1- CANOPY LANE



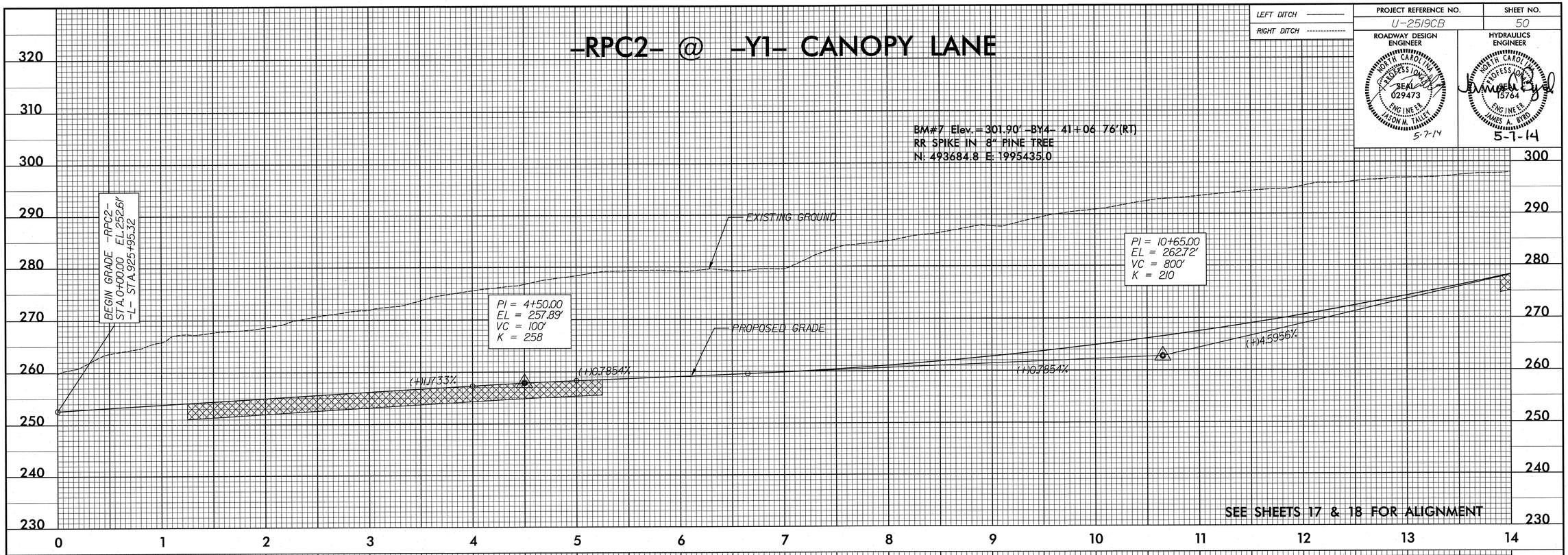
104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pr049

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	50

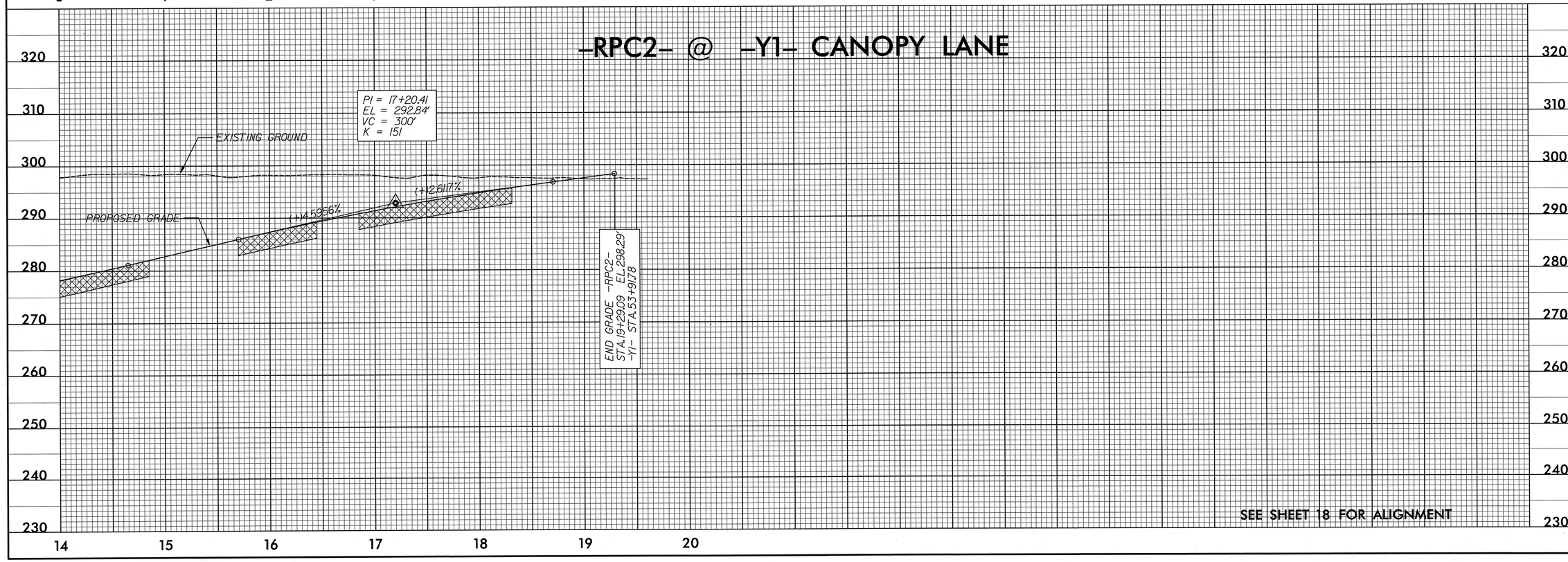
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

-RPC2- @ -Y1- CANOPY LANE



-RPC2- @ -Y1- CANOPY LANE



104.001.001/U2519cb/Roadway/pro1/u2519cb_rdy_pro51

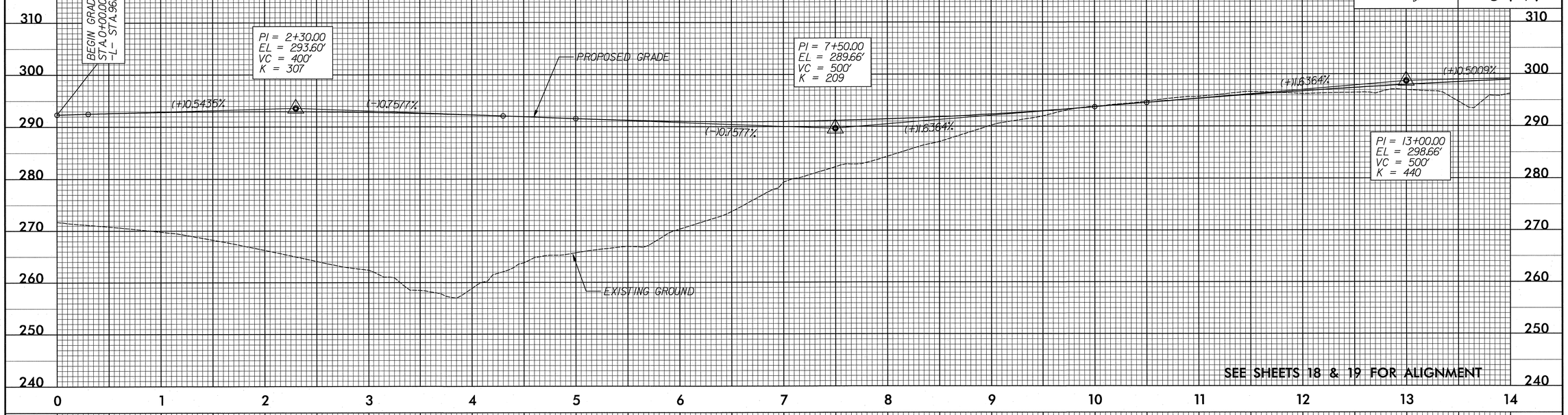
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	51

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-2-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-1-14

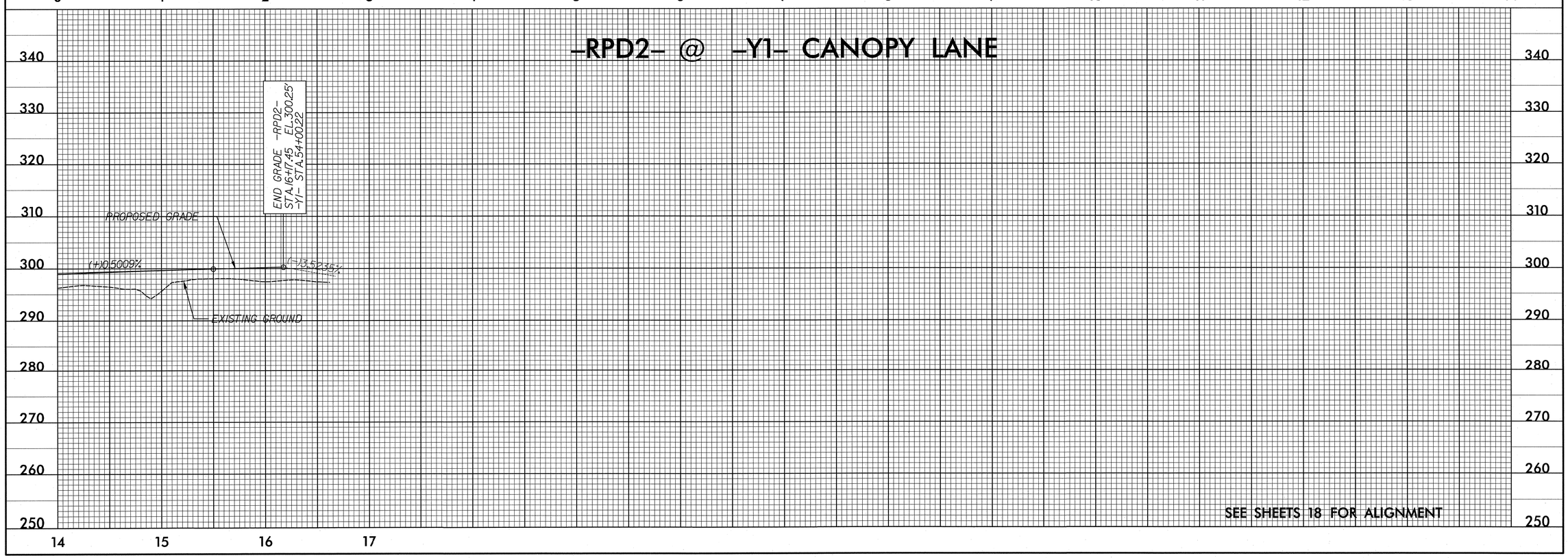
-RPD2- @ -Y1- CANOPY LANE

BM#15 Elev. = 288.80' -BY2- 36+83 73'(RT)
RR SPIKE IN DOUBLE POWER POLE
N: 493299.5 E: 1997467.9



SEE SHEETS 18 & 19 FOR ALIGNMENT

-RPD2- @ -Y1- CANOPY LANE



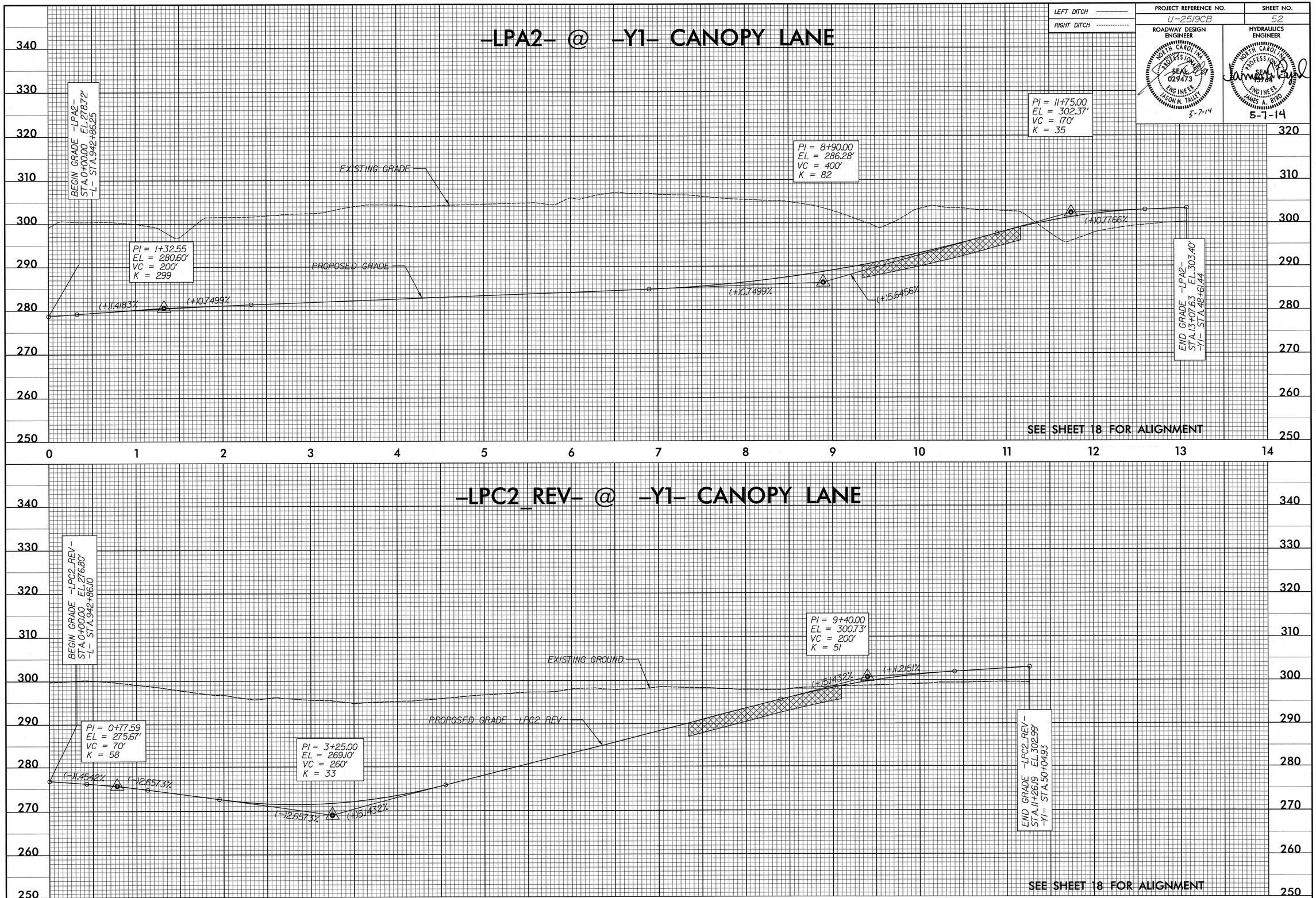
SEE SHEETS 18 FOR ALIGNMENT

104.001.001/U2519cb/Roadway/proj/u2519cb_rdy.pro51

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	52

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19764 ENGINEER JAMES A. BYRD 5-7-14



104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_pro52

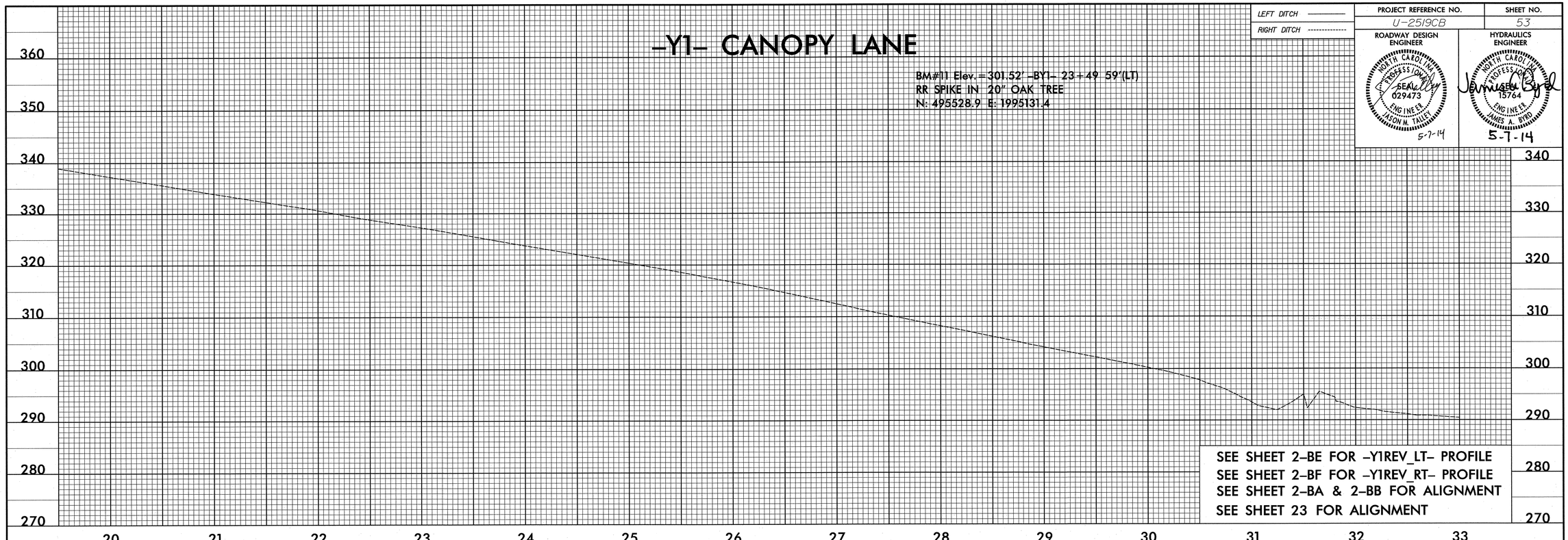
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	53

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15764 JAMES A. BYRD — 5-7-14

-Y1- CANOPY LANE

BM#11 Elev. = 301.52' -BY1- 23+49 59'(LT)
RR SPIKE IN 20" OAK TREE
N: 495528.9 E: 1995131.4



SEE SHEET 2-BE FOR -Y1REV_LT- PROFILE
SEE SHEET 2-BF FOR -Y1REV_RT- PROFILE
SEE SHEET 2-BA & 2-BB FOR ALIGNMENT
SEE SHEET 23 FOR ALIGNMENT

-Y1- CANOPY LANE

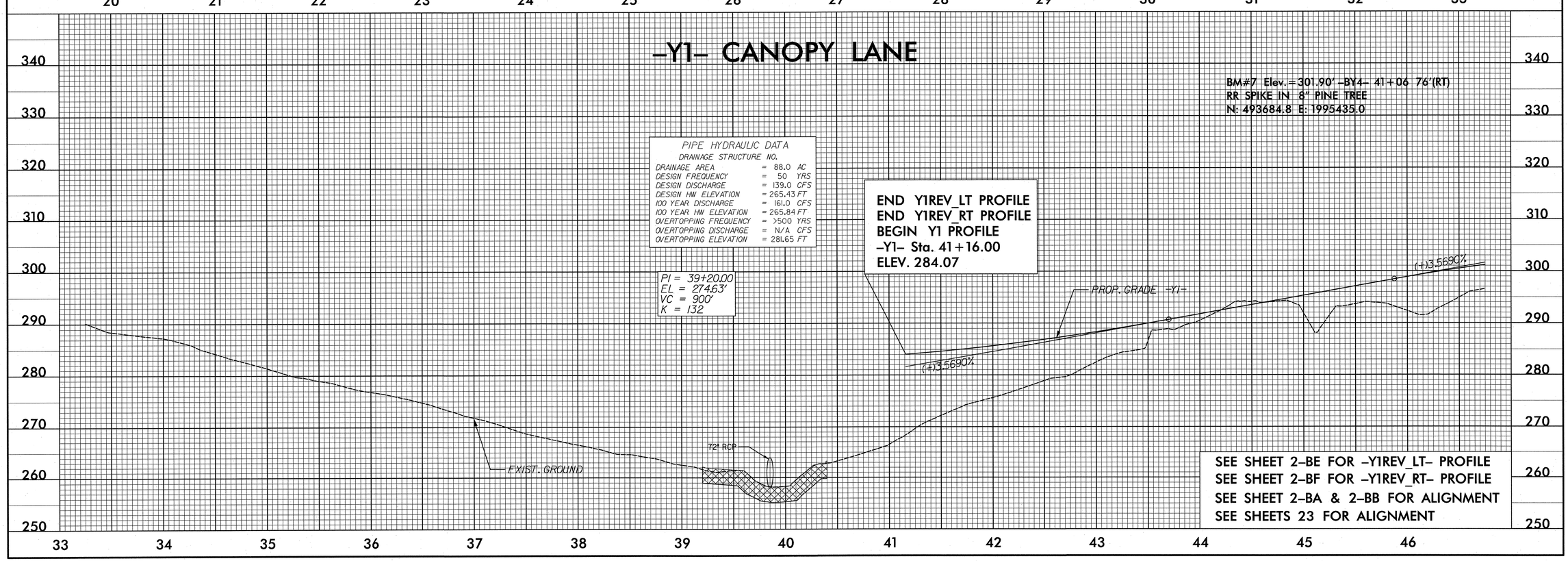
BM#7 Elev. = 301.90' -BY4- 41+06 76'(RT)
RR SPIKE IN 8" PINE TREE
N: 493684.8 E: 1995435.0

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 88.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 139.0	CFS
DESIGN HW ELEVATION	= 265.43	FT
100 YEAR DISCHARGE	= 161.0	CFS
100 YEAR HW ELEVATION	= 265.84	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 281.65	FT

END Y1REV_LT PROFILE
END Y1REV_RT PROFILE
BEGIN Y1 PROFILE
-Y1- Sta. 41+16.00
ELEV. 284.07

PI = 39+20.00
EL = 274.63'
VC = 900'
K = 132



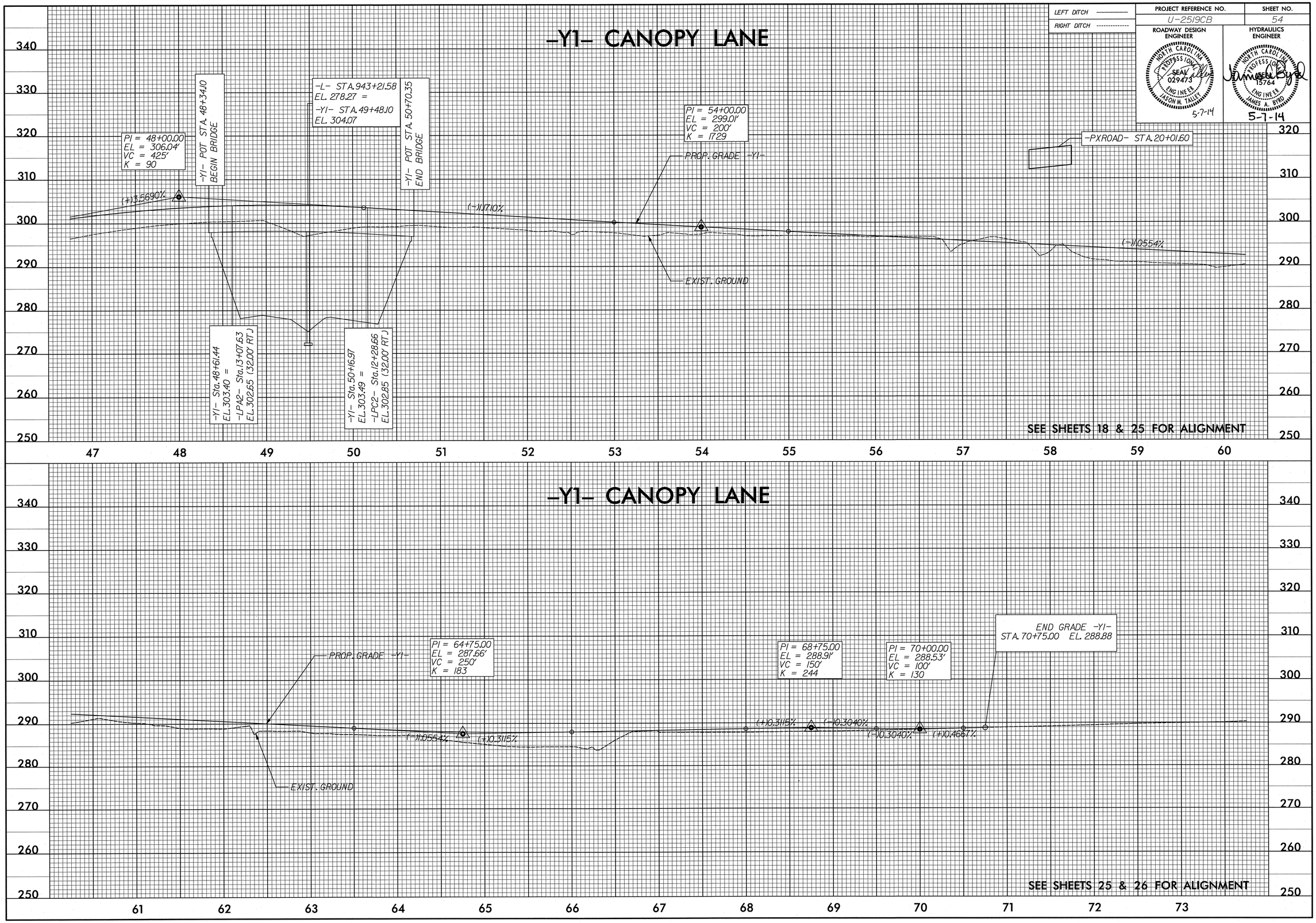
SEE SHEET 2-BE FOR -Y1REV_LT- PROFILE
SEE SHEET 2-BF FOR -Y1REV_RT- PROFILE
SEE SHEET 2-BA & 2-BB FOR ALIGNMENT
SEE SHEETS 23 FOR ALIGNMENT

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro53

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	54

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY 5-7-14

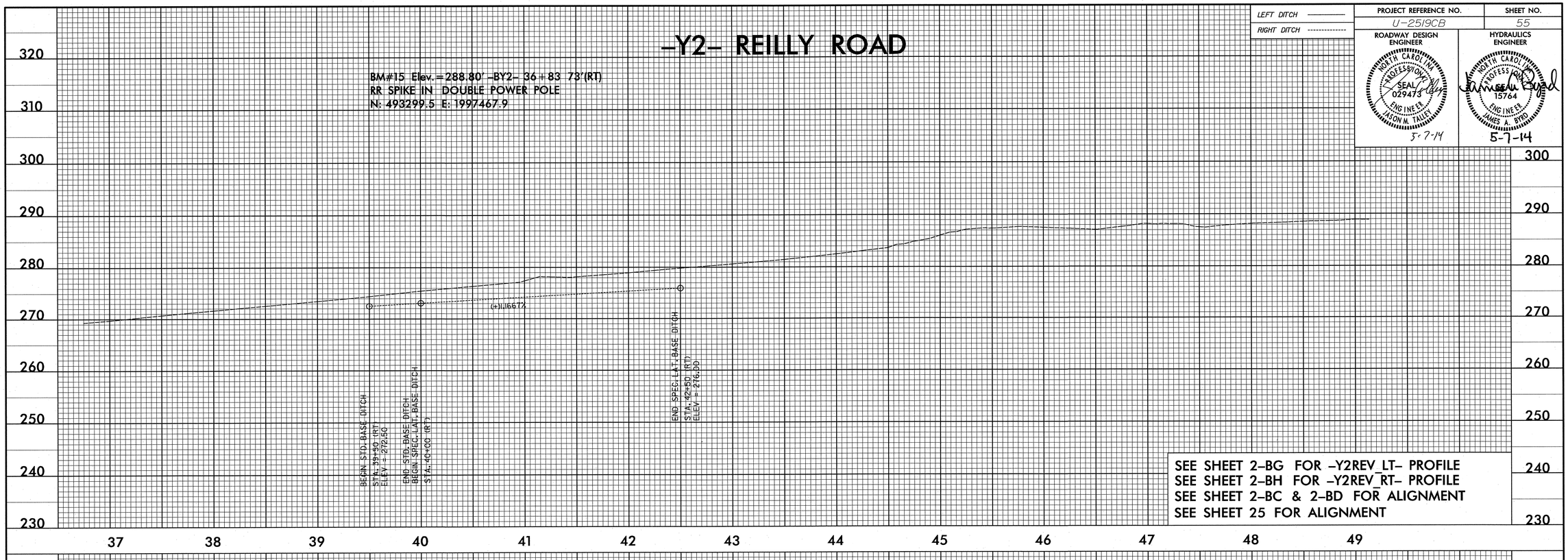
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14



104.001.001/U2519cb/Roadway/proj/u2519cb_rdy_pro54

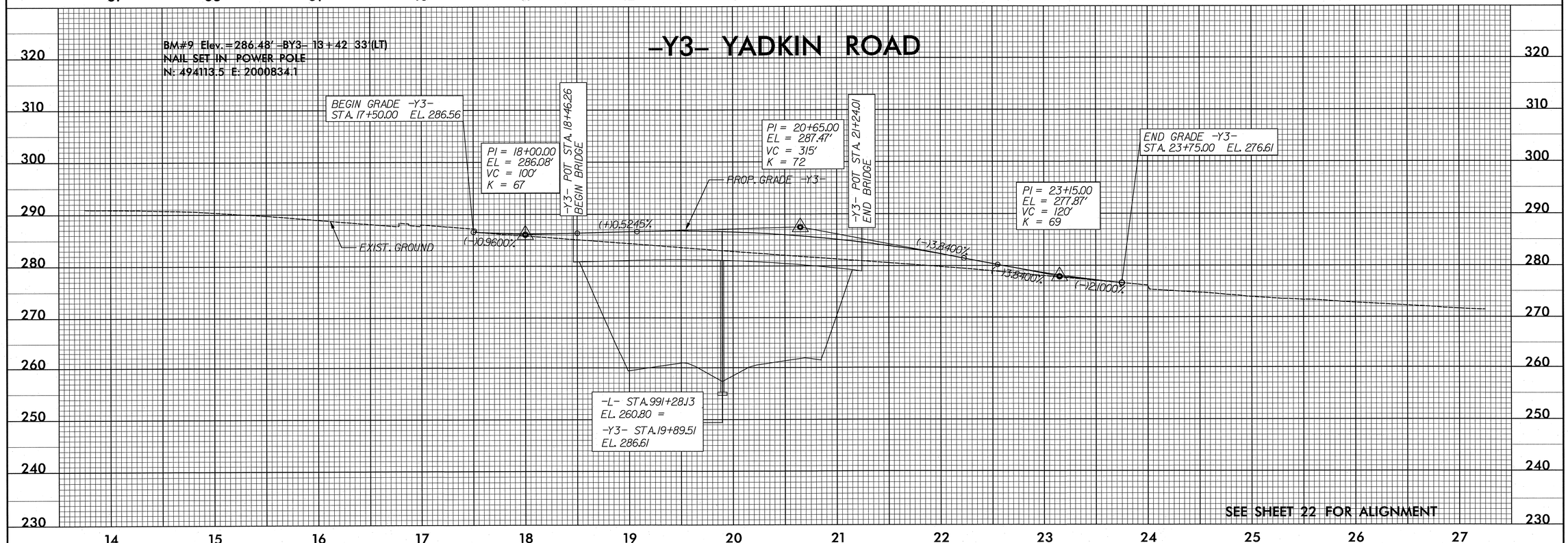
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	55
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	NORTH CAROLINA PROFESSIONAL SEAL 029475 ENGINEER JASON H. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD 5-7-14

-Y2- REILLY ROAD



SEE SHEET 2-BG FOR -Y2REV_LT- PROFILE
SEE SHEET 2-BH FOR -Y2REV_RT- PROFILE
SEE SHEET 2-BC & 2-BD FOR ALIGNMENT
SEE SHEET 25 FOR ALIGNMENT

-Y3- YADKIN ROAD



SEE SHEET 22 FOR ALIGNMENT

104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pr055

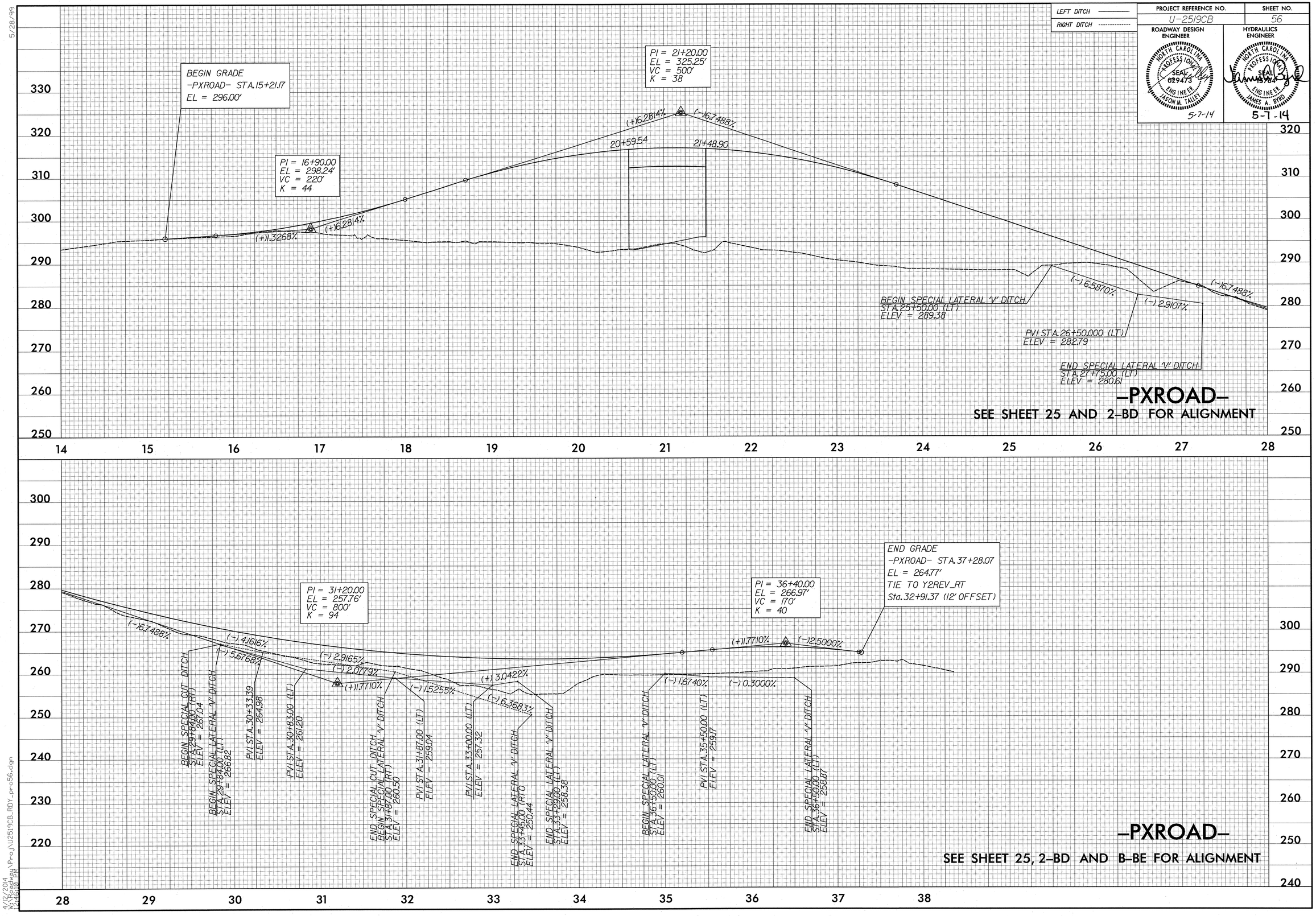
5/28/99

LEFT DITCH ————
RIGHT DITCH - - - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	56

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER MASON N. TALLEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13984 ENGINEER JAMES A. BYRD
5-7-14

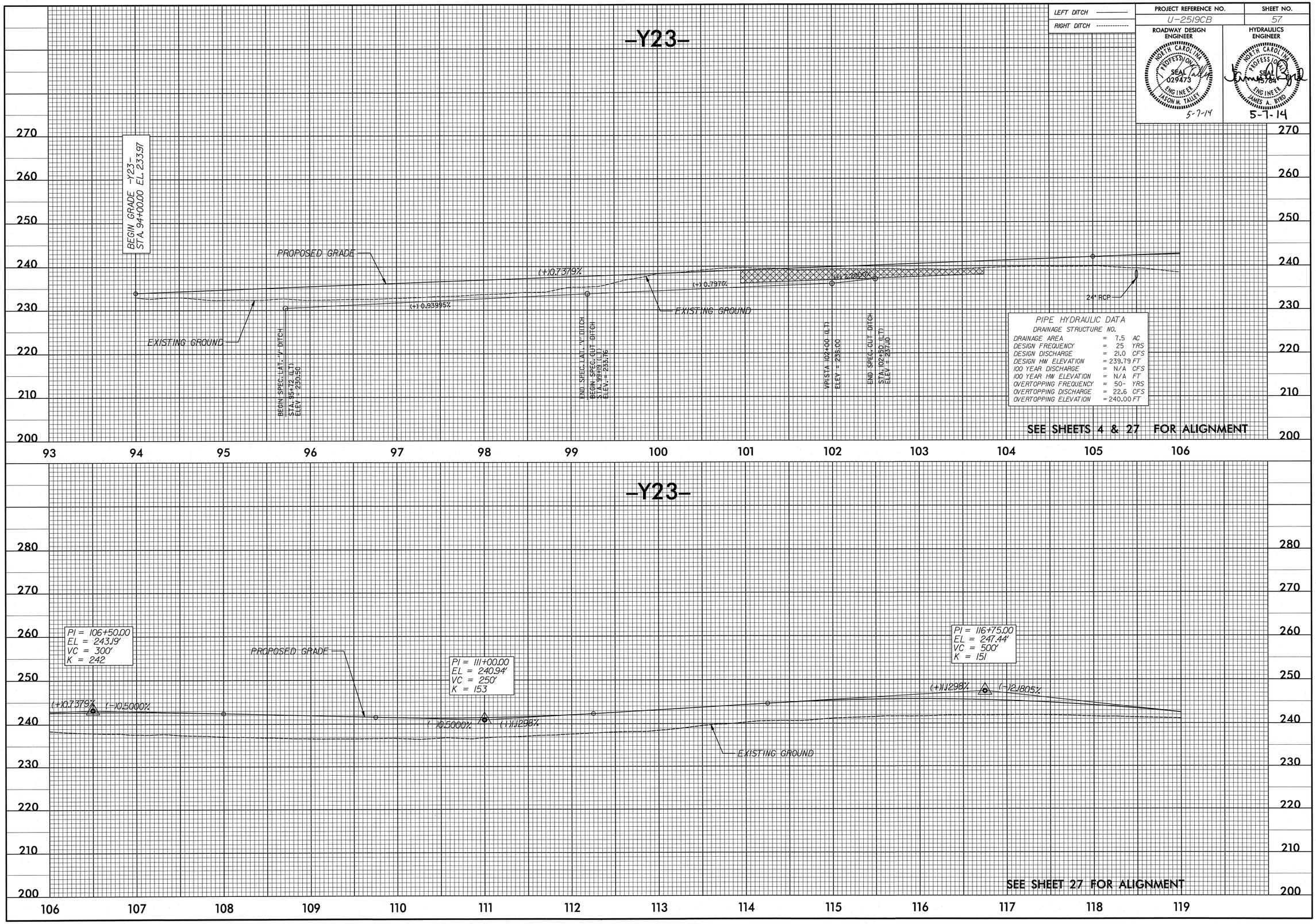


4/12/2014
W:\Roadway\Proj\U2519CB_RDY_pr056.dgn
2:46:10 PM

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	57

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER MASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15784 ENGINEER JAMES A. BYRUM — 5-7-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr059

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	58

ROADWAY DESIGN ENGINEER

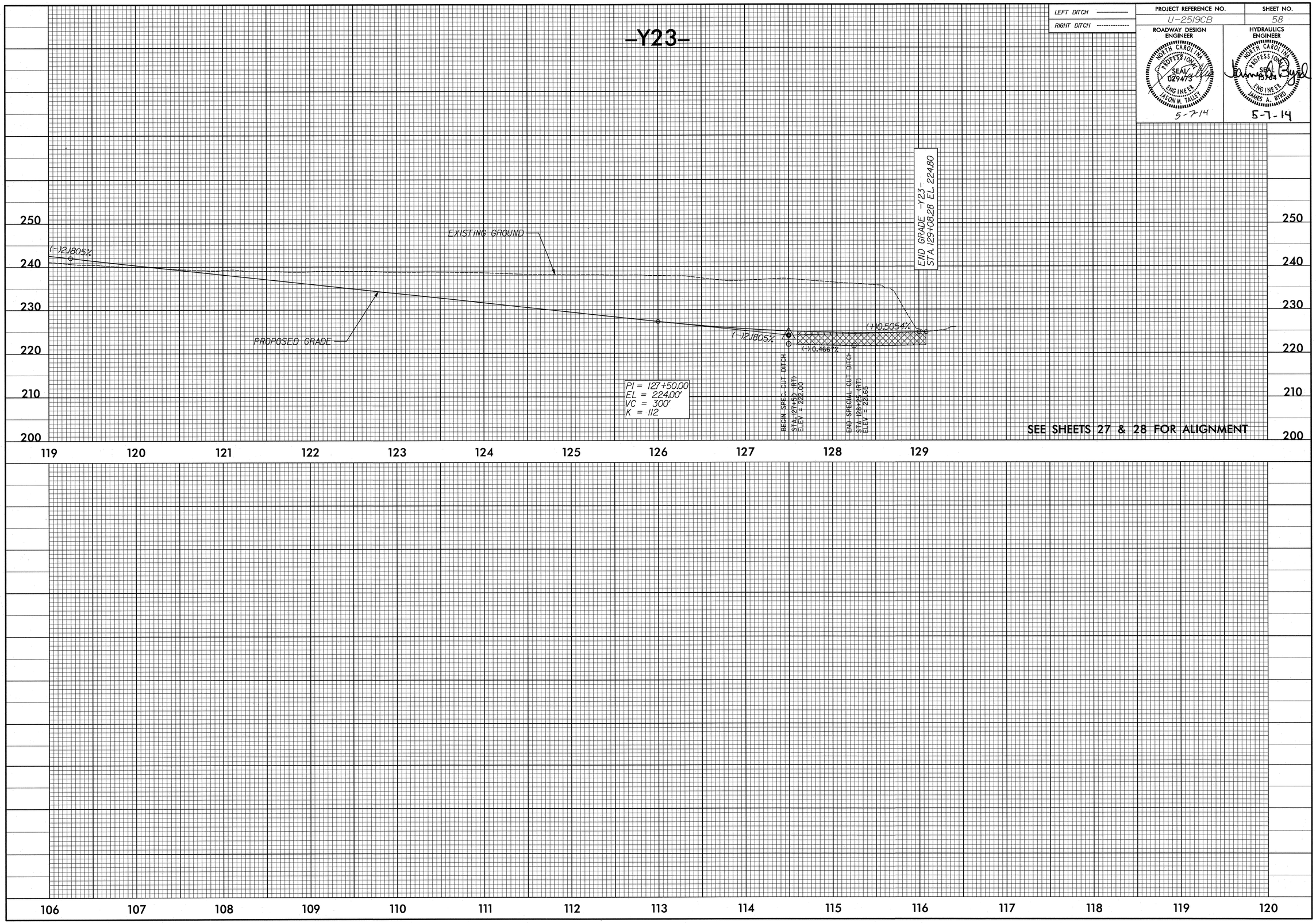
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15704 ENGINEER JAMES A. BYRD

5-7-14



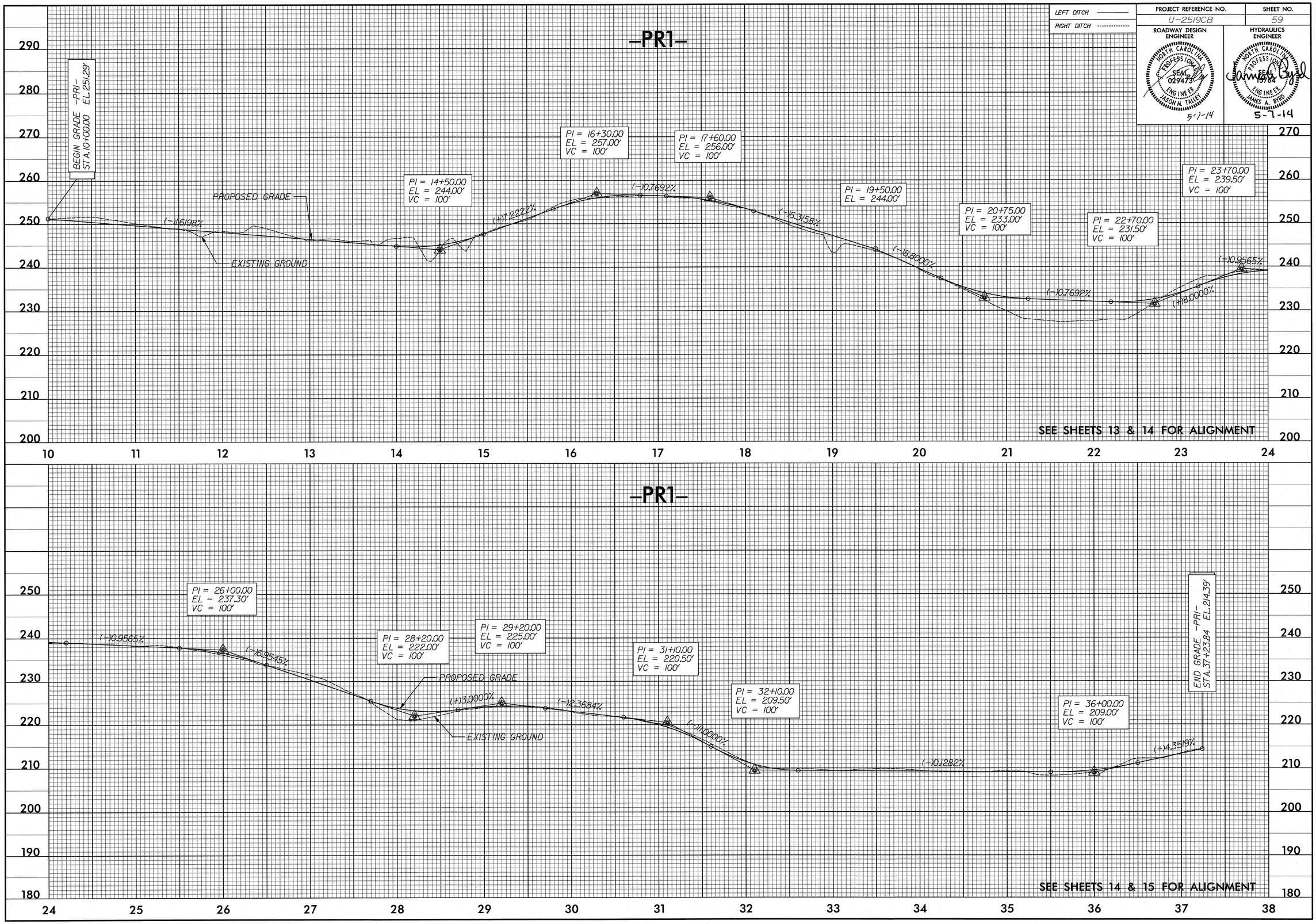
SEE SHEETS 27 & 28 FOR ALIGNMENT

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy.pr060

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	59

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 JASON H. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19784 JAMES A. BYRD — 5-7-14

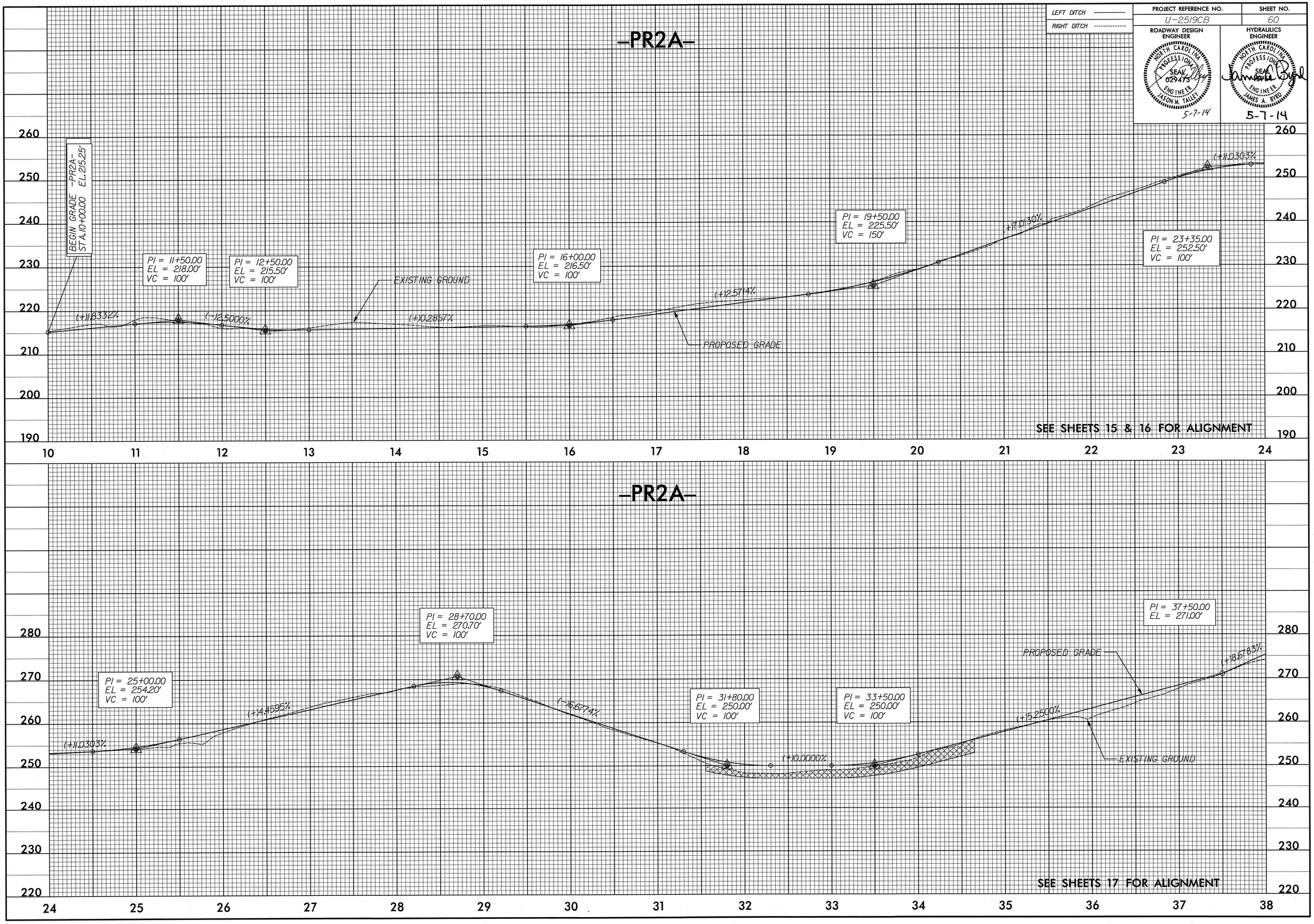


104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pr061

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	60

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029768 ENGINEER JAMES A. BYRD — 5-7-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro62

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	61

ROADWAY DESIGN ENGINEER

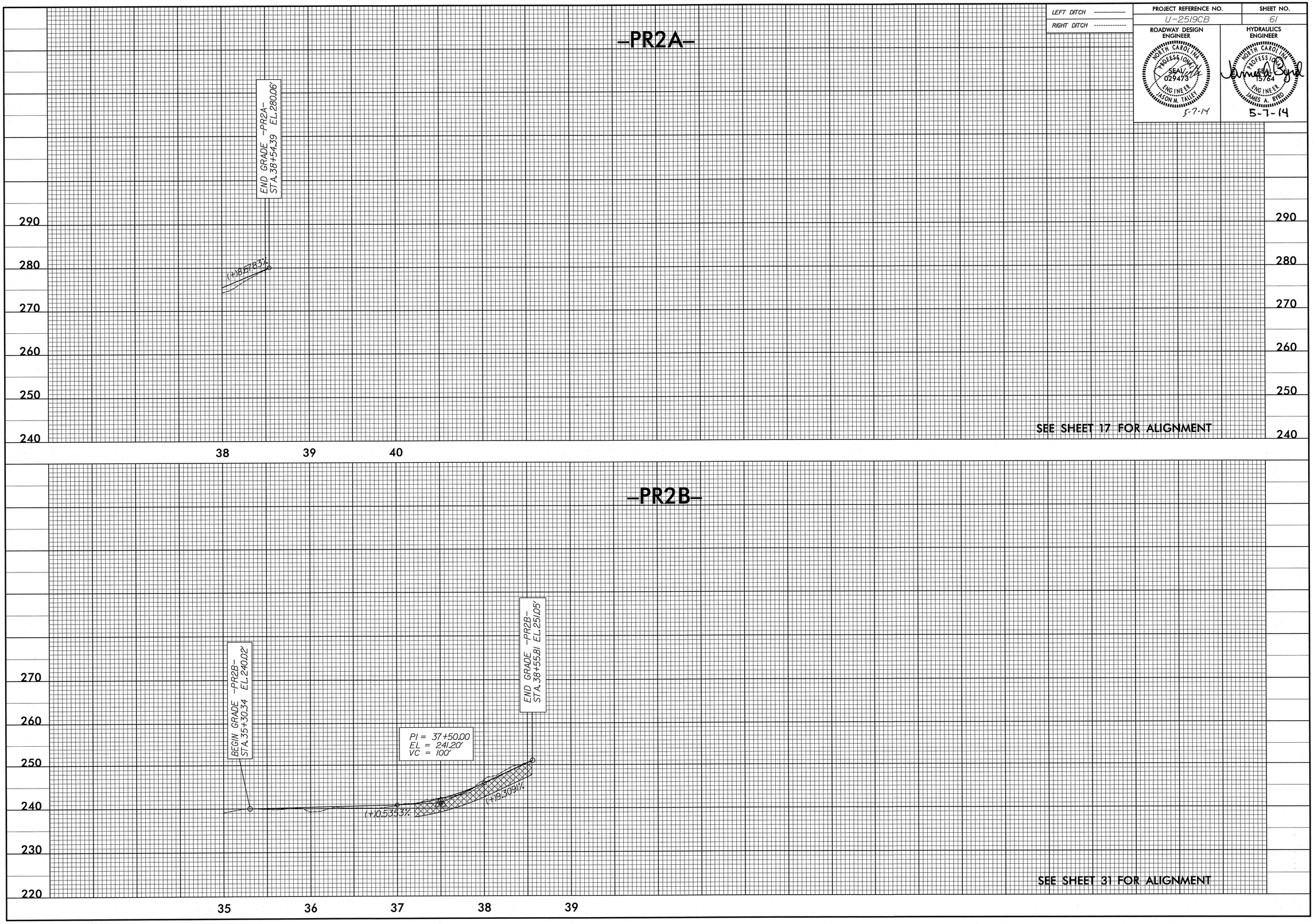
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr063

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	62

ROADWAY DESIGN ENGINEER

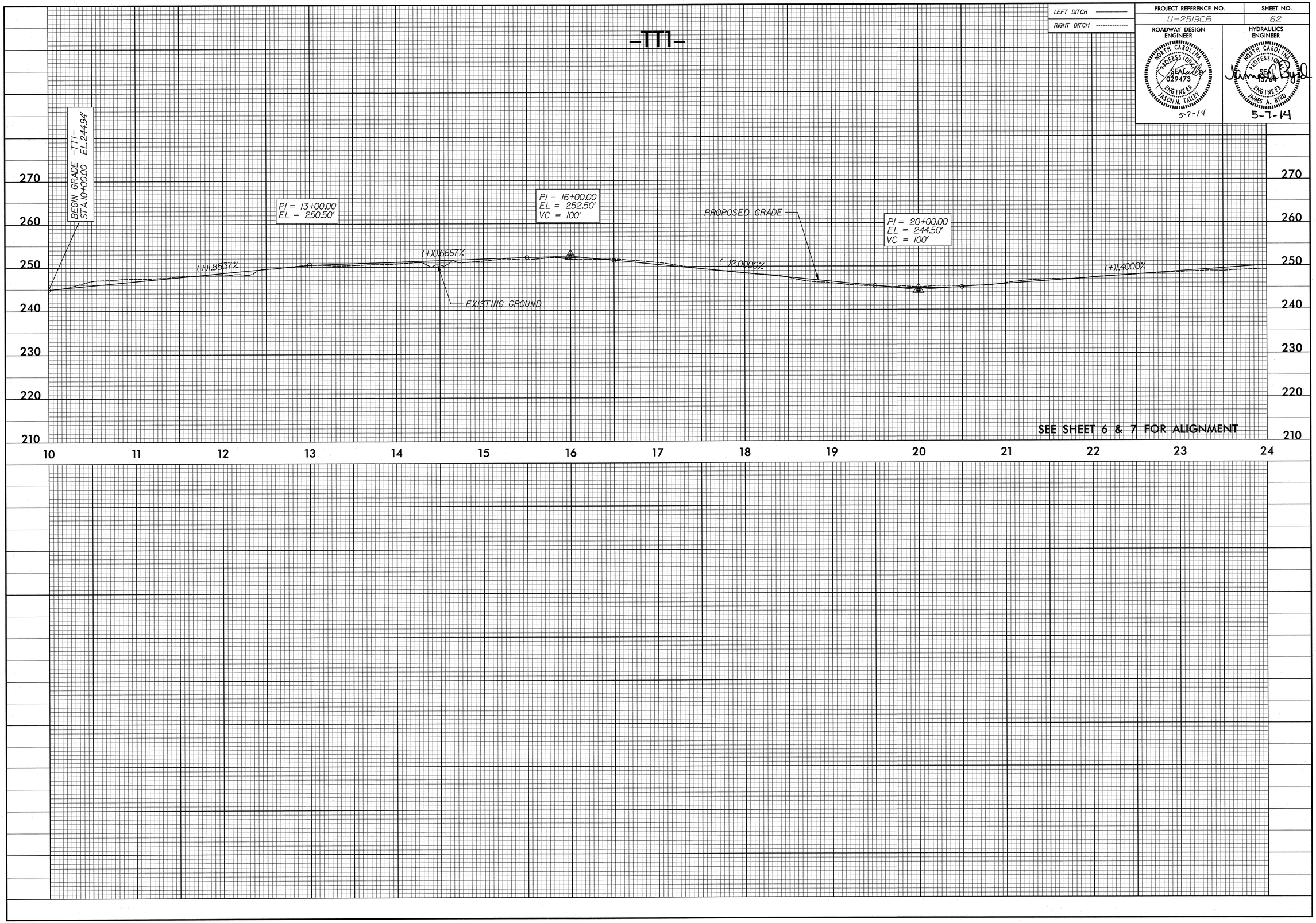
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14



SEE SHEET 6 & 7 FOR ALIGNMENT

104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro64

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	63

ROADWAY DESIGN ENGINEER

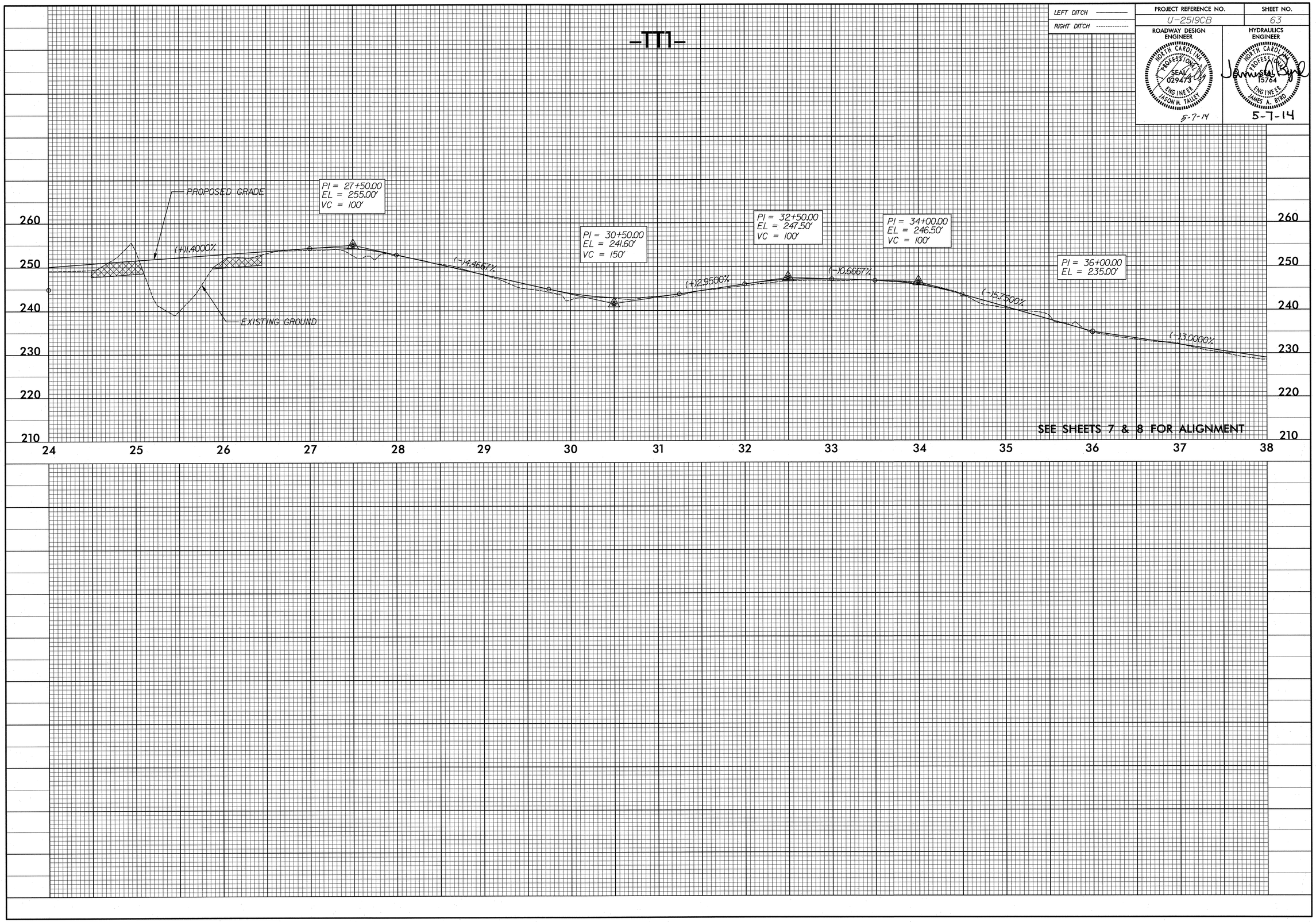
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON H. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14

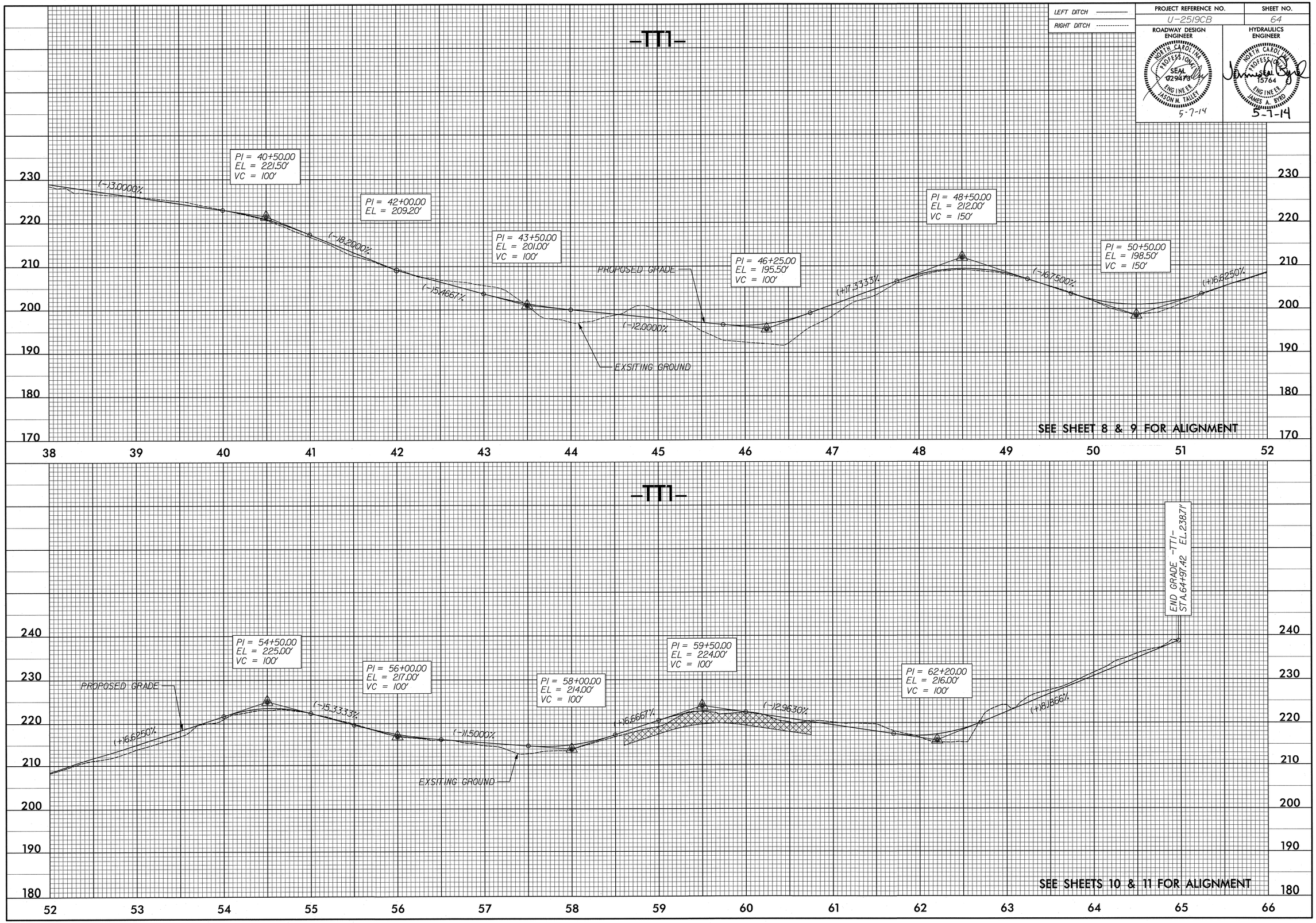


104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr065

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	64

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD — 5-7-14



104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pr066

LEFT DITCH	
RIGHT DITCH	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	65

ROADWAY DESIGN ENGINEER

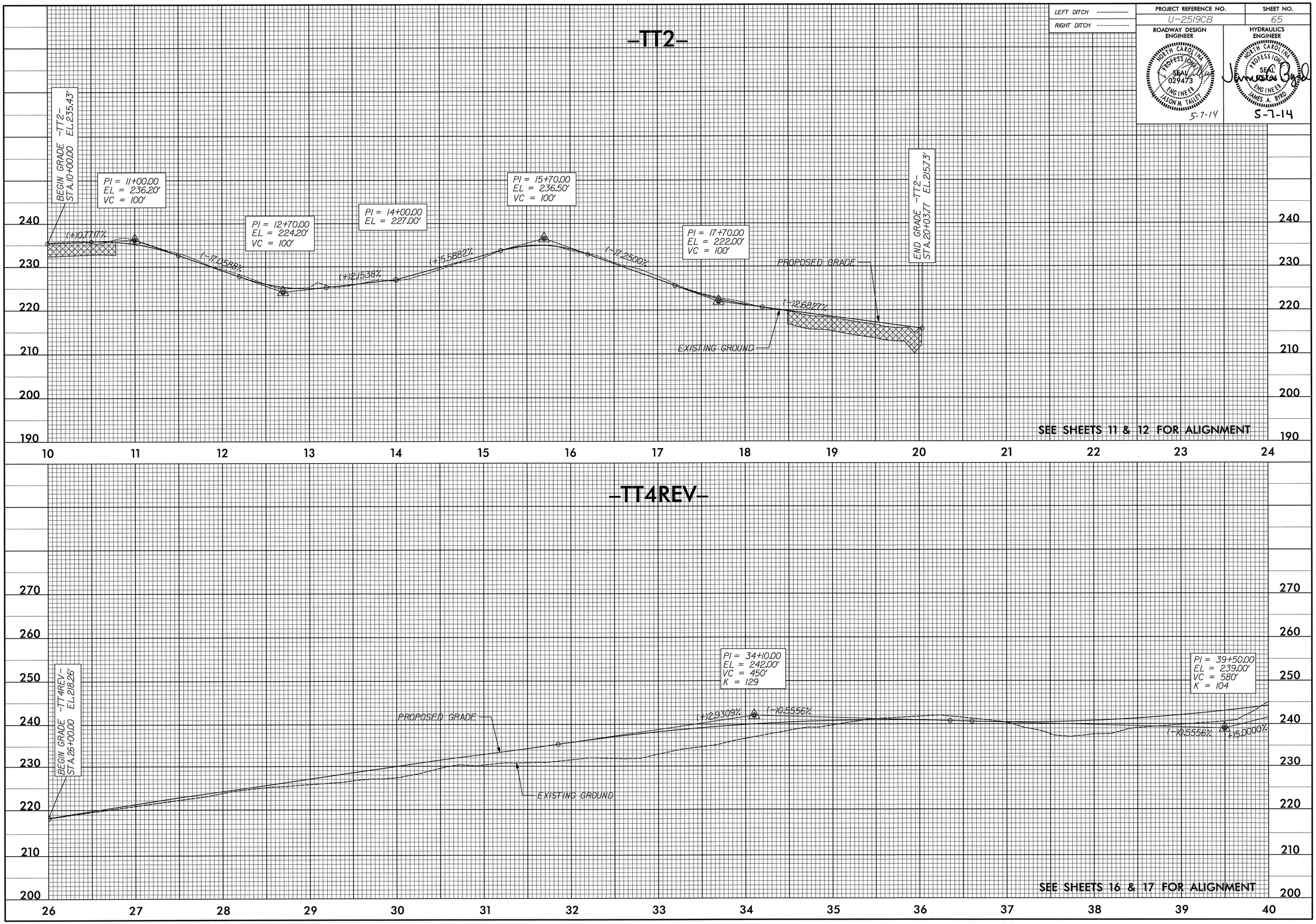
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JAMES A. BYRD

5-7-14

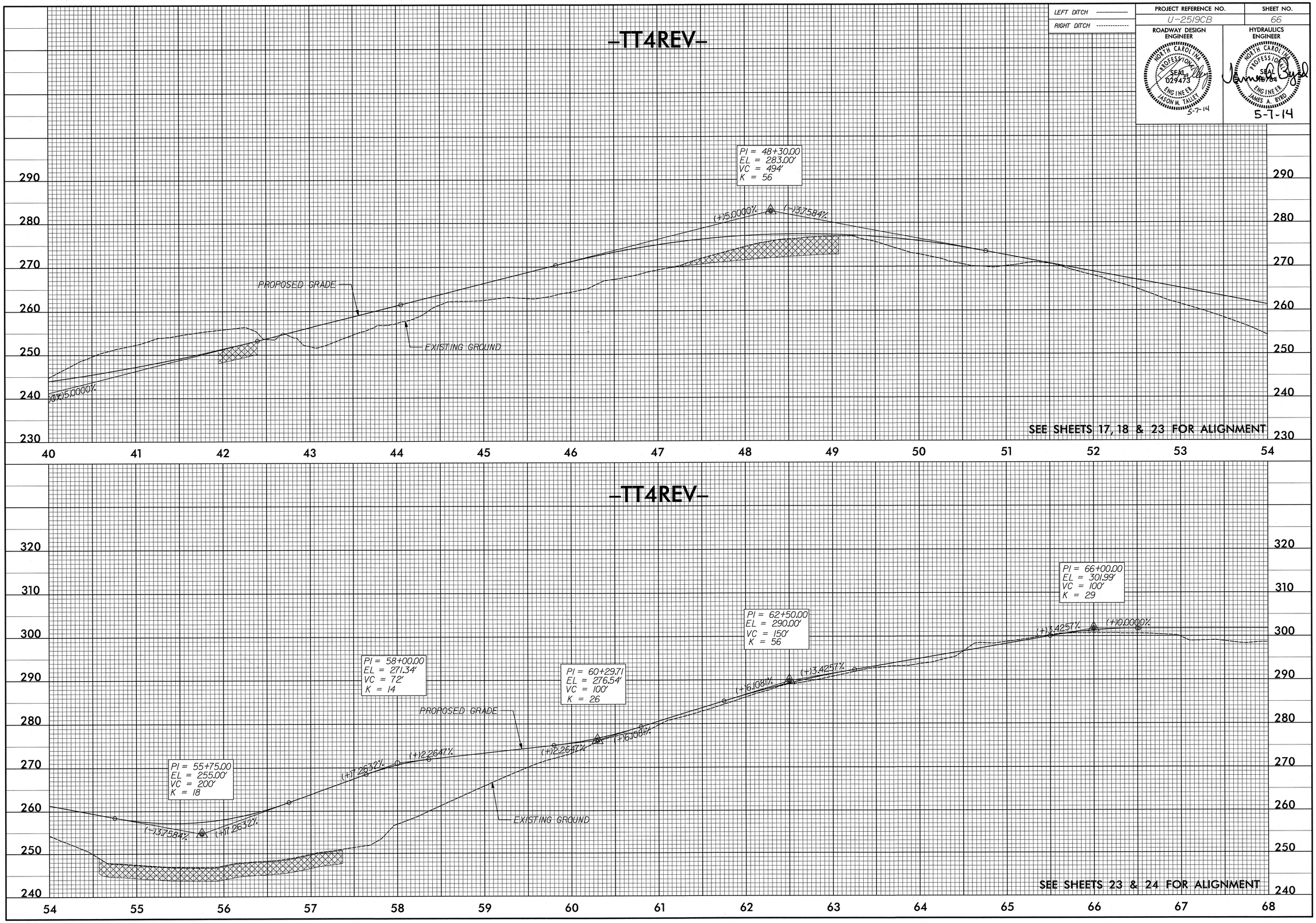


104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro67

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	66

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 16764 ENGINEER JAMES A. BYRD 5-7-14

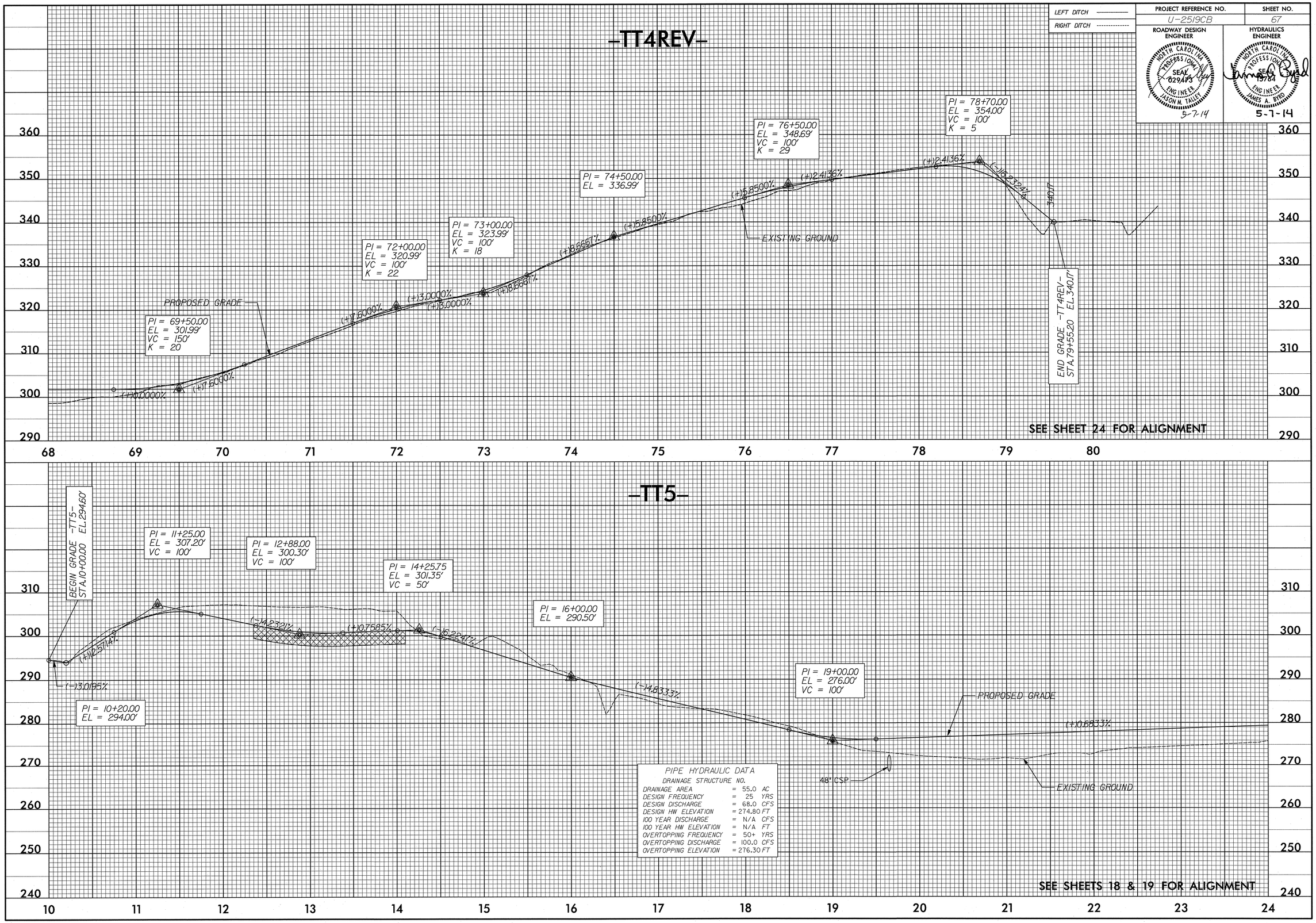


104.001.001/u2519cb/Roadway/proj/u2519cb_rdy_pro68

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	67

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY — 5-7-14

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19784 ENGINEER JAMES A. BYRD — 5-7-14



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 55.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 68.0	CFS
DESIGN HW ELEVATION	= 274.80	FT
100 YEAR DISCHARGE	= N/A	CFS
100 YEAR HW ELEVATION	= N/A	FT
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 100.0	CFS
OVERTOPPING ELEVATION	= 276.30	FT

104,001,001/u2519cb/Roadway/proj/u2519cb_rdy_pro69

LEFT DITCH	
RIGHT DITCH	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	68

ROADWAY DESIGN ENGINEER

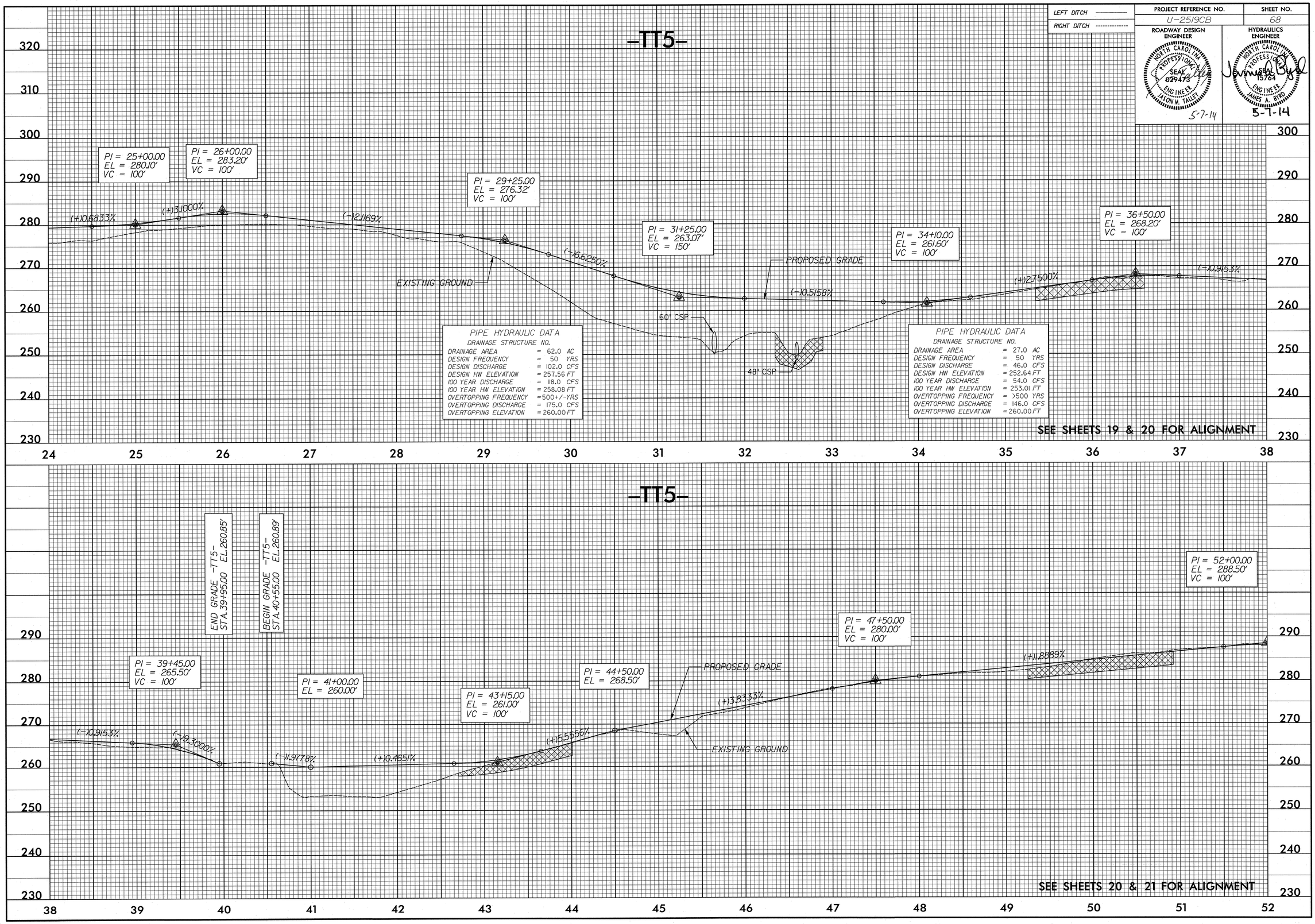
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD

5-7-14



104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pro70

LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH - - - - - -	U-2519CB	69

ROADWAY DESIGN ENGINEER

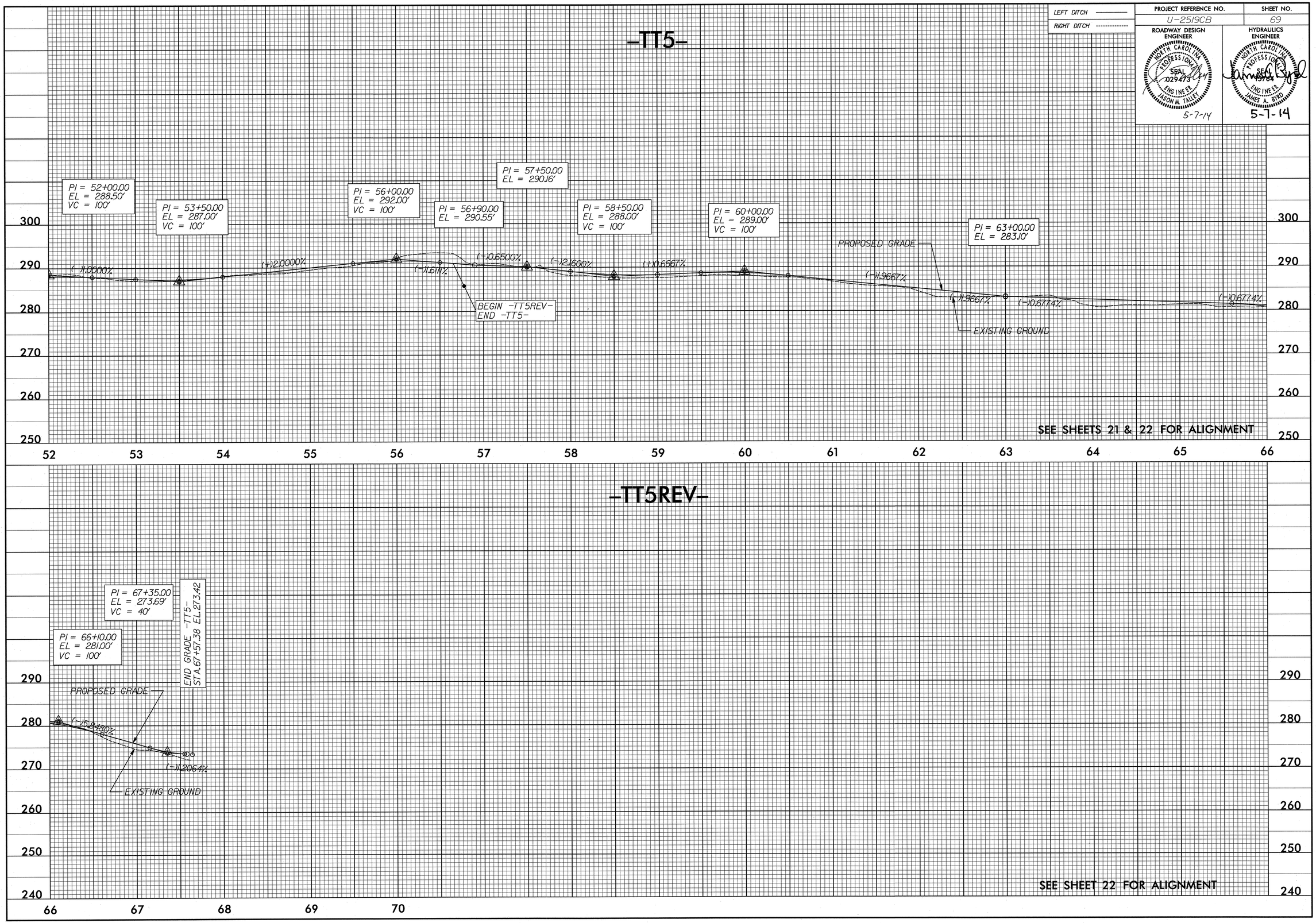
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19164 ENGINEER JAMES A. BIRD

5-7-14

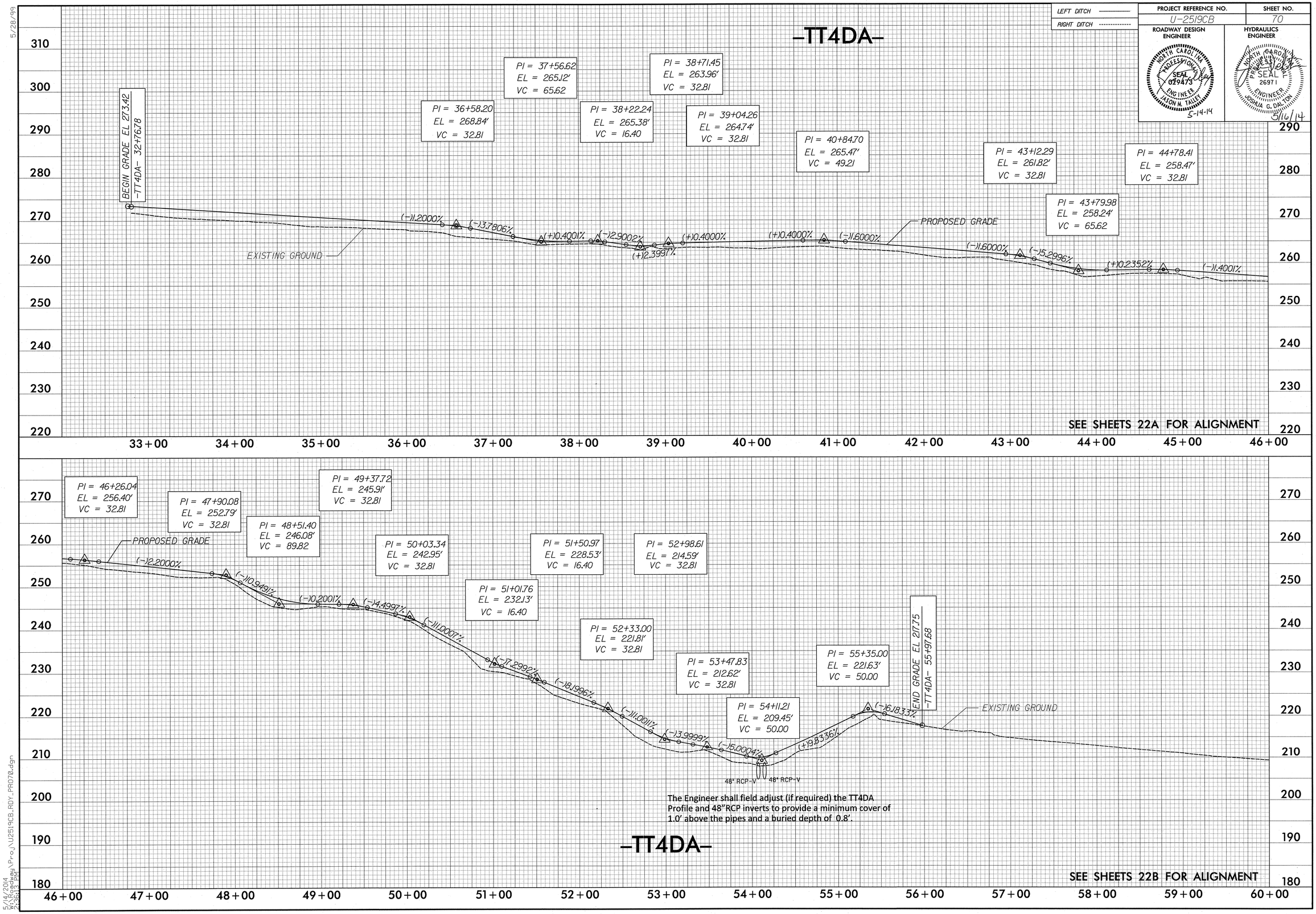


104.001.001/U2519cb/Roadway/proj/U2519cb_rdy_pro71

LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	70

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY 5-14-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14



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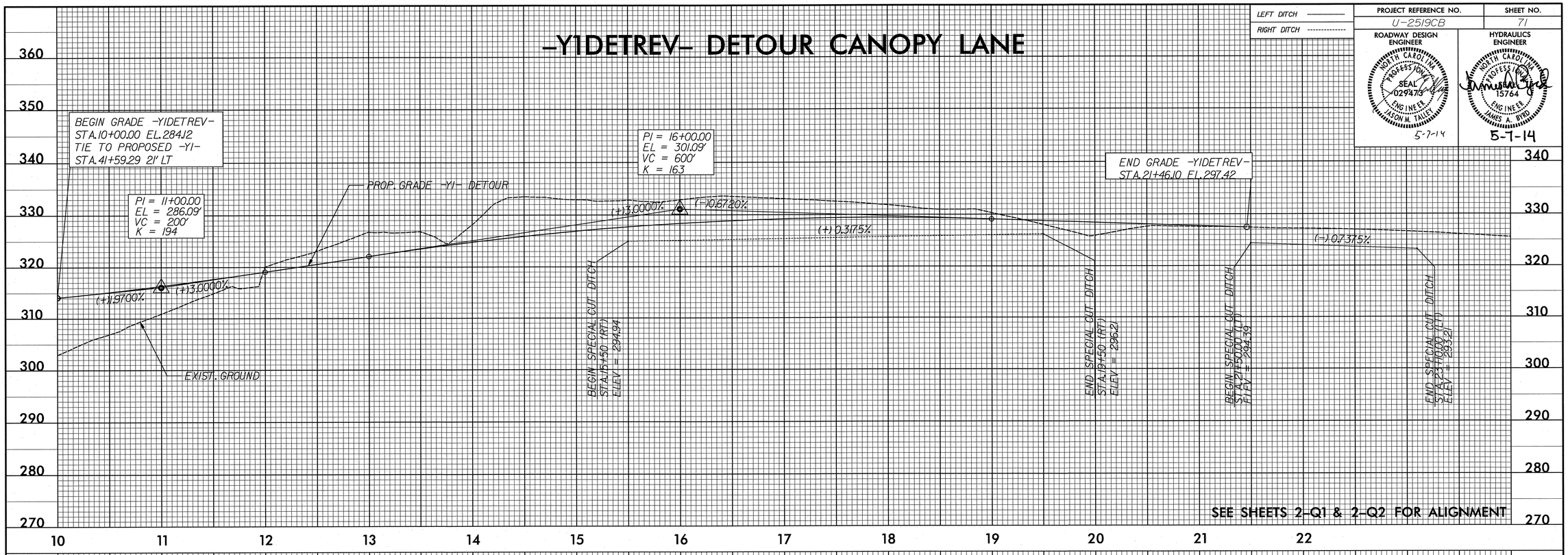
LEFT DITCH	
RIGHT DITCH	

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	71

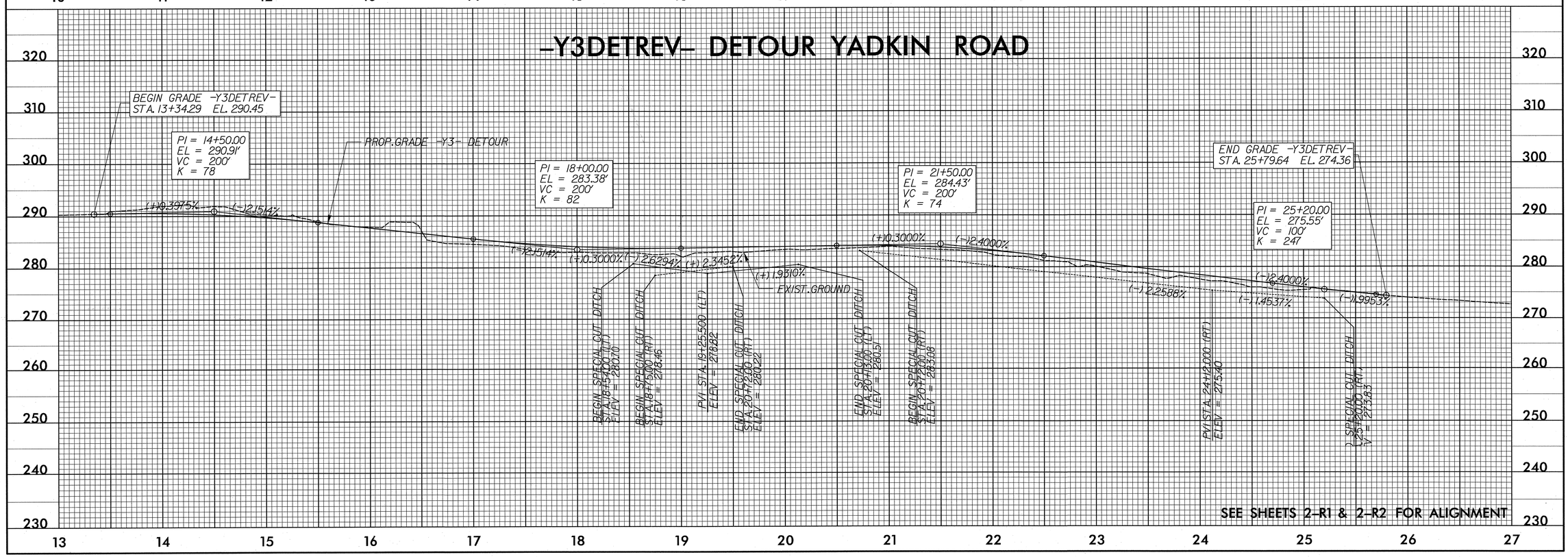
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TAILEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
5-7-14

-Y1DETREV- DETOUR CANOPY LANE



-Y3DETREV- DETOUR YADKIN ROAD



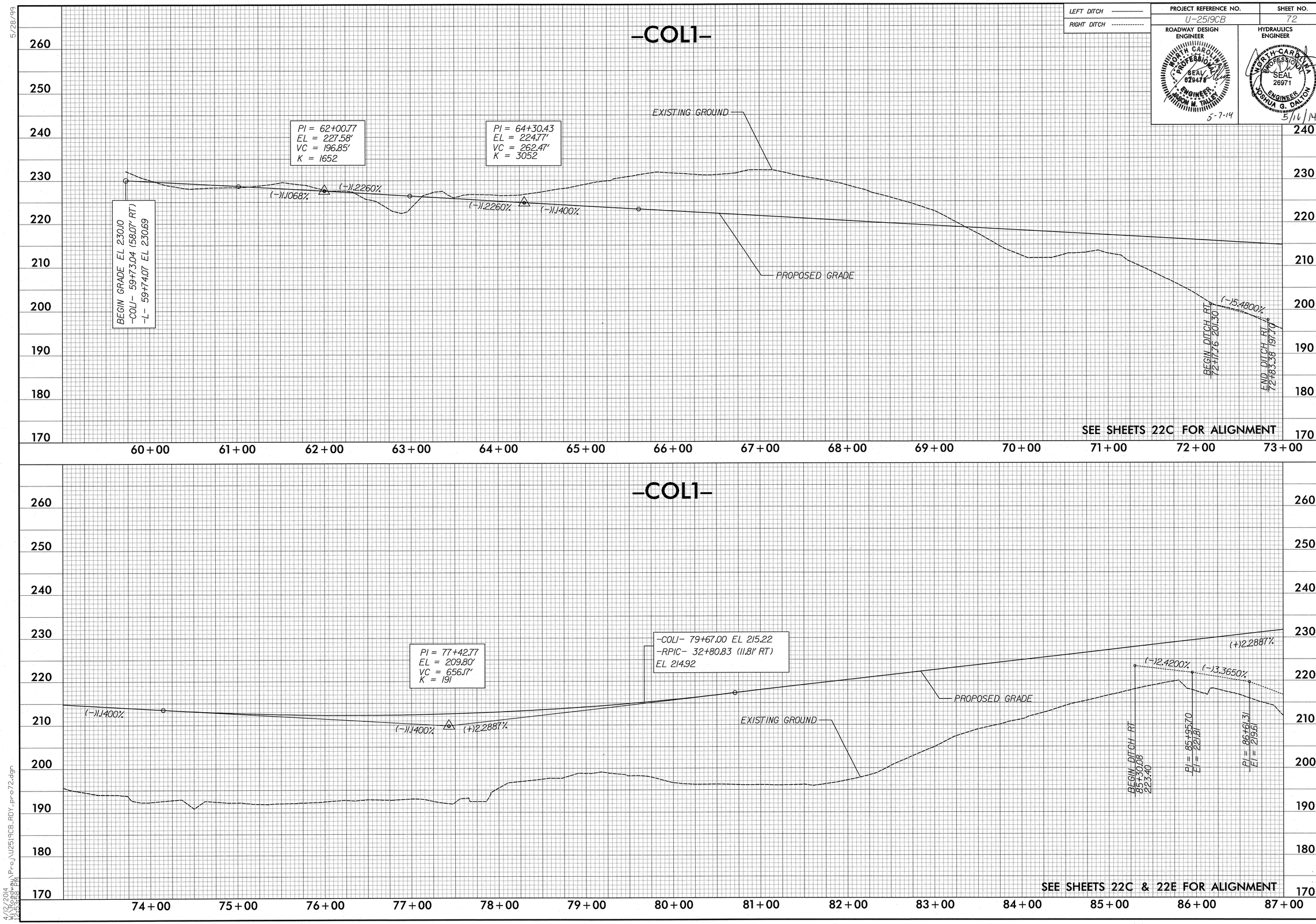
104.001.001/U2519cb/Roadway/proj/U2519cb_rdy.pr072

LEFT DITCH ————
RIGHT DITCH - - - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	72
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029476 ENGINEER AARON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14



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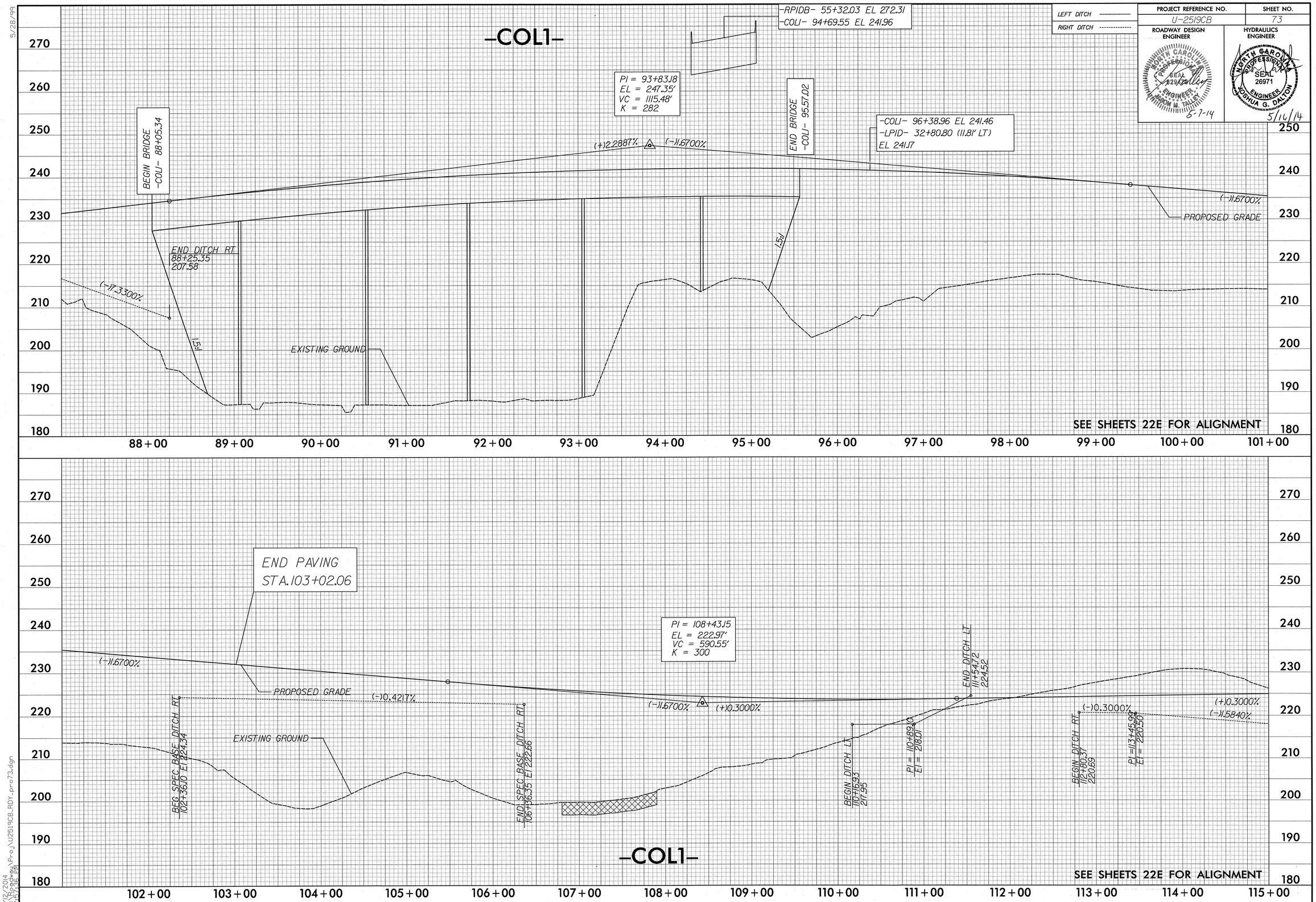
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	73

LEFT DITCH
RIGHT DITCH

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029 ENGINEER JASON M. TALLEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
5/16/14



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4/12/2014
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5/28/99

LEFT DITCH ———
RIGHT DITCH - - - - - -

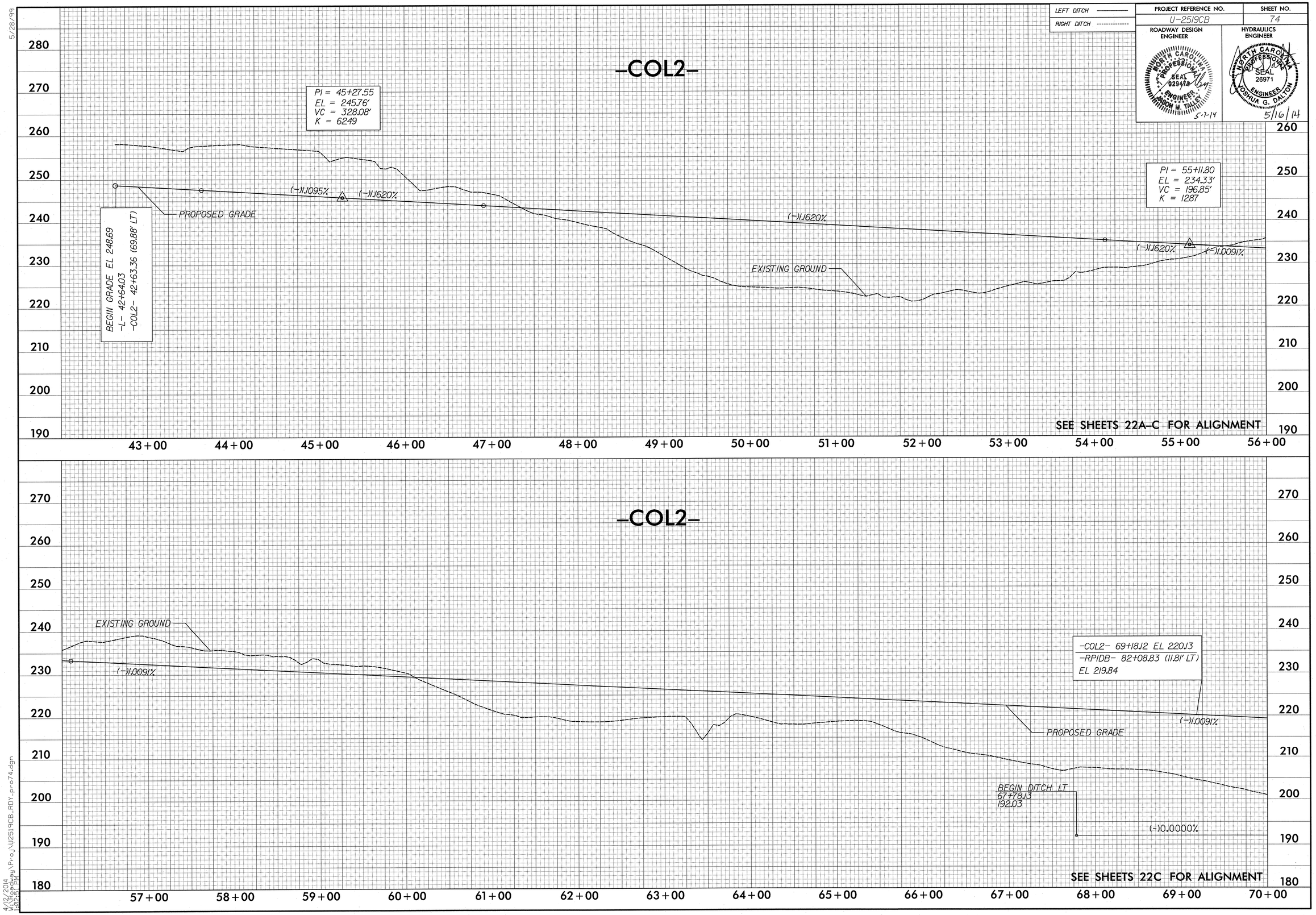
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	74

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029413 ENGINEER JASON M. TALLEY
5-7-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
5/16/14



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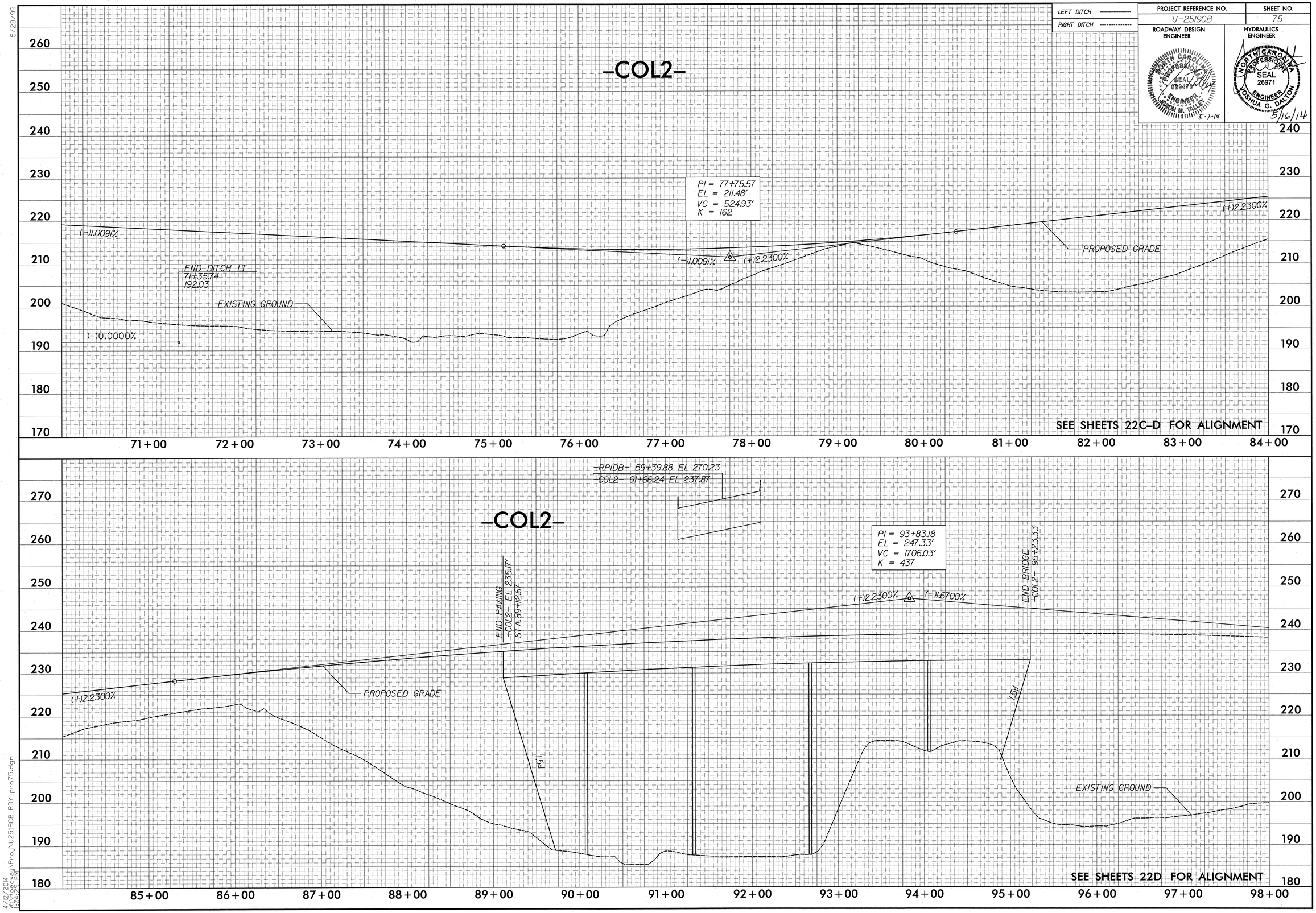
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	75
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020473 ENGINEER JASON M. TALLEY 5-7-14

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14



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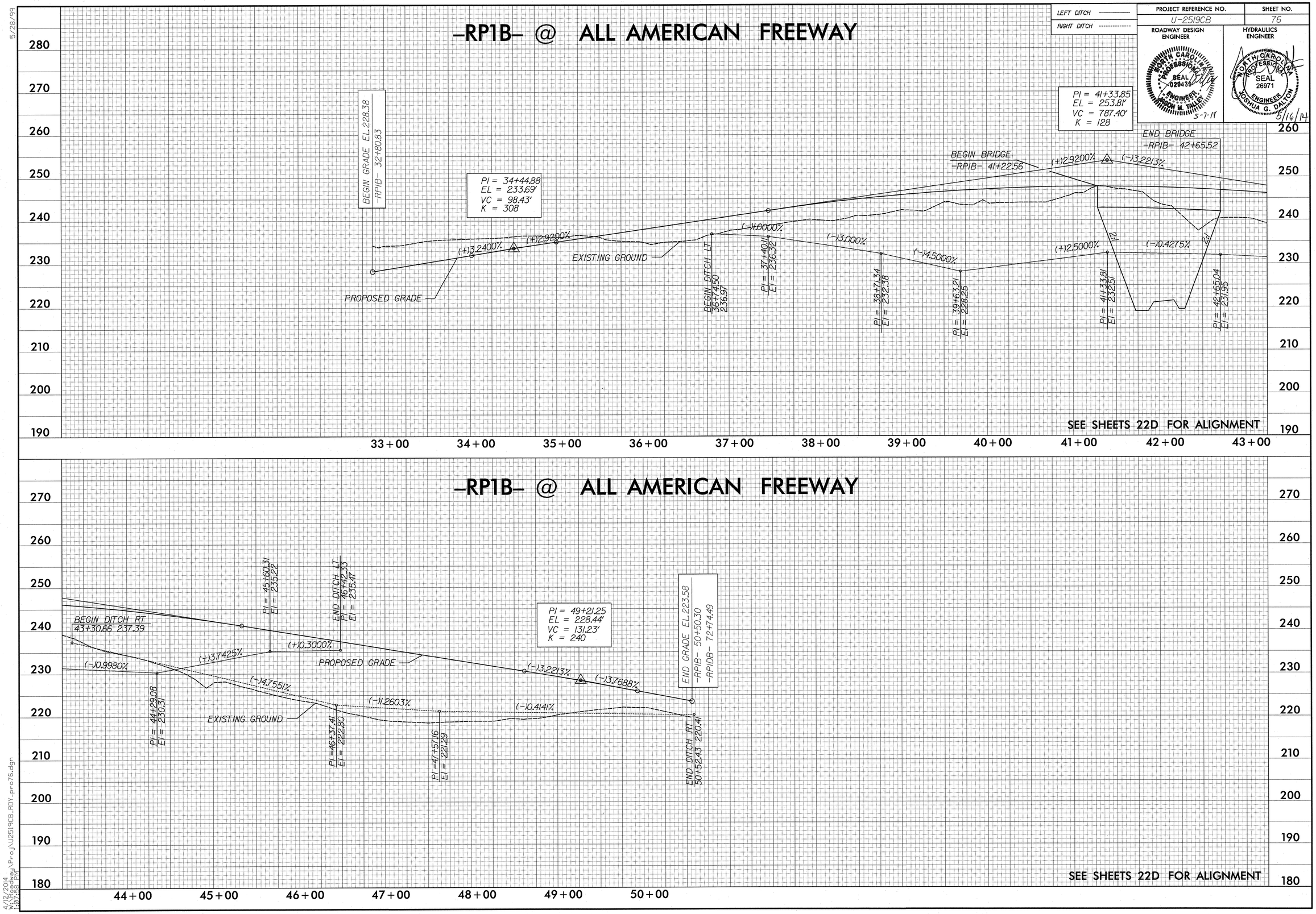
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	76
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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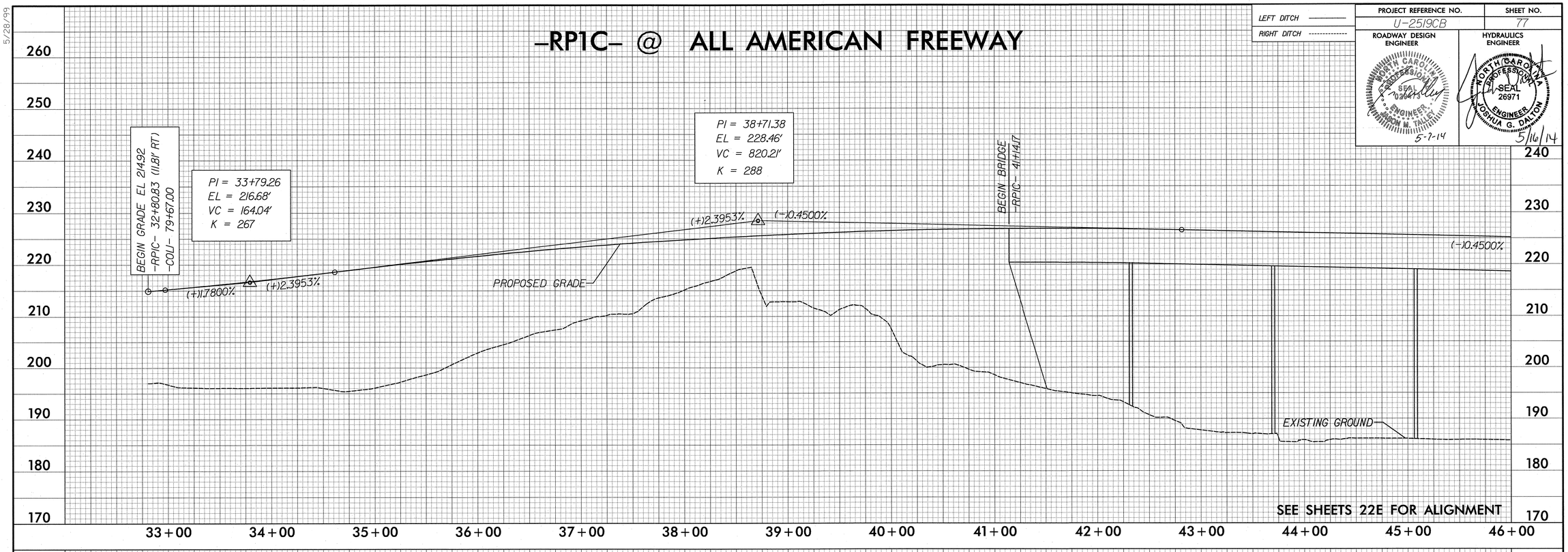
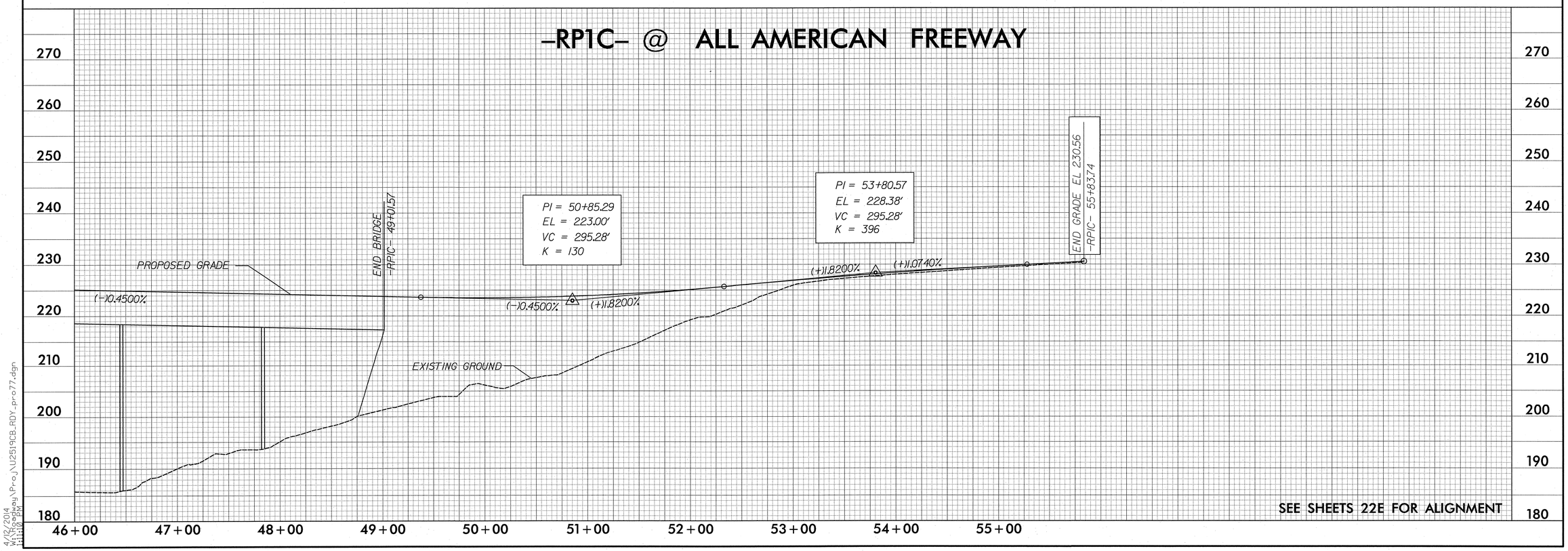
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	77

LEFT DITCH ———
RIGHT DITCH - - - - - -

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY
5-7-14

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
5/16/14





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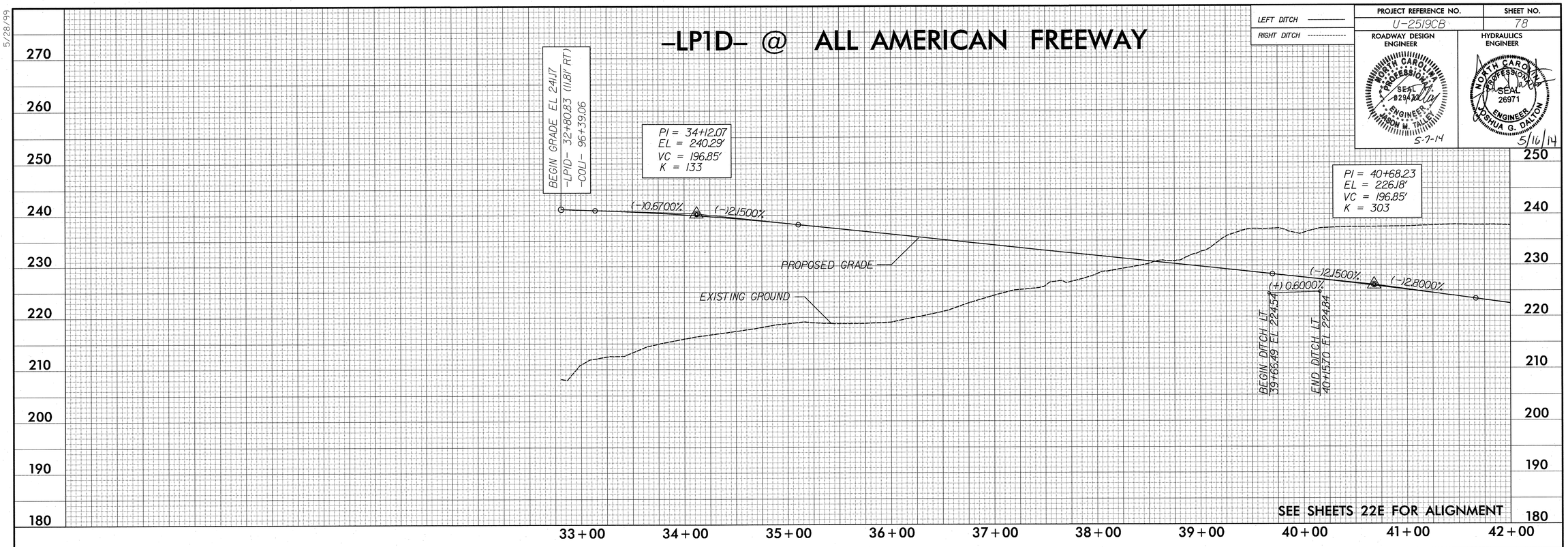
PROJECT REFERENCE NO.	SHEET NO.
U-2519CB	78

LEFT DITCH ———
RIGHT DITCH - - - - - - -

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029422 ENGINEER JASON M. TALLEY 5-7-14

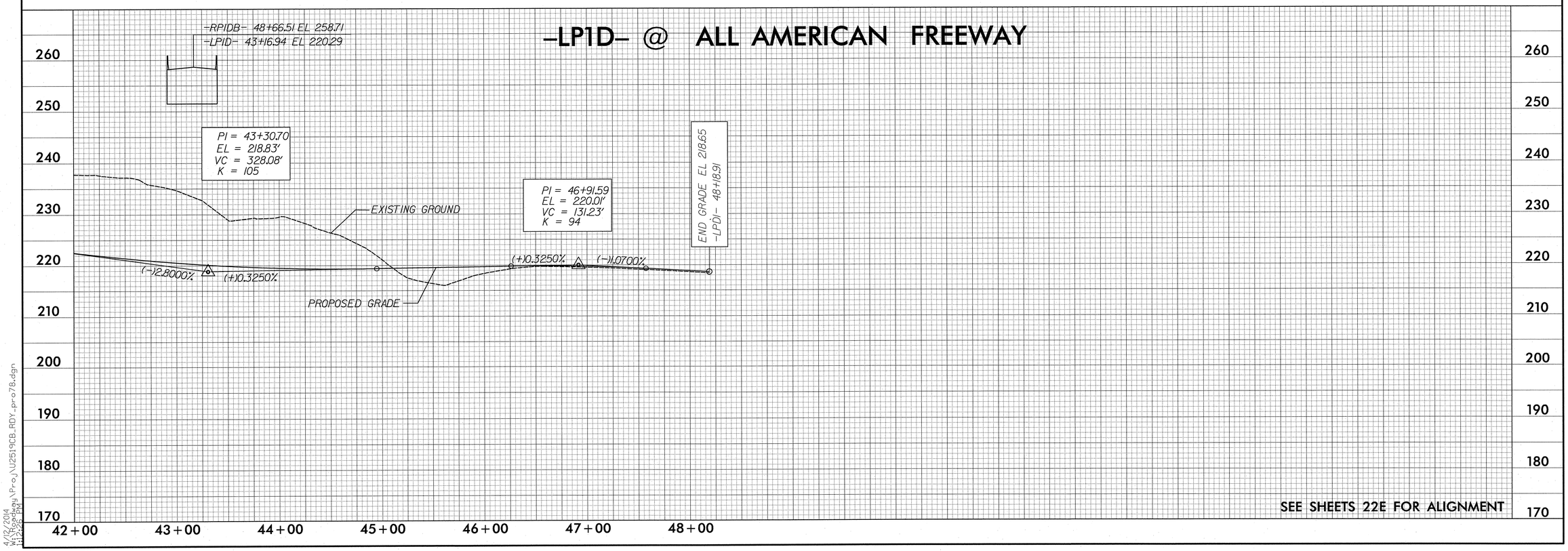
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14

-LP1D- @ ALL AMERICAN FREEWAY



SEE SHEETS 22E FOR ALIGNMENT

-LP1D- @ ALL AMERICAN FREEWAY



SEE SHEETS 22E FOR ALIGNMENT

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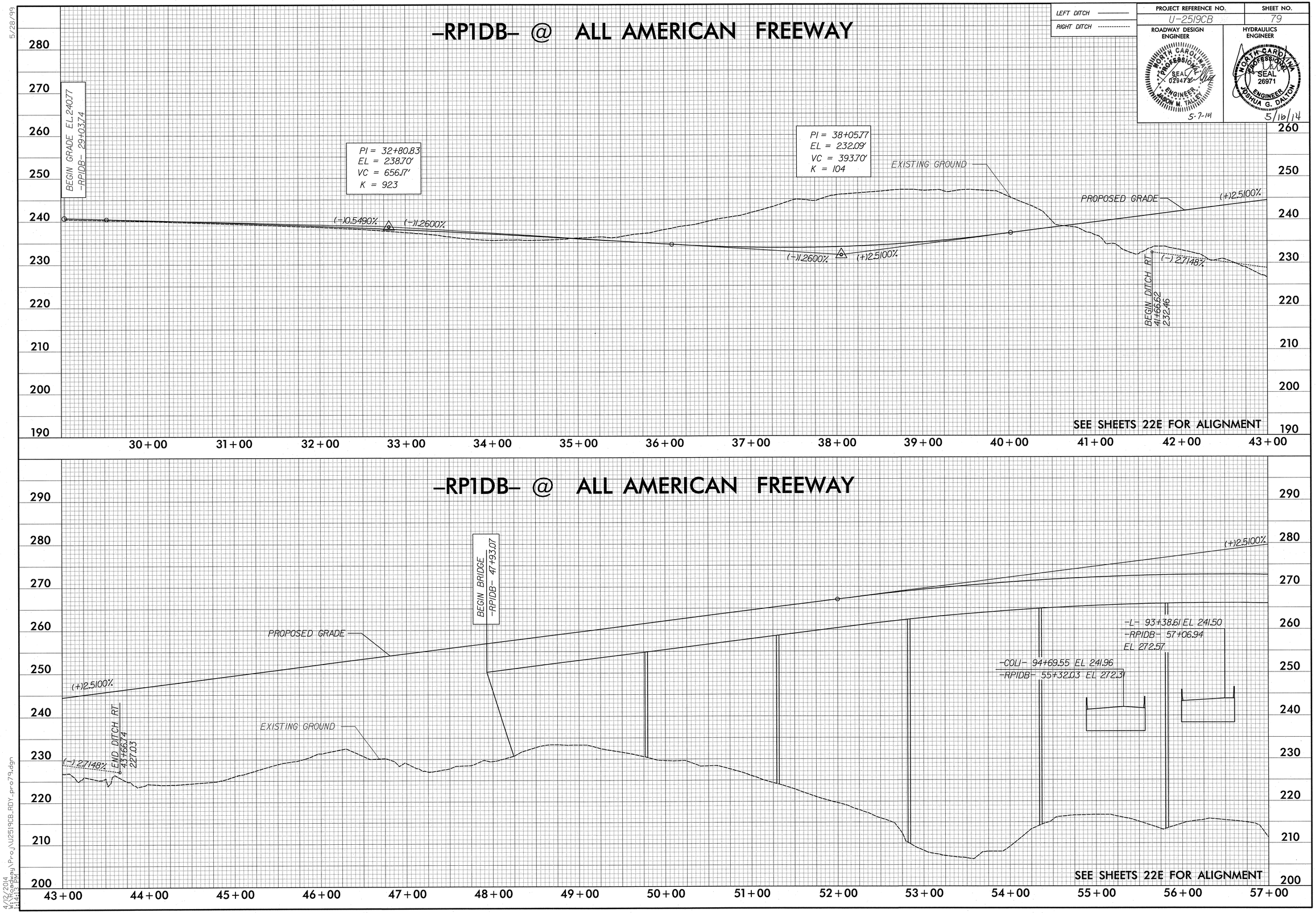
LEFT DITCH	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH	U-2519CB	79
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	NORTH CAROLINA PROFESSIONAL SEAL 029472 ENGINEER AARON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14

-RP1DB- @ ALL AMERICAN FREEWAY



-RP1DB- @ ALL AMERICAN FREEWAY

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4/12/2014
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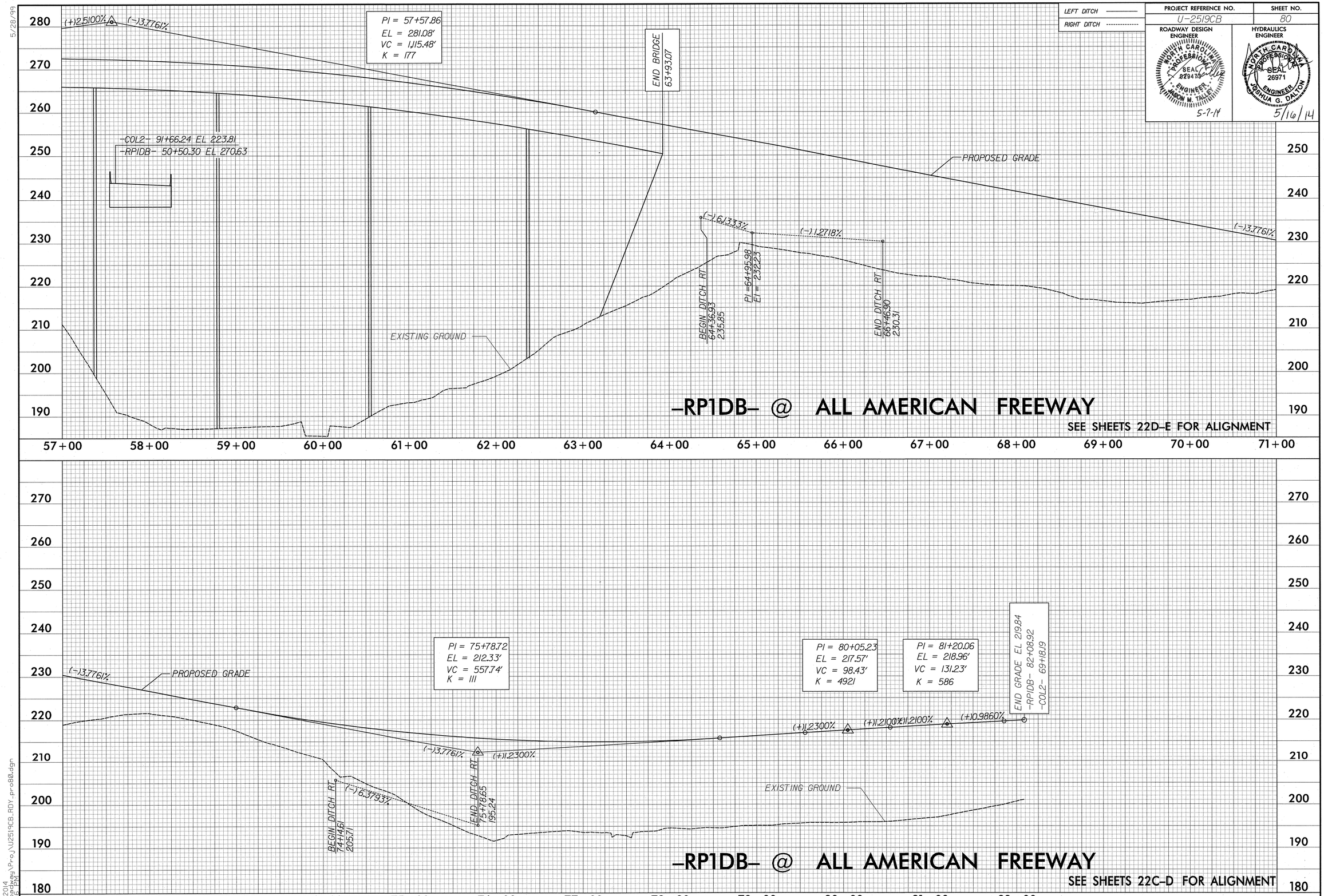
LEFT DITCH ————	PROJECT REFERENCE NO.	SHEET NO.
RIGHT DITCH ----------	U-2519CB	80
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	NORTH CAROLINA PROFESSIONAL SEAL 029475 ENGINEER AARON M. TALLEY 5-7-14	NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 5/16/14



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4/12/2014
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