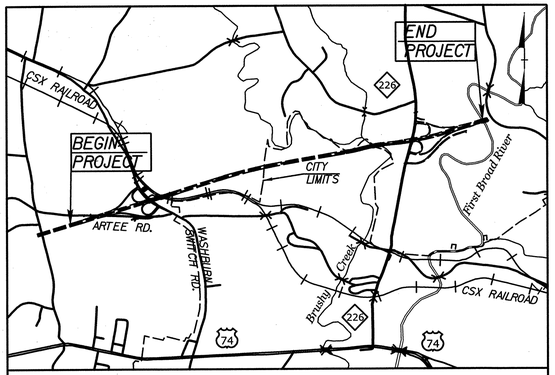
09/08/99

TIP PROJECT: R-2707B

CONTRACT: C203201

See Sheet 1-A For Index of Sheets



VICINITY MAP NTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

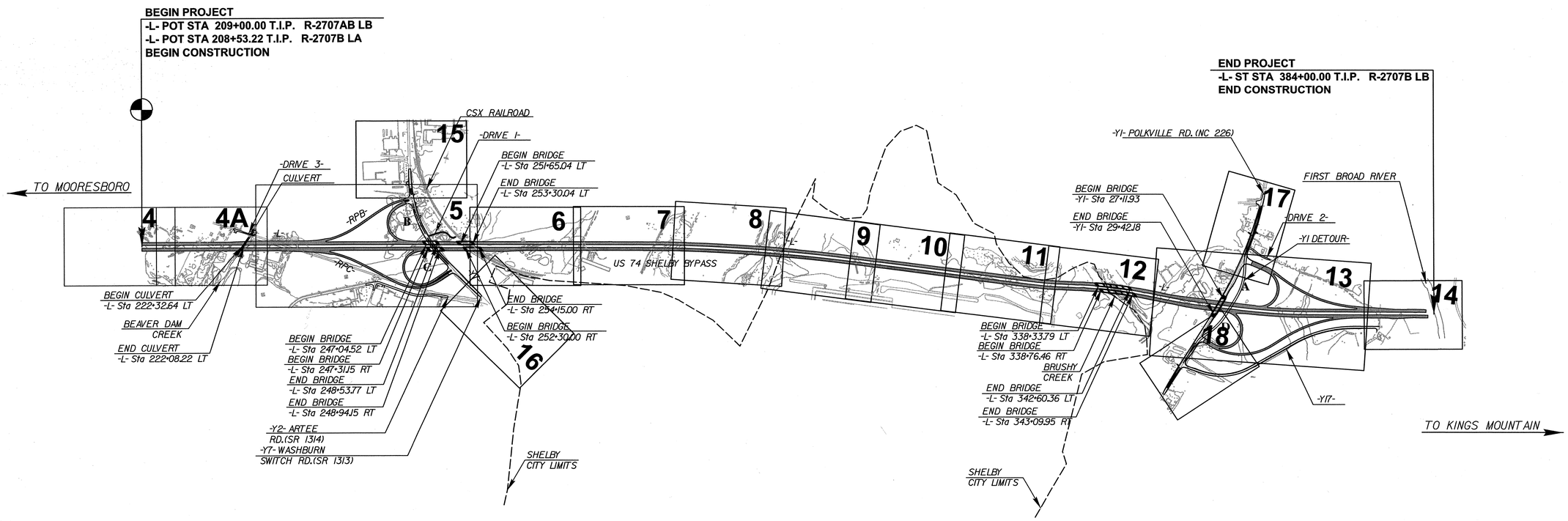
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2707B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34497.1.2	NHF-0074(14)	P.E.
34497.2.8	NHF-0074(107)	ROW/UTIL
34497.3.FS5	NHF-0074(107)	CON.

LOCATION: US 74 – SHELBY BYPASS FROM EAST OF SR 1315 (PLATO LEE ROAD) TO EAST OF NC 226

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES & CULVERT

NAD 83/95



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGE.

NCDOT Contact: Brenda L. Moore, PE – Roadway Design Project Engineer

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 2013 = 7,900
ADT 2033 = 19,200
DHV = 11%
D = 55%
T = 17%*
V = 70 MPH
* (DUAL = 5% + TTST = 12%)
FUNC CLASS = FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-2707B =	3.178 mi.
LENGTH OF STRUCTURES TIP PROJECT R-2707B =	0.145 mi.
TOTAL LENGTH OF TIP PROJECT R-2707B =	3.323 mi.

STRUCTURE LENGTHS BASED ON WB LANES

Prepared in the Office of:

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 15, 2011

LETTING DATE:
MAY 20, 2014

ENRICO A. ROQUE, PE
PROJECT ENGINEER

ANTHONY THOMPSON, PE
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN K. SCARCE

2/21/14

SIGNATURE: Jonathan K. Scarce P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER ENRICO A. ROQUE

SIGNATURE: Enrico A. Roque P.E. 2/21/14

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

10:55:55 AM
\\hntb\projects\R-2707b_rdy_tsh.dgn
$$$$USERNAME$$$$

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	1A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER
1/13/14

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES & LIST OF STANDARDS
1B	CONVENTIONAL SYMBOLS
1C THRU 1H	SURVEY CONTROL SHEET
2 THRU 2C	TYPICAL SECTIONS
2D THRU 2E	SHEAR POINT DIAGRAM
2F	ENDANGERED HEARTLEAF FLOWERS SITE
2G THRU 2H	Y1 DETOUR SHEETS
2I	DETAIL FOR STEEL PLATES
2J THRU 2K	GRADING PLAN FOR HAZARDOUS SPILL BASINS
3A THRU 3J	DRAINAGE SUMMARY
3K THRU 3L	GUARDRAIL SUMMARIES
3M	PAVEMENT REMOVAL, FENCE, AND SHOULDER BERM GUTTER SUMMARIES
3N	GEOTECHNICAL SUMMARY TABLES
3O	SUMMARY OF EARTHWORK
3P	PARCEL INDEX SHEET
4 THRU 18	PLAN SHEETS
19 THRU 38	PROFILE SHEETS
TMP-1 THRU TMP-22	TRAFFIC MANAGEMENT PLANS
PM-1 THRU PM-6	PAVEMENT MARKING PLANS
EC-1 THRU EC-38	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
SIGN-1 THRU SIGN-5	SIGNING PLANS
UC-1 THRU UC-23	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-13	UTILITY BY OTHERS PLANS
XO	CROSS SECTION INDEX SHEET
XOA THRU XOD	CROSS SECTION SUMMARY SHEETS
X1 THRU X320	CROSS SECTION SHEETS
C-1 THRU C-5	CULVERT PLANS
S-1 THRU S-266	STRUCTURE PLANS
W-1 THRU W-3	WALL PLANS

GENERAL NOTES:

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.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05
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

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.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 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.

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

AND SEWER, TOWN OF KINSTOWN:SEWER, CLEVELAND COUNTY: WATER, DUKE ENERGY:

TRANSMISSION AND DISTRIBUTION, AT&T: FIBER AND COPPER TELEPHONE LINES, TIME

WARNER CABLE: CATV LINE.

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.

ROCK

ROCK IS ANTICIPATED BETWEEN STA. 300+60 TO 362+50 BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY, 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	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
310.03	CROSS PIPE END SECTION - PRECAST CONCRETE SECTION FOR 18" TO 30" PIPE
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
654.01	PAVEMENT REPAIRS
DIVISION 8 - INCIDENTALS	
815.03	PIPE UNDERDRAIN AND BLIND DRAIN
838.01	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS - 15" THRU 48" PIPE 90 SKEW
838.02	CONCRETE ENDWALL AND SLUICE GATE - 15" THRU 36" PIPE 90 SKEW
838.11	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS - 15" THRU 48" 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
840.26	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
840.31	CONCRETE JUNCTION BOX - 12" THRU 66" PIPE
840.32	BRICK JUNCTION BOX - 12" THRU 66" PIPE
840.36	TRAFFIC BEARING GRATED DROP INLET - FOR STEEL (840.37) DOUBLE FRAME AND GRATES
840.37	STEEL GRATE AND FRAME
840.54	MANHOLE FRAME AND COVER
840.71	CONCRETE AND BRICK PIPE PLUG
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
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
852.06	METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS
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
866.02	WOVEN WIRE FENCE - WITH WOOD POST
866.03	WOVEN WIRE FENCE - WITH STEEL POST
876.01	RIP RAP IN CHANNELS
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS
876.03	DRAINAGE DITCHES WITH CLASS 'A' RIP RAP
876.04	DRAINAGE DITCHES WITH CLASS 'B' RIP RAP

REVISIONS

1/13/2014
2:16:07 PM
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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- 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.

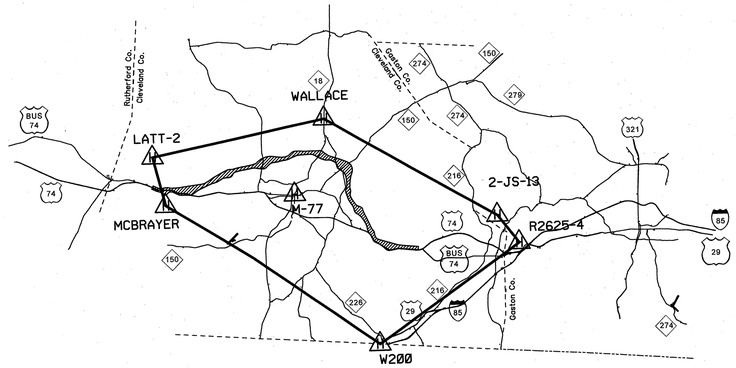
7/1/10

10/28/08

SURVEY CONTROL SHEET, R-2707B

PROJECT REFERENCE NO.	
R-2707B	1 C
LOCATION AND SURVEYS	

FINAL



GPS NETWORK

NOT TO SCALE

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.

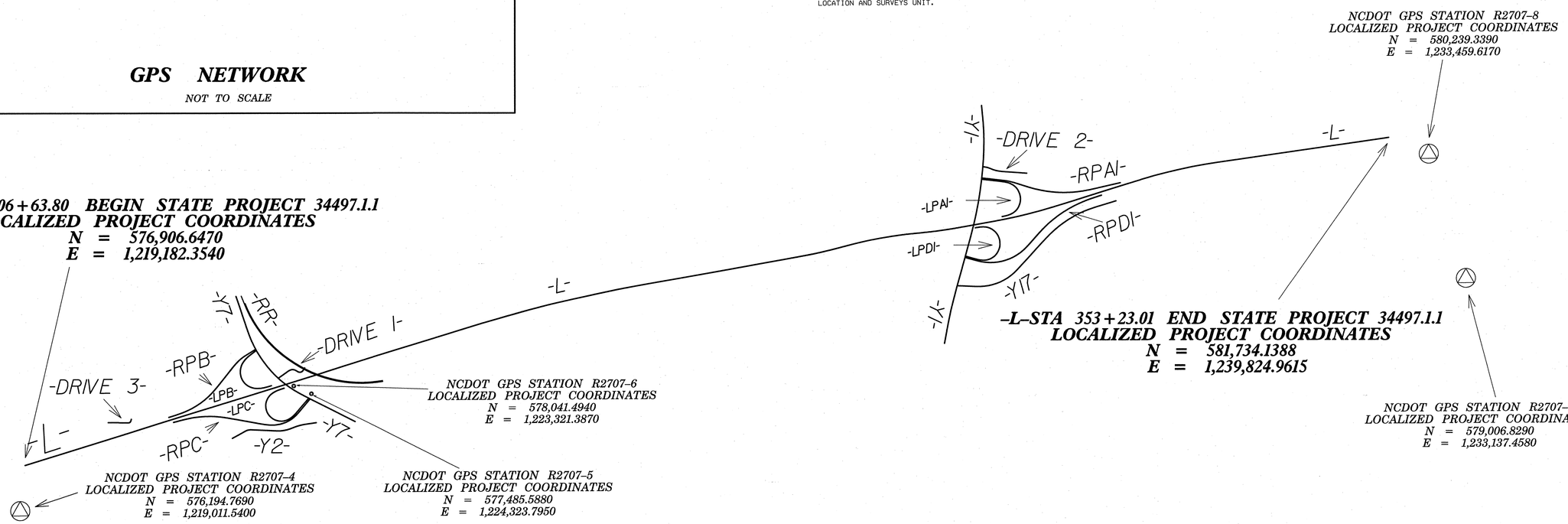
2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   R2707B_LS_GPSCALIB_100909.HTM
   R2707B_LS_WGS84_100909.TXT
   R2707B_LS_LOCAL_100909.TXT
   R2707B_LS_CONTROL_100909.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT.

IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT 'M 77'
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(//■) EASTING: 124297.658(//■)
ELEVATION: 852.279'(//■)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998441Ø
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
'M 77' TO -L- L STATION 215+00.00 IS
N 8Ø 07 30 W 23,38Ø.758'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION.
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	1 D
LOCATION AND SURVEYS	

FINAL

SURVEY CONTROL SHEET R2707-B

GPS CALIBRATION REPORT

GPS CALIBRATION REPORT PROJECT : R2707B

TIP NUMBER R2707B

USER NAME RDWOODS DATE & TIME 9:23:27 AM 6/29/2010
COORDINATE SYSTEM SITE(AT GROUND) ZONE NORTH CAROLINA 3200
HORIZONTAL DATUMNAD 1983 (CONUS)
VERTICAL DATUM NAVD 88 GEOID MODEL G99NC
COORDINATE UNITS US SURVEY FEET
DISTANCE UNITS US SURVEY FEET
HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION
LOCALIZED AROUND M-77

LATITUDE 35°17'53.47519"N
LONGITUDE 81°32'14.87764"W
SITE SCALE FACTOR 1.0001559240
HEIGHT 747.565SFT

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION USES A LOCALIZED COORDINATE SYSTEM WHICH IS VERY SIMILAR TO NORTH CAROLINA ZONE 3200 FROM WHICH IT IS DERIVED.
PLEASE TAKE CARE IN UTILIZING THESE COORDINATES TO ELIMINATE CONFUSION OF THE TWO SYSTEMS.
THIS FILE IS TO AID IN THE USE OF REAL TIME KINEMATIC (RTK) GPS DURING CONSTRUCTION LAYOUT.

DATUM TRANSFORMATION PARAMETERS

DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER 564891.530SFT
EASTING COORDINATE OF ROTATION CENTER 1248940.722SFT
ROTATION ABOUT THE CENTER POINT 0°00'00"
TRANSLATION NORTH -1.241SFT
TRANSLATION EAST 0.938SFT
SCALE FACTOR 1.00015517

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT 568742.403SFT
EASTING COORDINATE OF ORIGIN POINT 1203773.275SFT
VERTICAL SEPARATION AT ORIGIN 0.211SFT
SLOPE NORTH 5.123PPM
SLOPE EAST -1.547PPM

GEOID MODEL DEFINITION

G99NC

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

MAXIMUM	ERROR	ROOT MEAN SQUARE	POINT
HORIZONTAL	0.058SFT	0.009	GPS15
VERTICAL	0.045SFT	0.008	MCBRAYER
THREE-DIMENL	0.057SFT	0.012	MCBRAYER

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M 77"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(//■) EASTING: 1242971.658(//■)
ELEVATION: 852.279'(//■)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "M 77" TO -L- L STATION 215+00.00 IS
N 80 07 30 W 23,380.7581'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Point Residuals

WGS84 Coordinates	Calculated point	Local
Point MCBRAYER Latitude 35 16'59.95696"N Longitude 81 40'06.15783"W Height 751.773sft	Northing 568742.403sft Easting 1203773.275sft Elevation 856.819sft Horz error 0.035sft Vert error 0.045sft 3D error 0.057sft	Point McBrayer_Local Northing 568742.428sft Easting 1203773.299sft Elevation 856.774sft Utilized Horz and Vert Quality Survey quality
Point LATT-2 Latitude 35 19'02.46223"N Longitude 81 39'42.94665"W Height 820.821sft	Northing 581073.131sft Easting 1206029.125sft Elevation 925.966sft Horz error 0.009sft Vert error 0.004sft 3D error 0.010sft	Point LATT-2_Local Northing 581073.122sft Easting 1206029.126sft Elevation 925.970sft Utilized Horz and Vert Quality Survey quality
Point GPS4 Latitude 35 18'17.64678"N Longitude 81 37'04.79740"W Height 770.106sft	Northing 576194.767sft Easting 1219011.564sft Elevation 875.093sft Horz error 0.024sft Vert error 0.017sft 3D error 0.029sft	Point R2707-4_Local Northing 576194.769sft Easting 1219011.540sft Elevation 875.110sft Utilized Horz and Vert Quality Survey quality
Point M77 Latitude 35 17'53.47450"N Longitude 81 32'14.87790"W Height 747.535sft	Northing 573127.494sft Easting 1242971.651sft Elevation 852.249sft Horz error 0.029sft Vert error 0.030sft 3D error 0.042sft	Point M77_Local Northing 573127.522sft Easting 1242971.658sft Elevation 852.279sft Utilized Horz and Vert Quality Survey quality
Point WALLACE Latitude 35 21'21.03039"N Longitude 81 30'27.11508"W Height 863.861sft	Northing 593880.476sft Easting 1252431.750sft Elevation 968.736sft Horz error 0.018sft Vert error 0.001sft 3D error 0.018sft	Point WALLACE_Local Northing 593880.490sft Easting 1252431.739sft Elevation 968.735sft Utilized Horz and Vert Quality Survey quality
Point GPS15 Latitude 35 18'48.68592"N Longitude 81 29'24.43979"W Height 832.090sft	Northing 578350.583sft Easting 1257235.473sft Elevation 936.723sft Horz error 0.050sft Vert error 0.024sft 3D error 0.056sft	Point R2707-15_Local Northing 578350.547sft Easting 1257235.438sft Elevation 936.747sft Utilized Horz and Vert Quality Survey quality
Point 2JS13 Latitude 35 14'52.39137"N Longitude 81 25'26.08075"W Height 770.050sft	Northing 553976.489sft Easting 1276400.935sft Elevation 874.121sft Horz error 0.021sft Vert error 0.044sft 3D error 0.049sft	Point 2-JS-13_Local Northing 553976.474sft Easting 1276400.950sft Elevation 874.077sft Utilized Horz and Vert Quality Survey quality
Point GPS23 Latitude 35 14'49.16395"N Longitude 81 25'35.37802"W Height 763.346sft	Northing 553669.095sft Easting 1275622.024sft Elevation 867.424sft Horz error 0.017sft Vert error 0.007sft 3D error 0.018sft	Point R2707-23_Local Northing 553669.094sft Easting 1275622.041sft Elevation 867.417sft Utilized Horz and Vert Quality Survey quality
Point R26254 Latitude 35 13'23.79431"N Longitude 81 23'00.98772"W Height 846.141sft	Northing 544729.486sft Easting 1288217.128sft Elevation 949.783sft Horz error 0.031sft Vert error 0.017sft 3D error 0.036sft	Point R2625-4_Local Northing 544729.474sft Easting 1288217.099sft Elevation 949.766sft Utilized Horz and Vert Quality Survey quality
Point W200 Latitude 35 10'05.36224"N Longitude 81 27'02.08704"W Height 776.498sft	Northing 525158.972sft Easting 1267723.676sft Elevation 880.183sft Horz error 0.036sft Vert error 0.039sft 3D error 0.053sft	Point W200_Local Northing 525158.975sft Easting 1267723.712sft Elevation 880.222sft Utilized Horz and Vert Quality Survey quality

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   R2707B_LS_GPSCALIB_100909.HTM
   R2707B_LS_WGS84_100909.TXT
   R2707B_LS_CONTROL_100909.TXT
   R2707B_LS_LOCAL_100909.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	1 - E
Location and Surveys	

FINAL

SURVEY CONTROL SHEET R-2707B

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
72	BL 72	576680.3044	1220309.0066	838.40	216+75.12	545.72 RT
73	BL 73	576872.7786	1220584.3134	812.27	219+94.66	442.10 RT
74	BL 74	577109.3662	1220959.9758	833.61	224+23.06	325.63 RT
75	BL 75	577312.3431	1221369.8696	853.53	228+74.38	251.30 RT
76	BL 76	577698.6054	1222201.6874	873.50	237+82.77	125.00 RT
77	BL 77	577877.4566	1222710.9535	889.90	243+22.07	102.78 RT
GPS 6	R2707-6	578041.4940	1223321.3870	881.43	249+53.79	124.30 RT
78	BL 78	578523.0905	1224343.4117	857.82	260+71.94	37.59 LT
79	BL 79	578766.0758	1225055.6213	833.17	268+24.07	61.83 LT
80	BL 80	578897.8289	1225578.7159	851.41	273+62.83	34.96 LT
81	BL 81	579194.1181	1226908.2502	847.95	287+23.48	40.53 RT
82	BL 82	579500.3278	1228367.6384	844.88	302+17.83	49.76 RT
83	BL 83	579623.3137	1229442.5167	824.88	312+98.25	113.93 RT
84	BL 84	579861.5262	1230604.6440	753.71	324+84.02	78.87 RT
85	BL 85	579917.2312	1231047.6184	736.23	329+29.43	100.29 RT
86	BL 86	579999.9612	1231617.0553	778.41	334+94.85	143.73 RT
87	BL 87	580106.4693	1231965.8510	762.11	338+64.29	121.66 RT
88	BL 88	580182.1603	1232650.1704	746.27	345+67.32	147.66 RT
89	BL 89	580254.7601	1233031.0044	772.82	349+50.42	115.15 RT
GPS 8	R2707-8	580239.3390	1233459.6170	811.53	353+64.64	197.06 RT
90	BL 90	580499.7062	1234006.2199	807.65	359+47.10	36.13 RT
91	BL 91	580653.6979	1234513.7582	763.47	364+75.14	0.87 RT
92	BL 92	580787.4190	1234972.5183	778.06	369+52.98	1.52 RT
93	BL 93	581010.5855	1235703.0526	769.83	377+16.83	2.09 LT
94	BL 94	581155.9601	1236203.9489	717.34	382+38.41	1.97 RT
95	BL 95	581329.7707	1236682.0576	757.35	387+42.83	51.04 LT

BY9

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
360	BY9 360	581416.7323	1233713.6148	799.32	18+47.55	18.70 LT
361	BY9 361	580831.7503	1233650.7821	803.25	24+33.70	27.88 LT
GPS 8	R2707-8	580239.3390	1233459.6170	811.53	30+53.94	24.73 RT
GPS 7	R2707-7	579006.8290	1233137.4580	816.98	43+26.78	16.91 RT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
350	BY6 350	577523.1977	1221074.9543	835.21	226+53.96	36.53 LT
351	BY6 351	577499.1909	1221882.6446	863.19	234+19.37	222.47 RT
352	BY6 352	577479.5026	1222523.1124	882.29	240+26.13	428.47 RT
353	BY6 353	577475.5770	1223172.7895	871.02	246+46.29	622.09 RT

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
354	BY7 354	579433.4648	1222439.4342	889.80	10+27.62	48.36 LT
355	BY7 355	578800.9780	1222568.4036	890.67	16+66.44	34.94 RT
356	BY7 356	578348.7630	1222909.1844	890.47	22+30.54	22.02 LT
6	R2707-6	578041.4940	1223321.3870	881.43	27+57.44	48.36 LT
5	R2707-5	577485.5880	1224323.7950	887.49	OUTSIDE PROJECT LIMITS	

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
357	BY8 357	578737.8507	1222867.6235	878.47	247+23.34	674.26 LT
358	BY8 358	578255.4401	1223549.2655	870.65	252+34.25	13.71 LT
359	BY8 359	578108.2606	1224289.2647	865.78	258+98.93	343.31 RT

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
362	BY10 362	582016.7270	1236469.3313	733.57	386+84.78	767.58 LT
363	BY10 363	581443.2347	1236575.2458	752.92	386+64.10	184.80 LT
95	BL 95	581329.7707	1236682.0576	757.35	387+42.83	51.04 LT
364	BY10 364	581047.9599	1236951.0094	777.81	389+54.41	278.10 RT
365	BY10 36	580920.1510	1237376.2533	794.84	393+71.11	470.82 RT
366	BY10 366	580898.8189	1238009.8400	810.01	399+95.80	578.75 RT

****
BM8 ELEVATION = 813.42
N 576951 E 1220582
L STATION 220+16.00 366 RIGHT
8 INCH NAIL IN BASE OF 10 INCH MAPLE
****
****
BM9 ELEVATION = 866.89
N 577568 E 1222066
L STATION 236+14.00 210 RIGHT
8 INCH NAIL IN TOP OF 20 INCH PINE STUMP
****
****
BM10 ELEVATION = 881.23
N 578261 E 1223301
L STATION 249+98.00 91 LEFT
8 INCH NAIL IN ROOT OF 18 INCH WHITE PINE
****
****
BM11 ELEVATION = 830.29
N 578565 E 1224891
L STATION 266+07.00 83 RIGHT
8 INCH NAIL SET IN BASE OF DOUBLE POPLAR
****
****
BM12 ELEVATION = 825.96
N 578960 E 1226306
L STATION 280+52.00 209 RIGHT
8 INCH NAIL IN TOP OF 9 INCH PINE STUMP
****
****
BM13 ELEVATION = 797.84
N 579480 E 1227679
L STATION 295+39.00 64 LEFT
8 INCH NAIL IN BASE OF 22 INCH WHITE OAK
****
****
BM14 ELEVATION = 812.07
N 579425 E 1229068
L STATION 308+95.00 244 RIGHT
8 INCH NAIL IN BASE OF 15 INCH WHITE PINE
****
****
BM15 ELEVATION = 776.99
N 579762 E 1230605
L STATION 324+68.00 177 RIGHT
8 INCH NAIL IN ROOT OF 18 INCH POPLAR
****
****
BM16 ELEVATION = 735.98
N 580071 E 1232384
L STATION 342+83.00 228 RIGHT
8 INCH NAIL IN BASE OF 24 INCH RED OAK
****
****
BM17 ELEVATION = 707.47
N 581329 E 1236485
L STATION 385+52.00 94 LEFT
8 INCH NAIL IN BASE OF 20 INCH SYCAMORE
****
****
BM18 ELEVATION = 778.74
N 581170 E 1236857
L STATION 388+83.00 141 RIGHT
8 INCH NAIL IN BASE OF 20 INCH WHITE OAK
****

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT 'M 77'
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(//■) EASTING: 124297.658(//■)
ELEVATION: 852.279'(//■)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM 'M 77' TO -L- L STATION 215+00.00 IS
N 80 07 30 W 23,380.7581'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SURVEY CONTROL SHEET R-2707B

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2707B_LS_GPSCALIB_100909.HTM
R2707B_LS_WGS84_100909.TXT
R2707B_LS_LOCAL_100909.TXT
R2707B_LS_CONTROL_100909.TXT

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	1-F
Location and Surveys	

SURVEY CONTROL SHEET R-2707B
(DESIGN ALIGNMENTS)
FINAL

L

TYPE	STATION	NORTH	EAST
POT	206+63.80	576906.6470	1219182.3540
PC	275+55.52	578920.7065	1225773.2074
PT	303+96.22	579580.6084	1228534.3252
TS	328+14.65	579996.0155	1230916.8161
SC	330+14.65	580031.4625	1231113.6473
CS	332+78.71	580086.8388	1231371.8160
ST	334+78.71	580135.2352	1231565.8696
TS	335+25.50	580146.8085	1231611.2007
SC	337+25.50	580195.1540	1231805.2667
CS	343+94.94	580311.0452	1232464.2099
ST	345+94.94	580331.8152	1232663.1258
TS	346+96.72	580341.7960	1232764.4145
SC	348+96.72	580362.5660	1232963.3304
CS	351+23.01	580393.1152	1233187.5346
ST	353+23.01	580426.3213	1233384.7560
PC	357+87.39	580506.0876	1233842.2410
PT	366+97.53	580715.3954	1234727.4288
POT	366+97.53	580715.3954	1234727.4288
PC	381+28.48	581126.9913	1236097.9084
PT	393+07.39	581377.7980	1237248.6277
POT	419+08.25	581734.1388	1239824.9615

RPA1

TYPE	STATION	NORTH	EAST
POT	0+00.00	581075.5952	1235763.3759
TS	3+34.56	581002.6126	1235436.8684
SC	5+74.56	580955.4275	1235201.5998
CS	13+05.67	580989.4569	1234476.1992
SRS	15+45.67	581058.4598	1234246.3811
SC	17+45.67	581111.6149	1234053.7380
PT	17+90.69	581118.3559	1234009.2304
EQB	21+31.85	581159.2988	1233670.5369
EQA	0+00.00	581159.2988	1233670.5369

RPB

TYPE	STATION	NORTH	EAST
TS	10+00.00	577621.1180	1221359.5801
SC	13+00.00	577721.1441	1221642.1713
CS	16+80.23	577932.7792	1221955.9570
ST	19+80.23	578157.3088	1222154.5759
TS	21+88.34	578319.0522	1222285.5360
SC	23+88.34	578468.6269	1222418.0662
PT	25+38.95	578560.3906	1222537.1751
POT	27+03.88	578647.4419	1222677.2555

RPC

TYPE	STATION	NORTH	EAST
POT	10+00.00	577544.4385	1221430.3020
TS	10+22.41	577550.1223	1221451.9791
SC	13+22.41	577616.0057	1221744.5055
CS	16+55.22	577627.8033	1222076.3625
ST	19+55.22	577582.8587	1222372.8288
TS	22+78.66	577523.2501	1222690.7221
SC	25+78.66	577497.7530	1222988.4339
PT	29+57.95	577673.2947	1223314.4434
POT	32+42.43	577891.3165	1223497.1746

RPD1

TYPE	STATION	NORTH	EAST
TS	0+00.00	580891.2915	1235476.5050
SC	2+40.00	580817.2382	1235248.2642
CS	10+19.40	580398.6736	1234597.8463
SRS	12+59.40	580221.6216	1234435.8885
SC	14+59.40	580077.1491	1234297.8081
PT	22+15.98	579916.9748	1233589.9833
EQB	24+04.31	579968.1525	1233408.7403
EQA	0+00.00	579968.1525	1233408.7403

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	582264.1692	1233673.6746
TS	11+43.33	582121.3856	1233686.1555
SC	12+48.33	582016.7467	1233694.8461
PCC	18+13.03	581452.5049	1233697.3263
CS	29+90.03	580294.1431	1233500.7149
ST	30+40.03	580246.0050	1233487.1977
PC	36+79.85	579630.2586	1233313.3290
PT	38+00.10	579514.3104	1233281.4627
TS	39+84.08	579336.5776	1233233.9508
SC	40+34.08	579288.2551	1233221.1084
CS	44+25.51	578906.5638	1233134.6753
ST	44+75.51	578857.4228	1233125.4473
POT	46+58.19	578677.8338	1233091.9933

Y2

TYPE	STATION	NORTH	EAST
POT	7+00.00	577275.0333	1222274.6810
PC	9+78.13	577408.3486	1222518.7744
PT	10+60.57	577426.5180	1222598.1325
PC	14+57.73	577406.7706	1222994.8037
PT	16+57.08	577436.2851	1223190.6175
PC	17+65.14	577473.2326	1223292.1681
PT	18+72.27	577498.8377	1223395.9840
POT	20+65.20	577524.7430	1223587.1652

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	579444.2033	1222384.7905
TS	14+60.91	579007.4121	1222531.9434
SC	17+10.91	578772.6645	1222617.7405
CS	27+13.31	578022.6831	1223259.0873
ST	29+63.29	577901.4985	1223477.6552
POT	37+50.00	577537.6534	1224175.1692

Y17

TYPE	STATION	NORTH	EAST
POT	10+00.00	579538.5524	1233287.9810
PC	12+83.38	579524.6928	1233571.0219
PT	19+77.47	579777.1902	1234194.3471
PC	26+25.71	580250.5644	1234637.2107
PT	35+16.21	580714.5669	1235385.2229
POT	38+40.15	580807.7442	1235695.4730

DRIVE2

TYPE	STATION	NORTH	EAST
POT	10+00.00	581331.0111	1233688.0687
PC	10+50.00	581322.3574	1233737.3142
PRC	11+15.74	581302.6478	1233799.8272
PT	12+96.93	581257.0703	1233974.1704
POT	16+72.82	581229.0887	1234349.0194

DRIVE3

TYPE	STATION	NORTH	EAST
POT	10+00.00	577547.1913	1220442.5720
POT	11+49.52	577546.0905	1220592.0887
POT	11+75.95	577542.8451	1220618.3142
PC	13+03.72	577541.6500	1220746.0838
PT	13+57.35	577572.1666	1220785.3179
PC	13+70.89	577585.3134	1220788.5257
PT	14+08.38	577619.2403	1220803.9526

LPA1

TYPE	STATION	NORTH	EAST
CS	0+00.00	580578.3827	1233975.3486
SC	1+60.00	580626.2177	1234127.2239
CS	7+04.81	581069.0710	1234109.1086
ST	8+64.81	581104.8969	1233953.9171
EQB	11+52.63	581139.4392	1233668.1714
EQA	0+00.00	581139.4392	1233668.1714

LPB

TYPE	STATION	NORTH	EAST
TS	10+00.00	578095.6237	1222912.3633
SC	13+00.00	578066.9767	1222618.5290
PT	17+01.54	578388.6436	1222457.4384
CS	17+01.54	578388.6436	1222457.4384
ST	20+01.54	578606.7774	1222656.3776
POT	20+39.53	578629.2203	1222687.0295

LPC

TYPE	STATION	NORTH	EAST
TS	10+00.00	578055.9739	1223104.2619
SC	12+50.00	577943.2581	1222884.6555
PT	18+70.07	577564.7894	1223135.2766
CS	18+70.07	577564.7894	1223135.2766
ST	21+20.07	577722.9788	1223324.7704
POT	23+54.55	577902.6822	1223475.3857

LPD1

TYPE	STATION	NORTH	EAST
TS	0+00.00	580410.5099	1233567.6993
SC	1+60.00	580421.0221	1233726.6250
CS	8+97.36	579923.9830	1233701.1088
ST	10+57.36	579950.7143	1233544.0950
EQB	11+92.36	579987.3999	1233414.1752
EQA	0+00.00	579987.3999	1233414.1752

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT DATA AT HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/
THE FILES TO BE FOUND ARE AS FOLLOWS:
R2707B_LS_GPSCALIB_100909.HTM
R2707B_LS_WGS84_100909.TXT
R2707B_LS_CONTROL_100909.TXT
R2707B_LS_LOCAL_100909.TXT
THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION & SURVEYS UNIT.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT 'M 77'
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(//■) EASTING: 124297.658(//■)
ELEVATION: 852.279'(//■)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM 'M 77' TO -L- L STATION 215+00.00 IS
N 80 07 30 W 23,380.7581'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET R-2707B
(ROW MARKERS)
FINAL

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	214+59.62	145.00	577000.5503	1219985.8070
L	215+00.00	145.00	577012.3511	1220024.4241
L	215+00.00	160.00	576998.0041	1220028.8083
L	216+14.73	-160.00	577337.5650	1220045.0106
L	220+13.04	-160.00	577453.9686	1220425.9326
L	220+28.00	160.00	577152.3110	1220533.7593
L	220+44.70	-216.61	577517.3596	1220439.6665
L	222+23.71	-160.00	577515.5335	1220627.4062
L	222+41.81	-217.21	577575.5344	1220627.9974
L	223+04.11	-197.50	577574.8955	1220693.3398
L	224+22.67	-160.00	577573.6808	1220817.6810
L	228+55.00	-160.00	577700.0265	1221231.1378
L	228+95.50	-197.00	577747.2473	1221259.0568
L	230+00.00	160.00	577436.3715	1221463.3255
L	230+05.00	-160.00	577743.8633	1221374.5895
L	248+01.50	-116.42	578227.2018	1223105.3905
L	248+75.00	-149.55	578280.3625	1223166.0051
L	250+34.28	-90.00	578269.9611	1223335.7305
L	252+32.29	-176.16	578410.2305	1223499.9220
L	252+90.39	-212.97	578462.4109	1223544.7276
L	253+38.61	164.06	578115.9317	1223701.0258
L	254+50.00	-215.00	578510.9971	1223696.7769
L	255+90.00	-200.00	578537.5665	1223835.0507
L	257+46.30	160.00	578238.9579	1224089.7268
L	258+33.00	-160.00	578570.3275	1224079.1308
L	267+00.00	160.00	578517.6718	1225001.7964
L	267+00.00	145.00	578532.0169	1224997.4127
L	270+00.00	145.00	578619.6900	1225284.3159
L	270+00.00	160.00	578605.3453	1225288.7012
L	270+00.00	-160.00	578911.3753	1225195.1835
L	275+55.52	160.00	578767.6915	1225819.9663
L	275+55.52	-160.00	579073.7214	1225726.4485
L	285+00.00	-160.00	579332.8493	1226641.4724
L	285+04.00	160.00	579024.2296	1226726.1479
L	288+20.00	160.00	579101.3436	1227030.3164
L	291+35.00	-160.00	579485.7754	1227262.3284
L	292+02.72	-415.58	579750.2200	1227271.8380
L	293+33.00	-160.00	579529.9355	1227456.7600
L	294+22.77	-826.81	580200.8456	1227402.7047
L	294+69.00	-160.00	579559.2929	1227590.5238
L	295+82.65	-160.00	579583.2168	1227702.4374
L	295+87.71	-176.28	579600.2015	1227704.0649
L	296+01.24	-250.77	579675.8990	1227702.0718
L	296+75.87	-407.78	579845.0629	1227744.1126
L	297+89.14	-715.46	580169.7456	1227796.2021
L	299+28.00	160.00	579338.4509	1228104.6192
L	303+96.22	160.00	579422.9864	1228561.8080
L	303+96.22	-160.00	579738.2305	1228506.8425
L	305+72.00	-160.00	579768.4245	1228680.0148
L	311+54.00	-160.00	579868.3928	1229253.3647
L	320+00.00	-160.00	580013.7078	1230086.7913
L	320+00.00	160.00	579698.4635	1230141.7567
L	328+14.65	-160.00	580153.6375	1230889.3332
L	328+14.65	160.00	579838.3935	1230944.2988
L	330+14.65	-160.00	580188.6048	1231083.5415
L	330+14.65	160.00	579874.3205	1231143.7530
L	332+78.71	-160.00	580242.5043	1231334.8258
L	332+78.71	160.00	579931.1735	1231408.8062
L	334+78.71	-160.00	580290.2625	1231526.2903
L	334+78.71	160.00	579980.2080	1231605.4490
L	335+25.50	-160.00	580301.8357	1231571.6213
L	335+25.50	160.00	579991.7813	1231650.7803
L	337+25.50	160.00	580039.4595	1231842.1345
L	337+25.50	-160.00	580350.8485	1231768.3990
L	343+94.94	160.00	580152.1145	1232482.6765
L	343+94.94	-160.00	580469.9760	1232445.7433
L	345+94.94	160.00	580172.5865	1232678.8160
L	345+94.94	-160.00	580491.0440	1232647.4357
L	346+96.72	160.00	580182.5672	1232780.1045
L	346+96.72	-160.00	580501.0247	1232748.7243
L	348+96.72	160.00	580203.6353	1232981.7970
L	348+96.72	-190.00	580551.2967	1232941.4070
L	351+23.01	-160.00	580551.1928	1233162.8070
L	351+23.01	160.00	580235.0375	1233212.2622
L	353+23.01	-160.00	580583.9433	1233357.2733

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	353+23.01	160.00	580268.6950	1233412.2395
L	376+70.17	160.00	580841.9243	1235704.9835
L	380+00.17	-160.00	581243.3213	1235928.9933
L	380+00.17	160.00	580936.8448	1236021.0375
L	380+00.17	250.00	580850.6482	1236046.9248
L	381+28.48	-160.00	581280.2290	1236051.8845
L	381+28.48	250.00	580887.5550	1236169.8123
L	382+50.17	250.00	580920.5130	1236282.8105
L	382+80.17	160.00	581015.0545	1236286.5765
L	383+96.19	-160.00	581354.2432	1236314.9744
L	384+94.99	160.00	581068.6843	1236489.9394

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	11+90.00	-70.00	582080.8048	1233759.9293
Y1	11+90.00	-20.00	582076.5780	1233710.1083
Y1	11+90.00	20.00	582073.1968	1233670.2515
Y1	11+90.00	70.00	582068.9703	1233620.4305
Y1	12+48.33	-70.00	582021.9345	1233764.6535
Y1	12+93.11	85.00	581966.7094	1233613.0902
Y1	13+52.35	70.00	581909.5268	1233631.3080
Y1	17+80.00	-70.00	581481.4713	1233769.2365
Y1	17+80.00	70.00	581489.4818	1233629.4658
Y1	18+13.03	-70.00	581447.9290	1233767.1765
Y1	18+13.03	80.00	581457.7345	1233617.4975
Y1	19+00.00	85.00	581372.6145	1233606.2588
Y1	26+81.87	74.65	580609.2205	1233502.2455
Y1	36+79.85	90.00	579654.7200	1233226.7170
Y1	37+00.00	90.00	579635.1188	1233221.2070
Y1	37+00.00	-80.00	579589.3058	1233384.9175
Y1	38+00.00	90.00	579537.6538	1233194.5428
Y1	38+50.00	-70.00	579448.0282	1233336.2020
Y1	39+84.08	80.00	579357.2348	1233156.6638
Y1	39+84.08	-70.00	579318.4968	1233301.5753
Y1	40+34.08	70.00	579306.0345	1233153.4040
Y1	40+34.08	-70.00	579270.4695	1233288.8113
Y1	42+26.39	-19.51	579097.1418	1233194.4086
Y1	42+30.75	-65.00	579082.8728	1233237.8188
Y1	42+40.00	20.50	579092.6817	1233152.3855
Y1	42+40.00	65.00	579102.4328	1233108.9660

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+22.88	33.34	577391.0061	1222567.3221
Y2	14+52.99	37.00	577370.0525	1222988.2220
Y2	16+28.07	50.27	577379.0020	1223177.5085
Y2	17+65.14	50.00	577426.2459	1223309.2634
Y2	18+82.84	-48.64	577548.4567	1223399.9293
Y2	20+15.60	-50.00	577567.6295	1223531.2956
Y2	20+15.60	-29.49	577547.3030	1223534.0499
Y2	20+15.60	30.52	577487.8423	1223542.1069
Y2	20+16.29	50.00	577468.6285	1223545.4114

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	14+40.00	50.00	579011.2671	1222477.8834
Y7	14+40.00	24.76	579019.3253	1222501.8025
Y7	14+60.91	50.00	578991.4493	1222484.5600
Y7	14+60.91	-29.85	579016.9435	1222560.2281
Y7	14+60.91	-25.42	579015.5303	1222556.0322
Y7	15+56.99	-52.06	578933.6550	1222612.0992
Y7	17+10.91	50.00	578753.1335	1222571.7129
Y7	17+10.97	-50.00	578792.1487	1222663.7880
Y7	17+55.27	50.00	578711.2997	1222590.1374
Y7	20+17.45	-50.00	578531.0644	1222804.7130
Y7	21+30.00	-55.94	578446.0948	1222873.0628
Y7	23+35.50	-71.63	578308.0502	1223014.9825
Y7	23+82.04	-73.26	578278.1368	1223047.9445
Y7	28+46.51	-60.50	578009.2495	1223403.2877
Y7	29+63.30	-50.00	577945.8252	1223500.7883
Y7	30+77.76	50.00	577804.2289	1223556.0168
Y7	34+50.00	-50.00	577720.7316	1223932.3071
Y7	34+50.00	50.00	577632.0693	1223886.0581
Y7	34+69.07	76.31	577599.9226	1223890.7998
Y7	35+00.00	-50.00	577697.6070	1223976.6383
Y7	35+00.00	-25.00	577675.4415	1223965.0760

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y17	11+50.00	60.00	579471.2880	1233434.8670
Y17	12+83.38	65.00	579459.7708	1233567.8430
Y17	14+50.00	75.00	579459.8207	1233748.9880
Y17	17+90.00	185.00	579502.1745	1234153.5288
Y17	19+50.00	180.00	579630.0432	1234302.3845
Y17	21+00.00	80.00	579812.0127	1234336.4767
Y17	26+25.71	80.00	580195.9143	1234695.6330
Y17	28+20.00	130.00	580285.3947	1234861.9200
Y17	30+00.00	64.00	580440.5388	1234956.9688
Y17	32+00.00	60.00	580542.6405	1235120.2683
Y17	33+50.00	90.00	580575.7750	1235262.8660
Y17	35+16.21	70.00	580647.5253	1235405.3575
Y17	38+00.00	65.00	580733.9418	1235675.7135
Y17	38+40.15	65.00	580745.4805	1235714.1727

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
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R2707B_LS_LOCAL_100909.TXT
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DATUM DESCRIPTION

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WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(//■) EASTING: 124297.658(//■)
ELEVATION: 852.279'(//■)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998441 0
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM 'M 77' TO -L- L STATION 215+00.00 IS
N 80 07 30 W 23,380.7581'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

6/2/99
11:30:34 AM
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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	1-H
Location and Surveys	

SURVEY CONTROL SHEET R-2707B
(ROW MARKERS & PERMANENT EASEMENT POINTS)
FINAL

(ROW MARKERS)

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
DRIVE2	10+88.61	-25.00	581336.4337	1233782.7421
DRIVE2	11+15.74	-25.00	581325.2996	1233810.4054
DRIVE2	12+96.93	-25.00	581282.0010	1233976.0314
DRIVE2	13+60.00	-25.00	581277.3058	1234038.9286
DRIVE2	16+12.78	56.35	581177.3612	1234284.9482

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPA1	0+00.00	125.00	581197.5848	1235736.1083
RPA1	3+34.56	125.00	581124.6025	1235409.6008
RPA1	5+74.56	125.00	581078.9485	1235182.4288
RPA1	13+05.67	125.00	581110.6408	1234506.8495
RPA1	15+45.67	125.00	581177.3612	1234284.9482
RPA1	17+45.67	100.00	581209.9933	1234071.6735
RPA1	17+79.02	100.00	581215.9440	1234034.3481

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPB	13+00.00	-117.00	577827.6160	1221593.6665
RPB	16+80.23	-117.00	578017.6429	1221875.4141
RPB	19+80.23	-100.00	578220.2357	1222076.8572
RPB	21+88.34	-100.00	578381.9792	1222207.8175
RPB	23+88.34	-100.00	578541.3273	1222349.4028
RPB	25+38.95	-100.00	578645.3261	1222484.3929

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPC	13+22.41	122.89	577494.5238	1221763.0782
RPC	16+55.22	141.00	577487.2653	1222065.0050
RPC	19+55.22	104.32	577480.3270	1222353.6030
RPC	21+15.19	78.29	577476.4319	1222515.6271
RPC	29+57.95	100.00	577609.0594	1223391.0844

(PERMANENT EASEMENTS)

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	7+21.00	-24.00	577306.1615	1222281.6076
Y2	7+21.00	-54.00	577332.4904	1222267.2276
Y2	9+67.80	-55.61	577452.2068	1222483.0559
Y2	9+74.00	-26.00	577429.1879	1222502.6902
Y2	10+16.00	52.00	577371.7185	1222566.6753
Y2	10+47.88	56.00	577370.6454	1222587.3972
Y2	10+47.88	42.00	577384.6369	1222586.9090
Y2	15+50.13	56.07	577355.1443	1223094.5332
Y2	16+43.98	103.61	577333.7058	1223211.1161
Y2	16+69.54	49.56	577393.9767	1223219.2705
Y2	16+75.60	96.50	577351.9322	1223241.0135
Y2	17+65.14	60.00	577416.8472	1223312.6817
Y2	20+16.29	65.00	577453.7631	1223547.4250

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	220+70.48	-271.40	577577.2892	1220448.3060
L	220+71.00	160.00	577164.8775	1220574.8819
L	220+75.00	-285.70	577592.2885	1220448.4526
L	221+22.00	185.00	577155.8733	1220630.9616
L	221+43.00	160.00	577185.9190	1220643.7387
L	223+22.72	-207.48	577589.8819	1220708.2206
L	223+33.83	-203.83	577589.6358	1220719.9098
L	223+44.00	-206.00	577594.6818	1220729.0027
L	223+53.82	-260.08	577649.2720	1220722.5883
L	223+76.83	-174.50	577574.1504	1220769.6021
L	223+87.00	-190.50	577592.4249	1220774.6553
L	224+01.31	-236.36	577640.4635	1220774.9386
L	224+24.99	-175.00	577588.7014	1220815.5123
L	227+22.00	185.00	577331.2178	1221204.7665
L	227+22.00	160.00	577355.1263	1221197.4604
L	228+49.18	-175.00	577712.6695	1221221.1881
L	229+00.35	-221.75	577772.3326	1221256.4637
L	229+98.69	185.00	577412.0783	1221469.3761
L	230+08.27	-185.28	577768.9975	1221370.3276
L	294+00.00	-189.00	579572.8232	1227516.4195
L	340+92.00	160.00	580110.4120	1232191.2040
L	341+22.00	179.00	580096.4815	1232223.0548
L	341+52.00	179.00	580101.1316	1232251.7431
L	341+55.00	160.00	580120.3530	1232251.6322
L	343+32.00	160.00	580144.7200	1232421.9483
L	343+54.00	196.50	580111.1557	1232447.6394
L	343+78.00	183.00	580127.3520	1232469.0498
L	347+38.98	197.56	580149.3589	1232826.0006
L	347+91.50	159.57	580192.4795	1232874.9986
L	349+53.00	-183.38	580551.2712	1232996.2545
L	349+62.50	-197.00	580565.9433	1233003.6495
L	349+98.50	-177.62	580551.2503	1233040.6956
L	350+08.00	-191.50	580566.2381	1233047.9486
L	379+70.00	190.00	580899.4346	1236000.7759
L	379+70.00	160.00	580928.1669	1235992.1467
L	380+00.17	190.00	580908.1114	1236029.6669
L	380+00.17	-185.00	581267.2637	1235921.8031
L	381+28.48	-185.00	581304.1715	1236044.6936
L	382+75.22	175.00	580999.3050	1236285.9495
L	383+88.54	-185.00	581376.4299	1236301.0506
L	384+97.49	175.00	581054.7171	1236495.9355

(PERMANENT EASEMENTS)

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
RPB	13+00.88	-142.00	577850.6868	1221584.0071
RPB	16+79.82	-142.00	578035.5275	1221857.9433
RPB	19+81.50	-125.00	578236.9578	1222058.2305
RPB	21+88.91	-125.00	578398.1539	1222188.7474
RPB	23+87.39	-125.00	578558.7436	1222331.4360
RPB	25+38.94	-125.00	578666.5521	1222471.1867

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
RPC	13+20.51	147.98	577469.4649	1221765.1829
RPC	16+79.16	164.66	577461.7930	1222084.3063

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	16+84.44	-84.65	578828.9827	1222686.0073
Y7	16+96.51	-50.66	578805.3362	1222658.9709
Y7	17+17.33	-92.95	578803.4043	1222705.6864
Y7	17+29.58	-50.00	578775.5738	1222670.9335
Y7	17+30.78	50.00	578734.3318	1222579.8261
Y7	36+95.00	29.87	577536.6075	1224112.5912

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
RPA1	0+00.00	150.00	581221.9816	1235730.6549
RPA1	3+34.56	150.00	581148.9994	1235404.1474
RPA1	4+35.00	126.76	581105.0969	1235312.5472
RPA1	4+35.00	151.76	581129.5541	1235307.3760
RPA1	17+09.00	102.12	581203.7601	1234112.4054

NOTES

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAYBE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT DATA AT HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/
THE FILES TO BE FOUND ARE AS FOLLOWS:
R2707B_LS_GPSCALIB_100909.HTM
R2707B_LS_WGS84_100909.TXT
R2707B_LS_CONTROL_100909.TXT
R2707B_LS_LOCAL_100909.TXT
THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION & SURVEYS UNIT.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT 'M 77'
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(//■) EASTING: 124297.658(//■)
ELEVATION: 852.279'(//■)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
'M 77' TO -L- L STATION 215+00.00 IS
N 80 07 30 W 23,380.7581'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2
R/W SHEET NO.	

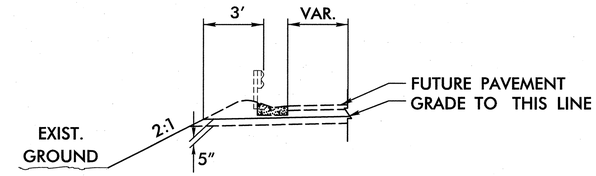
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER — 2/18/14

FINAL PAVEMENT SCHEDULE

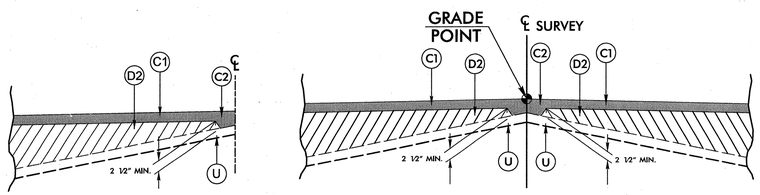
C1	PROP. APPROX. 3 " ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J4	PROP. 6" AGGREGATE BASE COURSE.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF .35 GAL. / SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R1	5" MONOLITHIC CONCRETE ISLAND
D3	PROP. APPROX. 4 " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	SHOULDER BERM GUTTER
D4	PROP. APPROX. 2 1/2 " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL.
J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
J2	PROP. 10" AGGREGATE BASE COURSE.	W	WEDGING

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



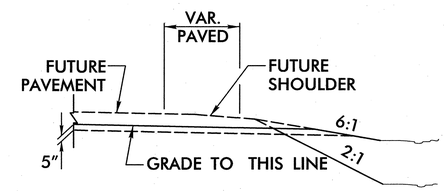
DETAIL FOR GRADING ONLY

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1, 2 & 3 (SEE PLANS FOR LOCATIONS)



DETAIL SHOWING METHOD OF WEDGING

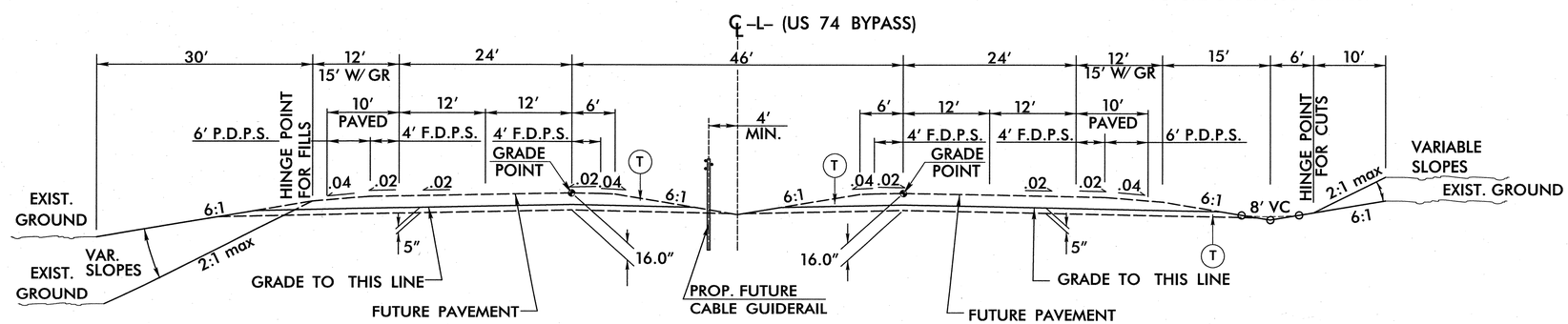
SEE TYPICAL SECTIONS



DETAIL FOR GRADING ONLY

USE FOR CLARITY FOR GRADING ONLY TYPICAL SECTIONS: NO.'S 1, 2 & 3.

NOTE: 1.) SEE PLAN SHEETS FOR LIMITS GRADING.
2.) SEE PLAN SHEETS FOR FUTURE CURB AND GUTTER, FUTURE GUARDRAILS, FUTURE CONCRETE BARRIERS, AND FUTURE DRAINAGE GRATES.



* 4:1 MAX. SLOPE INSIDE INTERCHANGES

TYPICAL SECTION 1

US 74 BYPASS

USE TYPICAL SECTION NO. 1 :

-L- STA 209+00 LB/STA. 208+53.22 LA TO -L- STA 247+17 +/- (BEG. BRIDGE RT.)
-L- STA 248+74 +/- (END BRIDGE RT.) TO -L- STA 252+30 +/- (BEG. BRIDGE RT.)
-L- STA 254+15 +/- (END BRIDGE RT.) TO -L- STA 338+55 +/- (BEG. BRIDGE)
-L- STA 342+85 +/- (END BRIDGE) TO -L- STA 383+00.00

NOTE:
SEE PLANS FOR SUPERELEVATION, AUXILIARY LANE & LANE TAPER LOCATIONS.

REVISIONS

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NC License No: C-1554

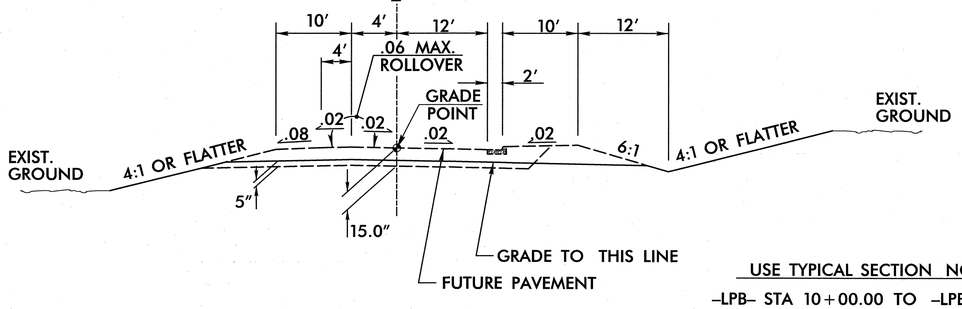
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER — 2/18/14

REVISIONS

℄ –LPB–, MIRROR FOR –LPC–



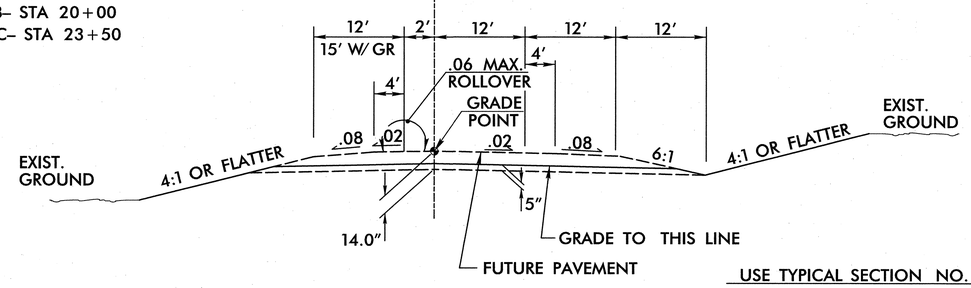
USE TYPICAL SECTION NO. 2 :

–LPB– STA 10+00.00 TO –LPB– STA 20+00
–LPC– STA 10+00.00 TO –LPC– STA 23+50

TYPICAL SECTION 2

LOOP B & LOOP C

℄ –RPB–, –RPC–



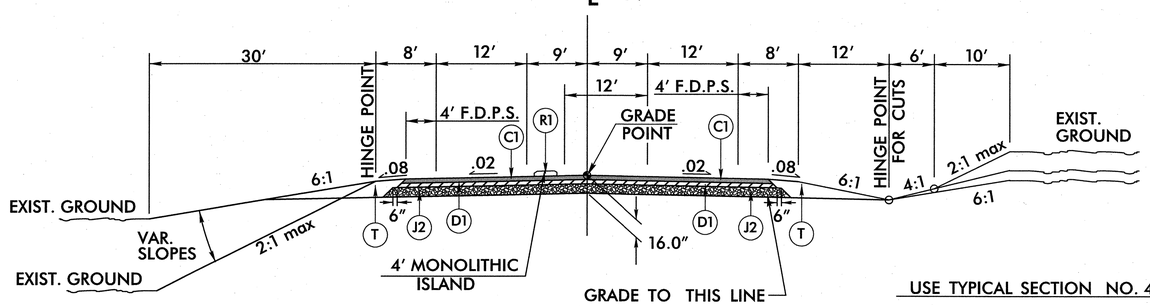
USE TYPICAL SECTION NO. 3 :

–RPB– STA 10+00.00 TO –RPB– STA 26+90
–RPC– STA 10+00.00 TO –RPC– STA 32+00

TYPICAL SECTION 3

RAMP B & RAMP C

℄ –Y7–



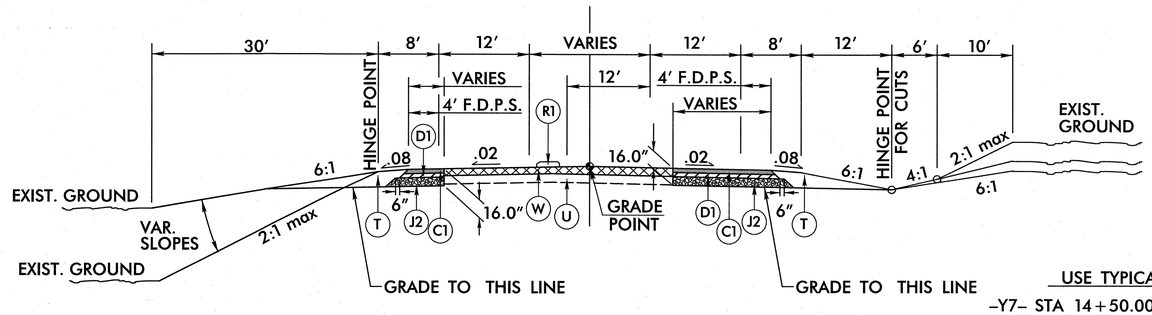
USE TYPICAL SECTION NO. 4 :

–Y7– STA 19+50.00 TO –Y7– STA 28+50.00

TYPICAL SECTION 4

Washburn Switch Road (SR 1313)

℄ –Y7–



USE TYPICAL SECTION NO. 5 :

–Y7– STA 14+50.00 TO –Y7– STA 19+50.00
–Y7– STA 28+50.00 TO –Y7– STA 35+00.00

TYPICAL SECTION 5

Washburn Switch Road (SR 1313)

NOTE:
SEE PLANS FOR SUPERELEVATION,
AUXILIARY LANE & LANE TAPER LOCATIONS.

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C1	3″ ACSC TYPE S9.5B
D1	3″ ACIC TYPE I19.0B
J2	10″ ABC
R1	5″ MONOLITHIC ISLAND
T	EARTH MATERIAL
W	WEDGING

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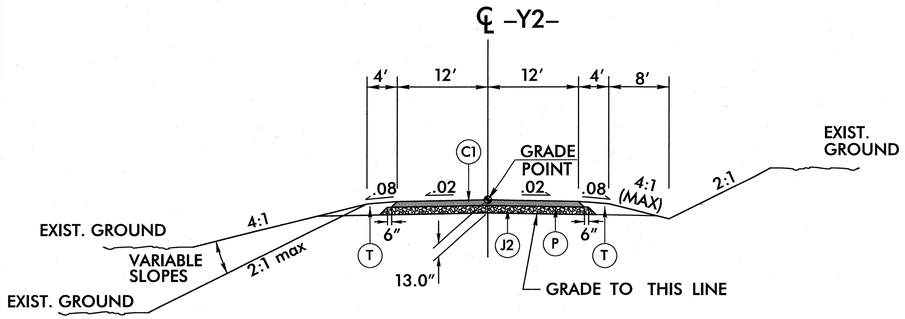
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022 ENGINEER — 6/18/13

PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER — 2/18/14

REVISIONS

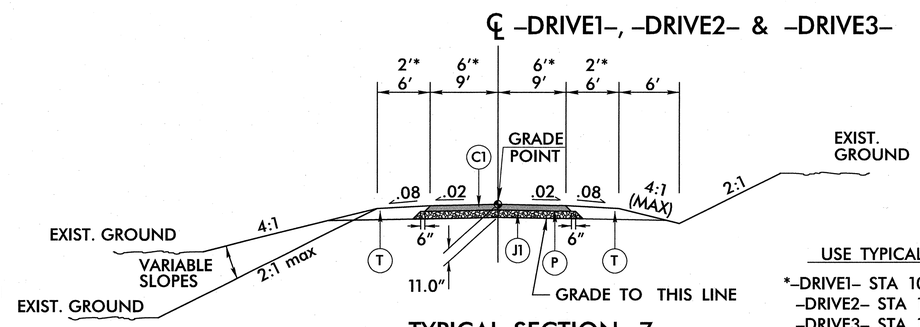


USE TYPICAL SECTION NO. 6 :

–Y2– STA 10+11.37 TO –Y2– STA 20+05.61

TYPICAL SECTION 6

Artee Road (SR 1314)

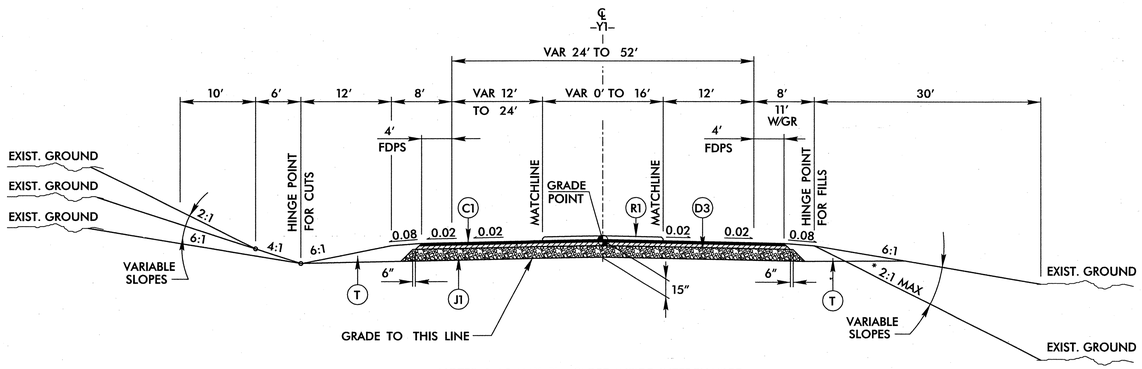


USE TYPICAL SECTION NO. 7 :

*–DRIVE1– STA 10+21.00 TO –DRIVE1– STA 14+30.00
–DRIVE2– STA 10+24.00 TO –DRIVE2– STA 13+50.00
–DRIVE3– STA 10+40.00 TO –DRIVE3– STA 13+75.00

TYPICAL SECTION 7

Eskridge Grove Baptist Church Access
Destiny Road &
Artee Road (Drive to Parcel 30)



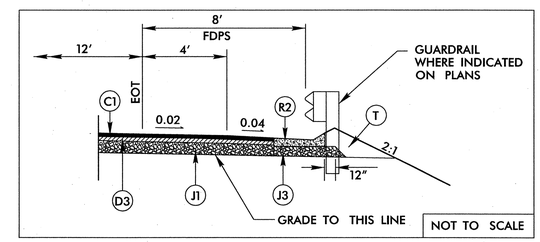
NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE.

USE TYPICAL SECTION NO. 8 :

–Y1– STA 11+90 TO STA 27+04 +/– (BEGIN BRIDGE)
–Y1– STA 29+52 +/– (END BRIDGE) TO STA 42+40.00

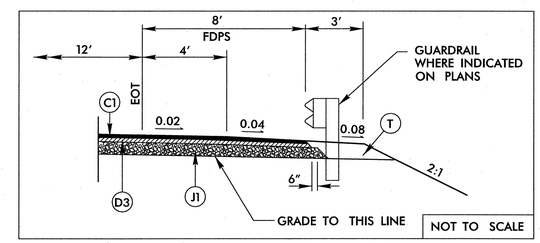
TYPICAL No. 8

NC 226 (Polkville Road)



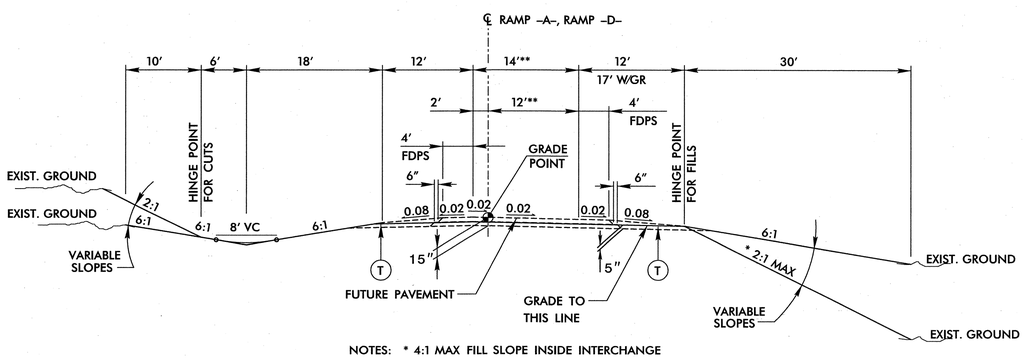
–Y1– SHLDR BERM GUTTER DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS



–Y1– GUARDRAIL DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS



NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE
** VARIES 12′–0″ TO 21′–6″
VARIES 14′–0″ TO 23′–6″

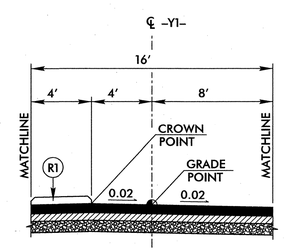
USE TYPICAL SECTION NO. 9 :

**RAMP –A– STA 4+37.19 TO STA 17+03.82
RAMP –D– STA 4+31.50 TO STA 21+28.98 (MIRROR TYPICAL)

TYPICAL No. 9

RAMP A & RAMP D

NOTE:
SEE PLANS FOR SUPERELEVATION,
AUXILIARY LANE & LANE TAPER LOCATIONS.



INSET DETAIL A

NOTE: USE THIS DETAIL IN CONJUNCTION WITH TYPICAL No. 8 AT THE FOLLOWING LOCATIONS.

–Y1– NC 226 (Polkville Road) STA 17+70.24 TO STA 20+68.00
–Y1– NC 226 (Polkville Road) STA 24+80.00 TO STA 32+80.00
–Y1– NC 226 (Polkville Road) STA 36+08.19 TO STA 37+32.64

PAVEMENT SCHEDULE

CODE	DESCRIPTION
C1	3″ ACSC TYPE S9.5B
D3	4″ ACIC TYPE I19.0B
J1	8″ ABC
J2	10″ ABC
J3	VAR. DEPTH ABC
J4	6″ ABC
P	PRIME COAT
R1	5″ MONOLITHIC ISLAND
R2	CONC SHOULDER BERM GUTTER
T	EARTH MATERIAL

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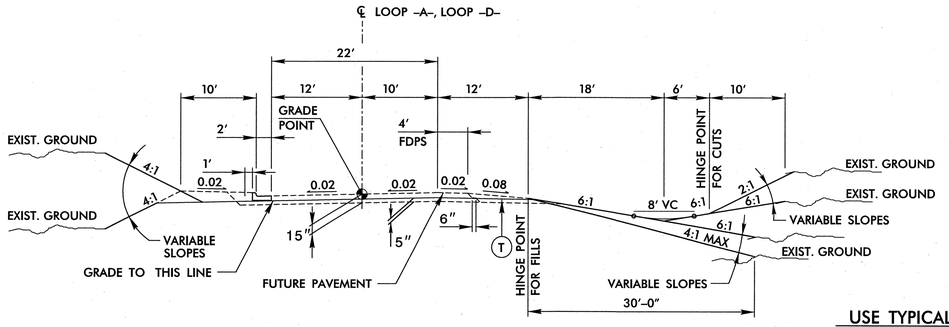
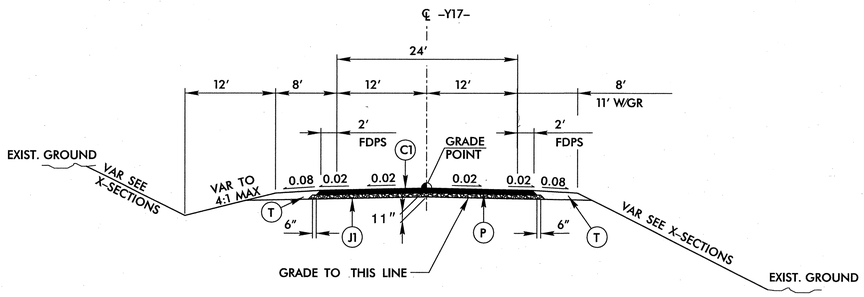
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER



TYPICAL No. 10
LOOP A & LOOP D

USE TYPICAL SECTION NO. 10 :

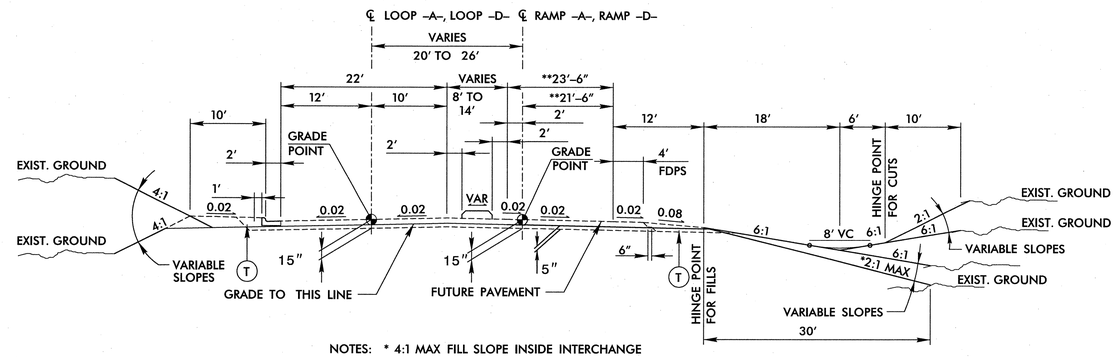
LOOP –A– STA 0+00.00 TO STA 7+28.39
LOOP –D– STA 0+00.00 TO STA 9+20.85 (MIRROR TYPICAL)



TYPICAL No. 12
–Y17–

USE TYPICAL SECTION NO. 12 :

–Y17– STA 10+28.77 to STA 38+40.15

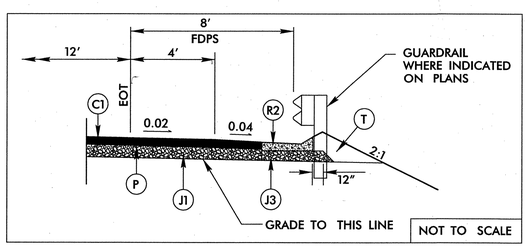


NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE
** VARIES 23′–6″ TO 26′–0″
VARIES 21′–6″ TO 24′–0″

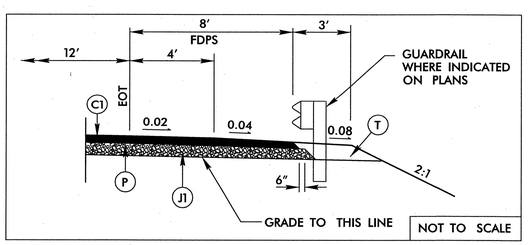
TYPICAL No. 11
RAMP A & RAMP D
LOOP A & LOOP D

USE TYPICAL SECTION NO. 11 :

RAMP –A– STA 17+03.82 TO STA 21+02.57
LOOP –A– STA 7+28.39 TO STA 11+23.39
RAMP –D– STA 21+28.98 TO STA 23+84.31 (MIRROR TYPICAL)
LOOP –D– STA 9+20.85 TO STA 11+72.36 (MIRROR TYPICAL)

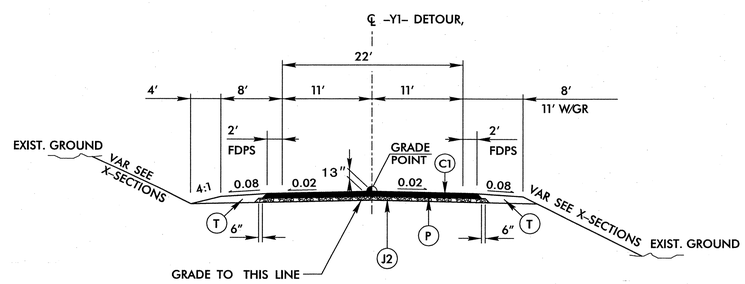


–Y17– SHLDR BERM GUTTER DETAIL
AT LOCATIONS WHERE INDICATED ON PLANS



–Y17– GUARDRAIL DETAIL
AT LOCATIONS WHERE INDICATED ON PLANS

NOTE:
SEE PLANS FOR SUPERELEVATION,
AUXILIARY LANE & LANE TAPER LOCATIONS.



TYPICAL No. 13
–Y1–DET

USE TYPICAL SECTION NO. 13 :

–Y1–DET STA 12+66.55 TO STA 27+27.94

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C1	3″ ACSC TYPE S9.5B
J1	8″ ABC
J2	10″ ABC
J3	VAR. DEPTH ABC
P	PRIME COAT
R2	CONC SHOULDER BERM GUTTER
T	EARTH MATERIAL

REVISIONS

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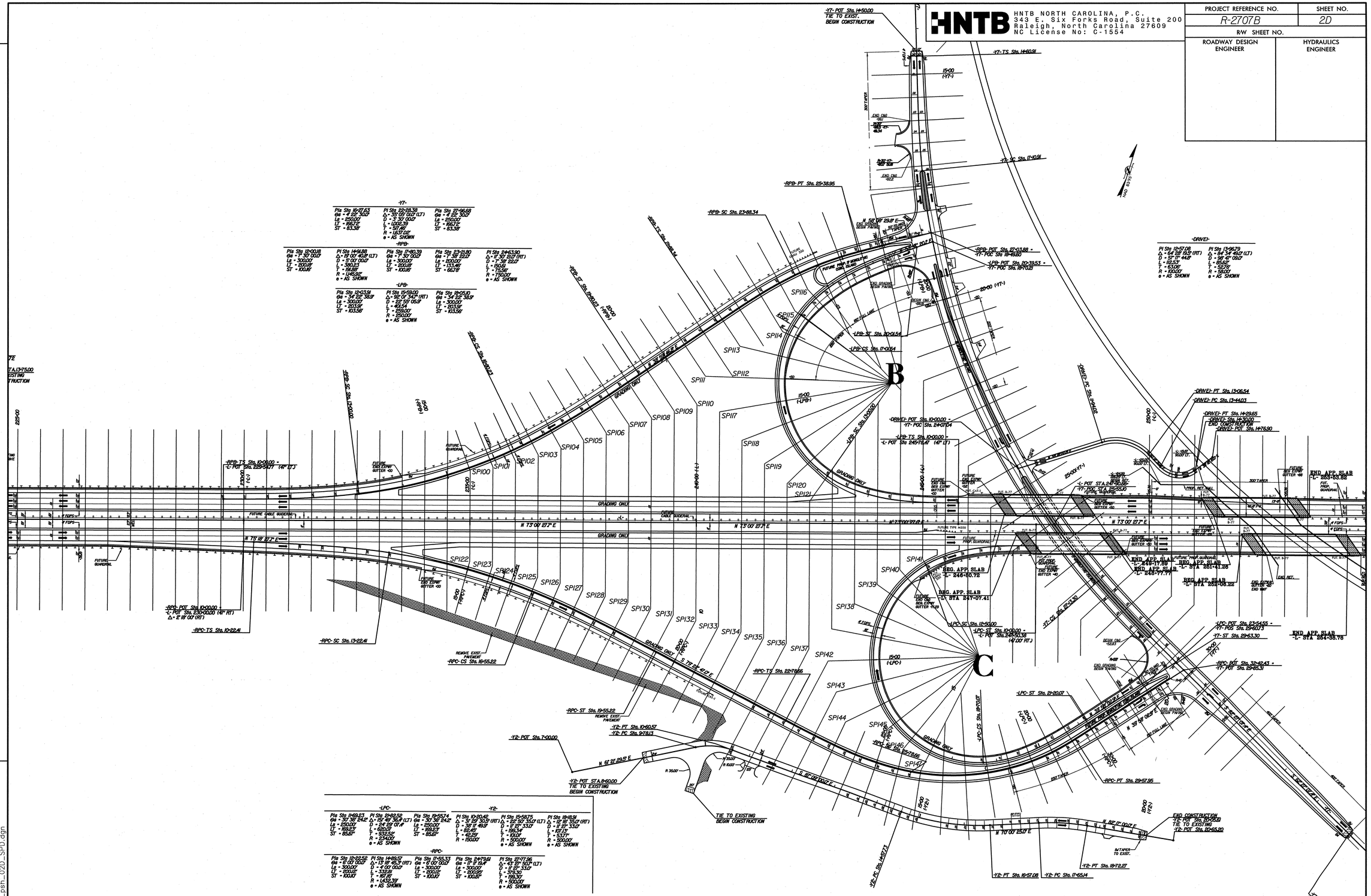
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS



-Y7-

PIs Sta 16+27.63 Ga = 4° 22' 30.0" Lc = 250.00' LT = 166.72' ST = 83.38'	PI Sta. 22+28.39 Δ = 35° 05' 00.0" (LT) D = 3° 37' 00.0" L = 1,000.39' T = 517.46' R = 1,637.05' e = AS SHOWN	PIs Sta 27+86.68 Ga = 4° 22' 30.0" Lc = 250.00' LT = 166.72' ST = 83.38'

-RPB-

PIs Sta 12+00.18 Ga = 1° 35' 00.0" Lc = 300.00' LT = 200.16' ST = 100.16'	PI Sta 14+41.89 Δ = 15° 07' 40.8" (LT) D = 5° 00' 00.0" L = 380.33' T = 191.88' R = 1,145.92' e = AS SHOWN	PIs Sta 17+80.39 Ga = 1° 35' 00.0" Lc = 300.00' LT = 200.16' ST = 100.16'	PIs Sta 23+21.90 Ga = 1° 38' 22.0" Lc = 300.00' LT = 199.47' ST = 99.74'	PI Sta 24+63.90 Δ = 11° 30' 31.0" (RT) D = 1° 38' 22.0" L = 191.61' T = 96.07' R = 3,500.00' e = AS SHOWN

-LPB-

PIs Sta 12+03.91 Ga = 34° 22' 38.9" Lc = 300.00' LT = 203.56' ST = 103.56'	PI Sta 15+59.00 Δ = 92° 01' 34.7" (RT) D = 22° 55' 05.9" L = 401.54' T = 258.00' R = 250.00' e = AS SHOWN	PIs Sta 19+05.10 Ga = 34° 22' 38.9" Lc = 300.00' LT = 203.56' ST = 103.56'

-DRIVE1-

PI Sta 12+57.08 Δ = 64° 28' 13.5" (RT) D = 57° 17' 44.8" L = 112.53' T = 63.00' R = 100.00' e = AS SHOWN	PI Sta 13+96.79 Δ = 84° 34' 49.0" (LT) D = 98° 47' 09.0" L = 85.62' T = 52.70' R = 58.00' e = AS SHOWN

-LPC-

PIs Sta 14+69.23 Ga = 30° 36' 24.2" Lc = 250.00' LT = 169.23' ST = 85.61'	PI Sta 21+82.59 Δ = 151° 49' 56.4" (LT) D = 24° 59' 07.4" L = 631.17' T = 932.52' R = 237.00' e = AS SHOWN	PIs Sta 19+55.74 Ga = 30° 36' 24.2" Lc = 250.00' LT = 169.23' ST = 85.61'	

-Y2-

PI Sta 10+90.45 Δ = 31° 29' 30.3" (RT) D = 38° 11' 49.5" L = 82.45' T = 42.39' R = 150.00'	PI Sta 15+58.73 Δ = 22° 50' 35.0" (LT) D = 11° 27' 33.0" L = 199.34' T = 101.01' R = 500.00' e = AS SHOWN	PI Sta 18+18.91 Δ = 12° 18' 35.0" (RT) D = 11° 27' 33.0" L = 107.13' T = 53.77' R = 500.00' e = AS SHOWN	

-RPC-

PIs Sta 12+22.59 Ga = 6° 00' 00.0" Lc = 300.00' LT = 200.16' ST = 100.10'	PI Sta 14+99.57 Δ = 13° 18' 16.3" (RT) D = 4° 00' 00.0" L = 332.18' T = 167.18' R = 1,432.39' e = AS SHOWN	PIs Sta 17+05.33 Ga = 6° 00' 00.0" Lc = 300.00' LT = 200.16' ST = 100.10'	PIs Sta 21+79.61 Ga = 11° 11' 15.4" Lc = 300.00' LT = 200.95' ST = 100.87'	PI Sta 27+77.86 Δ = 43° 27' 50.7" (LT) D = 11° 27' 33.0" L = 379.30' T = 199.30' R = 500.00' e = AS SHOWN

SHEAR POINT DIAGRAM

6/18/2013
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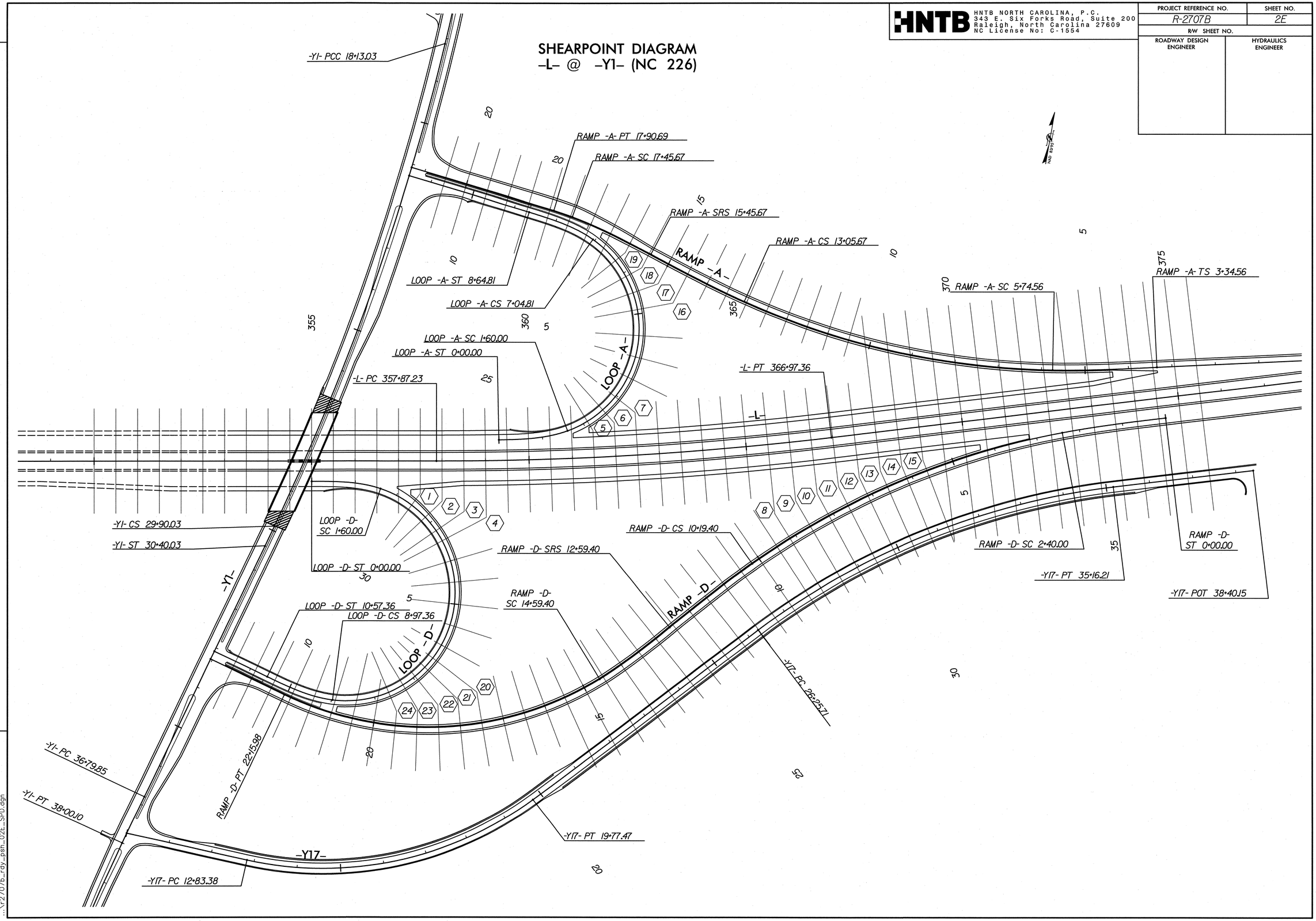
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SHEARPOINT DIAGRAM
-L- @ -Y1- (NC 226)



REVISIONS

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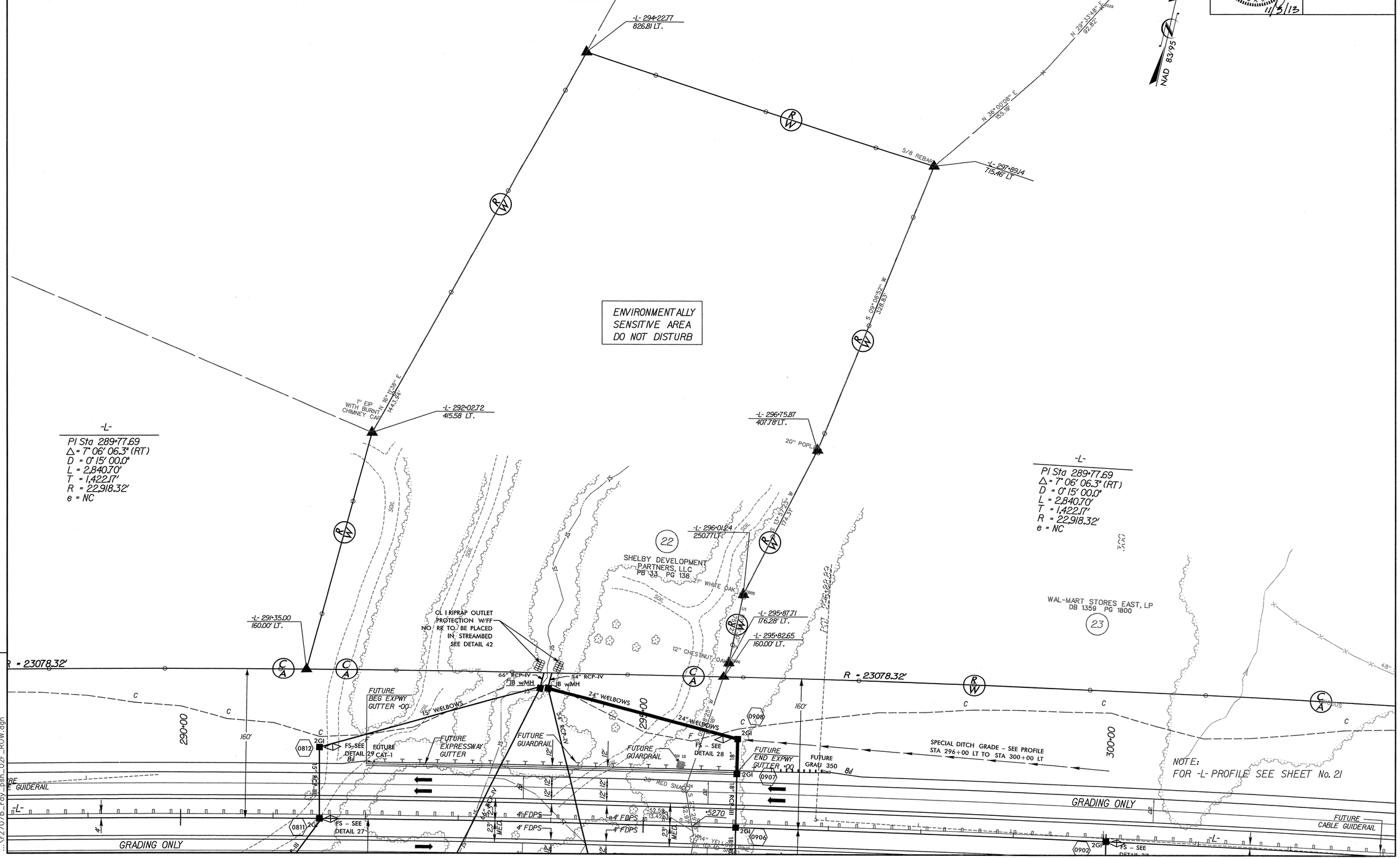
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2F
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER
11/5/13

RIGHT-OF-WAY LIMITS NEEDED FOR ENDANGERED HEARTLEAF FLOWERS ON PARCEL No. 22

SEE SHEET No's 8 & 9



REVISIONS

11/5/2013
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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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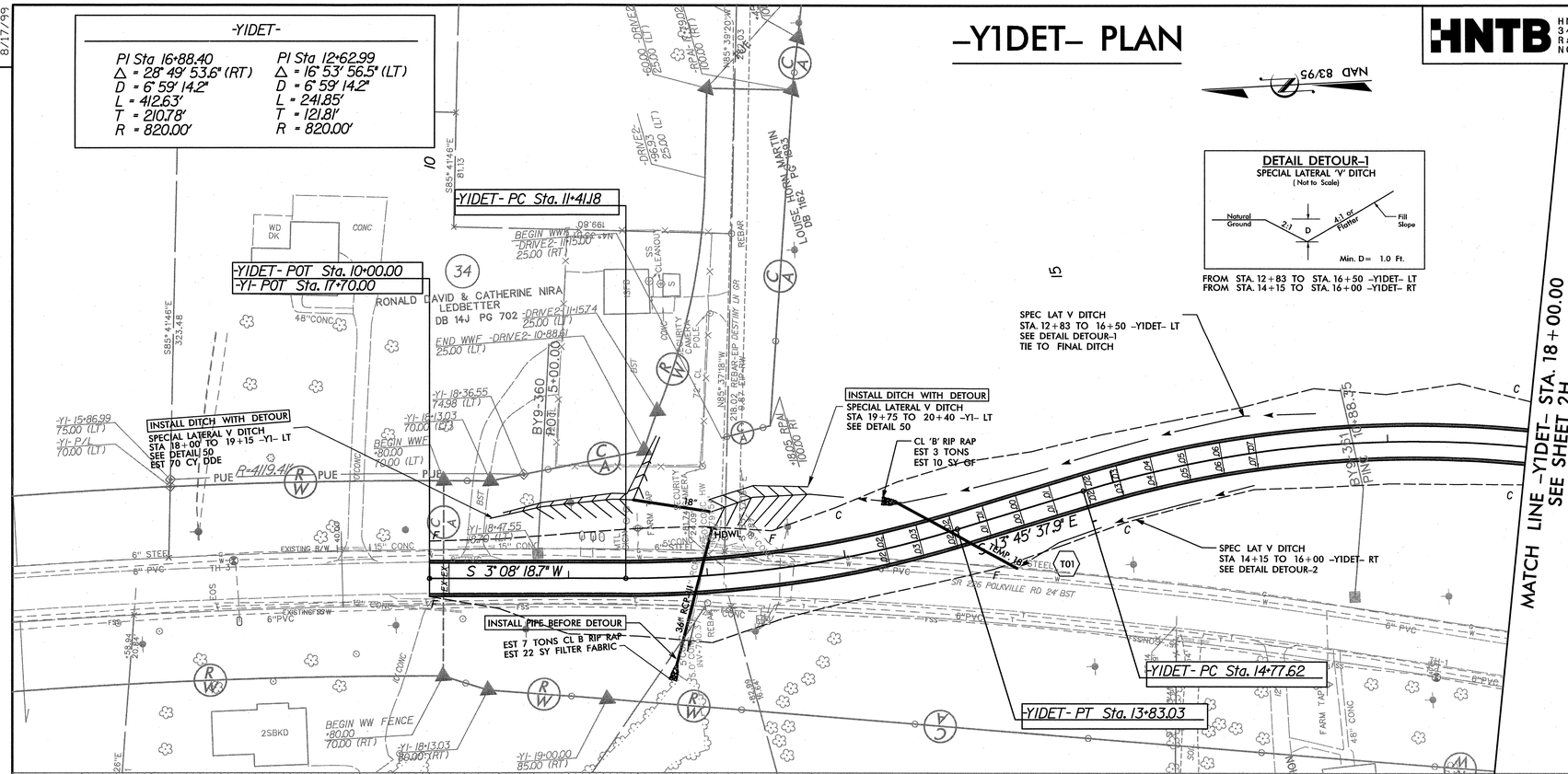
–Y1DET– PLAN

-Y1DET-

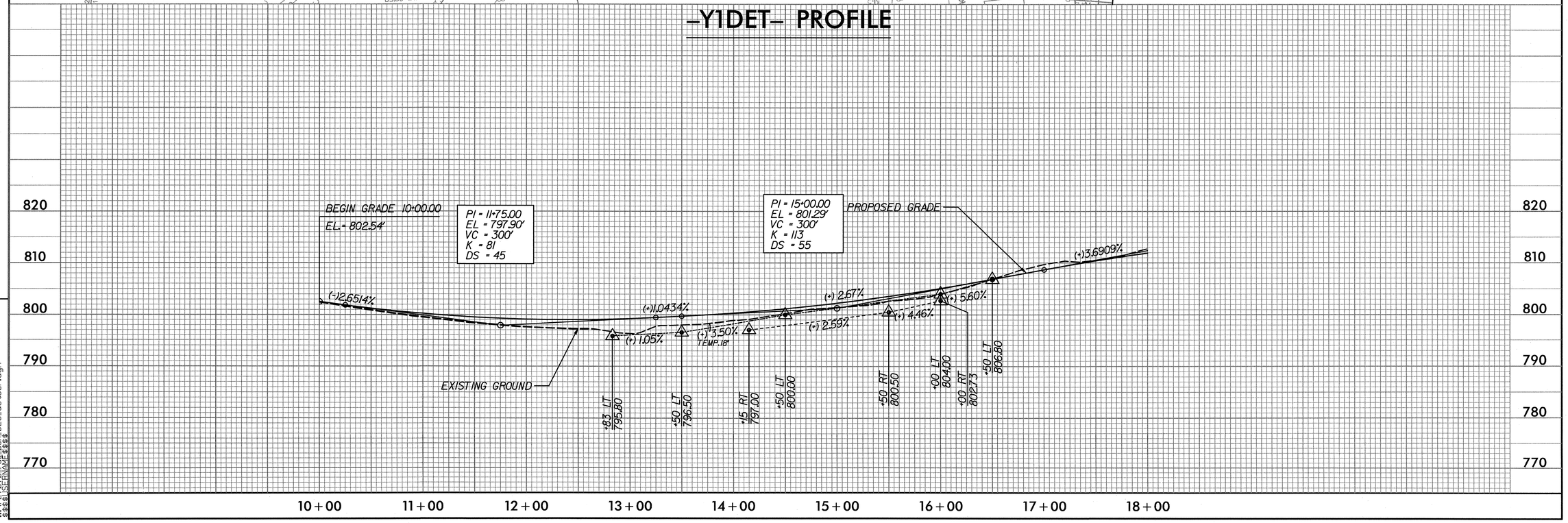
PI Sta 16+88.40	PI Sta 12+62.99
Δ = 28° 49' 53.6" (RT)	Δ = 16° 53' 56.5" (LT)
D = 6° 59' 14.2"	D = 6° 59' 14.2"
L = 412.63'	L = 241.85'
T = 210.78'	T = 121.81'
R = 820.00'	R = 820.00'



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

FROM STA. 12+83 TO STA. 16+50 -Y1DET- LT
FROM STA. 14+15 TO STA. 16+00 -Y1DET- RT

–Y1DET– PROFILE



REVISIONS

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8/17/99

REVISIONS

-Y1DET- PLAN

HNTB

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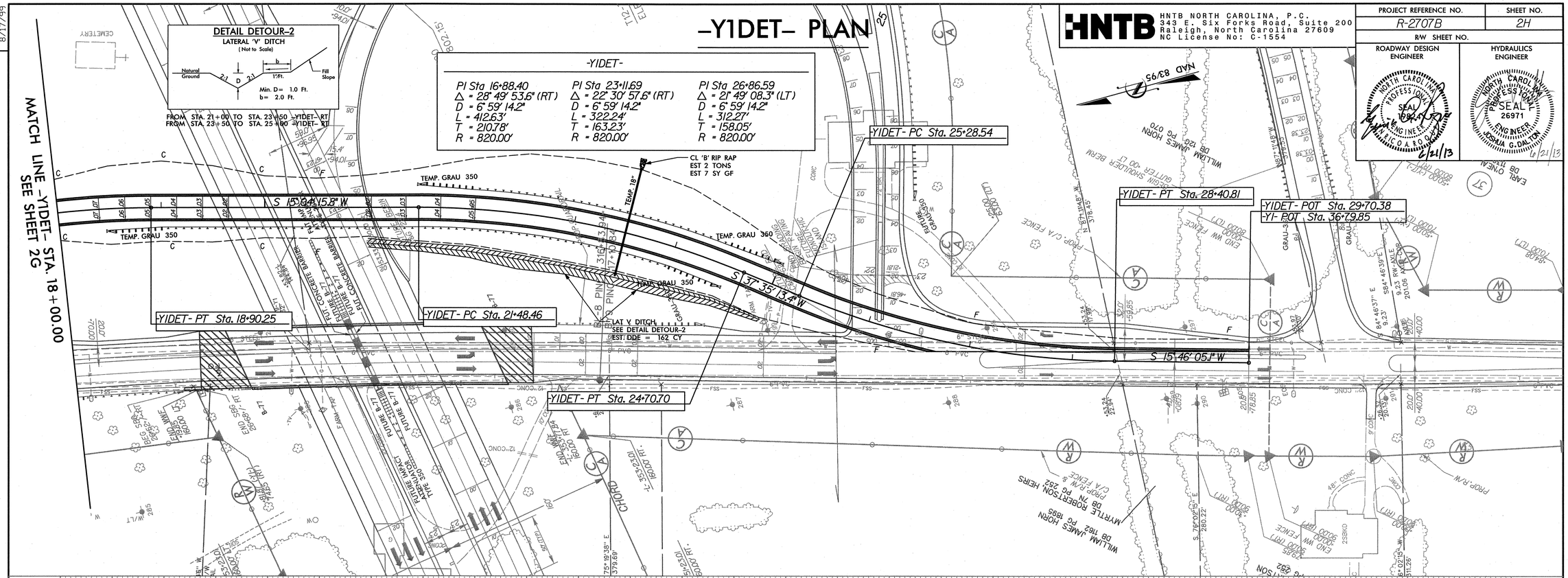
Raleigh, North Carolina 27609
NC License No: C-1554

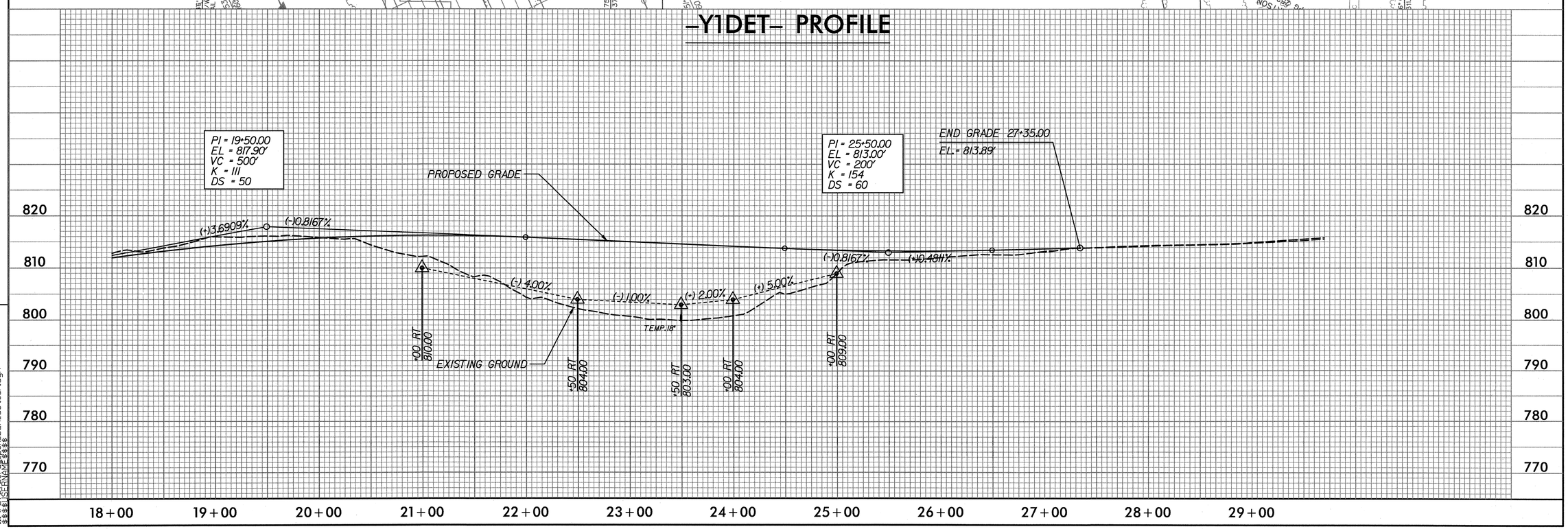
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2H
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 024 ENGINEER — 6/21/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — 6/21/13



-Y1DET- PROFILE



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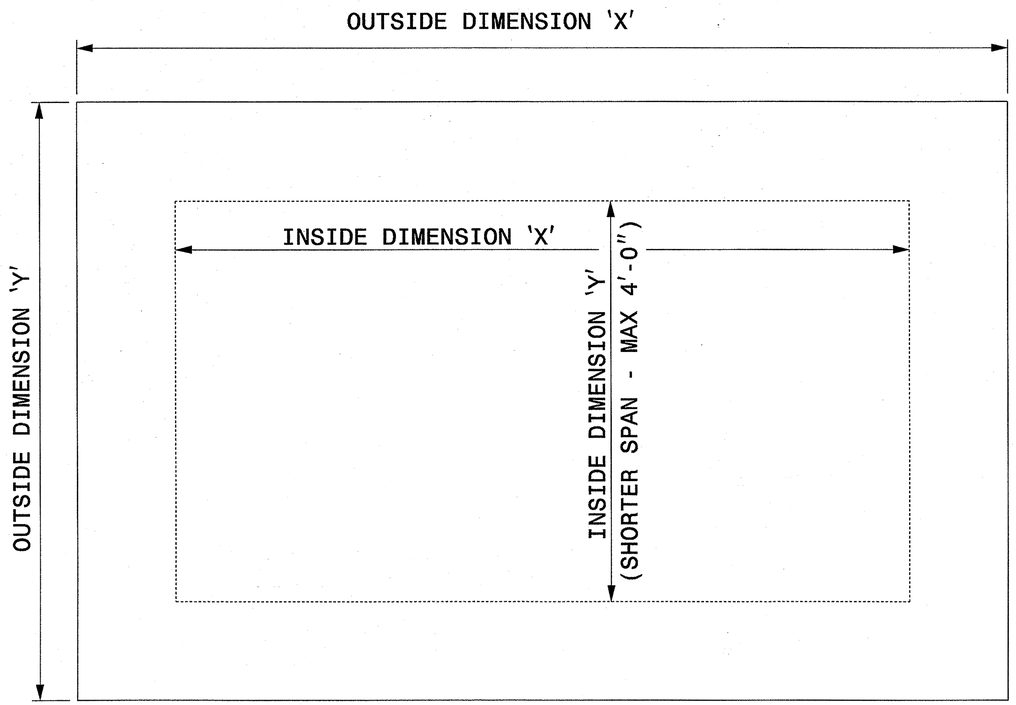
ss2_SELECTION_SS5

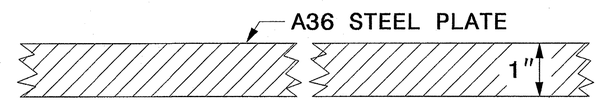
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	21



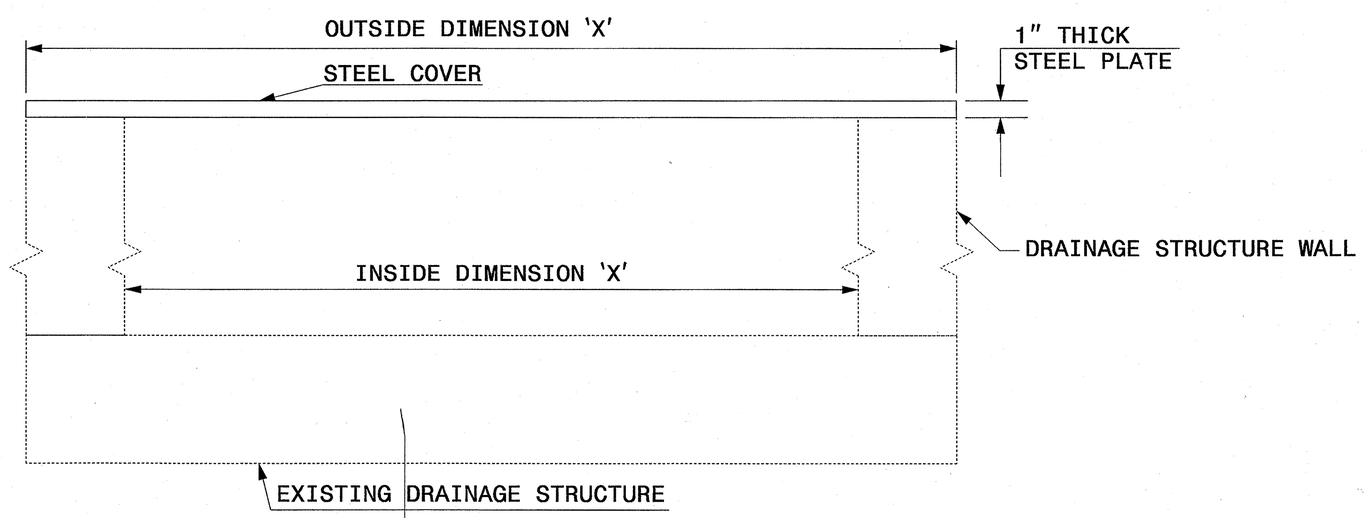
PLAN VIEWS

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

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER

2/18/14

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: 3/15/13
FILE SPEC.: efjc:/usr/details/metric/stand/stlcvr2.dgn

!!!!!!SYSTIME!!!!!!
!!!!!!USERZONE!!!!!!
!!!!!!USERNAME!!!!!!

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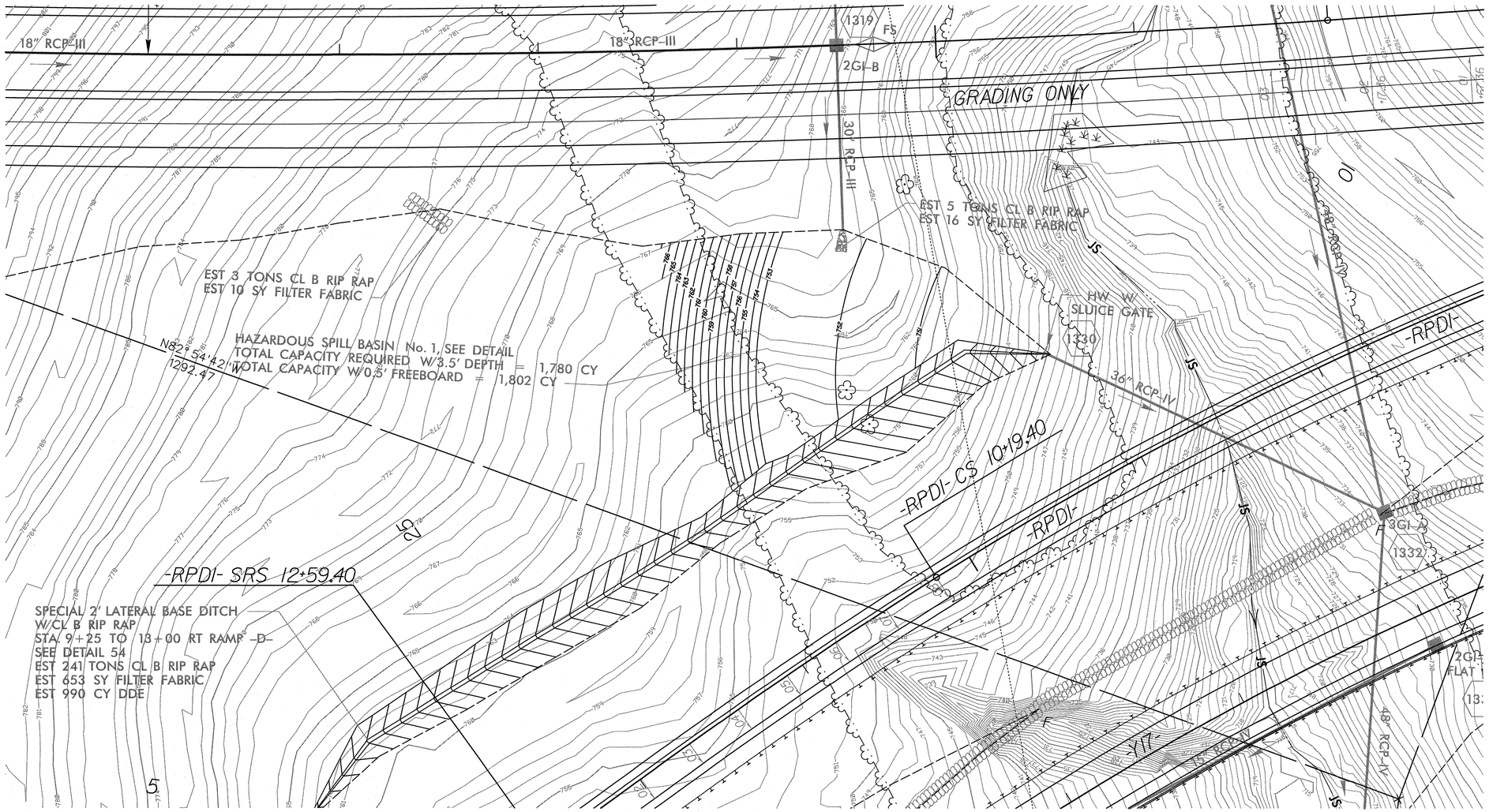
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2-J
R/W SHEET NO.	

NAD 83/95

GRAPHIC SCALES

30 15 0 30 60



HAZARDOUS SPILL BASIN No. 1, QUANTITIES
-L- STA. 364+50 RT.
GRADING PLAN
TOTAL EXCAVATION = 2050 CY
CONCRETE ENDWALL STD. 838.02 = 2.3 CY
36" DIAMETER SLUICE GATE = 1 EA.

REVISIONS

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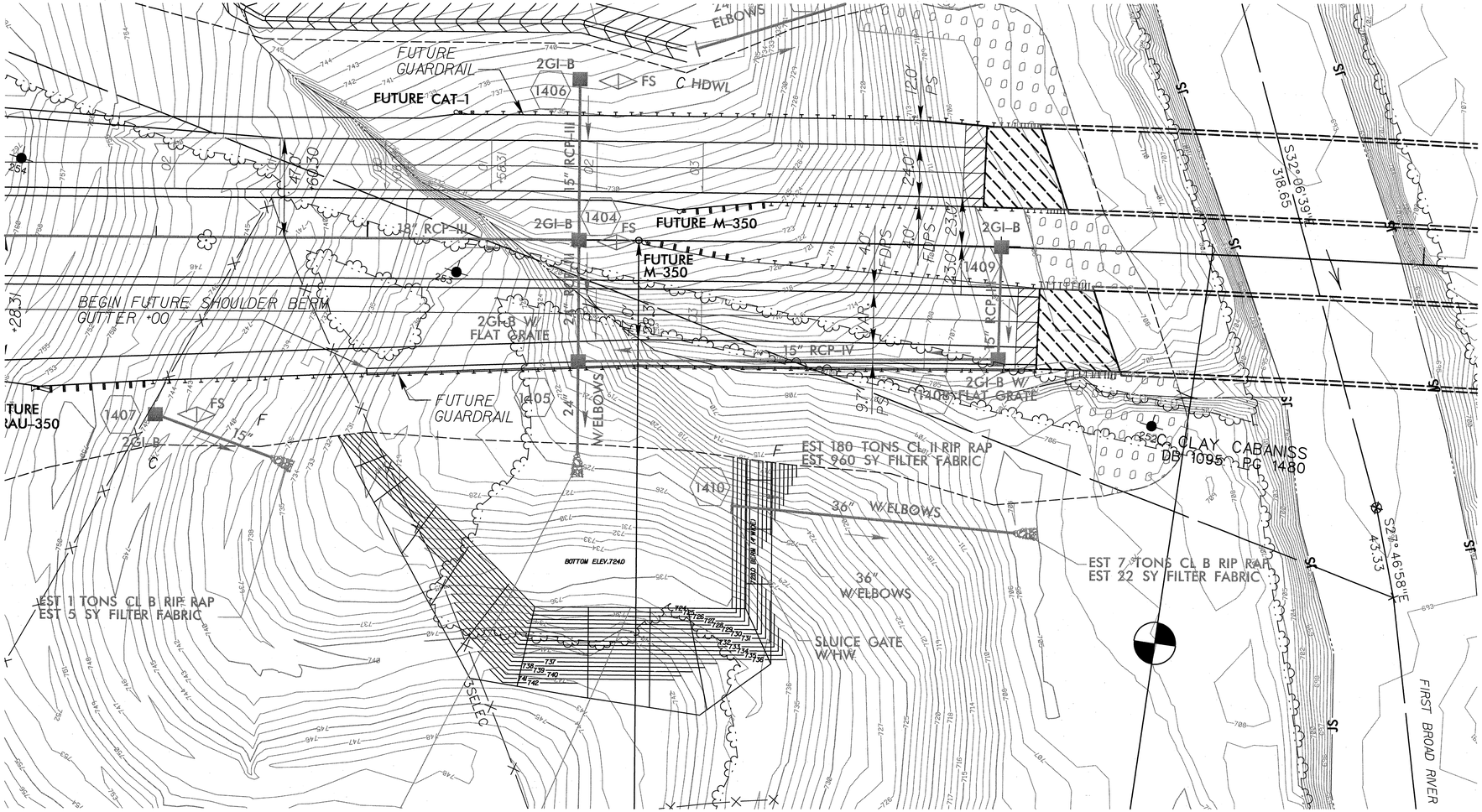
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	2-K
R/W SHEET NO.	

GRAPHIC SCALES

30 15 0 30 60

NAD 83/95



HAZARDOUS SPILL BASIN No. 2, QUANTITIES
–L– STA. 381+00 RT
GRADING PLAN
TOTAL EXCAVATION = 5250 CY
CONCRETE ENDWALL STD. 838.02 = 2.3 CY
36" DIAMETER SLUICE GATE = 1 EA.

REVISIONS

6/17/2013
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COMPUTED BY: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3A

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)

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

Column groups 1 (SIZE / THICKNESS OR GAUGE rows apply to pipe columns)

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 4																			
217+85 -L-	CL	401		836.99															
		401	402		834.24	833.60													
218+50 -L-	CL	402		837.10															
		402	403		833.60	832.80													
218+50 -L-	RT	403		836.04															
		403	OUT		832.55	832.30				52									
219+11 -L-	RT	404		840.26															
		404	OUT		837.05	831.62			44										
220+20 -L-	RT	405		840.82															
		405	OUT		838.07	824.86			48										
220+50 -L-	RT	406	407		823.00	817.00				72									
221+05 -L-	RT	407																	
221+35 -L-	LT	408		842.61															
		408	409		839.86	839.00			52										
220+85 -L-	LT	409		841.75															
		409	OUT		839.00	826.24			44										
223+55 -L-	LT	410		847.80															
		410	411		845.05	842.91													
223+55 -L-	CL	411		845.66															
		411	412		842.91	842.36													
223+55 -L-	RT	412		848.02															
		412	OUT		841.61	828.86					48								
223+50 -L-	RT	413	414		828.83	819.04					52								
223+02 -L-	RT	414																	
213+50 -L-	LT	415		841.2															
		415	416		838.2	835.2													
213+50 -L-	RT	417		841.20															
		417	416		838.2	835.2													
213+50 -L-	CL	416		842.1															
		416	401		835.2	834.24													
SHEET 5																			
228+40 -L-	RT	501	502		840.66	832.33				40									
228+02 -L-	RT	502																	
230+47 -L-	CL	503			849.84	832.80													
12+07 -RPC-	RT	504		879.12															
		504	OUT		876.37	850.86			68										
232+05 -L-	CL	505		877.54															
		505	506		874.79	874.03													
12+52 -RPB-	LT	506		878.52															
		506	507		874.03	848.84			68										
234+00 -L-	RT	508		885.70															
		508	509		882.95	881.22													
233+50 -L-	LT	509		883.97															
		509	OUT		881.22	852.57			100										
18+41 -RPC-	CL	510			876.97	875.07													
	CL	IN	511		876.50	876.40													
19+25 -RPB-	CL	511	OUT	878.92	874.92	874.00													
242+15 -L-	CL	512		907.19															
		512	513		904.44	898.19													
SHEET TOTALS									424	164	100								

Column group 2

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"
SHEET 4																										
217+85 -L-	401																									
	401	402										64														
218+50 -L-	402																									
	402	403										72														
218+50 -L-	403																									
	403	OUT																								
219+11 -L-	404																									
	404	OUT																								
220+20 -L-	405																									
	405	OUT																								
220+50 -L-	406	407																								
221+05 -L-	407																									
221+35 -L-	408																									
	408	409																								
220+85 -L-	409																									
	409	OUT																								
223+55 -L-	410																									
	410	411																			64						
223+55 -L-	411																									
	411	412										52														
223+55 -L-	412																									
	412	OUT																								
223+50 -L-	413	414																								
223+02 -L-	414																									
213+50 -L-	415																									
	415	416										76														
213+50 -L-	417																									
	417	416										76														
213+50 -L-	416																									
	416	401											432													
SHEET 5																										
228+40 -L-	501	502																								
228+02 -L-	502																									
230+47 -L-	503																								372		
12+07 -RPC-	504																									
	504	OUT																								
232+05 -L-	505																									
	505	506										76														
12+52 -RPB-	506																									
	506	507																								
234+00 -L-	508																									
	508	509										140														
233+50 -L-	509																									
	509	OUT																								
18+41 -RPC-	510													160												
	IN	511										4														
19+25 -RPB-	511	OUT																					184			
242+15 -L-	512																									
	512	513										96														
SHEET TOTALS												656	432	160						64			184	372		

Column group 3

STATION	FROM	TO	18" R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	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
SHEET 4																							
217+85 -L-	401									1												1	
	401	402																					
218+50 -L-	402									1												1	
	402	403																					
218+50 -L-	403									1												1	
	403	OUT																					
219+11 -L-	404									1												1	
	404	OUT																					
220+20 -L-	405									1												1	
	405	OUT																					
220+50 -L-	406	407							1.0														
221+05 -L-	407								1.0														
221+35 -L-	408									1												1	
	408	409																					
220+85 -L-	409									1												1	
	409	OUT																					
223+55 -L-	410									1												1	
	410	411																					
223+55 -L-	411									1												1	
	411	412																					
223+55 -L-	412									1	1.41											1	
	412	OUT																					
223+50 -L-	413	414							1.4														
223+02 -L-	414								1.4														
213+50 -L-	415									1												1	
	415	416																					
213+50 -L-	417									1												1	
	417	416																					
213+50 -L-	416									1	1.9											1	
	416	401																					
SHEET 5																							
228+40 -L-	501	502							1.0														
228+02 -L-	502								1.0														
230+47 -L-	503																						
12+07 -RPC-	504									1												1	
	504	OUT																					
232+05 -L-	505									1												1	
	505	506																					
12+52 -RPB-	506									1												1	
	506	507							1.0														
234+00 -L-	508									1												1	
	508	509																					
233+50 -L-	509									1												1	
	509	OUT																					
18+41 -RPC-	510																						
	IN	511																					
19+25 -RPB-	511	OUT								1												1	
242+15 -L-	512									1												1	
	512	513						0.7															
SHEET TOTALS								1	8	20	3.31											20	

Column group 4

STATION	FROM	TO	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
SHEET 4																		
217+85 -L-	401						1											
	401	402																
218+50 -L-	402						1											
	402	403																
218+50 -L-	403						1											
	403	OUT																
219+11 -L-	404						1											
	404	OUT												2 - 15"				
220+20 -L-	405						1											
	405	OUT												2 - 15"				
220+50 -L-	406	407												2 - 18"				
221+05 -L-	407																	
221+35 -L-	408						1											
	408	409																
220+85 -L-	409						1											
	409	OUT												2 - 15"				
223+55 -L-	410						1											
	410	411															50	REMOVE 8'X13' OVAL CMP / REMOVE HDWL
223+55 -L-	411						1											
	411	412																
223+55 -L-	412						1											
	412	OUT												2 - 24"				
223+50 -L-	413	414												2 - 24"				
223+02 -L-	414																	
213+50 -L-	415						1											
	415	416																
213+50 -L-	417						1											
	417	416																
213+50 -L-	416						1											
	416	401																
SHEET 5																		
228+40 -L-	501	502												2 - 18'				
228+02 -L-	502																	
230+47 -L-	503																45	Remove 18" RCP
12+07 -RPC-	504		1															
	504	OUT												2 - 15"				
232+05 -L-	505						1											
	505	506																
12+52 -RPB-	506						1											
	506	507												2 - 15"				
234+00 -L-	508						1											
	508	509																
233+50 -L-	509						1											
	509	OUT												2 - 15"				
18+41 -RPC-	510																	
	IN	511																
19+25 -RPB-	511	OUT					1											
242+15 -L-	512						1											
	512	513																
SHEET TOTALS			1				19							12-15",4-18",4-24"			95	

RD248621

COMPUTED BY:	Michelle Ward	DATE:	10/15/2010
CHECKED BY:	Brian Blackwell	DATE:	7/5/2012

PROJECT NO.	SHEET NO.
R2707B	3B

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
15+50 -LPB-	CL	514			889.56	884.88													
15+20 -LPB-	RT	515		902.34															
		515	OUT		899.34	890.38			60										
25+65 -RPB-	RT	516		895.91															
		516	517		892.74	892.14													
18+69 -LPB-	RT	517		895.95															
		517	OUT		892.14	891.94			28										
SHEET 5																			
26+45 -RPB-	RT	518		894.52															
		518	519		891.35	891.33			8										
19+72 -LPB-	LT	519		894.76															
		519	520		891.33	891.09													
19+35 -LPB-	RT	520		895.16															
		520	OUT		891.09	890.84			28										
19+25 -Y7-	LT	521								50									
23+48 -Y7-	CL	522		891.28															
		522	OUT		886.53	885.33													
246+46 -L-	LT	523		908.25															
		523	OUT		905.08	891.50			120										
247+29 -L-	RT	524		912.30															
		524	OUT		909.13	881.50			60										
12+75 -LPC-	LT	525		907.48															
		525	OUT		904.73	903.14													
25+00 -RPC-	CL	526			874.55	872.16													
18+90 -LPC-	LT	527		875.33															
		527	528		872.33	870.76													
		IN	528		870.90	870.01					28								
19+20 -LPC-	LT	528		875.21															
		528	530		870.01	869.77													
19+54 -LPC-	RT	529		876.56															
		529	530		873.39	870.52													
27+88 -RPC-	LT	530		876.60															
		530	531		869.77	862.46													
16+42 -Y2-	LT	531		865.29															
		531	OUT		862.46	861.60													
27+97 -Y7-	CL	532		883.73															
		532	533		880.73	879.00													
28+72 -Y7-	CL	533		882.92															
		533	OUT		879.00	875.88													
248+58 -L-	LT	534		911.93															
		534	535		908.76	908.03													
249+50 -L-	LT	535		911.20															
		535	536		908.03	905.96													
251+00 -L-	LT	536		909.13															
		536	537		905.96	902.76													
251+40 -L-	CL	537		905.51															
		537	540		902.76	902.14													
249+64 -L-	RT	538		911.20															
		538	539		908.03	906.55													
SHEET TOTALS									304	50	28								

STATION	FROM	TO	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	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"
THICKNESS OR GAUGE			.064	.064	.064	.064	.079	.079	.109	.109																
15+50 -LPB-	514												160													
15+20 -LPB-	515																									
	515	OUT																								
25+65 -RPB-	516																									
	516	517																		60						
18+69 -LPB-	517																									
	517	OUT																								
SHEET 5																										
26+45 -RPB-	518																									
	518	519																								
19+72 -LPB-	519																									
	519	520																		52						
19+35 -LPB-	520																									
	520	OUT																								
19+25 -Y7-	521																									
23+48 -Y7-	522																									
	522	OUT											76													
246+46 -L-	523																									
	523	OUT																								
247+29 -L-	524																									
	524	OUT																								
12+75 -LPC-	525																									
	525	OUT																		52						
25+00 -RPC-	526												96													
18+90 -LPC-	527																									
	527	528										24														
	IN	528																								
19+20 -LPC-	528																									
	528	530												28												
19+54 -LPC-	529																									
	529	530										40														
27+88 -RPC-	530																									
	530	531												108												
16+42 -Y2-	531																									
	531	OUT												80												
27+97 -Y7-	532																									
	532	533										76														
28+72 -Y7-	533																									
	533	OUT										44														
248+58 -L-	534																									
	534	535																		88						
249+50 -L-	535																									
	535	536																		148						
251+00 -L-	536																									
	536	537																		72						
251+40 -L-	537																									
	537	540										60														
249+64 -L-	538																									
	538	539										84														
SHEET TOTALS												328	332	216						472						

STATION	FROM	TO	18 " R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	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
15+50 -LPB-	514																	
15+20 -LPB-	515									1			1					
	515	OUT																
25+65 -RPB-	516									1								
	516	517																
18+69 -LPB-	517									1			1					
	517	OUT																
SHEET 5																		
26+45 -RPB-	518									1								
	518	519																
19+72 -LPB-	519									1								
	519	520																
19+35 -LPB-	520									1			1					
	520	OUT																
19+25 -Y7-	521																	
23+48 -Y7-	522									1								
	522	OUT																
246+46 -L-	523									1								
	523	OUT																
247+29 -L-	524									1								
	524	OUT																
12+75 -LPC-	525									1								
	525	OUT																
25+00 -RPC-	526																	
18+90 -LPC-	527									1			1					
	527	528																
	IN	528																
19+20 -LPC-	528									1	0.2		1					
	528	530																
19+54 -LPC-	529									1								
	529	530																
27+88 -RPC-	530									1	1.83							
	530	531																
16+42 -Y2-	531									1								
	531	OUT																
27+97 -Y7-	532									1								
	532	533																
28+72 -Y7-	533									1								
	533	OUT																
248+58 -L-	534									1								
	534	535																
249+50 -L-	535									1								
	535	536																
251+00 -L-	536									1								
	536	537																
251+40 -L-	537									1								
	537	540																
249+64 -L-	538									1								
	538	539																
SHEET TOTALS										22	2.03		5					

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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
15+50 -LPB-	514																						
15+20 -LPB-	515											1											
	515	OUT																	2 - 15"				
25+65 -RPB-	516		1									1											
	516	517																					
18+69 -LPB-	517											1											
	517	OUT																					
SHEET 5																							
26+45 -RPB-	518		1									1											
	518	519																					
19+72 -LPB-	519		1									1											
	519	520																					
19+35 -LPB-	520											1											
	520	OUT																					
19+25 -Y7-	521																						
23+48 -Y7-	522		1	1																			
	522	OUT																					
246+46 -L-	523											1			1								
	523	OUT																	2 - 15"				
247+29 -L-	524											1			1								
	524	OUT																	2 - 15"				
12+75 -LPC-	525											1			1								
	525	OUT																					
25+00 -RPC-	526																						
18+90 -LPC-	527											1											
	527	528																					
	IN	528																					
19+20 -LPC-	528											1											
	528	530																					
19+54 -LPC-	529		1									1											
	529	530																					
27+88 -RPC-	530		1									1											
	530	531																				53	24" RCP
16+42 -Y2-	531					1						1											
	531	OUT																					
27+97 -Y7-	532		1	1																			
	532	533																					
28+72 -Y7-	533														1	1							
	533	OUT																					
248+58 -L-	534											1			1								
	534	535																					
249+50 -L-	535											1			1								
	535	536																					
251+00 -L-	536											1			1								
	536	537																					
251+40 -L-	537					1						1											
	537	540																					
249+64 -L-	538											1			1								
	538	539																					
SHEET TOTALS			7	2		2						19			8	1			6-15"			53	

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: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3C

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 ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
250+50 -L-	RT	539		909.72								
		539	540		906.55	902.14						
251+40 -L-	RT	540		907.86								
		540	541		902.14	901.38						
252+20 -L-	RT	541		906.44								
		541	OUT		901.38	867.82		2 - 15"				
SHEET 5												
253+13 -L-	RT	542		867.21					0.36			E-80 / TYPE "D" - pipe plug
		542	543		862.38	860.21						
250+97 -L-	LT	545		873.46								E-80
		545	544		865.36	863.29						
251+18 -L-	LT	544		873.42								E-80
		544	543		863.29	860.21						
251+60 -L-	LT	543		874.50								E-80
		543	546		860.21	858.53						
251+85 -L-	LT	546		868.00								E-80
		546	OUT		858.53	853.36						
250+85 -L-	LT	547		898.64								
		547	548		895.89	895.36						
250+25 -L-	LT	548		900.62								
		548	549		895.36	876.58						
249+80 -L-	LT	549		878.50								
		549	OUT		876.58	876.53						
SHEET 15												
16+70 -Y7-	RT	1501							0.13			Plug 18" Conc.
		IN	1502		888.13	885.70						
17+21 -Y7-	CL	1502		891.69								
		1502	OUT		885.70	880.30						
		1503			871.39	866.13						
SHEET 6												
258+00 -L-	CL	601			853.95	847.00						
261+00 -L-	RT	602		878.43								
		602	603		875.68	873.32						
261+00 -L-	CL	603		876.07								
		603	604		873.07	872.58						
261+00 -L-	LT	604		878.43								
261+00 -L-	LT	604	OUT		872.58	852.80		2 - 18"				
262+87 -L-	CL	606			848.94	842.90						
266+85 -L-	RT	608		855.03								
		608	609		852.28	850.28						
267+35 -L-	RT	609		853.03								
		609	610		850.28	847.92						
267+35 -L-	CL	610		850.67								
		610	611		847.92	847.34						
267+35 -L-	LT	611		853.03								
SHEET TOTALS								2-15",2-18"	0.5			

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"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE															.064	.064	.064	.064	.079	.079	.109	.109
250+50 -L-	539																					
	539	540																				
251+40 -L-	540																					
	540	541																				
252+20 -L-	541																					
	541	OUT		92																		
SHEET 5																						
253+13 -L-	542																					
	542	543																				
250+97 -L-	545																					
	545	544																				
251+18 -L-	544																					
	544	543																				
251+60 -L-	543																					
	543	546																				
251+85 -L-	546																					
	546	OUT																				
250+85 -L-	547																					
	547	548																				
250+25 -L-	548																					
	548	549																				
249+80 -L-	549																					
	549	OUT																				
SHEET 15																						
16+70 -Y7-	1501				40																	
	IN	1502																				
17+21 -Y7-	1502																					
	1502	OUT																				
	1503																					
SHEET 6																						
258+00 -L-	601																					
261+00 -L-	602																					
	602	603																				
261+00 -L-	603																					
	603	604																				
261+00 -L-	604																					
261+00 -L-	604	OUT			56																	
262+87 -L-	606																					
266+85 -L-	608																					
	608	609																				
267+35 -L-	609																					
	609	610																				
267+35 -L-	610																					
	610	611																				
267+35 -L-	611																					
SHEET TOTALS				92	96																	

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"
250+50 -L-	539																	
	539	540		88														
251+40 -L-	540																	
	540	541		80														
252+20 -L-	541																	
	541	OUT																
SHEET 5																		
253+13 -L-	542																	
	542	543													236			
250+97 -L-	545																	
	545	544													24			
251+18 -L-	544																	
	544	543													52			
251+60 -L-	543																	
	543	546																
251+85 -L-	546																	
	546	OUT							100									
250+85 -L-	547																	
	547	548		56														
250+25 -L-	548																	
	548	549		60														
249+80 -L-	549																	
	549	OUT		16														
SHEET 15																		
16+70 -Y7-	1501																	
	IN	1502											36					
17+21 -Y7-	1502																	
	1502	OUT											64					
	1503																	
SHEET 6																		
258+00 -L-	601																	
261+00 -L-	602																	
	602	603										56						
261+00 -L-	603																	
	603	604			56													
261+00 -L-	604																	
261+00 -L-	604	OUT																
262+87 -L-	606												276					
266+85 -L-	608																	
	608	609		48														
267+35 -L-	609																	
	609	610										52						
267+35 -L-	610																	
	610	611		56														
267+35 -L-	611																	
SHEET TOTALS				404	56				100			108	376		312			

STATION	FROM	TO	18" R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	24" WELDED STEEL PIPE (0.312 THICK)	18" SIDE DRAIN PIPE	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
250+50 -L-	539									1						
	539	540														
251+40 -L-	540									1	0.72					
	540	541														
252+20 -L-	541									1	0.06					
	541	OUT														
SHEET 5																
253+13 -L-	542									1						
	542	543														
250+97 -L-	545									1	3.1					
	545	544														
251+18 -L-	544									1	5.00	0.13				
	544	543														
251+60 -L-	543									1	5.00	4.29				
	543	546		56												
251+85 -L-	546									1	5.00	4.47				
	546	OUT														
250+85 -L-	547									1						
	547	548														
250+25 -L-	548									1	0.26					
	548	549														
249+80 -L-	549									1						
	549	OUT														
SHEET 15																
16+70 -Y7-	1501															
	IN	1502														
17+21 -Y7-	1502									1	0.99					
	1502	OUT														
	1503					56										
SHEET 6																
258+00 -L-	601		300													
261+00 -L-	602									1						
	602	603														
261+00 -L-	603									1	0.85					
	603	604														
261+00 -L-	604									1						
261+00 -L-	604	OUT							1.0							
262+87 -L-	606															
266+85 -L-	608									1						
	608	609														
267+35 -L-	609									1						
	609	610														
267+35 -L-	610									1						
	610	611														
267+35 -L-	611									1	0.69					
SHEET TOTALS			300	56		56			1	19	21.67	8.89				

STATION	FROM	TO	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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11
250+50 -L-	539													1			1			
	539	540																		
251+40 -L-	540													1			1			
	540	541																		
252+20 -L-	541													1			1			
	541	OUT																		
SHEET 5																				
253+13 -L-	542																		1	
	542	543																		
250+97 -L-	545								1			1								
	545	544																		
251+18 -L-	544								1			1								
	544	543																		
251+60 -L-	543														1	1				
	543	546																		
251+85 -L-	546								1			1								
	546	OUT																		
250+85 -L-	547								1			1								
	547	548																		
250+25 -L-	548								1			1								
	548	549																		
249+80 -L-	549								1			1								
	549	OUT																		
SHEET 15																				
16+70 -Y7-	1501																			
	IN	1502																		
17+21 -Y7-	1502																1	1		
	1502	OUT																		
	1503																			
SHEET 6																				
258+00 -L-	601																			
261+00 -L-	602							1						1						
	602	603																		
261+00 -L-	603							1						1						
	603	604																		
261+00 -L-	604							1						1						
261+00 -L-	604	OUT																		
262+87 -L-	606																			
266+85 -L-	608							1						1						
	608	609																		
267+35 -L-	609							1						1						
	609	610																		
267+35 -L-	610							1						1						
	610	611																		
267+35 -L-	611							1						1						
SHEET TOTALS								7	6			6		10	1	1	4	1	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: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3D

RD24621

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
SIZE																			
THICKNESS OR GAUGE																			
		611	OUT		847.34	826.60			64										
SHEET 7																			
270+90 -L-	RT	701		838.50															
		701	702		838.50	833..33			20										
270+90 -L-	RT	702		836.08															
		702	703		833.33	832.48													
SHEET 7																			
270+50 -L-	CL	703		838.07															
		703	704		832.48	831.88													
270+20 -L-	LT	704		841.63															
		704	OUT		831.88	830.00				32									
278+49 -L-	LT	705		813.93															
		705	706		811.18	810.34													
278+00 -L-	CL	706		815.21															
		706	707		810.34	809.48													
277+51 -L-	RT	707		815.80															
		707	OUT		809.23	801.90				72									
279+35 -L-	RT	709		815.35															
		709	OUT		812.60	796.18			48										
280+01 -L-	RT	710		826.10															
		710	OUT		826.10	800.63					60								
SHEET 8																			
287+00 -L-	CL	801		807.76															
		801	802		805.84	805.45													
287+00 -L-	RT	802		807.37															
		802	803		805.45	804.08			276										
284+23 -L-	RT	803		808.81															
		803	808		803.83	802.45				276									
281+97 -L-	LT	804		806.27															
		804	805		803.52	803.17			68										
281+45 -L-	LT	805		813.02															
		805	806		803.17	802.91													
281+44 -L-	CL	806		810.66															
		806	808		802.91	802.70													
281+48 -L-	RT	807																	
	RT	807	808		824.20	802.70				40									
281+47 -L-	RT	808		810.61															
		808	710		801.95	800.77					144								
291+00 -L-	RT	809		805.36															
		809	811		802.61	802.09													
291+50 -L-	CL	811		805.50															
		811	812		801.57	800.84													
SHEET TOTALS									476	420	204								

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	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"	18" R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE
SIZE																													
THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.079	.109	.109																					
611																													
SHEET 7																													
270+90 -L-																													
701																													
270+90 -L- 702																													
702									84																				
SHEET 7																													
270+50 -L- 703																													
703									64																				
270+20 -L- 704																													
704																													
278+49 -L- 705																													
705									88																				
278+00 -L- 706																													
706									88																				
277+51 -L- 707																													
707																													
279+35 -L- 709																													
709																													
280+01 -L- 710																													
710																													
SHEET 8																													
287+00 -L- 801																													
801									72																				
287+00 -L- 802																													
802																													
284+23 -L- 803																													
803																													
281+97 -L- 804																													
804																													
281+45 -L- 805																													
805									52																				
281+44 -L- 806																													
806									68																				
281+48 -L- 807																													
807																													
281+47 -L- 808																													
808																													
291+00 -L- 809																													
809									88																				
291+50 -L- 811																													
811									72																				
SHEET TOTALS									676																				

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 *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	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. 840.19 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
611																										2 - 15"				
SHEET 7																														
270+90 -L-																									1					
701																										1 - 15"				
270+90 -L- 702			1										1						1											
702																														
SHEET 7																														
270+50 -L- 703			1	0.59									1						1											
703																														
270+20 -L- 704			1	4.75									1						1											
704																														
278+49 -L- 705			1										1					1												
705																														
278+00 -L- 706			1										1						1											
706																														
277+51 -L- 707			1	1.57									1					1												
707																										2 - 18"				
279+35 -L- 709			1										1						1											
709																										2 - 15"				
280+01 -L- 710			1										1					1												
710																														
SHEET 8																														
287+00 -L- 801			1											1					1											
801																														
287+00 -L- 802			1											1				1												
802																														
284+23 -L- 803			1										1					1												
803																														
281+97 -L- 804			1										1					1												
804																														
281+45 -L- 805			1	4.85									1						1											
805																														
281+44 -L- 806			1	2.75									1						1											
806																														
281+48 -L- 807				3.66																					1					
807																										1 - 18"				
281+47 -L- 808			1										1					1												
808																														
291+00 -L- 809			1										1					1												
809																														
291+50 -L- 811			1										1						1											
811																														
SHEET TOTALS			17	18.17									15	2				8		9					2	5-15",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: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3E

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
	LT	812		805.11															
		812	OUT		800.84	764.50			244										
SHEET 9																			
300+00 -L-	CL	902		801.40															
		902	903		798.65	798.10													
SHEET 09																			
300+02 -L-	RT	903		800.85															
		903	904		798.10	795.00			400										
296+00 -L-	RT	904		796.83															
		904	905		794.91	794.65			20										
296+00 -L-	RT	905		805.48															
		905	906		794.40	794.14													
296+00 -L-	CL	906		803.24															
		906	907		794.14	793.88													
296+00 -L-	LT	907		805.48															
		907	908		793.88	793.72				40									
296+00 -L-	LT	908		799.65															
		908	OUT		793.22	767.30					212								
SHEET 10																			
306+00 -L-	CL	1001		798.01															
		1001	1002		795.26	794.88													
306+00 -L-	LT	1002		797.63															
		1002	OUT		794.88	780.00			64										
306+50 -L-	RT	1003		797.18															
		1003	OUT		794.88	780.00			80										
311+00 -L-	Rt	1005		790.12															
		1005	1006		787.37	787.03													
311+00 -L-	CL	1006		790.51															
		1006	OUT		787.03	786.10													
318+00 -L-	LT	1009		769.44															
		1009	1010		766.69	765.95													
318+00 -L-	CL	1010		769.83															
		1010	1011		765.95	765.21													
318+00 -L-	RT	1011		769.44															
		1011	1103		765.21	760.18				148									
SHEET 11																			
319+50 -L-	LT	1101		765.04															
		1101	1102		762.29	761.61													
319+50 -L-	CL	1102		765.43															
		1102	1103		761.36	760.68													
319+50 -L-	RT	1103		765.04															
		1103	OUT		760.18	759.12					52								
324+00 -L-	RT	1105		759.59															
		1105	OUT		756.84	747.79			32										
323+50 -L-	LT	1106		760.13															
		1106	OUT		757.38	740.90			40										
SHEET TOTALS									880	188	264								

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"	18 " R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
	812																																
	812	OUT																															
SHEET 9																																	
300+00 -L-	902																																
	902	903										72																					
SHEET 09																																	
300+02 -L-	903																																
	903	904																															
296+00 -L-	904																																
	904	905																															
296+00 -L-	905																																
	905	906											56																				
296+00 -L-	906																																
	906	907											52																				
296+00 -L-	907																																
	907	908																															
296+00 -L-	908																																
	908	OUT																															
SHEET 10																																	
306+00 -L-	1001																																
	1001	1002										72																					
306+00 -L-	1002																																
	1002	OUT																															
306+50 -L-	1003																																
	1003	OUT																															
311+00 -L-	1005																																
	1005	1006										72																					
311+00 -L-	1006																																
	1006	OUT										72																					
318+00 -L-	1009																																
	1009	1010										72																					
318+00 -L-	1010																																
	1010	1011										92																					
318+00 -L-	1011																																
	1011	1103																															
SHEET 11																																	
319+50 -L-	1101																																
	1101	1102										72																					
319+50 -L-	1102																																
	1102	1103											72																				
319+50 -L-	1103																																
	1103	OUT																															
324+00 -L-	1105																																
	1105	OUT																															
323+50 -L-	1106																																
	1106	OUT																															
SHEET TOTALS												524	180																				

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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
	812		1												1				1													
	812	OUT																										2 - 15"				
SHEET 9																																
300+00 -L-	902		1												1						1											
	902	903																														
SHEET 09																																
300+02 -L-	903		1												1				1													
	903	904																														
296+00 -L-	904		1													1			1													
	904	905																														
296+00 -L-	905		1	5	1.06										1						1											
	905	906																														
296+00 -L-	906		1	4.1											1						1											
	906	907																														
296+00 -L-	907		1	5	1.6										1						1											
	907	908																														
296+00 -L-	908		1	1.43											1				1													
	908	OUT																										2 - 24"				
SHEET 10																																
306+00 -L-	1001		1												1						1											
	1001	1002																														
306+00 -L-	1002		1												1				1													
	1002	OUT																										2 - 15"				
306+50 -L-	1003		1												1				1													
	1003	OUT																														
311+00 -L-	1005		1												1				1													
	1005	1006																														
311+00 -L-	1006		1												1						1											
	1006	OUT																														
318+00 -L-	1009		1												1				1													
	1009	1010																														
318+00 -L-	1010		1												1						1											
	1010	1011																														
318+00 -L-	1011		1												1				1													
	1011	1103																														
SHEET 11																																
319+50 -L-	1101		1												1				1													
	1101	1102																														
319+50 -L-	1102		1												1						1											
	1102	1103																														
319+50 -L-	1103		1												1				1													
	1103	OUT																														
324+00 -L-	1105		1												1						1											
	1105	OUT																										2 - 15"				
323+50 -L-	1106		1												1						1											
	1106	OUT																										2 - 15'				
SHEET TOTALS			21	15.53	2.66										20	1			11		10							8-15" 2- 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:	Michelle Ward	DATE:	10/15/2010
CHECKED BY:	Brian Blackwell	DATE:	7/5/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3F

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 11							
325+86 -L-	RT	1107		758.38			
		1107	1108		755.63	754.55	
326+69 -L-	RT	1108		758.25			
		1108	OUT		755.50	736.50	
325+86 -L-	LT	1109		758.38			
		1109	OUT		754.55	738.00	
326+69 -L-	CL	1110		755.89			
		1110	1111		754.98	754.46	
326+69 -L-	LT	1111		758.25			
		1111	OUT		754.46	738.75	
327+52 -L-	LT	1113		758.38			
		1113	OUT		754.55	736.75	
330+50 -L-	CL	1115		758.56			
		1115	1116		755.81	755.29	
330+50 -L-	LT	1116		760.44			
		1116	OUT		755.29	736.76	
SHEET 12							
335+25 -L-	CL	1202		764.80			
		1202	OUT		762.05	759.00	
337+97 -L-	LT	1203		771.46			
		1203	1204		765.79	765.63	
337+97 -L-	CL	1204		768.38			
		1204	1205		765.63	764.83	
338+61 -L-	RT	1205		771.10			
		1205	OUT		764.83	755.28	
339+47 -L-	RT	1206		750.53			
		1206	OUT		746.93	736.00	
343+75 -L-	CL	1207		776.06			
		1207	1208		773.31	772.76	
343+74 -L-	RT	1208		777.24			
		1208	1209		772.76	772.11	
344+39 -L-	RT	1209		778.89			
		1209	1210		772.11	748.85	
344+40 -L-	RT	1210		752.50			
		1210	1211		748.85	734.00	
SHEET 13							
346+50 -L-	CL	1301		779.54			
		1301	1303		776.79	776.19	
346+75 -L-	LT	1302		782.66			
		1302	1303		778.44	776.19	
346+50 -L-	LT	1303		782.41			
		1303	OUT		776.19	764.00	
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
325+86 -L-	1107																					
	1107	1108																				
326+69 -L-	1108																					
	1108	OUT		44																		
325+86 -L-	1109																					
	1109	OUT		44																		
326+69 -L-	1110																					
	1110	1111																				
326+69 -L-	1111																					
	1111	OUT		44																		
327+52 -L-	1113																					
	1113	OUT		44																		
330+50 -L-	1115																					
	1115	1116																				
330+50 -L-	1116																					
	1116	OUT		48																		
335+25 -L-	1202																					
	1202	OUT																				
337+97 -L-	1203																					
	1203	1204																				
337+97 -L-	1204																					
	1204	1205																				
338+61 -L-	1205																					
	1205	OUT		36																		
339+47 -L-	1206																					
	1206	OUT				160																
343+75 -L-	1207																					
	1207	1208																				
343+74 -L-	1208																					
	1208	1209																				
344+39 -L-	1209																					
	1209	1210		64																		
344+40 -L-	1210																					
	1210	1211		92																		
346+50 -L-	1301																					
	1301	1303																				
346+75 -L-	1302																					
	1302	1303		24																		
346+50 -L-	1303																					
	1303	OUT		48																		
SHEET TOTALS				488		160																

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"
325+86 -L-	1107																	
	1107	1108		80														
326+69 -L-	1108																	
	1108	OUT																
325+86 -L-	1109																	
	1109	OUT																
326+69 -L-	1110																	
	1110	1111										54						
326+69 -L-	1111																	
	1111	OUT																
327+52 -L-	1113																	
	1113	OUT																
330+50 -L-	1115																	
	1115	1116										54						
330+50 -L-	1116																	
	1116	OUT																
335+25 -L-	1202																	
	1202	OUT		92														
337+97 -L-	1203																	
	1203	1204		16														
337+97 -L-	1204																	
	1204	1205		84														
338+61 -L-	1205																	
	1205	OUT																
339+47 -L-	1206																	
	1206	OUT																
343+75 -L-	1207																	
	1207	1208		52														
343+74 -L-	1208																	
	1208	1209		64														
344+39 -L-	1209																	
	1209	1210																
344+40 -L-	1210																	
	1210	1211																
346+50 -L-	1301																	
	1301	1303		52														
346+75 -L-	1302																	
	1302	1303																
346+50 -L-	1303																	
	1303	OUT																
SHEET TOTALS				440								108						

STATION	FROM	TO	18 " R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	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
325+86 -L-	1107									1								
	1107	1108																
326+69 -L-	1108									1								
	1108	OUT																
325+86 -L-	1109									1								
	1109	OUT																
326+69 -L-	1110									1								
	1110	1111																
326+69 -L-	1111									1								
	1111	OUT																
327+52 -L-	1113									1								
	1113	OUT																
330+50 -L-	1115									1								
	1115	1116																
330+50 -L-	1116									1	0.15							
	1116	OUT																
335+25 -L-	1202									1								
	1202	OUT																
337+97 -L-	1203									1	0.67							
	1203	1204																
337+97 -L-	1204									1								
	1204	1205																
338+61 -L-	1205									1	1.27							
	1205	OUT																
339+47 -L-	1206									1								
	1206	OUT																
343+75 -L-	1207									1								
	1207	1208																
343+74 -L-	1208									1								
	1208	1209																
344+39 -L-	1209									1	1.78							
	1209	1210																
344+40 -L-	1210									1								
	1210	1211							0.7									
346+50 -L-	1301									1								
	1301	1303																
346+75 -L-	1302									1								
	1302	1303																
346+50 -L-	1303									1	1.22							
	1303	OUT																
SHEET TOTALS									1	20	5.09							

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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
325+86 -L-	1107					1						1											
	1107	1108																					
326+69 -L-	1108					1						1											
	1108	OUT																	2 - 15"				
325+86 -L-	1109					1						1											
	1109	OUT																	2 - 15"				
326+69 -L-	1110					1						1											
	1110	1111																					
326+69 -L-	1111					1						1											
	1111	OUT																	2 - 15"				
327+52 -L-	1113					1						1											
	1113	OUT																	2 - 15"				
330+50 -L-	1115					1						1											
	1115	1116																					
330+50 -L-	1116					1						1											
	1116	OUT																	2 - 15"				
335+25 -L-	1202					1						1											
	1202	OUT																					
337+97 -L-	1203											1			1								
	1203	1204																					
337+97 -L-	1204					1						1											
	1204	1205																					
338+61 -L-	1205					1						1											
	1205	OUT																	2 - 15"				
339+47 -L-	1206				1				1	1													
	1206	OUT																					
343+75 -L-	1207					1						1											
	1207	1208																					
343+74 -L-	1208					1						1											
	1208	1209																					
344+39 -L-	1209					1						1											
	1209	1210																	2 - 15"				
344+40 -L-	1210												1	1									
	1210	1211																	2 - 15"				
346+50 -L-	1301					1						1											
	1301	1303																					
346+75 -L-	1302					1						1											
	1302	1303																					
346+50 -L-	1303					1						1											
	1303	OUT																	2 - 15"				
SHEET TOTALS					1	17			1	1		18	1	1	1				18-15"				

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: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

PROJECT NO.	SHEET NO.
R2707B	3G

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	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	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"	18" R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO FLAT GRATES STD. 840.29	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.079	.109	.109																																																					
SHEET 13																																																																															
30+00 -Y1-	RT	1305		809.6	807.6																																															1													1				1												
		1305	OUT		807.6	807.1																							88																																																				
26+55 -Y1-	RT	1306		808.1	805.3																																															1												1					1												
		1306	OUT		805.3	801.8			40							X																																																												2 - 15"				
25+00 -Y1-	CL	1307		806.2	803.0																																															1							1											1				1								
		1307	1308		803.0	800.4																															152																																												
23+50 -Y1-	CL	1308		803.6	800.4																																															1							1											1				1								
		1308	1309		800.4	798.1																															140																																												
22+12 -Y1-	CL	1309		801.3	798.1																																															1							1											1				1								
		1309	OUT		798.1	797.8																															60																																												
20+63 -RPA1-	CL	1310			797.5	795.8																									152																																																	
20+20 -Y1-	CL	1311		799.5	796.2																																															1																		1				1								
		1311	OUT		796.2	794.7																							60																																																				
17+10 -RPA1-	LT	1312		792.9	789.7																																															1							1												1			1								
		1312	1313		789.7	787.8																															32																																												
7+34 -LPA1-	LT	1313		790.8	787.8																																															1			1																1											
		1313	1314		787.8	776.2																							220																																																					
5+00 -LPA1-	LT	1314		779.2	776.2																																															1			1																1											
		1314	1315		776.2	772.0																							176																																																			
3+11 -LPA1-	LT	1315		775.1	771.8																																															1			1																1											
		1315	1317		771.8	767.7																								56																																																	
2+00 -LPA1-	LT	1316		776.5	773.5																																															1			1																1											
		1316	1315		773.5	772.0																							104																																																					
3+11 -LPA1-	RT	1317		772.0	767.2																																															1												1					1														
		1317	1318		767.2	765.7					208																																																																							
364+50 -L-	LT	1318		770.5	765.7																																															1												1					1														
		1318	1319		765.7	765.0																									76																																																	
364+50 -L-	CL	1319		771.5	764.5																																															1	2												1						1												
		1319	OUT		764.5	764.7																										96																																															
359+50 -L-	LT	1320		780.5	777.0																																															1													1						1												
		1320	1321		777.0	776.6																							72																																																				
359+50 -L-	LT	1321		779.6	776.6																																															1													1						1												
		1321	1319		776.6	765.5																								500																																																	
2+13 -LPD1-	RT	1322		782.0	779.0																																															1			1																1											
		1322	1323		779.0	778.2																															84																																												
3+00 -LPD1-	RT	1323		781.2	778.2																																															1			1																1											
		1323	1324		778.2	777.5																							156																																																					
359+00 -L-	RT	1324		780.3	777.3																																															1													1				1													
		1324	1321		777.3	776.6																								96																																																	
5+00 -LPD1-	RT	1325		785.5	782.5																																															1			1																1											
		1325	OUT		782.5	782.0			32																																																																							
9+22 -LPD1-	LT	1326		805.7	802.7																																															1																			1			1								
		1326	1327		802.7	800.5																							32																																																				
9+20 -LPD1-	RT	1327		803.5	800.5																																															1			1																1											
		1327	OUT		800.5	798.0			44																																																																					
17+50 -RPD1-	RT	1328		766.0	761.2																																															1												1				1	1													3GI-A
		IN	1328		780.0	761.2																																	208								1			1.5																																HDWL W/ 24" SLUICE GATE STD 838.02
		1328	OUT		761.2	742.5																																	200																																													
11+31 -RPA1-	RT	1329		765.2	758.4																																												4.9		1	1.8											1				1	1													3GI-A
SHEET TOTALS									116		208																		908	652	228	96					468		408							1			6		24	3.80		8				4				4	5	1		2	5	6	13			6				2-15"				

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: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3H

**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
		IN	1329		763.0	758.4	
		1329	OUT		758.4	754.2	
SHEET 13							
9+14 -RPD1-	RT	1330			750.0		
		1330	1332		750.0	728.6	
366+47 -L-	LT	1331			747.7		
		1331	1332		747.7	727.6	
29+00 -Y17-		1332		739.6	727.6		
		1332	OUT		727.6	708.2	
29+00 -Y17-	RT	1333		754.6	751.8		
		1333	1334		751.8	750.6	
27+11 -Y17-	RT	1334		753.4	750.6		
		1334	1335		750.6	749.0	
24+00 -Y17-	RT	1335		755.5	749.0		
		1335	OUT		749.0	738.5	
24+80 -Y17-	LT	1336		746.7	743.9		
		1336	OUT		743.9	738.5	
		IN	1337		782.1	751.4	
33+58 -RPA1-	RT	1337		754.2	751.4		
		1337	1338		751.4	750.8	
6+42 -RPA1-	LT	1338		755.1	750.4		
		1338	1339		750.4	749.8	
371+55 -L-	CL	1339		757.3	749.8		
		1339	OUT		749.8	747.7	
33+52 -Y17-	CL	1340	OUT		747.5	729.5	
Sheet 14							
1+97 - RPA1-	RT	1401		746.5	743.7		
		1401	1403		743.7	742.7	
376+00 -L-	RT	1402		746.8	744.0		
		1402	1403		744.0	742.7	
376+00 -L-	CL	1403		748.2	742.5		
		1403	1404		742.5	733.3	
381+00 -L-	CL	1404		739.5	732.8		
		1404	1405		732.8	730.7	
381+00 -L-	RT	1405		740.2	730.7		
		1405	OUT		730.7	724.0	
381+00 -L-	LT	1406		737.2	734.4		
		1406	1404		734.4	733.6	
379+00 -L-	RT	1407		741.0	738.2		
		1407	OUT		738.2	737.0	
383+00 -L-	RT	1408		736.0	732.1		
		1408	1405		732.1	731.5	
SHEET TOTALS							

SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) and C.S. PIPE (SIZE / THICKNESS OR GAUGE)

STATION	FROM	TO	SD 12"	SD 15"	SD 18"	SD 24"	SD 30"	SD 36"	SD 42"	SD 48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	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
	IN	1329								20	X											
	1335	OUT		44							X											
	IN	1337		68							X											
33+52 -Y17-	1340	OUT																	128			
	1405	OUT				48					X											
	1407	OUT		60																		
SHEET TOTALS				172		48				20									128			

R.C. PIPE CLASS III and R.C. PIPE CLASS IV

STATION	FROM	TO	III 12"	III 15"	III 18"	III 24"	III 30"	III 36"	III 42"	III 48"	IV 12"	IV 15"	IV 18"	IV 24"	IV 30"	IV 36"	IV 42"	IV 48"
	1329	OUT								100								
	1330	1332														192		
	1331	1332																388
	1332	OUT																192
	1333	1334										188						
	1334	1335										312						
	1336	OUT		128														
	1337	1338		64														
	1338	1339			88													
	1339	OUT			108													
	1401	1403		104														
	1402	1403		92														
	1403	1404			500													
	1404	1405				58												
	1406	1404		76														
	1408	1405		200														
SHEET TOTALS				664	696	58				100		500				192		580

STATION	FROM	TO	18" R.C. PIPE (CLASS V)	42" WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS 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'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN
9+14 -RPD1-	1330				1			2.3										
366+47 -L-	1331				1			6										
29+00 -Y17-	1332									1	5	2						
	1332	OUT						6										
29+00 -Y17-	1333									1								
27+11 -Y17-	1334									1								
24+00 -Y17-	1335									1	1.5							
24+80 -Y17-	1336									1								
33+58 -RPA1-	1337									1								
6+42 -RPA1-	1338									1								
371+55 -L-	1339									1	2.5							
33+52 -Y17-	1340	OUT			1				2									
1+97 - RPA1-	1401									1								
376+00 -L-	1402									1								
376+00 -L-	1403									1	1							
381+00 -L-	1404									1	1.7							
381+00 -L-	1405									1	4.5							
381+00 -L-	1406									1								
379+00 -L-	1407									1								
383+00 -L-	1408									1								
SHEET TOTALS					3			14	2	16	15.90	2.00						

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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
9+14 -RPD1-	1330																						HDWL W/ 36" SLUICE GATE STD 838.02
366+47 -L-	1331																						HDWL W/ 48" SLUICE GATE STD 838.02
29+00 -Y17-	1332				1							1											3GI-A
	1332	OUT																					ENDWALL
29+00 -Y17-	1333					1						1											
27+11 -Y17-	1334					1						1											
24+00 -Y17-	1335					1						1											
	1335	OUT																	2 - 15"				
24+80 -Y17-	1336					1				1													
	1336	OUT																					PREFORMED SCOUR HOLE
	IN	1337																1	2 - 15"				
33+58 -RPA1-	1337					1				1													
6+42 -RPA1-	1338					1			1	1													3GI-A
371+55 -L-	1339					1						1											
33+52 -Y17-	1340	OUT																					HDWL W/ 30" SLUICE GATE STD 838.02
1+97 - RPA1-	1401					1				1													
376+00 -L-	1402					1				1													
376+00 -L-	1403					1						1											
381+00 -L-	1404					1						1											
381+00 -L-	1405					1						1											
	1405	OUT																	2 - 24"				
381+00 -L-	1406					1				1													
379+00 -L-	1407					1				1													
383+00 -L-	1408					1						1											
SHEET TOTALS					1	15			1	7		9						1	4-15",2-24"				

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.)	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: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

RD248621

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R2707B	3I

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)

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

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
383+00 -L-	CL	1409		735.5	732.7																						
		1409	1408		732.7	732.1																					
381+74 -L-	RT	1410	OUT		723.5	705.0							136			X											
381+55 -L-	LT	1411	OUT		734.0	706.0					112					X											
SHEET 17																											
17+05 -Y1-	LT	1701	OUT						24																		
17+42 -Y1-	RT	1702	OUT						32																		
19+00 -Y1-	CL	1703		800.2	797.0																						
		1703	OUT		797.0	795.6																					
10+55 -DRIVE 2-	CL	1704			795.0	792.2				56																	
19+63 -Y1-	CL	1705			792.0	783.0																					
18+05 -Y1-	LT	1706	OUT						24																		
SHEET 18																											
38+16 -Y1-	RT	1801	OUT						36																		
19+47 -Y17-	CL	1802	OUT		740.0	715.8																				216	
19+00 -Y17-	LT	1803		770.9	768.1																						
		1803	1804		768.1	762.1																					
20+50 -Y17-	LT	1804		762.9	762.1																						
		1804	OUT		762.1	745.7			32							X											
DETOUR -Y1-																											
13+77 -Y1DET-	CL	T01			797.0	796.5				100																	
23+50 -Y1DET-	CL	T02			803.0	794.7				108																	
SHEET TOTALS									148	264	112		136													216	
SHEET 3A									424	164	100																
SHEET 3B									304	50	28																
SHEET 3C									92	96																	
SHEET 3D									476	420	204																
SHEET 3E									880	188	264																
SHEET 3F									488		160																
SHEET 3G									116		208																
SHEET 3H									172		48				20									128			
SHEET 3I									148	264	112		136													216	
PROJECT TOTALS									3100	1182	1124		136		20									128		216	

STATION	STRUCTURE NO. FROM	STRUCTURE NO. 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"	18" R.C. PIPE (CLASS V)	42"WELDED STEEL PIPE (0.625" Thick)	SLUICE GATE STD 838.02	24"WELDED STEEL PIPE (0.312" Thick)	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
383+00 -L-	1409																								
	1409	1408		56																					
381+74 -L-	1410	OUT																			1				2.8
381+55 -L-	1411	OUT																							2.8
SHEET 17																									
17+05 -Y1-	1701	OUT																							
17+42 -Y1-	1702	OUT																							
19+00 -Y1-	1703																								
	1703	OUT		56																					
10+55 -DRIVE 2-	1704																								
19+63 -Y1-	1705							104																3.4	
18+05 -Y1-	1706	OUT																							
SHEET 18																									
38+16 -Y1-	1801	OUT																							
19+47 -Y17-	1802	OUT																			1				3.8
19+00 -Y17-	1803																								
	1803	1804		152																					
20+50 -Y17-	1804																								
	1804	OUT																							
DETOUR -Y1-																									
13+77 -Y1DET-	T01																								
23+50 -Y1DET-	T02																								
SHEET TOTALS				264				104													2			3.4	9.4
SHEET 3A				656	432	160						64			184	372								0.7	7.8
SHEET 3B				328	332	216						472													
SHEET 3C				404	56				100			108	376		312				300	56		56			1
SHEET 3D				676																					
SHEET 3E				524	180																				
SHEET 3F				440								108													0.7
SHEET 3G				908	652	228	96					468		408							1			6.4	
SHEET 3H				664	696	58				100		500				192		580			3			14.3	2
SHEET 3I				264				104													2			3.4	9.4
PROJECT TOTALS				4864	2348	662	96	104	100	100		1720	376	408	496	564		580	300	56	6	56		25	21
																							SAY	46	

STATION	STRUCTURE NO. FROM	STRUCTURE NO. 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 TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO FLAT GRATES STD. 840.29	1" STEEL PLATE SEE PSH(2I) DETAIL	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	T.B. G.D.I. STD. 840.36	STEEL GRATE AND FRAME STD. 840.37	O.T.C.B. STD. 840.04 OR 840.05	BERM DRAIN OUTLET 850.10 AND 850.11	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.	REMARKS
383+00 -L-	1409		1												1						1											
	1409	1408																														
381+74 -L-	1410	OUT																										2 - 36"				HDWL W/ 36" SLUICE GATE STD 838.02
381+55 -L-	1411	OUT																										2 - 24"				HDWL AND EDWL
SHEET 17																																
17+05 -Y1-	1701	OUT																														
17+42 -Y1-	1702	OUT																														
19+00 -Y1-	1703		1							1										1				1								TB DI
	1703	OUT																														
10+55 -DRIVE 2-	1704																															
19+63 -Y1-	1705																															HDWL
18+05 -Y1-	1706	OUT																														
SHEET 18																																
38+16 -Y1-	1801	OUT																													44	REMOVE 12" CONC
19+47 -Y17-	1802	OUT																														HDWL W/ 42" SLUICE GATE STD 838.02
19+00 -Y17-	1803		1												1						1											
	1803	1804																														
20+50 -Y17-	1804		1												1						1											
	1804	OUT																										2 - 15"				
DETOUR -Y1-																																
13+77 -Y1DET-	T01																														100	
23+50 -Y1DET-	T02																														108	
SHEET TOTALS			4							1					3					1	3			1				2-15", 2-24", 2-36"			252	
SHEET 3A			20	3.31											20		1				19							12-15",4-18",4-24"			95	
SHEET 3B			22	2.03		5						7	2		2						19			8	1			6-15"			53	
SHEET 3C			19	21.67	8.89										7	6			6		10	1	1	4	1	1		2-15",2-18"	0.5			
SHEET 3D			17	18.17											15	2			8		9						2	5-15",3-18"				
SHEET 3E			21	15.53	2.66										20	1			11		10							8-15" 2- 24"				
SHEET 3F			20	5.09										1	17			1	1		18	1	1	1				18-15"				
SHEET 3G			24	3.8		8				4				4	5	1		2	5	6	13			6				2-15"				
SHEET 3H			16	15.9	2									1	15			1	7		9						1	4-15",2-24"				
SHEET 3I			4							1					3					1	3			1				2-15", 2-24", 2-36"			252	
PROJECT TOTALS			163	85.50	13.55	13				5		7	2	6	104	10	1	4	38	7	110	2	2	20	2	1	3	59-15",9-18",10-24" 2-36"	0.5		400	
				103.12																									SAY 1.0			
			SAY	104																												

COMPUTED BY: Michelle Ward DATE: 10/15/2010

CHECKED BY: Brian Blackwell DATE: 7/5/2012

PROJECT NO.	SHEET NO.
R2707B	3J

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.

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS IV R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"	C.S. PIPE (54": .109, .138, .168; SHOP ELON-GATED .138, .168; 60": .138, .168; 66": .138, .168; 72": .139, .168)	STRUCTURAL PLATE PIPE (60": 12, 10; 66": 12, 10; 72": 12, 10)	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, F, G)	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	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
SIZE / THICKNESS OR GAUGE																												
SHEET 6																												
265+68 -L-	RT	607	OUT		823.90	813.97				292						6.3												CLASS IV
SHEET 7																												
278+54 -L-	RT	708	OUT		790.13	782.59			284							5.6												CLASS IV
SHEET 8																												
292+49 -L-	RT	813	OUT		766.40	765.90				328						6.3												CLASS IV
SHEET 9																												
294+63 -L-	RT	901	OUT		774.70	767.30		284								5.0												CLASS IV
SHEET 10																												
307+45 -L-	RT	1004	OUT		786.70	777.50		204								5.0												
SHEET 11																												
322+65 -L-	RT	1104	OUT		747.39	740.50				188						6.3												CLASS IV
327+10 -L-	CL	1112			736.00	736.00			208																			CLASS IV
329+00 -L-	CL	1114			736.00	736.00			216																			CLASS IV
SHEET 12																												
332+35 -L-	CL	1201			734.50	734.50			256																			CLASS IV
SHEET 13																												
348+55 -L-	CL	1304			734.00	729.00				380						6.3												CLASS IV
SHEET TOTALS								488	964	1188						40.8												
															SAY	41												

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

6/16/99

COMPUTED BY: BRIAN BLACKWELL DATE: 7/12/12
CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	3K

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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			SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	TYPE 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	NO.	PERMITTED G	PERMITTED NG				
-Y1-	29+38.50	31+51.00	LT	212.5				29+38.50	8		50		1			1	1												
-Y1-	25+02.75	27+16.50	RT	212.5				27+16.50	8		50		1			1	1												
-Y17-	11+50.00	37+50.00	RT	2600					8		50	50	1	1			2												
-Y17-	11+50.00	37+50.00	LT	2600					8		50	50	1	1			2												
-DRIVE 3-	12+28.98	13+63.51	LT	50.0	87.5				8		25	50											2						
									6																				
LESS ANCHOR DEDUCTIONS																													
	GRAU-350	6 @ 50.00'	=	300																									
	B-77	2 @ 18.75'	=	37.5																									
	AT-1	2 @ 6.25'	=		12.5																								
TOTAL				5337.5												2	6						2						
			SAY	5350	75											2	6						2						
10 ADDITIONAL GUARDRAIL POSTS																													

TEMPORARY GUARDRAIL SUMMARY

-Y1DET-	18+46.00	24+58.50	RT	612.5					8		50	50	1	1			2												
-Y1DET-	21+47.00	25+09.50	LT	362.5					8		50	50	1	1			2												
LESS ANCHOR DEDUCTIONS																													
	GRAU-350	4 @ 50.00'	=	200																									
TOTAL				775													4												
			SAY	775													4												

6/16/99

COMPUTED BY: BRIAN BLACKWELL DATE: 7/12/12
CHECKED BY: ENRICO ROQUE DATE: 5/03/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	3L

"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

FUTURE 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			SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	TYPE 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	NO.	PERMITTED G	PERMITTED NG				
-L-	219+05.00	220+00.00	RT	1100			220+55.00		12	15	50		1				1													
-L-	220+60.00	229+54.77	LT	900					12	15			1																	
-L-	246+01.59	246+75.82	LT	50					12	15			1			1				1										
-L-	248+25.60	251+37.96	LT	312.5					12	15			1			2														
-L-	253+03.70	272+00.00	LT	1900			270+50.00		12	15	50		1			1	1													
-L-	245+31.15	247+28.09	MED RT	200					4	6	37.5		4			1		1												TEMPORARY GUARDRAIL
-L-	248+91.09	252+27.20	MED RT	337.5					4	6						2														
-L-	248+56.44	251+67.84	MED LT	312.5					4	6						2														
-L-	253+32.84	255+56.21	MED LT	225					4	6	37.5		4			1		1												
-L-	244+95.13	247+63.29	RT	275					12	15	50		1			1	1													
-L-	249+26.29	252+59.41	RT	337.5					12	15						2														
-L-	254+44.41	267+50.00	RT	1312.5				266+00.00	12	15						1				1										
-L-	276+50.00	279+50.00	RT	300			278+00.00		12	15	50		1				1			1										
-L-	279+00.00	282+00.00	LT	300			280+50.00		12	15	50		1				1			1										
-L-	290+00.00	296+10.00	RT	562.5			292+00.00		12	15	50		1				1			1										
-L-	292+00.00	297+00.00	LT	500			295+50.00		12	15	50		1				1			1										
-L-	319+50.00	338+02.87	LT	1850				321+00.00	12	15						1				1										
-L-	322+00.00	332+40.00	RT	1050					12	15			1				1			1										
-L-	336+37.77	339+08.64	RT	275					12	15	50		1			1	1													
-L-	336+36.32	338+72.24	MED RT	237.5					4	6	37.5		4			1		1												
-L-	342+23.46	351+55.00	LT	937.5			350+05.00		12	15	50		1			1	1													
-L-	342+65.16	344+50.40	MED LT	187.5					4	6	37.5		4			1		1												
-L-	343+47.43	350+49.61	RT	700					12	15						1				1										
-L-	353+83.00	354+45.70	MED LT	75					20	23						1														
-L-	353+83.00	354+45.70	MED RT	75					20	23						1								1	X					
-L-	355+20.70	355+83.00	MED LT	75					20	23						1														
-L-	355+20.70	355+83.00	MED RT	75					20	23						1								1	X					
-L-	380+40.00	383+17.19	LT	275				381+70.00	12	15						1				1										
-L-	378+40.00	383+58.49	RT	525			379+90.00		12	15			1			1	1													
-L-	381+46.73	383+30.81	MED LT	187.5					4	6	37.5		4			1		1												
-L-	381+29.68	383+44.58	MED RT	212.5					4	6	37.5		4			1		1												
-RP B-	10+00.00	24+50.00	LT	1450					12	15			1				1													
-RP C-	10+00.00	21+10.00	RT	1112.5					12	15										1										
-RP D1-	6+90.00	22+10.00	LT	1562.5			21+05.00	8+40.00	12	15	50		1				1			1										
LESS ANCHOR DEDUCTIONS																														
	GRAU-350	13 @ 50.00'	"	650																										
	B-77	6 @ 37.50'	"	225																										
	CAT-1	12 @ 6.25'	"	75																										
TOTAL				18,837.5												28	13	6		12										
			SAY	18837.5												28	13	6		12										
10 ADDITIONAL GUARDRAIL POSTS																														

COMPUTED BY: BRIAN BLACKWELL DATE: 7/12/12
CHECKED BY: ANTHONY THOMPSON DATE: 6/11/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	3M

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT REMOVAL SUMMARIES

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	222+00	240+00	LT/RT	2513.56
-Y1-	18+00	18+50	LT	230.89
			TOTAL:	2744.45
			SAY:	2750

SUMMARY OF EXISTING CONCRETE PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-LPD1-	9+77	11+48	RT	343.54
-LPD1-	10+80	11+34	LT	68.59
-Y1-	29+92	30+11	RT	25.21
			TOTAL:	437.33
			SAY:	440

SUMMARY OF SHOULDER BERM GUTTER

LOCATION	SIDE	BEGIN STATION	END STATION	LENGTH
-Y1-	RT	26+51.55	26+67.74	16.2
-Y17-	LT	12+04.00	20+50.00	846.0
-Y17-	RT	20+50.00	35+64.00	1514.0
			TOTAL:	2376.2
			SAY:	2380

SUMMARY OF WOOVEN WIRE FENCE

STATION TO STATION	LOCATION LT/RT/CL	FABRIC	END BRACE	CORNER BRACE	LINE BRACE	4" POSTS	5" POSTS
-L- 209+53 TO 244+42	LT.	3873	2	10	11	240	67
-Y7- 14+40 TO 16+15	RT.	176	2			10	4
-Y7- 14+60 TO 19+05	LT.	437	2		1	27	7
-Y7- 19+95 TO 21+00	LT.	102	2			5	4
-Y7- 21+30 TO 23+82	LT.	242	2			15	4
-L- 248+01 TO 250+34	LT.	267	2	2		14	10
-L- 252+87 TO 338+02	LT.	8,894	2	5	27	581	100
-L- 342+23 TO -Y1- 17+80	LT/RT	2,170	3	5	6	134	39
-Y1- 17+80 TO 19+21	LT.	146	2			8	4
-L- 358+75 TO 380+00	LT.	2,243	2	2	6	145	28
-L- 381+28 TO 383+16	LT.	229	2	1		13	7
-L- 209+53 TO 221+18	RT.	1290	2	3	3	80	22
-L- 221+57 TO -Y1- 34+50	RT.	3,510	2	8	10	219	58
-Y7- 34+50 TO -L- 252+60	LT/RT	947	2	2	2	59	16
-L- 254+45 TO 267+00	RT.	1,293	2	2	3	82	19
-L- 267+10 TO 339+10	RT.	7,311	2	4	22	477	82
-L- 343+48 TO -Y1- 36+30	RTRT	1,730	3	2	5	109	27
-Y1- 37+00 TO -L- 383+60	LT/RT	3,768	2	7	11	237	58
(Environmentally Sensitive Area) -L- 291+35 TO 295+85	LT	1,725	2	2	5	110	25
TOTAL:		40,353				2,565	581
SAY:		40,360				2,570	590

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COMPUTED BY: Enrico Rogue DATE: 6/18/13
CHECKED BY: Pete Thompson DATE: 6/18/13

(2-19-13)

PROJECT NO.	SHEET NO.
R-2707B	3-N

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
L	215+00	218+00	LT/RT	UD	600
L	271+00	277+00	LT/RT	UD	1100
L	284+00	289+00	LT/RT	UD	1100
L	308+00	311+00	LT/RT	UD	600
L	358+00	361+00	LT/RT	UD	600
				TOTAL LF:	4000
				SAY	4000

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

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Station 247+04.52 -L-	EB 1	3 mos.
Station 248+53.77 -L-	EB 2	3 mos.
Statiion 247+31.15 -L-	EB 1	3 mos.
Station 248+94.15 -L-	EB 2	3 mos.

COMPUTED BY: PETE THOMPSON DATE: 5/6/13
CHECKED BY: ENRICO ROQUE DATE: 5/6/13

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	30
R/W SHEET NO.	

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY #1					
-L- STA 209+00 TO -L- STA 215+00	93,538		54	-	93,484
5" ADJ.MATERIAL FOR GRADING			3,202	3,202	
#1 TOTAL	93,538		3,256	3,202	93,484
SUMMARY #2					
-L- STA 215+00 TO -L- STA 252+00	40,788		645,832	605,044	-
-RPB- 15+50 TO -RPB- STA 26+50	809		58,112	57,303	-
-LPB- STA 13+00 TO -LPB- STA 17+50	953		16,764	15,811	-
-RPC- STA 15+00 TO -RPC- STA 32+00	540		63,659	63,119	-
-LPC- STA 12+50 TO -LPC- STA 18+00	17		21,857	21,840	-
-Y2- STA 15+50 TO -Y2 STA 20+00	904		1,151	247	-
-Y7 STA 14+50 TO -Y7- STA 35+00	2,851		12,598	9,747	-
-DRIVE1- STA 10+50 TO STA 14+50	484		30	-	454
-DRIVE3- STA 10+50 TO STA 14+50	93		256	163	-
5" ADJ.MATERIAL FOR GRADING			15,823	15,823	
#2 TOTAL	47,439		836,082	789,097	454
SUMMARY #3					
-L- STA 253+00 TO -L- STA 283+00	93,185		347,291	254,106	-
5" ADJ.MATERIAL FOR GRADING			11,955	11,955	
#3 TOTAL	93,185		359,246	266,061	-
SUMMARY #4					
-L- STA 283+00 TO -L- STA 313+00	507,237		75,719	-	431,518
5" ADJ.MATERIAL FOR GRADING			12,289	12,289	
#4 TOTAL	507,237		88,008	12,289	431,518
SUMMARY #5					
-L- STA 313+00 TO -L- STA 338+50	146,160	1,750	186,077	39,917	1,750
5" ADJ.MATERIAL FOR GRADING			12,873	12,873	
#5 TOTAL	146,160	1,750	198,950	52,790	1,750

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY #6					
-L- STA 342+50 TO -L- STA 353+00	9,316		163,268	153,952	-
5" ADJ MATERIAL FOR GRADING			4,091	4,091	
#6 TOTAL	9,316		167,358	158,042	-
SUMMARY #7					
-L- STA 353+00 TO STA 384+00	367,359		106,458	-	260,901
-DRIVE2- STA 10+50 TO STA 14+50	199		82	-	117
-Y1- STA 11+90 TO -Y1- STA 27+00	2,589		8,099	5,510	-
-Y1- STA 29+52 TO -Y1- STA 42+40	2,163		2,743	580	-
-Y1DET- STA 10+00 TO -Y1DET- STA 29+50	1,468		13,859	12,391	-
RAMP -A1- STA.0+00.00 TO STA.20+50.00	57,196		2,620	-	54,576
RAMP -D1- STA.0+00.00 TO STA.23+50.00	1,939		171,739	169,800	-
LOOP -A1- STA.2+10 TO STA.6+33.80	58,933		-	-	58,933
LOOP -D1- STA.2+41 TO STA.7+65.75	16,941		22,453	5,512	-
-Y17- STA 10+20 TO -Y17- STA 21+00	2,396		86,732	84,336	-
HAZARDOUS SPILL BASINS 1 & 2	7,300		-	-	7,300
5" ADJ MATERIAL FOR GRADING			10,117	10,117	
#7 TOTAL	518,483		424,901	288,245	381,827
SUMMARIES 1-7 TOTAL	1,415,358	1,750	2,077,801	1,569,727	909,034
ADDITIONAL UNDERCUT PER GEOTECH.		6,000	6,900	6,900	6,000
EST.5% LOSS DUE TO CLEARING AND GRUBBING	-24,000			24,000	
ROCK WASTE TO REPLACE BORROW				-2,582	-2582
ESTIMATED SHOULDER MATERIAL			4,140	4,140	
DETOUR REMOVAL	12,391				12,391
WASTE TO REPLACE BORROW				-904,702	-904,702
ADJUST FOR ROCK SWELL			-646	-646	
ELIMINATE EARTH SHRINK FACTOR			-484	-484	
PROJECT TOTAL	1,403,749	7,750	2,087,711	696,353	20,141
EST.5% FOR REPLACING TOPSOIL				34,818	
GRAND TOTAL	1,403,749	7,750	2,087,711	731,171	20,141
SAY	1,404,000			732,000	

EST. DRAINAGE DITCH EXCAVATION: 15,000 CY

EST.SELECT GRANULAR MATERIAL = 4,500 CY PER GEOTECH

EST.SHALLOW UNDERCUT = 2,000 CY PER GEOTECH

REVISIONS

6/4/96

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PROJ. REFERENCE NO.	SHEET NO.
R-2707B	3P

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	ROGER W. McMAHAN
2	4	ROGER W. & DEBBIE McMAHAN
3	4 & 5	FRANKLIN NURSEY, INC.
4	5	JULIA WEAVER
5	5	JAMES & WANDA McSWAIN
6	6	DAVID CABE WALL
7	5 & 15	GEORGE C. DOGGETT
8	5	ROSA M. JAMERSON, HEIRS
9	15	JJI LIGHTING GROUP, INC.
10	4 & 5	CITY OF SHELBY
11	5, 6, 7 & 8	DUKE POWER COMPANY
12	5	WILLIS M. CAMP
13	5	SIGFRIDO & SONIA DELLA VALLE
14	5, 6, 7 & 15	COLEMAN DOGGETT
15	5	ESKRIDGE GROVE BAPTIST CHURCH
16	5	MARTIN LARRY BORDERS
17	5 & 6	ESKRIDGE GROVE BAPTIST CHURCH
18	5	HERMAN DAVIS
19	5 & 15	CITY OF SHELBY
20	15	COLEMAN DOGGETT
21	6 & 7	JIMMY HAWKINS
22	2D, 7 & 8	SHELBY DEVELOPMENT PARTNERS, LLC
23	8, 9, 10, 11 & 12	WAL-MART STORES EAST, LP
24	12 & 13	CHARLES A. & JERI HORN
25	15	WILLIAM JAMES HORN
26	5, 6, 7 & 14	CSX RAILROAD
27	5	ERSKINE GROVE BAPTIST CHURCH
28	13	CHARLES A. & JERI HORN
29	13	CHARLES A. HORN
30	4	JOHN E. & GRACE F. WEAVER
31	4	KATHY M. & KEITH BEAVER
32	17	SAM D. BLACK
33	14 & 17	CHARLES CLAY CABANISS, Jr. & JANE GRAGG CABANISS
34	17	RONALD DAVID & CATHERINE NIRA LEDBETTER
34A	13	EARL H & JOANN FILTER
35	13	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
36	18	MYRTLE ROBERTSON, HEIRS
37	18	EARL O'NEAL MADDOX
38	18	DENNIS RAY & EVELYN McCRAKEN
38A	18	HATTLEY H. & LELA J. BRIDGES
39	13 & 18	WILLIAM JAMES HORN
40	13	LOUISE HORN MARTIN
41	13 & 14	CHARLES A. HORN
42	17	C. CLAY & BERTIE CABANISS
43	17	JAMES E. & AUDREY L. WALKER DEATON
44	4	KATHY A. HIPPS

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

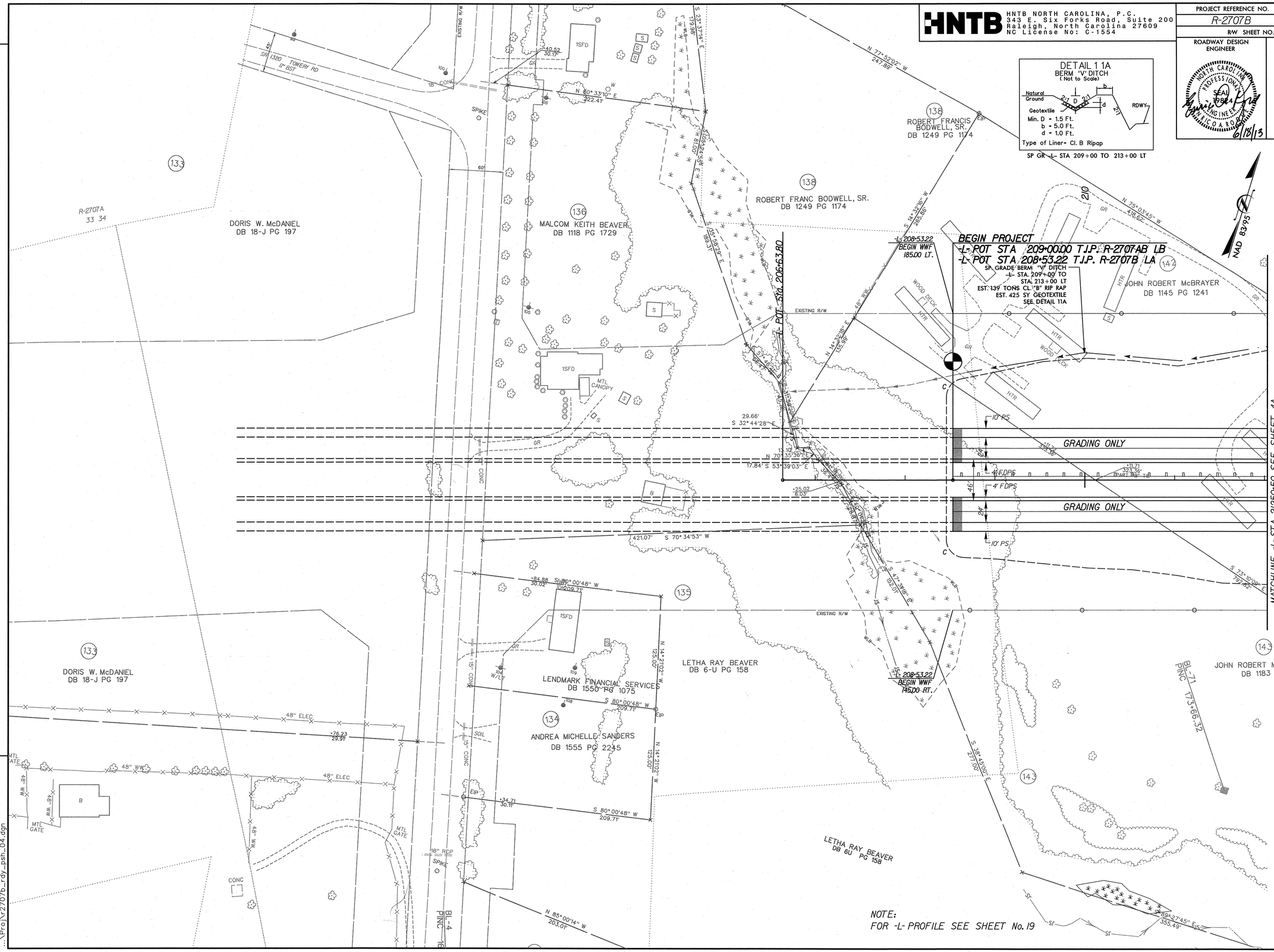
NORTH CAROLINA PROFESSIONAL SEAL 038424 ENGINEER RICO A RAMIREZ 6/18/13

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN W. SPEARS 6/26/13

DETAIL 11A
BERM 'V' DITCH
(Not to Scale)

Min. D = 1.5 Ft.
b = 5.0 Ft.
d = 1.0 Ft.
Type of Liner= Cl. B Ripap

SP GR -L- STA 209+00 TO 213+00 LT



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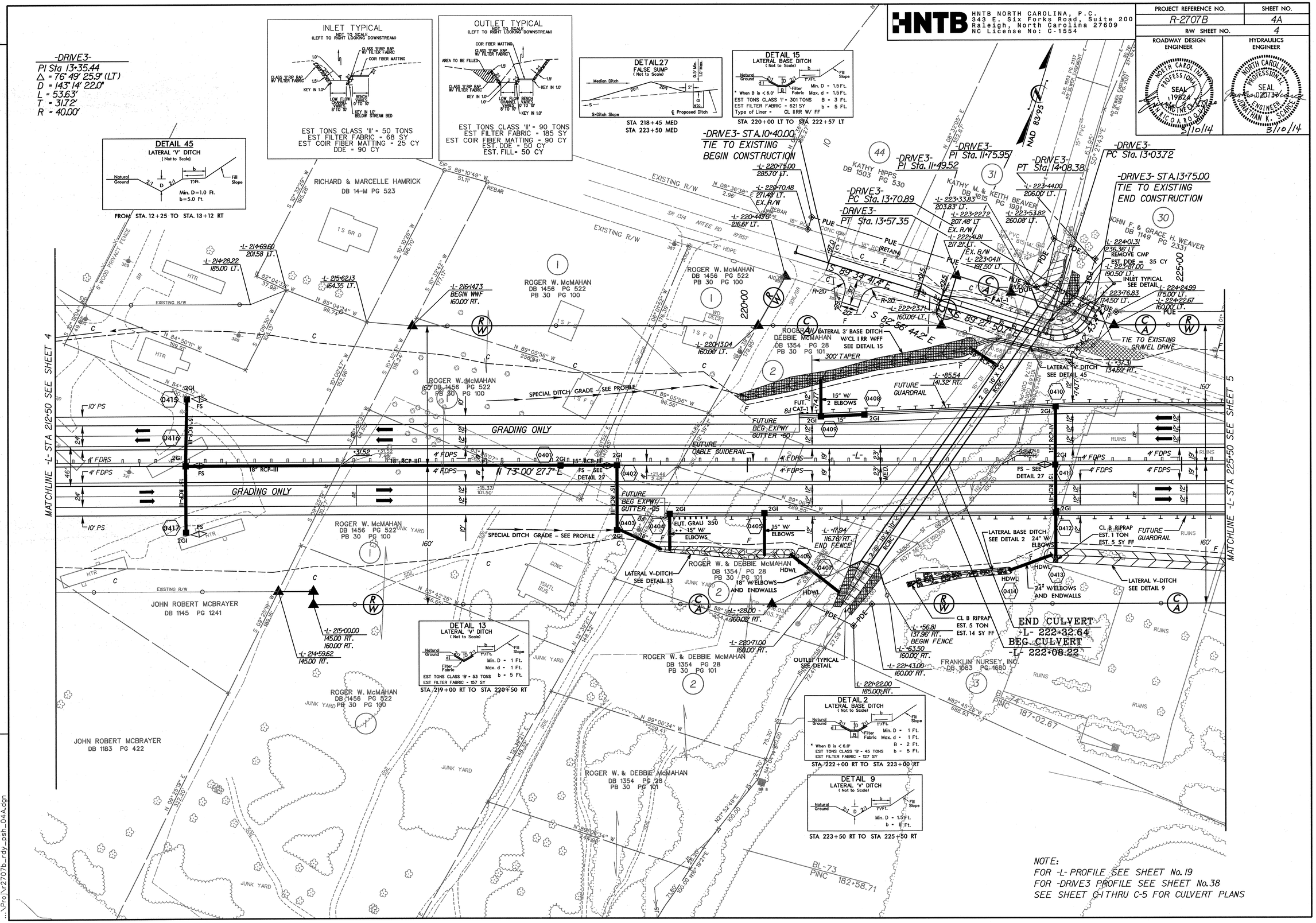
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	4A
R/W SHEET NO.	4

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER — R. A. ROGERS JR. — 3/10/14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 030734 ENGINEER — JONATHAN K. SCARCE — 3/10/14



NOTE:
FOR -L- PROFILE SEE SHEET No. 19
FOR -DRIVE3 PROFILE SEE SHEET No. 38
SEE SHEET C-1 THRU C-5 FOR CULVERT PLANS

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HNTB

HNTB NORTH CAROLINA, P.C.
343 EAST ROANOKE STREET, SUITE 200
FAYETTEVILLE, NORTH CAROLINA 27858
NC LICENSE NO: C-0910

PROJECT REFERENCE NO.	SHEET NO.
R-2701B	5
R/W SHEET NO.	5

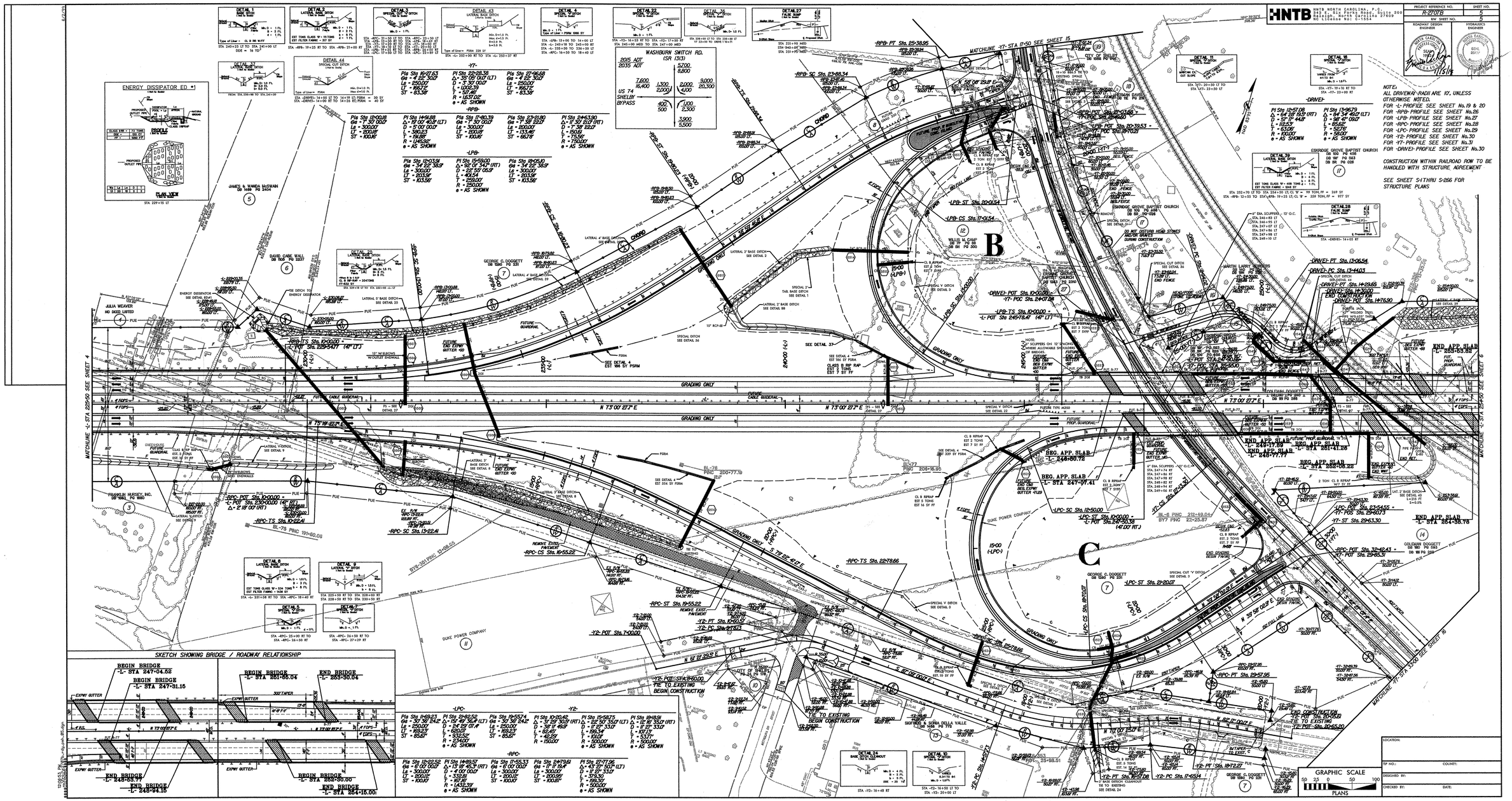
ROADWAY DESIGN ENGINEER: STEPHEN D. LEE, SEAL 19863, NORTH CAROLINA PROFESSIONAL ENGINEER, 11/15/18

HYDRAULICS ENGINEER: DAVID A. CRAWFORD, SEAL 20717, NORTH CAROLINA PROFESSIONAL ENGINEER, 11/15/18

NOTE:
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.
FOR -L- PROFILE SEE SHEET No.19 & 20
FOR -RPB- PROFILE SEE SHEET No.26
FOR -LPB- PROFILE SEE SHEET No.27
FOR -RPC- PROFILE SEE SHEET No.28
FOR -LPC- PROFILE SEE SHEET No.29
FOR -Y2- PROFILE SEE SHEET No.30
FOR -Y7- PROFILE SEE SHEET No.31
FOR -DRIVE7- PROFILE SEE SHEET No.30

CONSTRUCTION WITHIN RAILROAD ROW TO BE HANDLED WITH STRUCTURE AGREEMENT

SEE SHEET S-1 THRU S-266 FOR STRUCTURE PLANS



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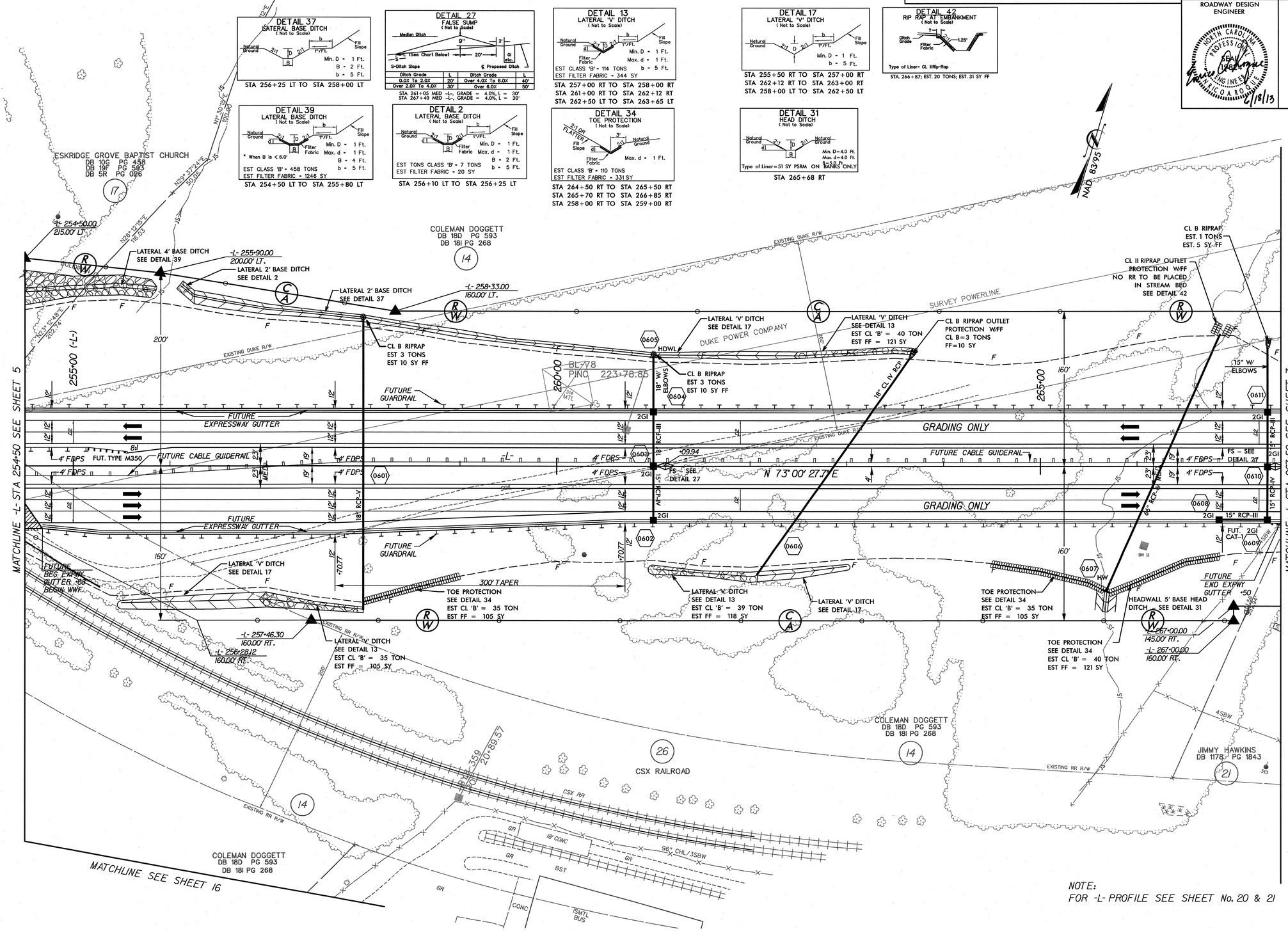
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 019242 ENGINEER — 6/18/13

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — 6/21/13

REVISIONS



NOTE:
FOR -L- PROFILE SEE SHEET No. 20 & 21

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HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER M. CHRISTOPHER GARVEY 6/18/13

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN W. BRYANT 6/18/13

REVISIONS

-L-
PI Sta 289+77.69
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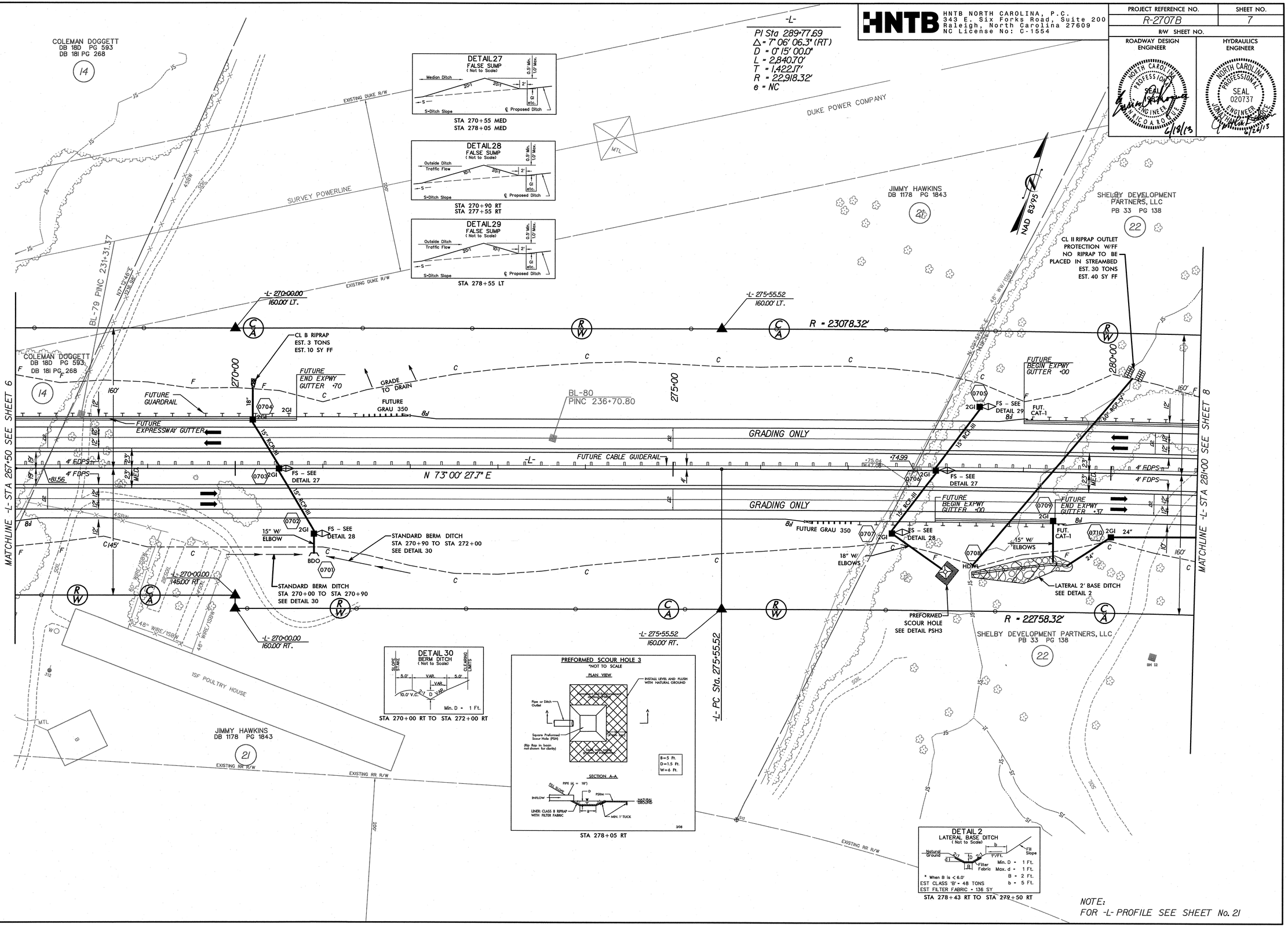
L = 2,840.70'
T = 1,422.17'
R = 22,918.32'
e = NC



NOTE:
FOR -L- PROFILE SEE SHEET No. 21

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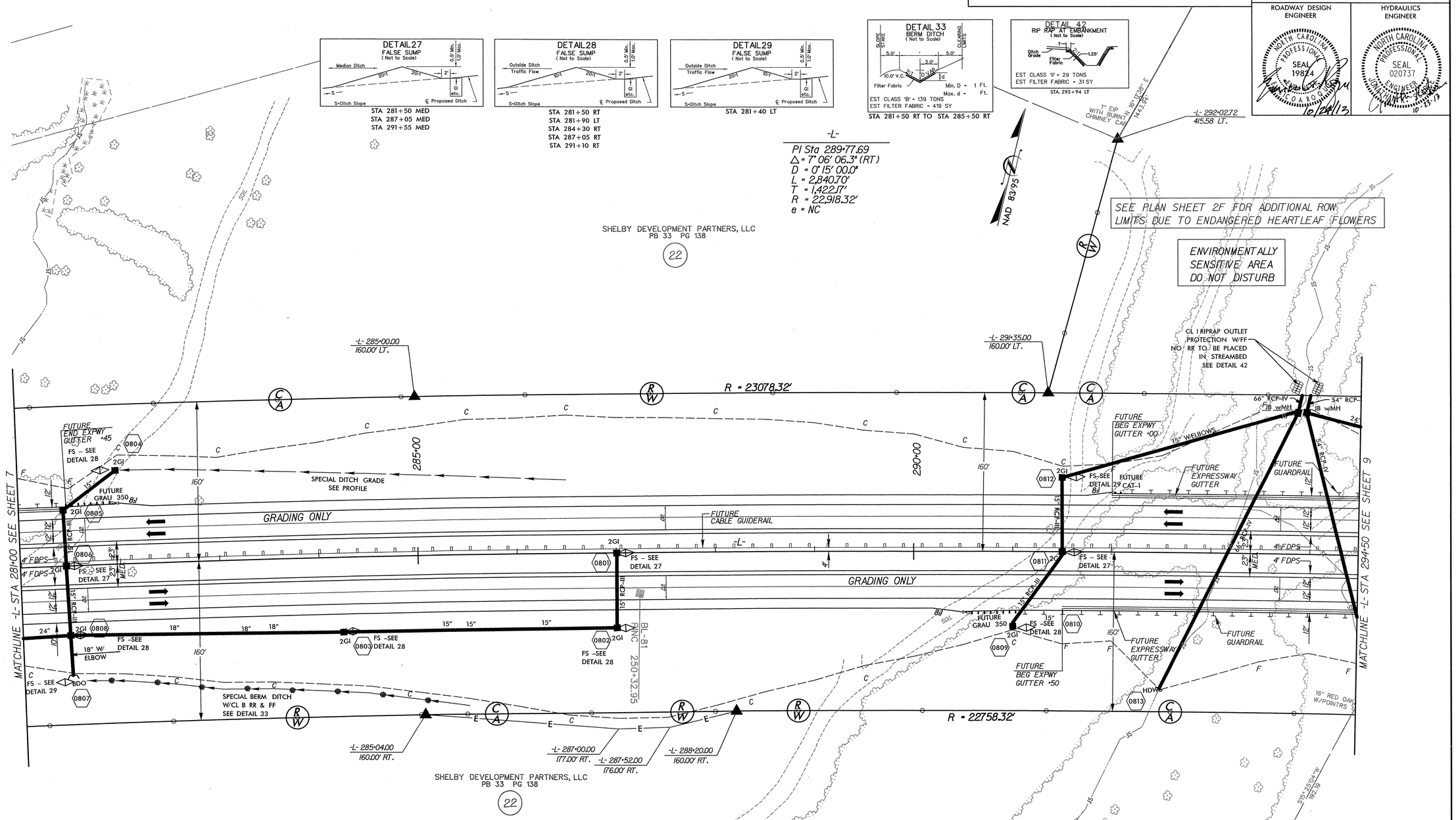
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19874 ENGINEER R. O. A. R. O. GUNN 10/24/13

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN C. HANKINS 10/23/13

REVISIONS



NOTE:
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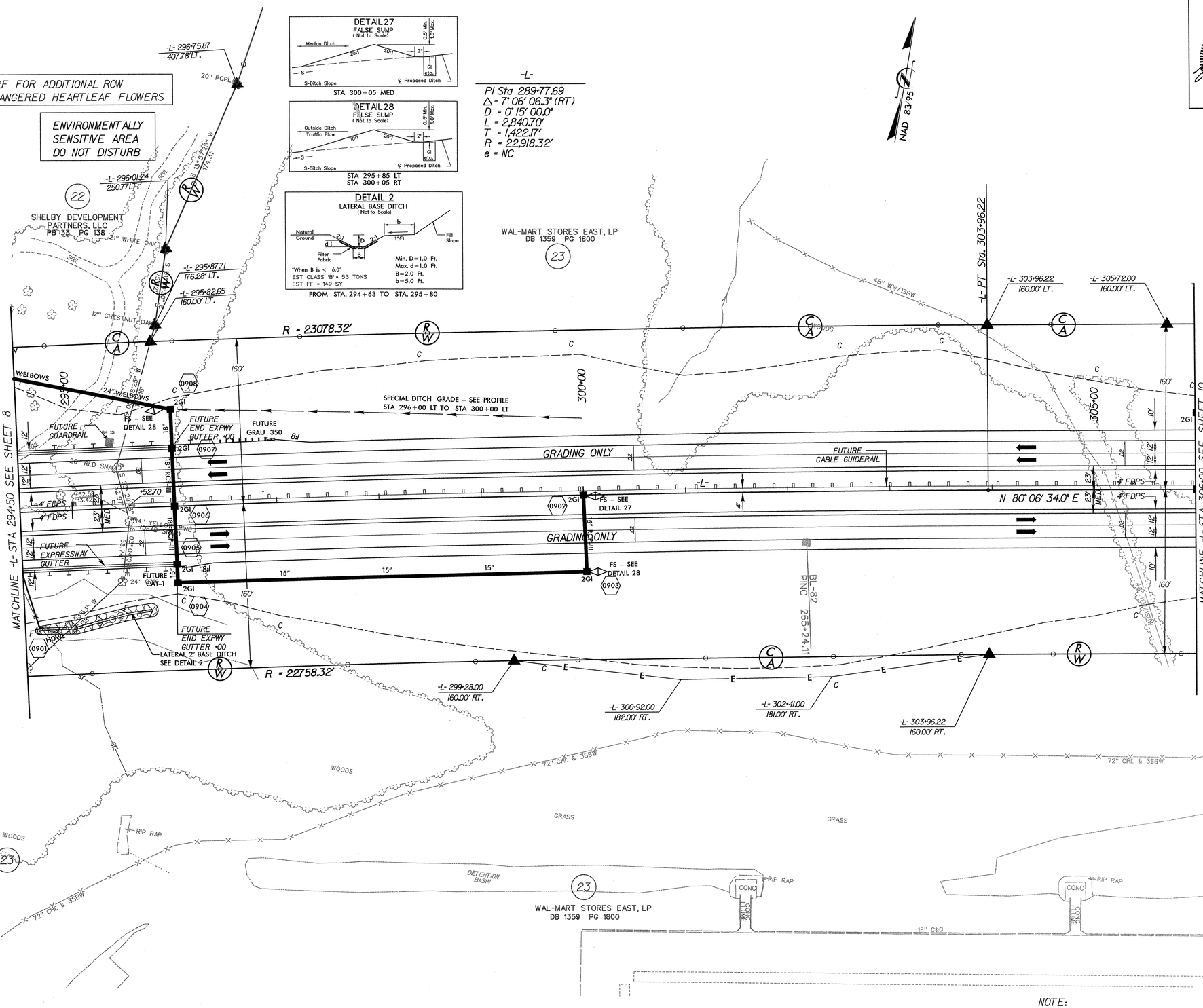
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER — 10/24/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — 10-23-13

REVISIONS



NOTE:
FOR -L- PROFILE SEE SHEET No. 21 & 22

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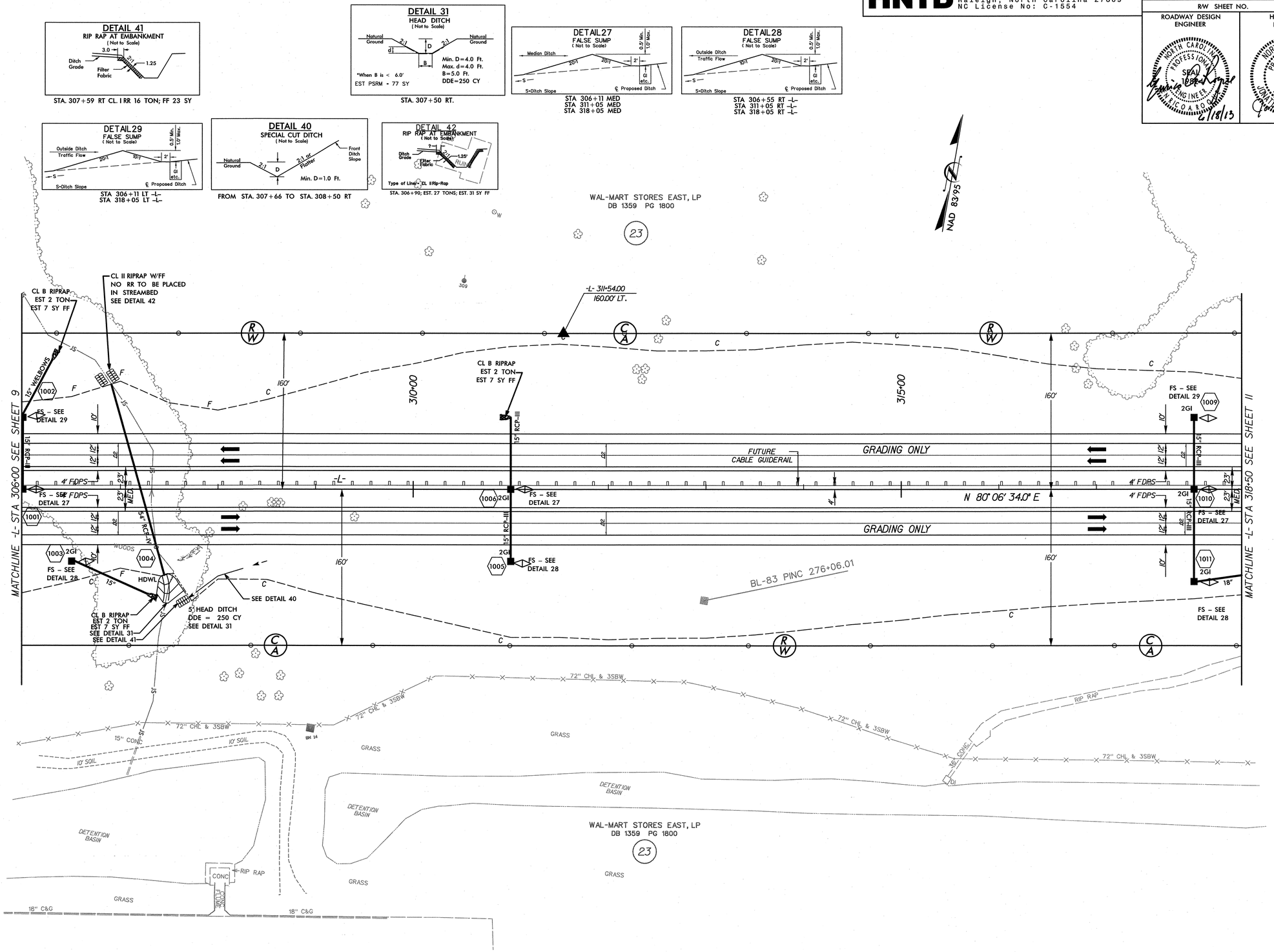
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18842 ENGINEER FABIO A. ROCHA 6/18/13

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN K. SCALF 6/18/13

REVISIONS



NOTE:
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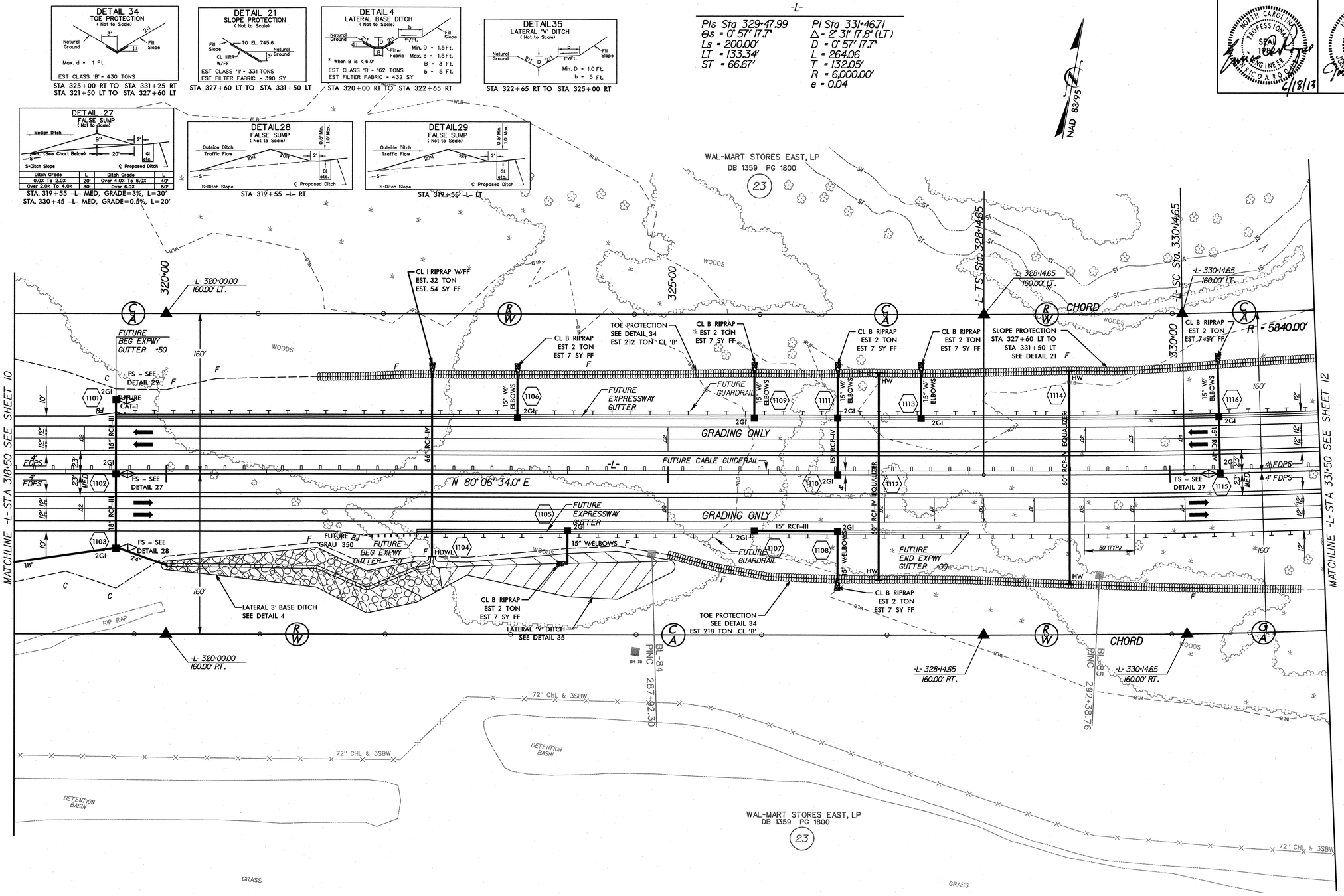
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER JAMES A. ROBERTS 6/18/13

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JOHN K. SCARBOROUGH 6/18/13

REVISIONS



NOTE:
FOR -L- PROFILE SEE SHEET No. 22 & 23

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	12
R/W SHEET NO.	

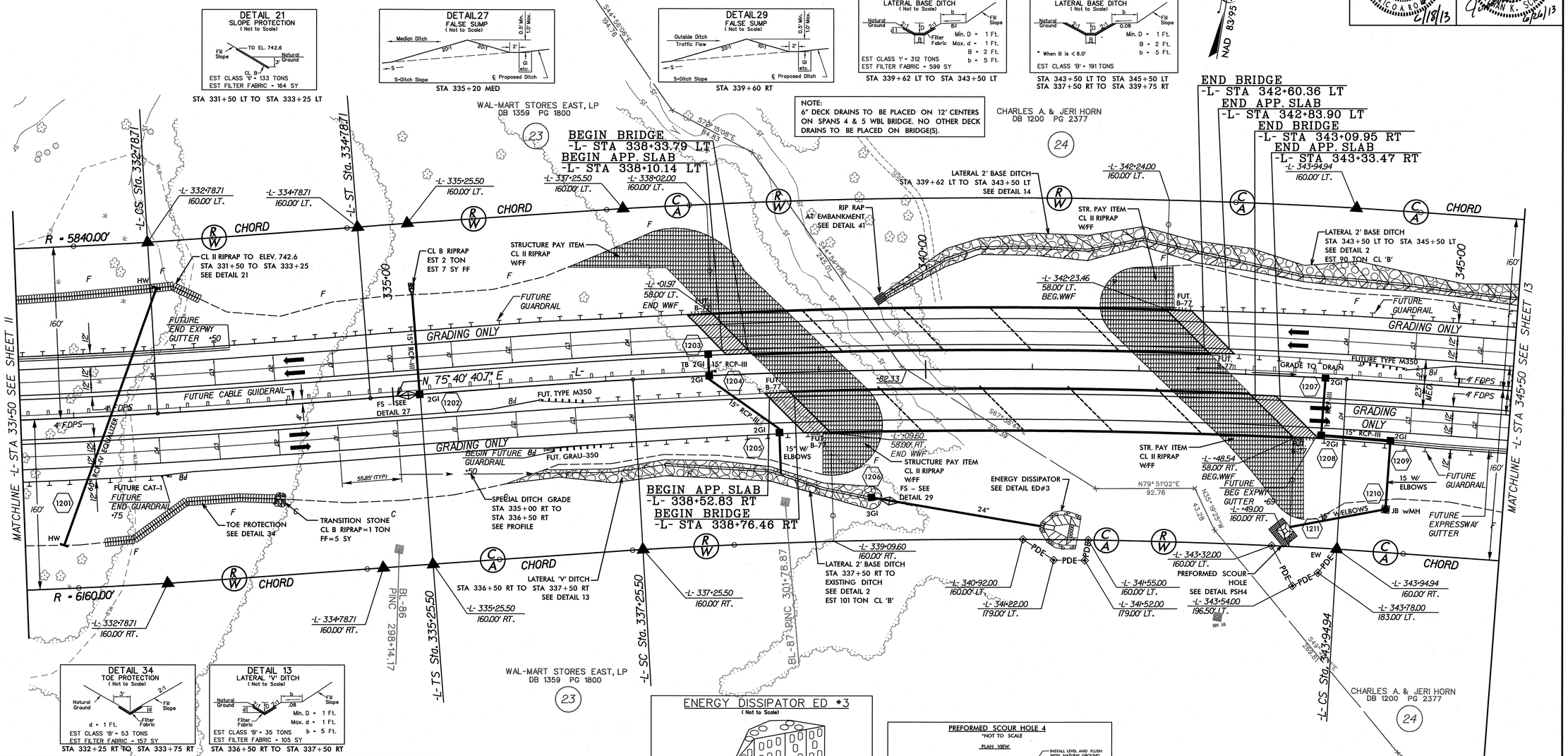
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

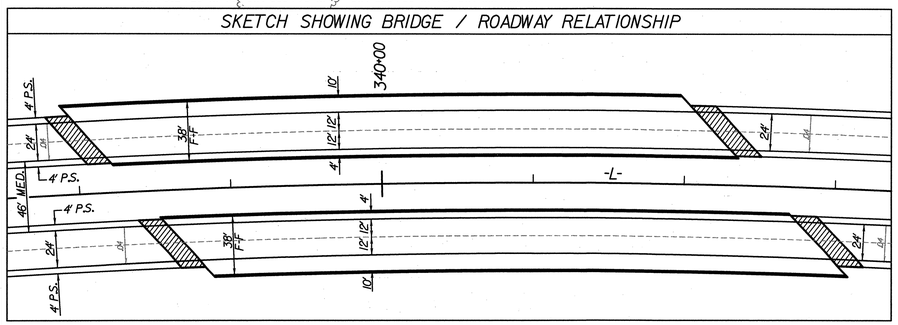
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 — 6/20/13

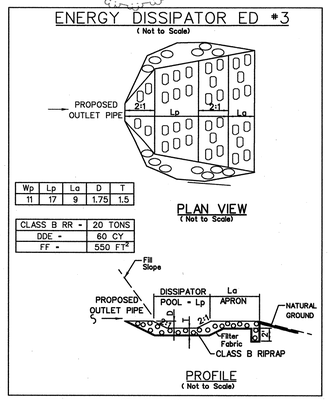
REVISIONS

-L-

PI Sta 331+46.71	PIs Sta 333+45.39	PIs Sta 336+58.84	PI Sta 340+60.60	PIs Sta 344+61.61
Δ = 2° 31' 17.8" (LT)	θs = 0° 57' 17.7"	θs = 1° 00' 00.0"	Δ = 6° 41' 39.7" (RT)	θs = 1° 00' 00.0"
D = 0° 57' 17.7"	Ls = 200.00'	Ls = 200.00'	D = 1° 00' 00.0"	Ls = 200.00'
L = 264.06	LT = 133.34'	LT = 133.34'	L = 669.44	LT = 133.34'
T = 132.05'	ST = 66.67'	ST = 66.67'	T = 335.10'	ST = 66.67'
R = 6,000.00'			R = 5,729.58'	
			e = 0.04	

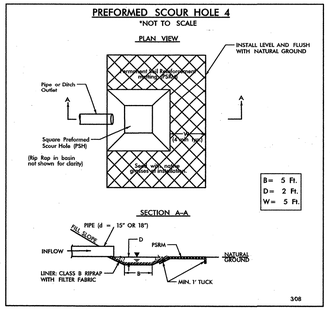


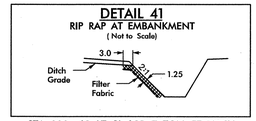




Wp	Lp	Lq	D	T
11	17	9	1.75	1.5

CLASS B RR -	20 TONS
DDE -	60 CY
FF -	550 FT²





NOTE:
FOR -L- PROFILE SEE SHEET No. 23
SEE SHEET S-1 THRU S-266 FOR STRUCTURE PLANS

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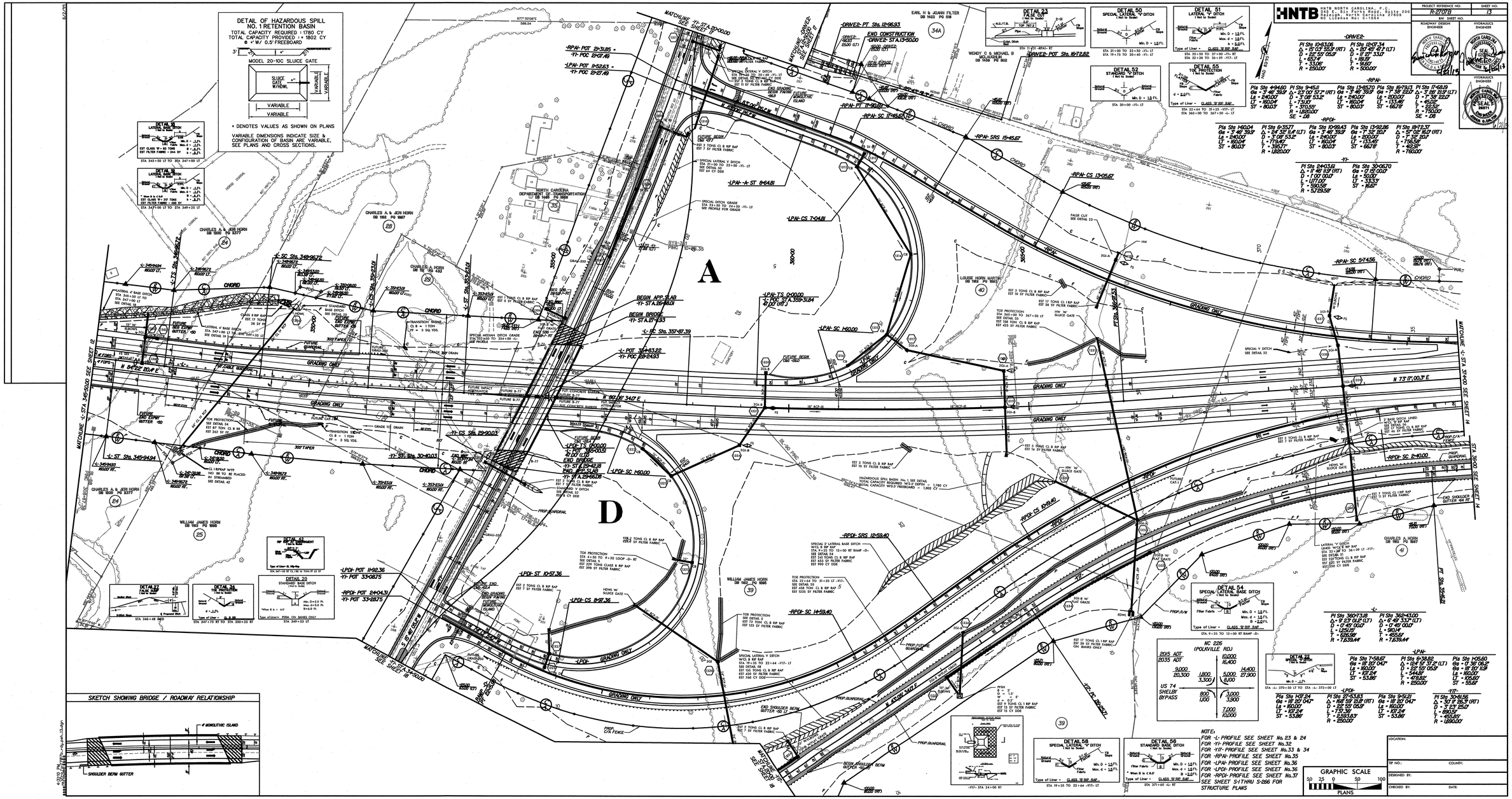
DETAIL OF HAZARDOUS SPILL NO. 1 RETENTION BASIN
TOTAL CAPACITY REQUIRED : 1780 CY
TOTAL CAPACITY PROVIDED : ± 1802 CY
@ +' W/ 0.5' FREEBOARD
MODEL 20-10C SLUICE GATE
SLUICE GATE W/HDWL
VARIABLE
* DENOTES VALUES AS SHOWN ON PLANS
VARIABLE DIMENSIONS INDICATE SIZE & CONFIGURATION OF BASIN ARE VARIABLE, SEE PLANS AND CROSS SECTIONS.
DETAIL 23 FALSE CUT
DETAIL 50 SPECIAL LATERAL "V" DITCH
DETAIL 51 LATERAL "V" DITCH
DETAIL 52 STANDARD "V" DITCH
DETAIL 55 TOE PROTECTION
DETAIL 18 LATERAL DITCH
DETAIL 19 LATERAL DITCH
HNTB
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NC License No: C-1584
PROJECT REFERENCE NO. R-2707B
SHEET NO. 13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
-DRW2-
PI Sta 10+83.06 Δ = 15°03'55.9" (RT) D = 22°59'05.5" L = 653.4' T = 331.06' R = 250.00'
PI Sta 12+07.34 Δ = 90°00'47.1" (LT) D = 11°21'33.0" L = 191.15' T = 121.60' R = 500.00'
-RPA1-
PI Sta 4+94.60 Δ = 3°46'39.9" D = 3°06'53.2" L = 240.00' T = 120.07' R = 1820.00'
PI Sta 9+45.11 Δ = 23°00'57.7" (RT) D = 3°06'53.2" L = 730.17' T = 370.05' R = 1820.00'
PI Sta 13+65.70 Δ = 3°46'39.9" D = 3°06'53.2" L = 240.00' T = 120.07' R = 1820.00'
PI Sta 16+79.13 Δ = 7°39'22.0" D = 3°06'53.2" L = 600.00' T = 299.79' R = 1820.00'
PI Sta 17+68.13 Δ = 7°39'22.0" D = 1°39'22.0" L = 450.00' T = 225.56' R = 750.00'
SE = .08
-RPD1-
PI Sta 1+60.04 Δ = 3°46'39.9" D = 3°06'53.2" L = 240.00' T = 120.07' R = 1820.00'
PI Sta 6+35.77 Δ = 24°32'11.4" (LT) D = 3°06'53.2" L = 719.40' T = 365.77' R = 1820.00'
PI Sta 10+96.43 Δ = 3°46'39.9" D = 3°06'53.2" L = 240.00' T = 120.07' R = 1820.00'
PI Sta 13+92.86 Δ = 7°32'20.1" D = 3°06'53.2" L = 600.00' T = 299.79' R = 1820.00'
PI Sta 18+12.37 Δ = 57°05'18.2" (RT) D = 7°32'20.1" L = 756.56' T = 412.07' R = 750.00'
SE = .08
-Y1-
PI Sta 2+03.58 Δ = 1°46'11.9" (RT) D = 1°00'00.0" L = 177.07' T = 88.54' R = 5729.58'
PI Sta 30+05.70 Δ = 12°15'00.0" L = 50.00' T = 25.13' R = 233.65'
-Y2-
PI Sta 7+58.67 Δ = 18°20'04.7" D = 22°59'05.5" L = 544.81' T = 275.02' R = 250.00'
PI Sta 9+07.34 Δ = 18°20'04.7" D = 22°59'05.5" L = 544.81' T = 275.02' R = 250.00'
PI Sta 9+51.87 Δ = 18°20'04.7" D = 22°59'05.5" L = 544.81' T = 275.02' R = 250.00'
-LPA1-
PI Sta 6+38.82 Δ = 19°15'51.9" (LT) D = 22°59'05.5" L = 544.81' T = 275.02' R = 250.00'
PI Sta 10+50.60 Δ = 0°38'08.2" D = 18°20'05.5" L = 160.00' T = 80.00' R = 312.50'
PI Sta 11+10.60 Δ = 18°20'05.5" L = 160.00' T = 80.00' R = 500.00'
-LPD1-
PI Sta 1+07.34 Δ = 18°20'04.7" D = 22°59'05.5" L = 160.00' T = 80.00' R = 250.00'
PI Sta 3+67.83 Δ = 166°59'01.8" (RT) D = 22°59'05.5" L = 727.54' T = 2,593.83' R = 250.00'
PI Sta 9+51.87 Δ = 18°20'04.7" D = 22°59'05.5" L = 160.00' T = 80.00' R = 250.00'
-Y1T-
PI Sta 30+81.56 Δ = 30°17'35.2" (RT) D = 3°21'25.0" L = 269.15' T = 138.15' R = 1,050.00'
PI Sta 36+43.00 Δ = 6°49'33.7" (LT) D = 0°45'00.0" L = 380.14' T = 190.16' R = 1,638.44'
-LPA1-
PI Sta 7+58.67 Δ = 18°20'04.7" D = 22°59'05.5" L = 544.81' T = 275.02' R = 250.00'
PI Sta 9+07.34 Δ = 18°20'04.7" D = 22°59'05.5" L = 160.00' T = 80.00' R = 250.00'
PI Sta 9+51.87 Δ = 18°20'04.7" D = 22°59'05.5" L = 160.00' T = 80.00' R = 250.00'
-Y1T-
PI Sta 30+81.56 Δ = 30°17'35.2" (RT) D = 3°21'25.0" L = 269.15' T = 135.15' R = 1,050.00'
NOTE:
FOR -L- PROFILE SEE SHEET No. 23 & 24
FOR -Y1- PROFILE SEE SHEET No.32
FOR -Y1T- PROFILE SEE SHEET No.33 & 34
FOR -RPA1- PROFILE SEE SHEET No.35
FOR -LPA1- PROFILE SEE SHEET No.36
FOR -LPD1- PROFILE SEE SHEET No.36
FOR -RPD1- PROFILE SEE SHEET No.37
SEE SHEET S-1 THRU S-266 FOR STRUCTURE PLANS
SKETCH SHOWING BRIDGE / ROADWAY RELATIONSHIP
4' MONOLITHIC ISLAND
SHOULDER BERM GUTTER
GRAPHIC SCALE
PLANS
LOCATION:
TIP NO.:
COUNTY:
DESIGNED BY:
CHECKED BY:
DATE:

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19521 ENGINEER MICHAEL A. ROBERTS 6/21/13

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 6/21/13

-L-
PI Sta 387+19.11
Δ = 8° 50' 30.4" (RT)
D = 0° 45' 00.0"
L = 1,178.90'
T = 590.62'
R = 7,639.44'

DETAIL 56
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, 2:1, Natural Ground; Filter Fabric; B

Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2.0 Ft.
* When B is < 6.0'
Type of Liner = CLASS 'B' RIP RAP

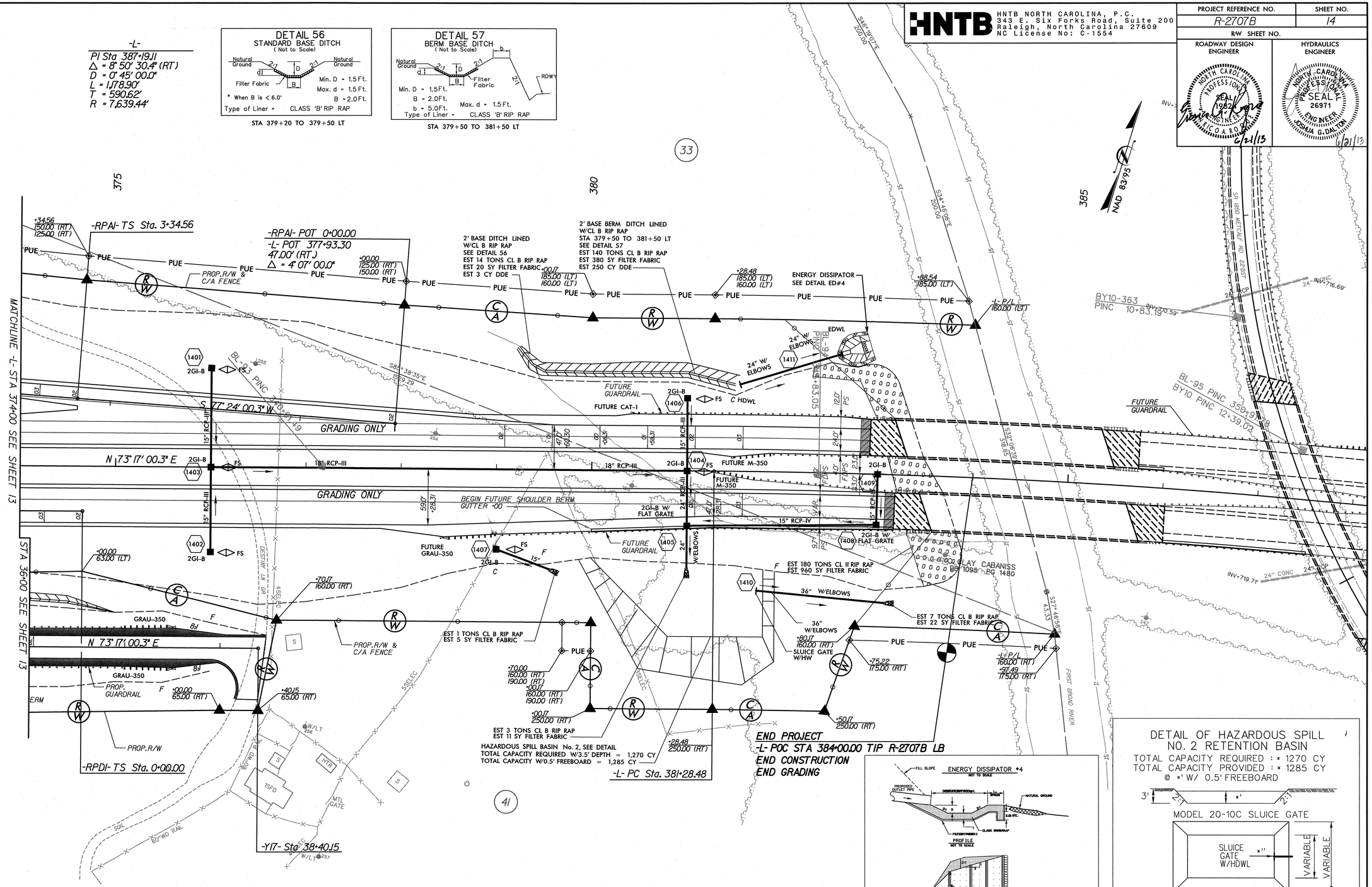
STA 379+20 TO 379+50 LT

DETAIL 57
BERM BASE DITCH
(Not to Scale)

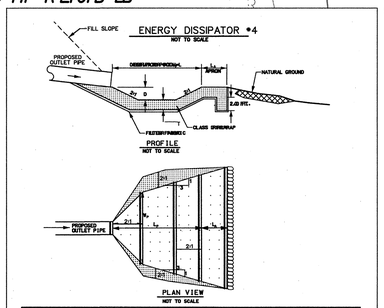
Natural Ground, 2:1, d, D, 2:1, b, 2:1, RDWY; Filter Fabric; B

Min. D = 1.5 Ft.
B = 2.0 Ft.
b = 5.0 Ft.
Max. d = 1.5 Ft.
Type of Liner = CLASS 'B' RIP RAP

STA 379+50 TO 381+50 LT

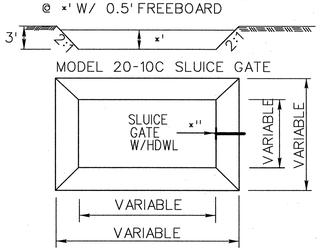


NOTE:
FOR -L- PROFILE SEE SHEET No. 24 & 25
FOR -RPAI- PROFILE SEE SHEET No.35
FOR -Y17- PROFILE SEE SHEET No.33 & 34



STATION	L_p FT.	W_p FT.	L_A FT.	T FT.	D FT.	CLASS I RIP RAP TONS	DDE (CU YD)	FILTER FABRIC (SQ YD)
382+50 -L-	26	8	2	2	3	84	68	42

DETAIL OF HAZARDOUS SPILL
NO. 2 RETENTION BASIN
TOTAL CAPACITY REQUIRED : * 1270 CY
TOTAL CAPACITY PROVIDED : * 1285 CY
@ *' W/ 0.5' FREEBOARD



* DENOTES VALUES AS SHOWN ON PLANS

VARIABLE DIMENSIONS INDICATE SIZE & CONFIGURATION OF BASIN ARE VARIABLE, SEE PLANS AND CROSS SECTIONS.

REVISIONS

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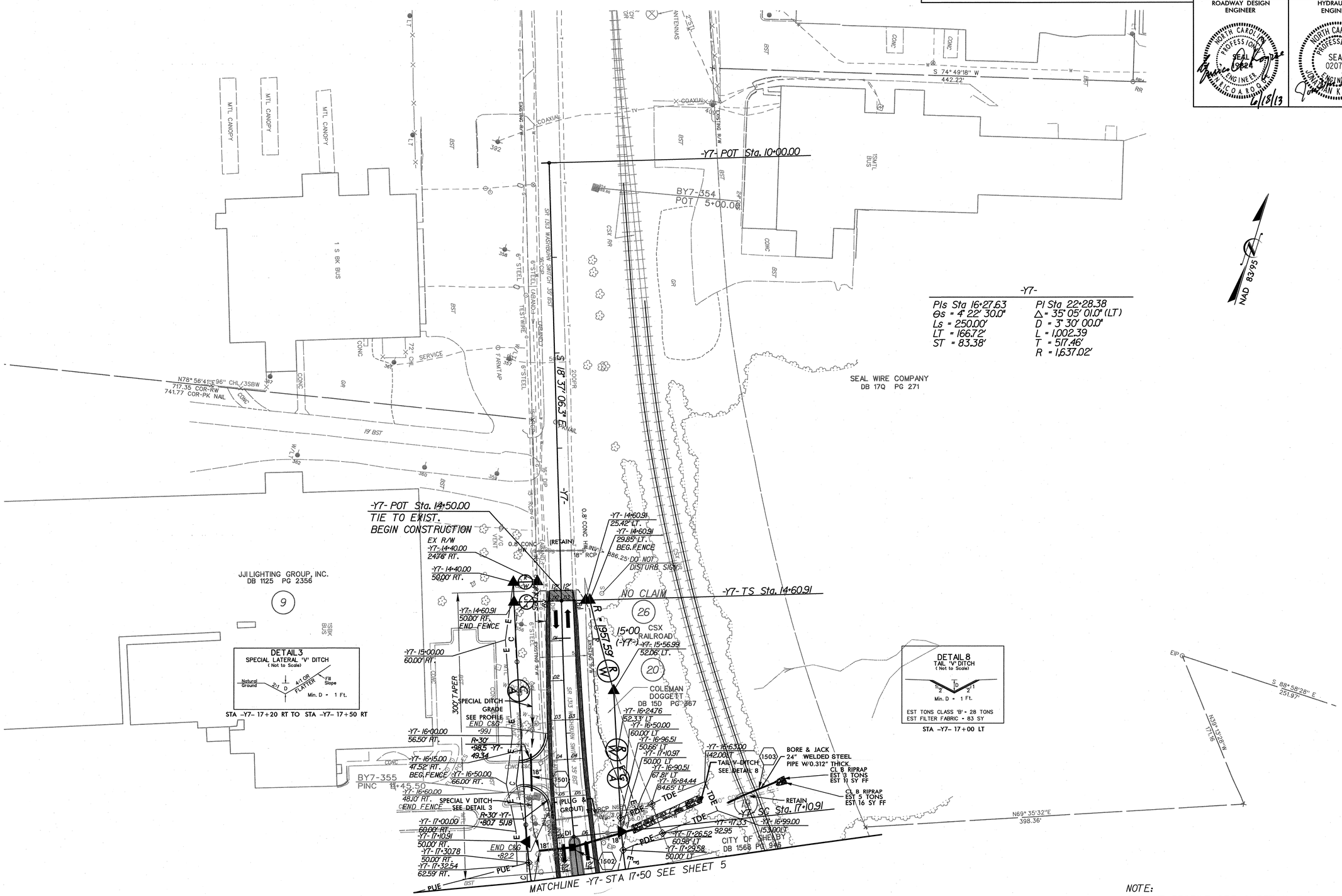
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	15
R/W SHEET NO.	14

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — 6/24/13

REVISIONS



-Y7-

PIs Sta 16+27.63	PI Sta 22+28.38
Θs = 4° 22' 30.0"	Δ = 35° 05' 01.0" (LT)
Ls = 250.00'	D = 3° 30' 00.0"
LT = 166.72'	L = 1,002.39
ST = 83.38'	T = 517.46'
	R = 1,637.02'

DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground — 2:1 — D — 4:1 OR FLATTER — Fill Slope
Min. D = 1 Ft.
STA –Y7– 17+20 RT TO STA –Y7– 17+50 RT

DETAIL 8
TAIL 'V' DITCH
(Not to Scale)
2:1 — D — 2:1
Min. D = 1 Ft.
EST TONS CLASS 'B' = 28 TONS
EST FILTER FABRIC = 83 SY
STA –Y7– 17+00 LT

NOTE:
FOR -Y7- PROFILE SEE SHEET No. 31

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	16
R/W SHEET NO.	15

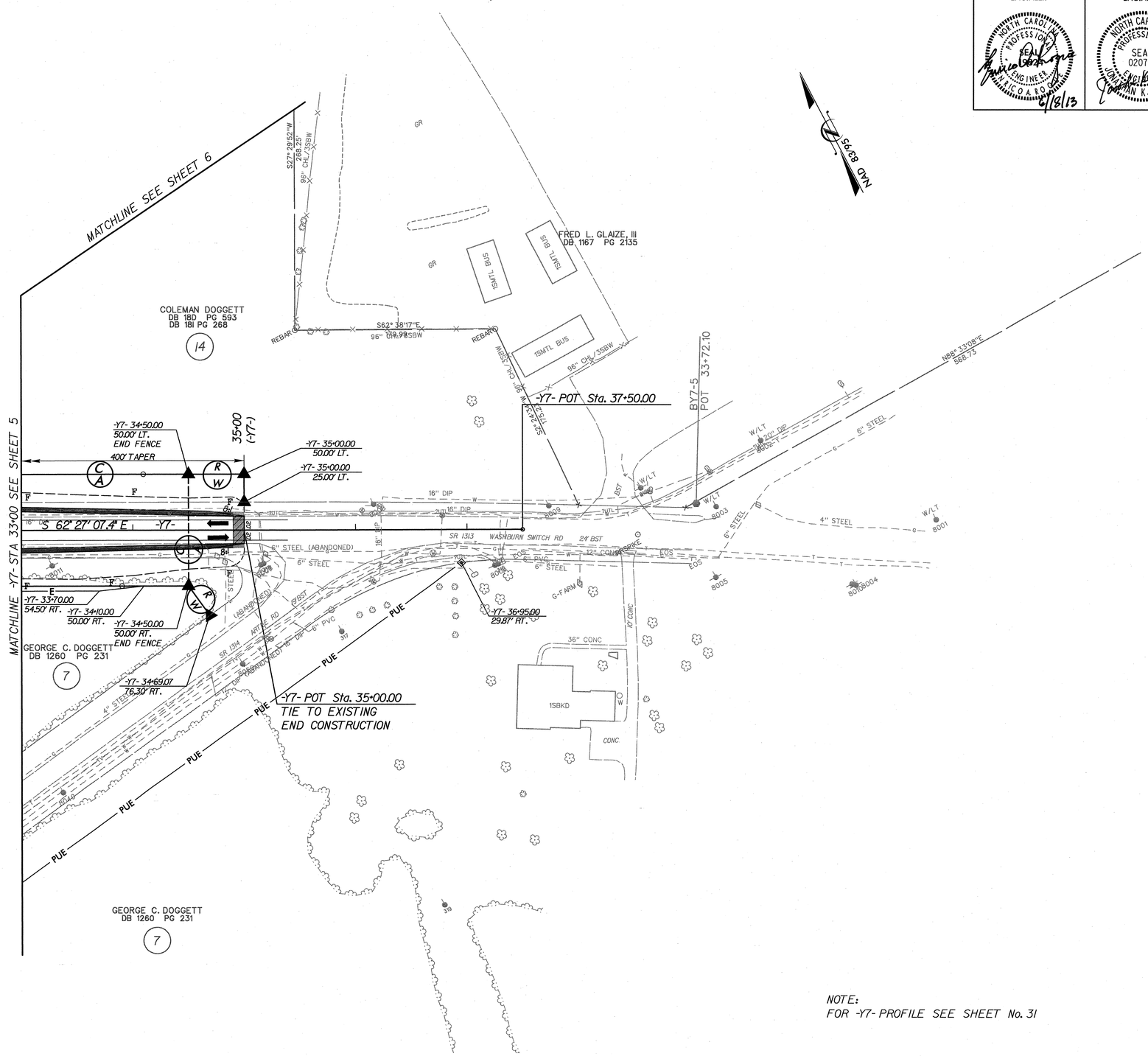
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN K. SCARBOROUGH
6/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN K. SCARBOROUGH
6/18/13

REVISIONS



NOTE:
FOR -Y7- PROFILE SEE SHEET No. 31

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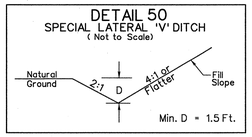
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19682 ENGINEER RICO A. RODRIGUEZ 6/21/13

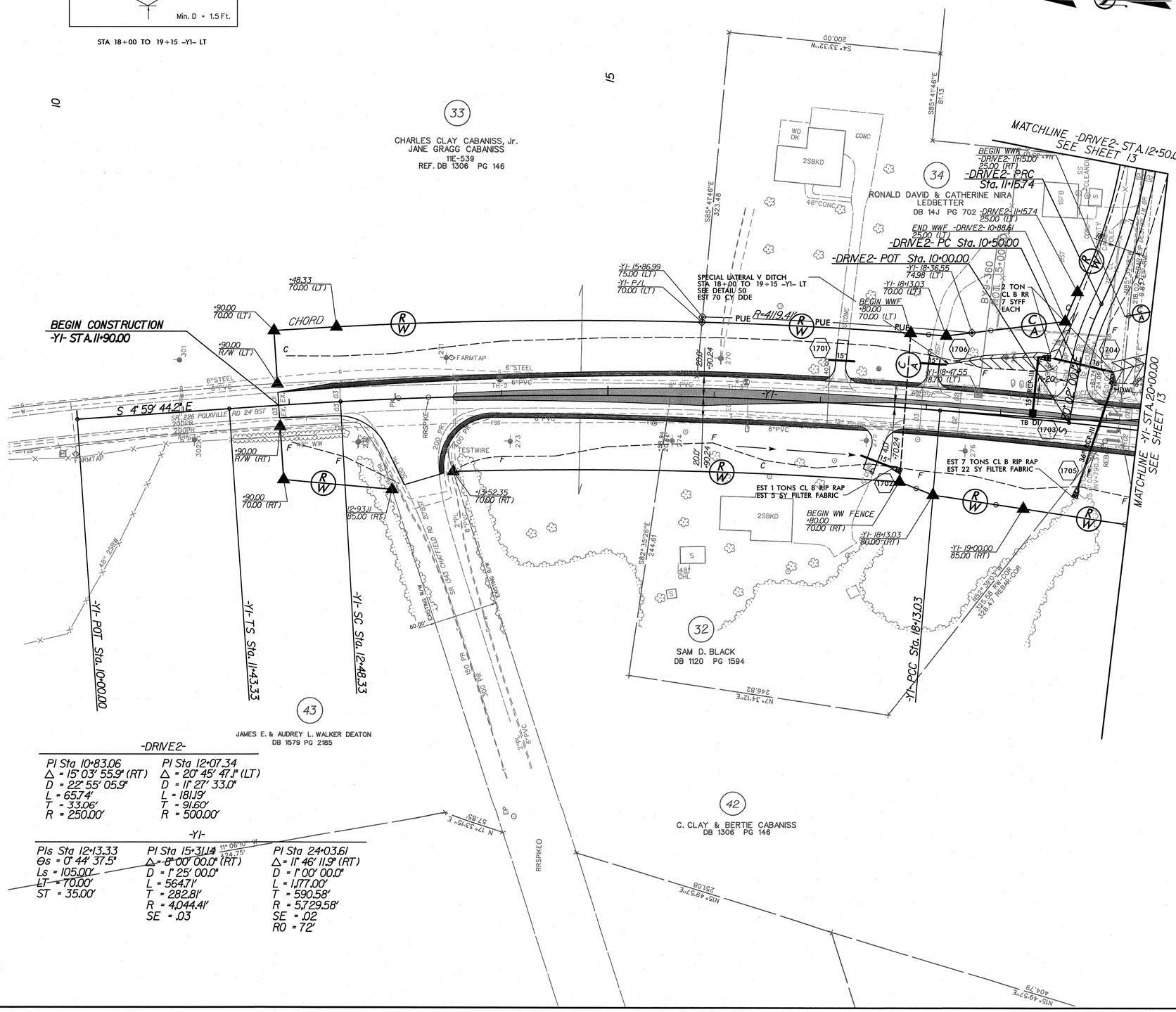
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 6/21/13

REVISIONS

DETAIL 50
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



STA 18+00 TO 19+15 -Y1- LT



-DRIVE2-

PI Sta 10+83.06	PI Sta 12+07.34
Δ = 15° 03' 55.9" (RT)	Δ = 20° 45' 47.1" (LT)
D = 22° 55' 05.9"	D = 11° 27' 33.0"
L = 65.74'	L = 181.19'
T = 33.06'	T = 91.60'
R = 250.00'	R = 500.00'

-Y1-

PIs Sta 12+13.33	PI Sta 15+31.14	PI Sta 24+03.61
Θs = 0° 44' 37.5"	Δ = 8° 00' 00.0" (RT)	Δ = 11° 46' 11.9" (RT)
Ls = 105.00'	D = 1° 25' 00.0"	D = 1° 00' 00.0"
LT = 70.00'	L = 564.71'	L = 1,177.00'
ST = 35.00'	T = 282.81'	T = 590.58'
	R = 4,044.41'	R = 5,729.58'
	SE = .03	SE = .02
		RO = 72'

NOTE:
FOR -Y1- PROFILE SEE SHEET No. 32 & 33
FOR -DRIVE2- PROFILE SEE SHEET No.38

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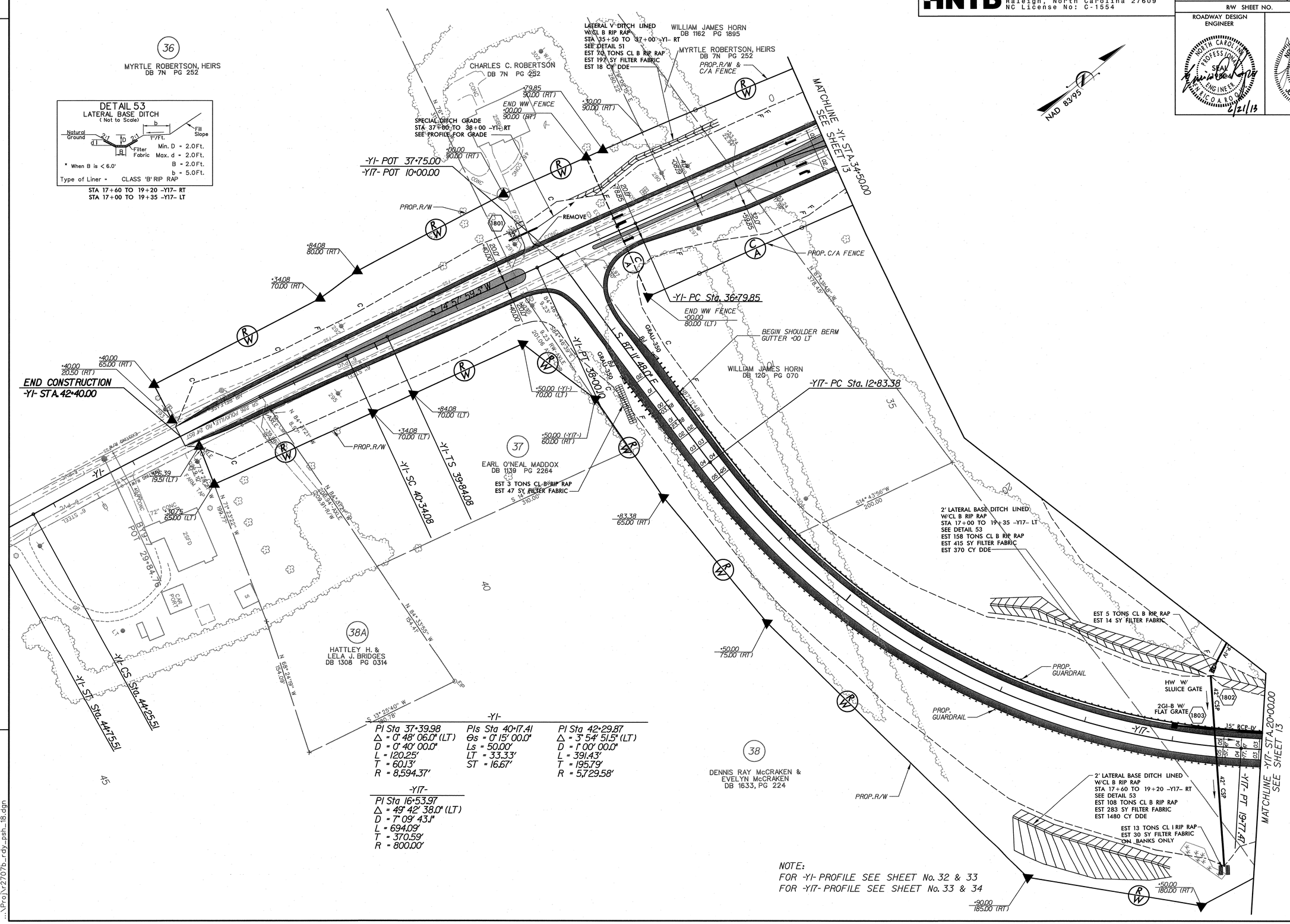
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER RICHARD O. ROBERTS 6/21/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON 6/21/13

REVISIONS



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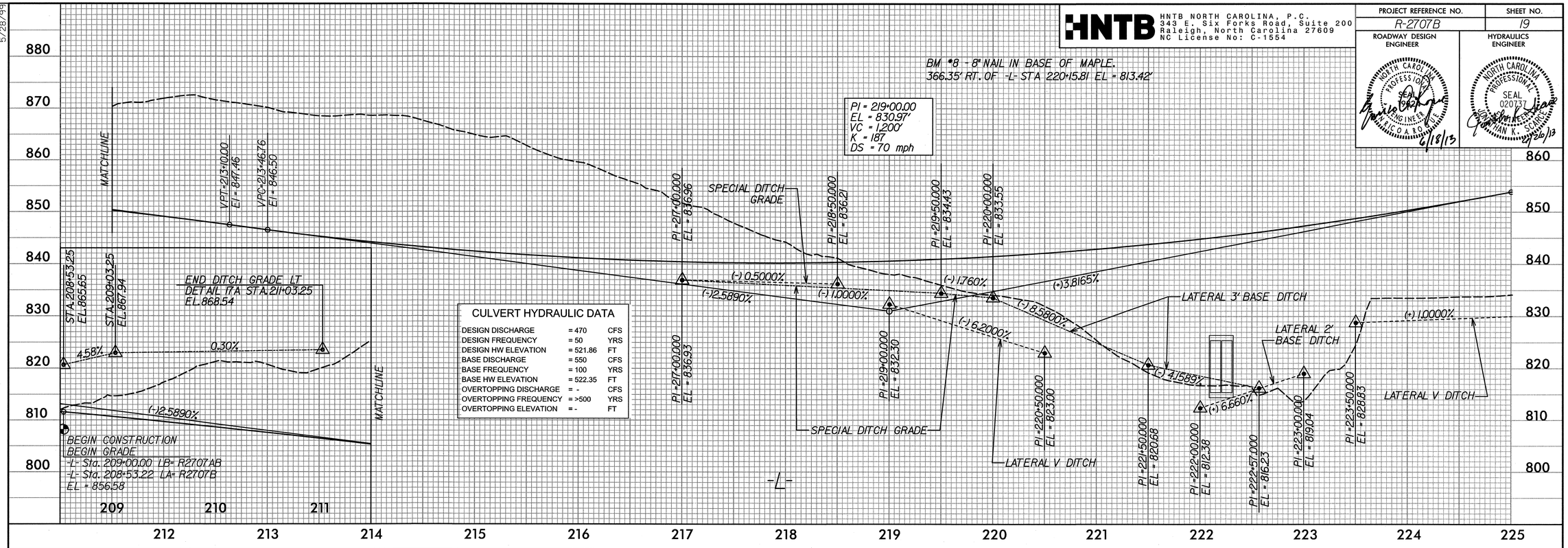
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	19

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

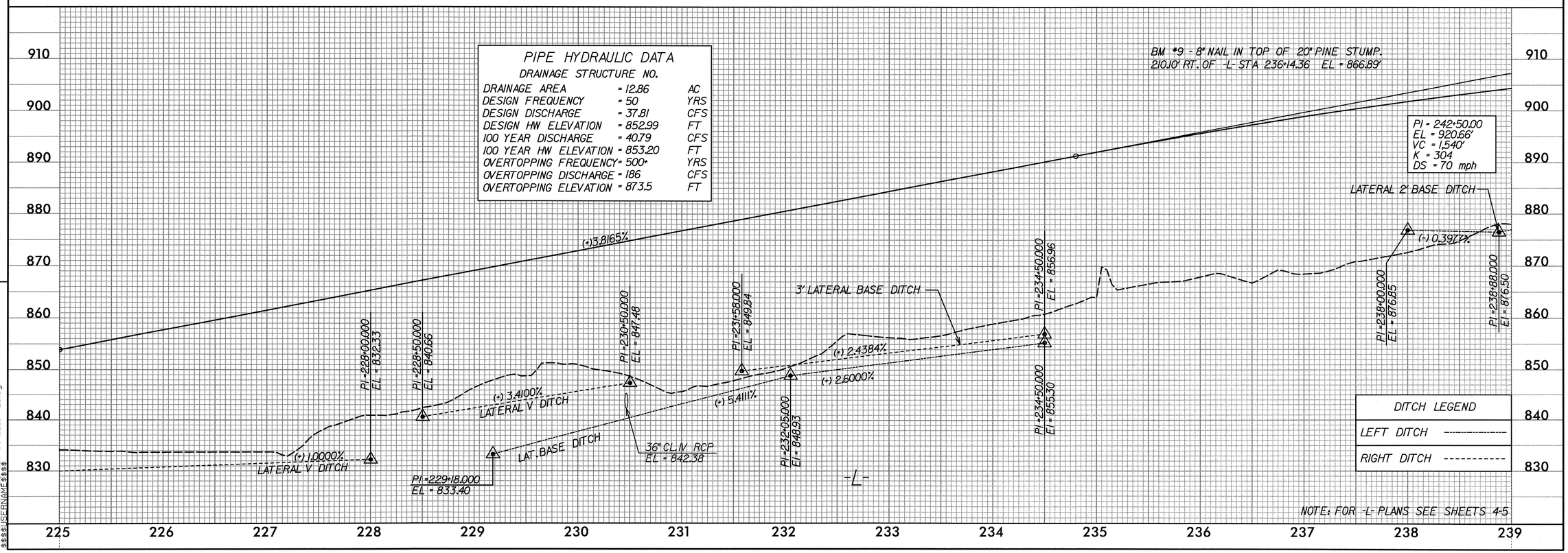
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — 6/26/13

5/28/99



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 470	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 521.86	FT
BASE DISCHARGE	= 550	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 522.35	FT
OVERTOPPING DISCHARGE	= -	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= -	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 12.86	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 37.81	CFS
DESIGN HW ELEVATION	= 852.99	FT
100 YEAR DISCHARGE	= 40.79	CFS
100 YEAR HW ELEVATION	= 853.20	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 186	CFS
OVERTOPPING ELEVATION	= 873.5	FT

DITCH LEGEND
LEFT DITCH ----------
RIGHT DITCH ----------

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	20

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER — 2/26/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — 2/26/13

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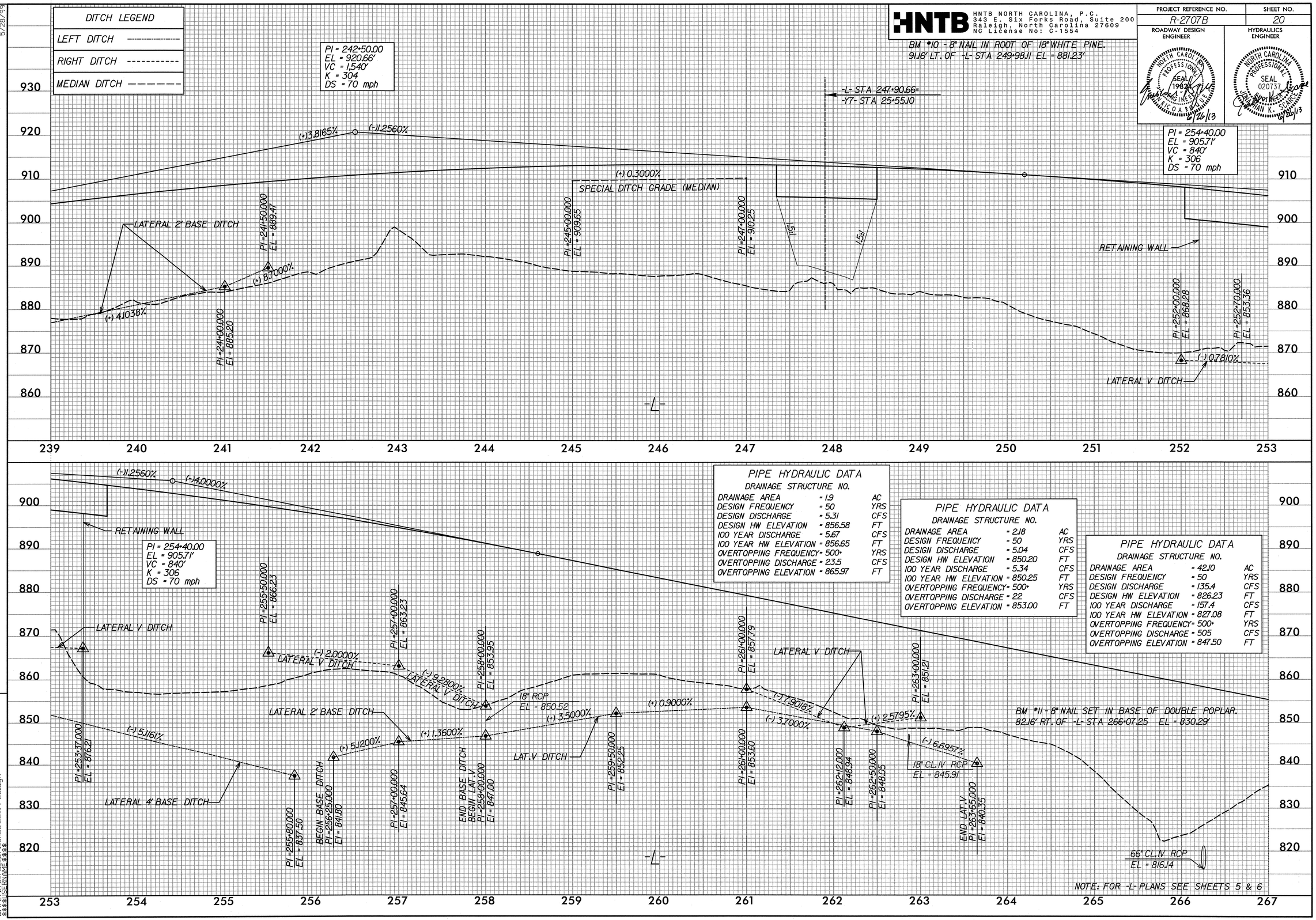
NC License No: C-1554

BM #10 - 8" NAIL IN ROOT OF 18" WHITE PINE.
91.16' LT. OF -L- STA 249+98.11 EL - 881.23'



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5.31	CFS
DESIGN HW ELEVATION	= 856.58	FT
100 YEAR DISCHARGE	= 5.67	CFS
100 YEAR HW ELEVATION	= 856.65	FT
OVERTOPPING FREQUENCY	= 500*	YRS
OVERTOPPING DISCHARGE	= 23.5	CFS
OVERTOPPING ELEVATION	= 865.97	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.18	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5.04	CFS
DESIGN HW ELEVATION	= 850.20	FT
100 YEAR DISCHARGE	= 5.34	CFS
100 YEAR HW ELEVATION	= 850.25	FT
OVERTOPPING FREQUENCY	= 500*	YRS
OVERTOPPING DISCHARGE	= 22	CFS
OVERTOPPING ELEVATION	= 853.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 42.10	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 135.4	CFS
DESIGN HW ELEVATION	= 826.23	FT
100 YEAR DISCHARGE	= 157.4	CFS
100 YEAR HW ELEVATION	= 827.08	FT
OVERTOPPING FREQUENCY	= 500*	YRS
OVERTOPPING DISCHARGE	= 505	CFS
OVERTOPPING ELEVATION	= 847.50	FT

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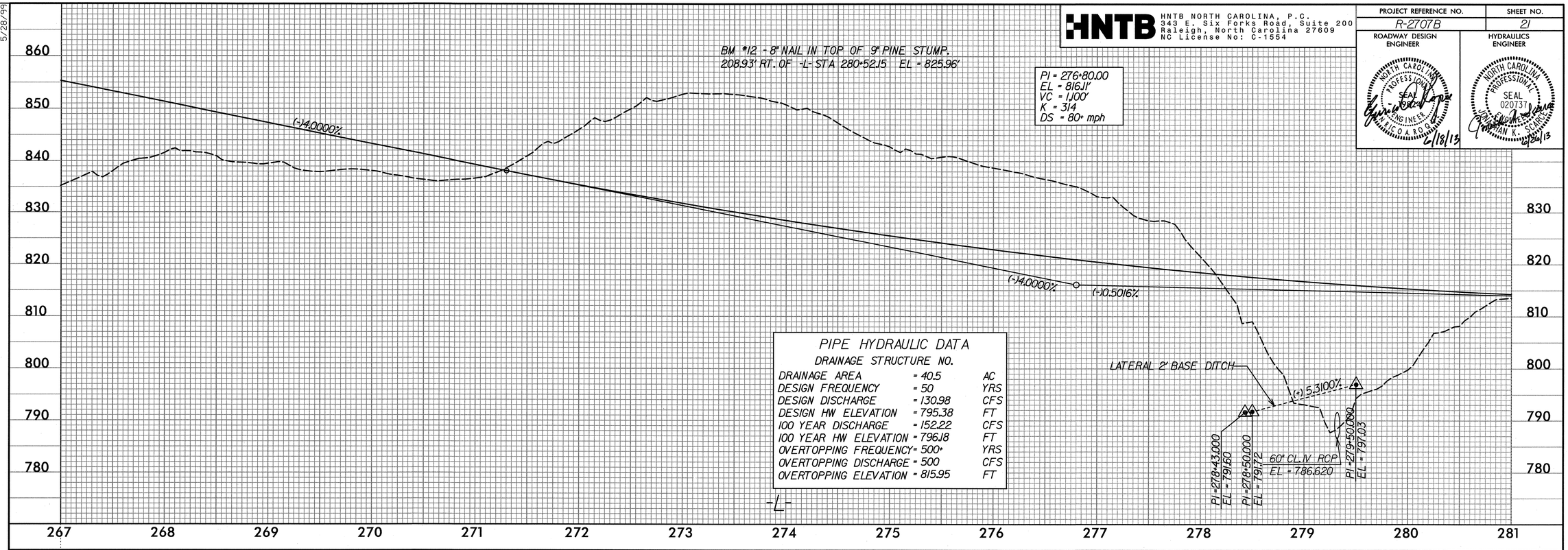
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	21

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 019 — 6/18/13

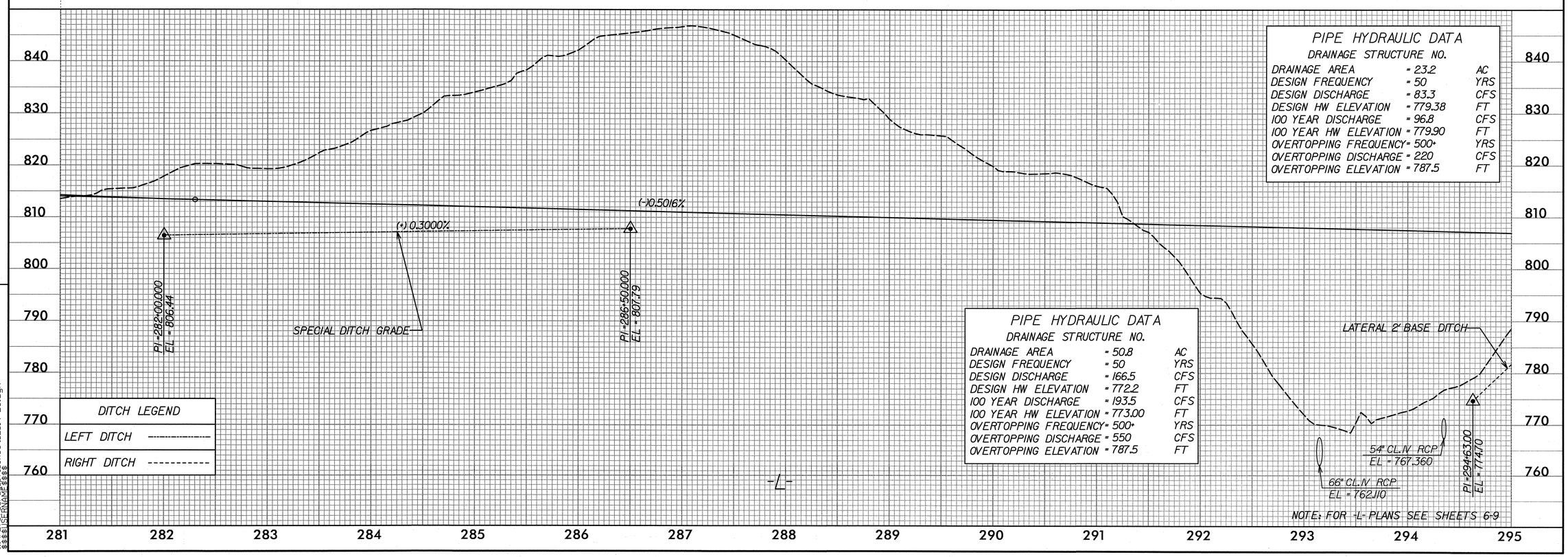
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 — JON K. SCARCE — 6/20/13

5/28/99



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 40.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130.98	CFS
DESIGN HW ELEVATION	= 795.38	FT
100 YEAR DISCHARGE	= 152.22	CFS
100 YEAR HW ELEVATION	= 796.18	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 500	CFS
OVERTOPPING ELEVATION	= 815.95	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 23.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 83.3	CFS
DESIGN HW ELEVATION	= 779.38	FT
100 YEAR DISCHARGE	= 96.8	CFS
100 YEAR HW ELEVATION	= 779.90	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 220	CFS
OVERTOPPING ELEVATION	= 787.5	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 50.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 166.5	CFS
DESIGN HW ELEVATION	= 772.2	FT
100 YEAR DISCHARGE	= 193.5	CFS
100 YEAR HW ELEVATION	= 773.00	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 550	CFS
OVERTOPPING ELEVATION	= 787.5	FT

DITCH LEGEND

LEFT DITCH	----------
RIGHT DITCH	----------

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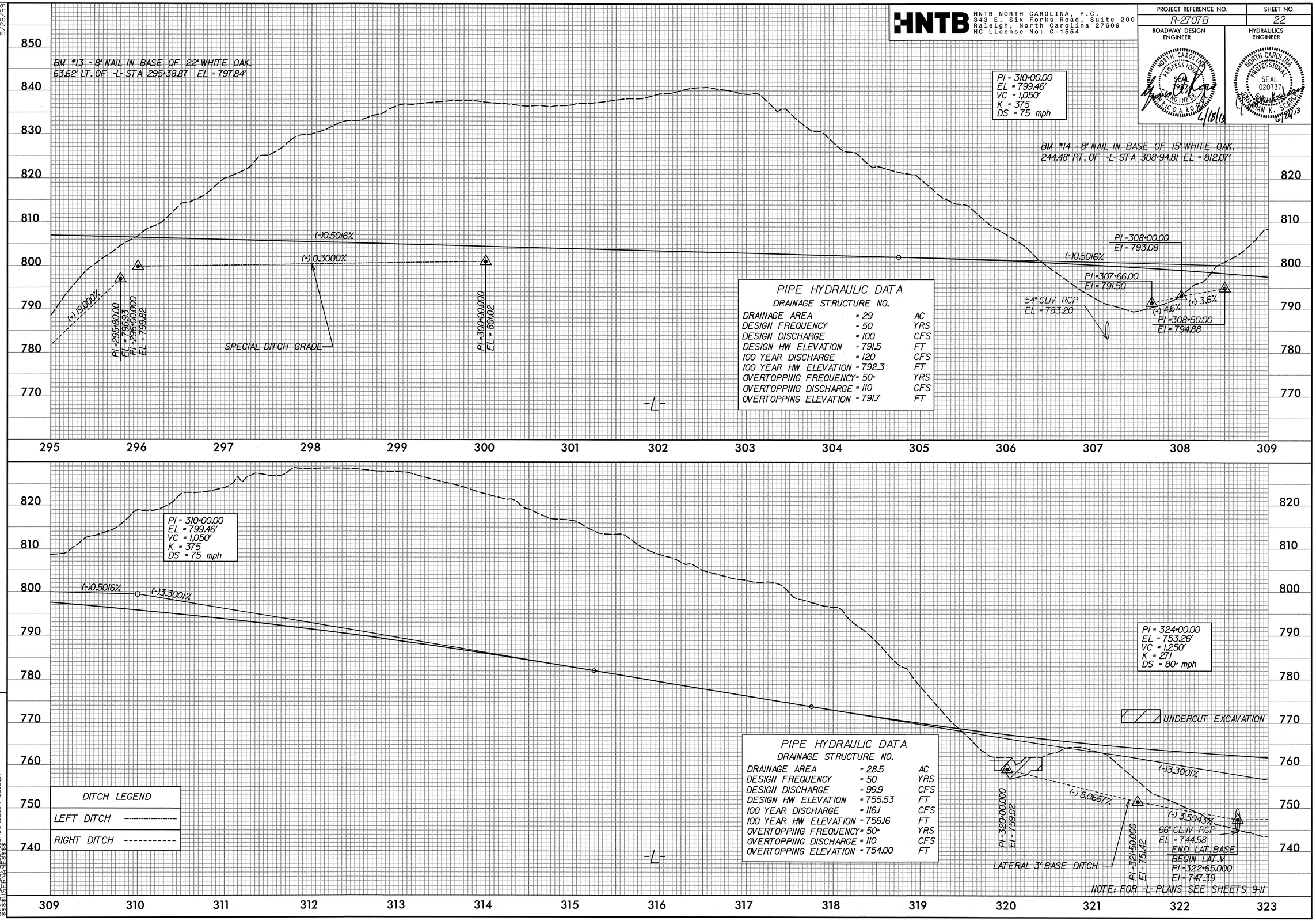
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	22

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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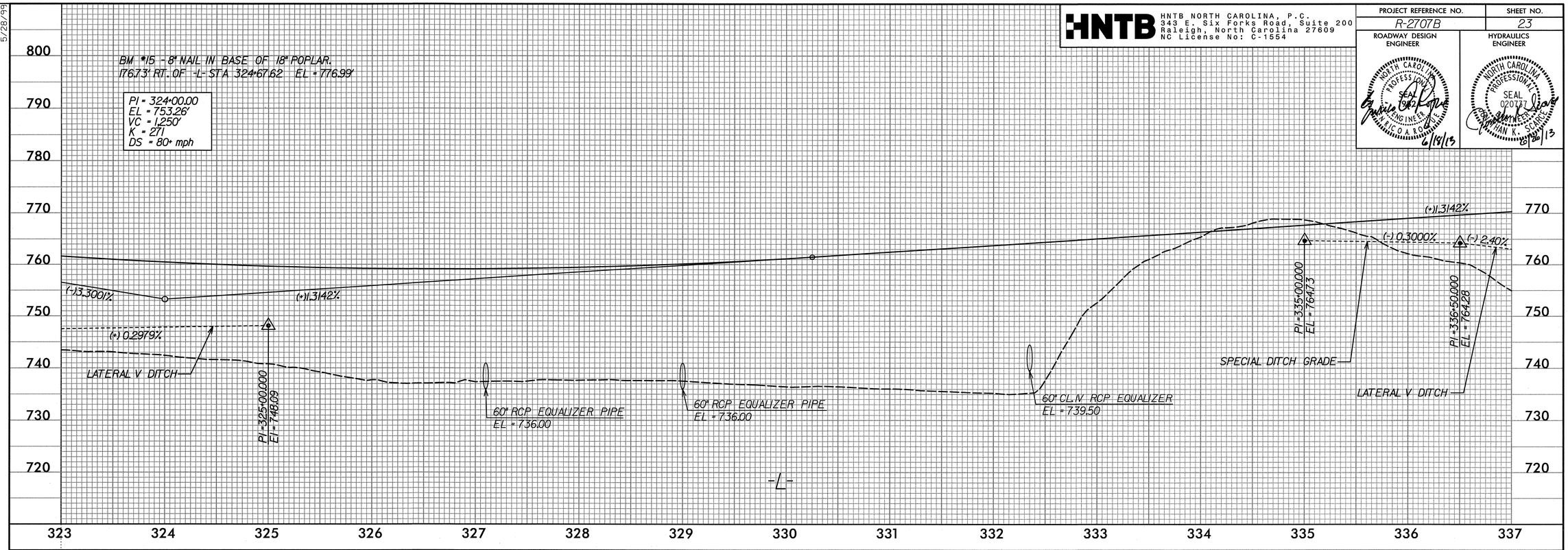
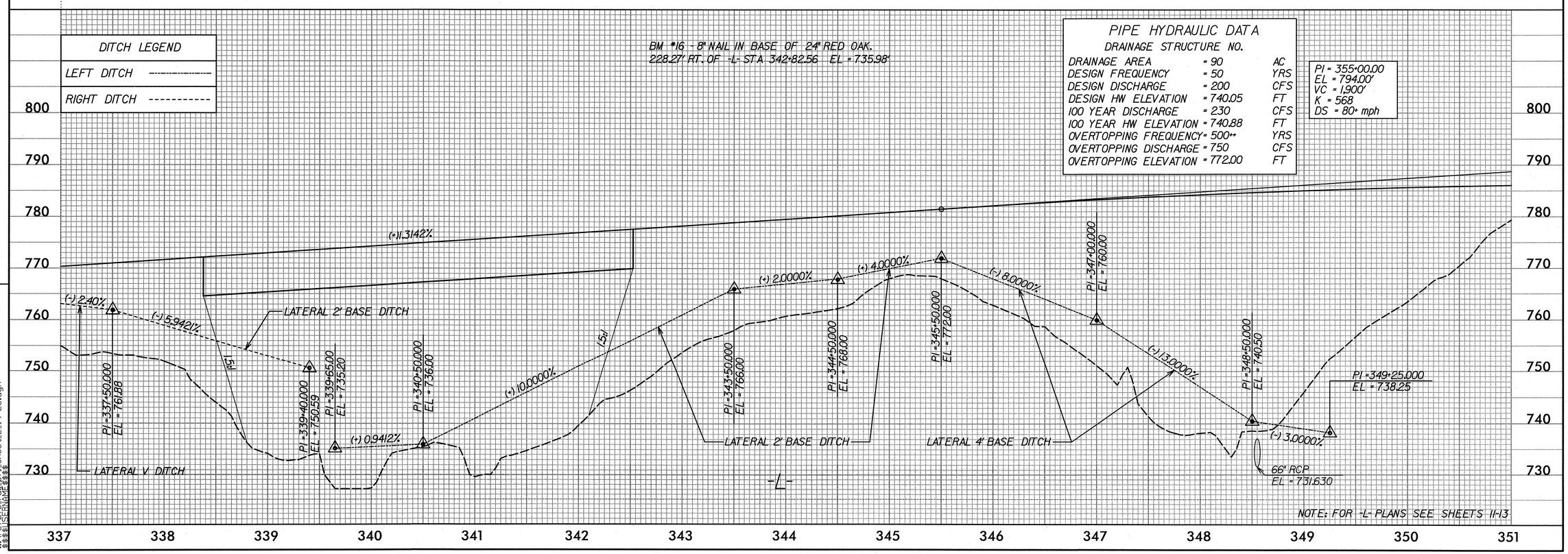
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	23

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — 6/26/13





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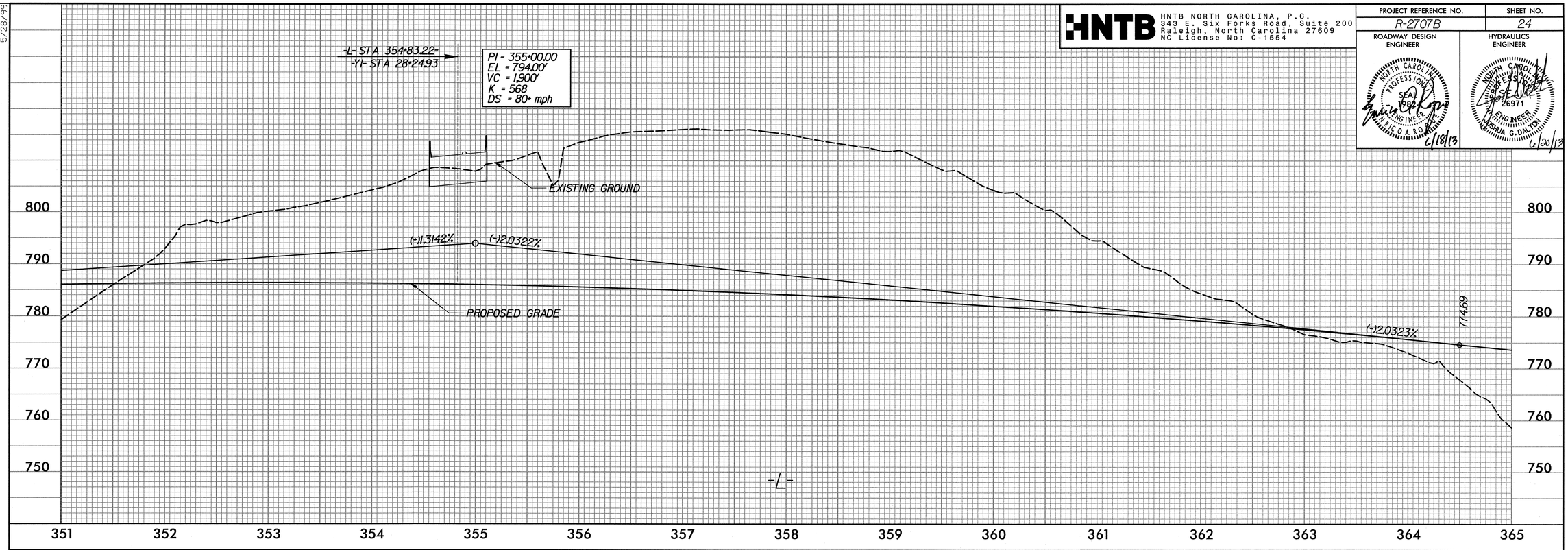
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	24

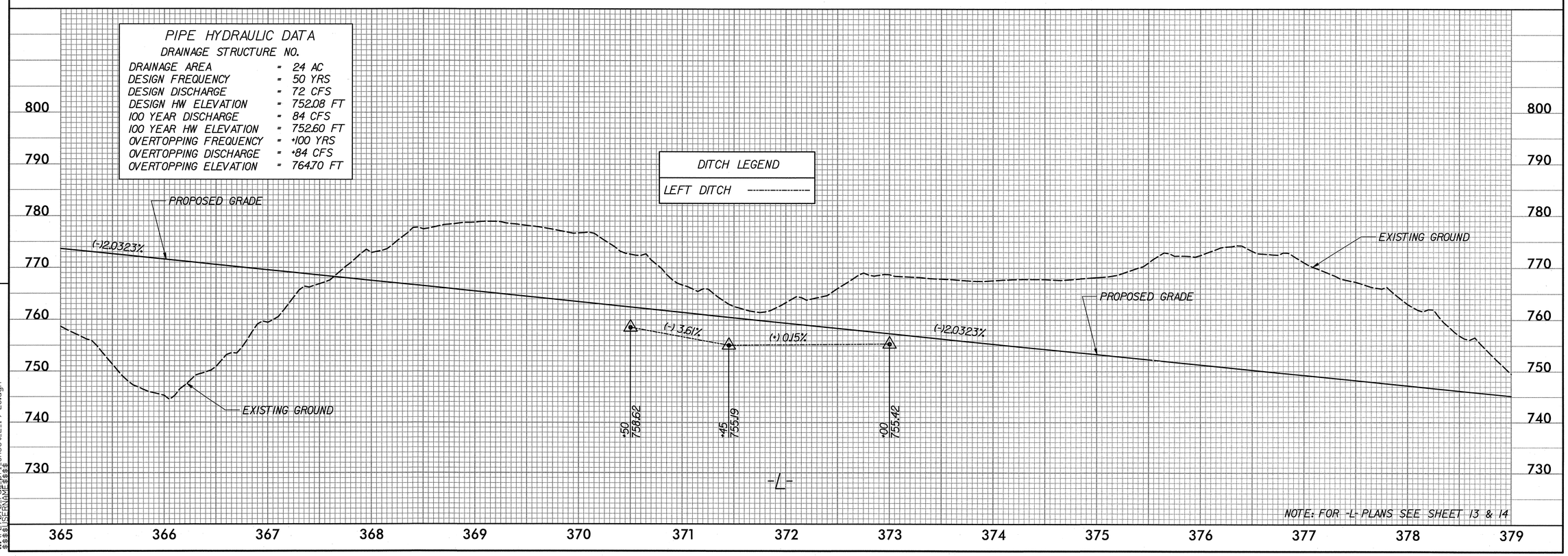
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030 ENGINEER JAMES W. CAYLOR
6/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
6/20/13





NOTE: FOR -L- PLANS SEE SHEET 13 & 14

5/28/99

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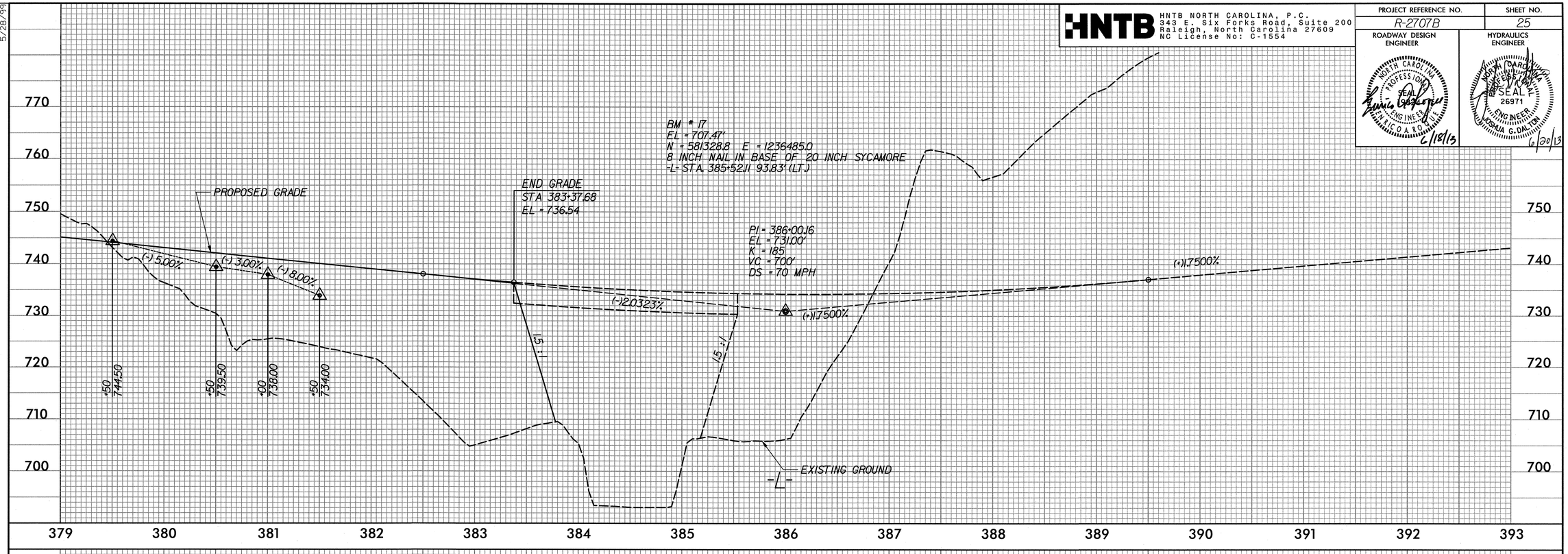
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	25

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



NOTE: FOR -L- PLANS SEE SHEET 14

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Raleigh, North Carolina 27609
NC License No: C-1554

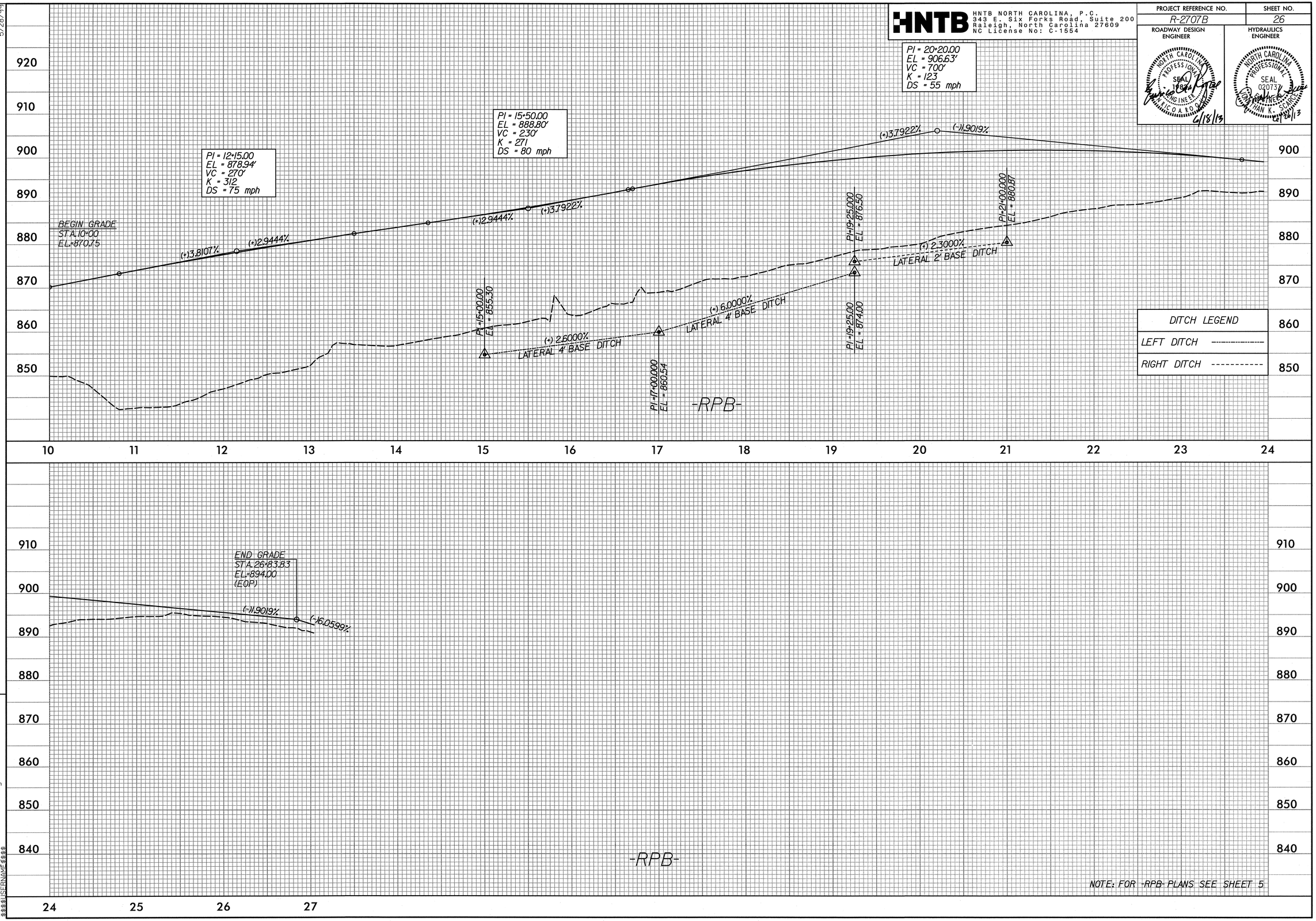
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	26

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER JAMES C. ROBERTS
6/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER JONATHAN K. SAPP
6/18/13



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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	27

ROADWAY DESIGN ENGINEER

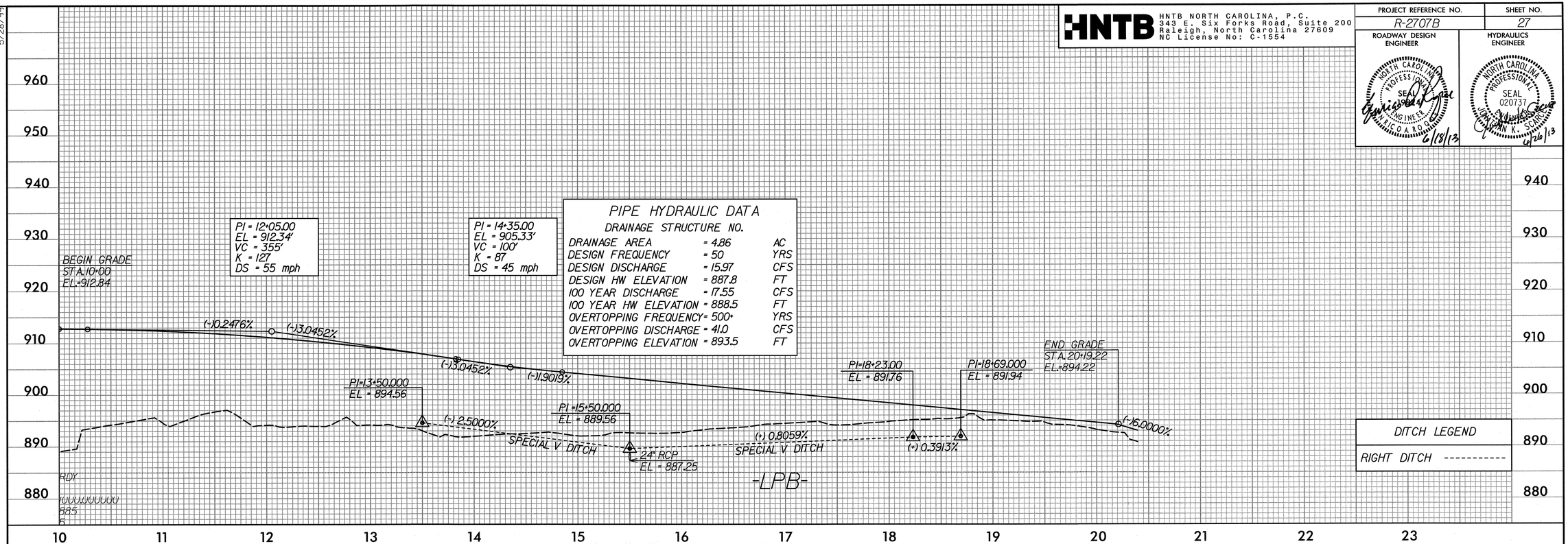
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 019880 JAMES C. O'A R.O.

6/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 JOHN K. SCARBOROUGH

6/26/13



PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 4.86	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 15.97	CFS
DESIGN HW ELEVATION	= 887.8	FT
100 YEAR DISCHARGE	= 17.55	CFS
100 YEAR HW ELEVATION	= 888.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 41.0	CFS
OVERTOPPING ELEVATION	= 893.5	FT

DITCH LEGEND
RIGHT DITCH ----------

NOTE: FOR -LPB- PLANS SEE SHEET 5

5/28/99

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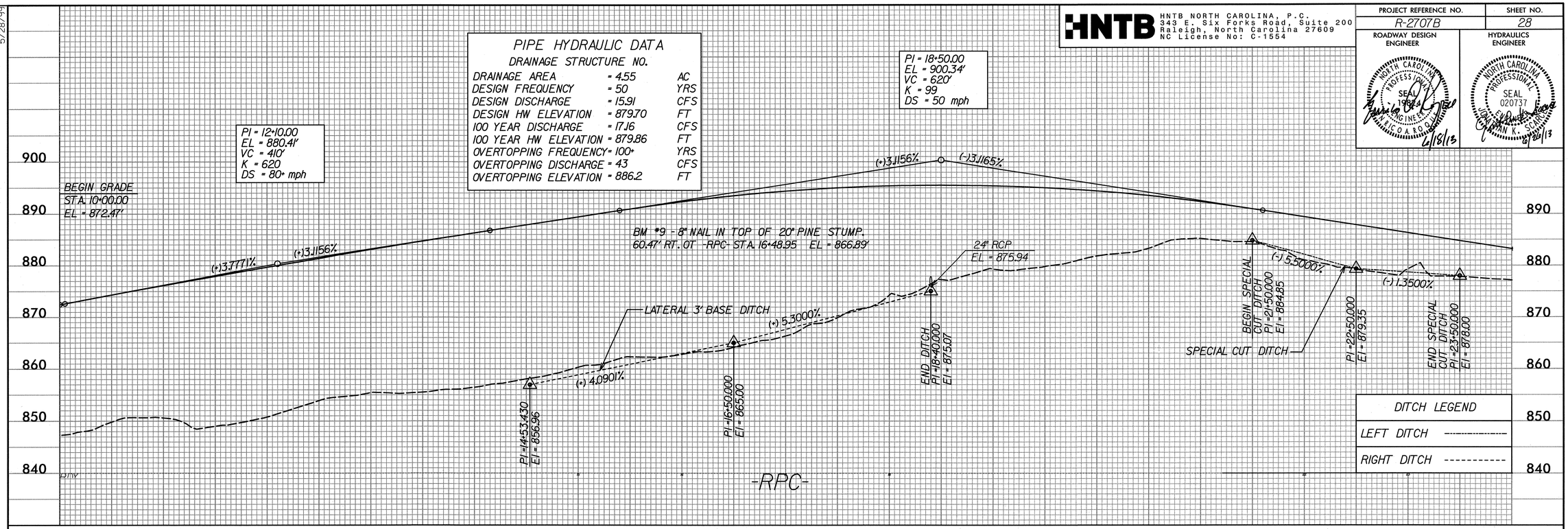
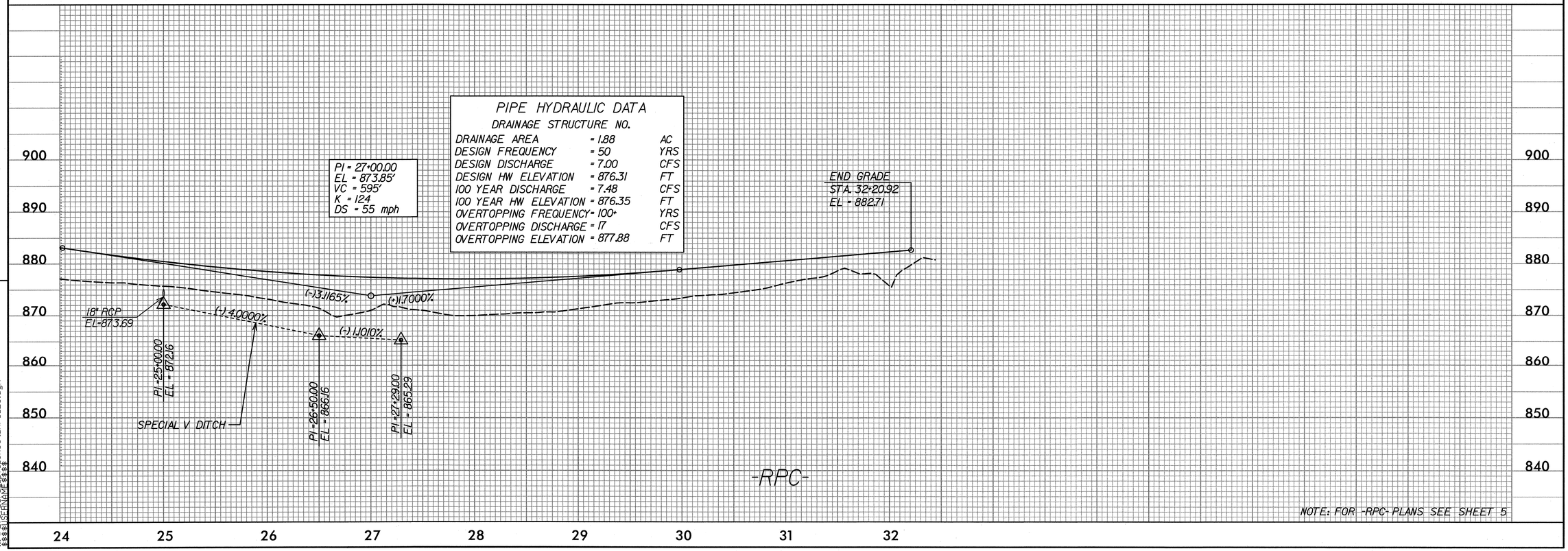
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	28

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER — NICOA RODU — 6/18/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER — JONATHAN K. SCARBOROUGH — 6/28/13

5/28/99





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HNTB

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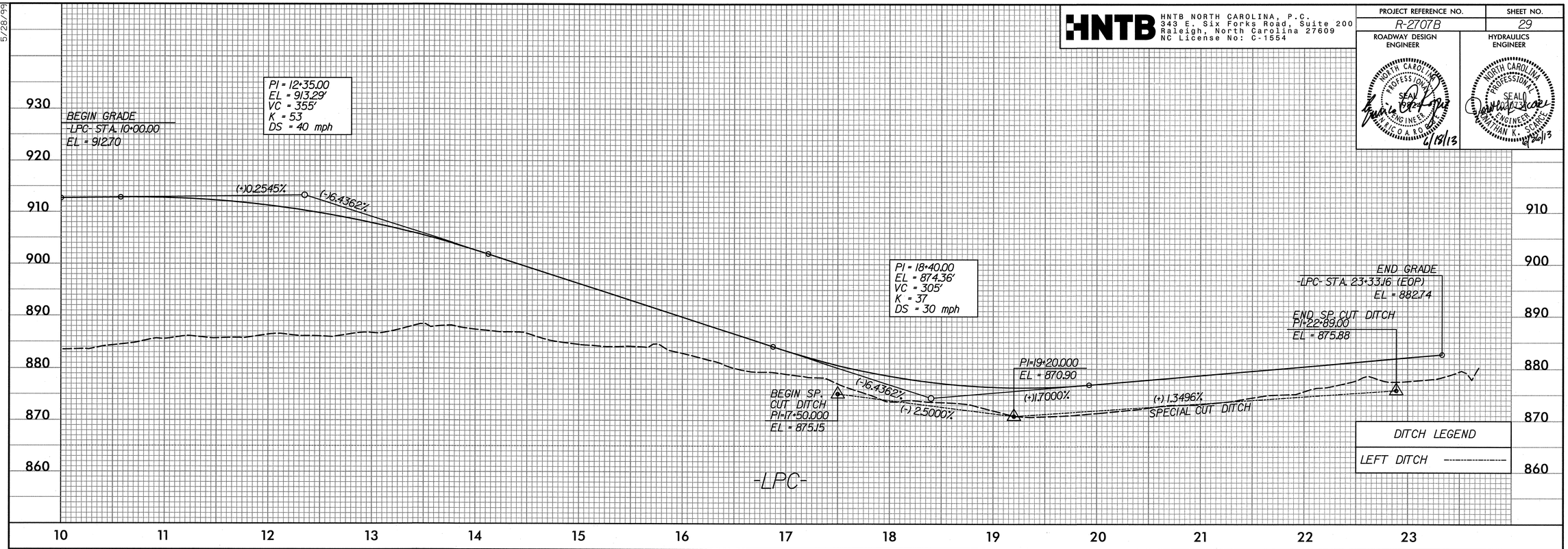
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	29

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER AMERICA A. ROSE 6/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JONATHAN K. SCARCE 6/20/13



NOTE: FOR -LPC- PLANS SEE SHEET 5

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HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
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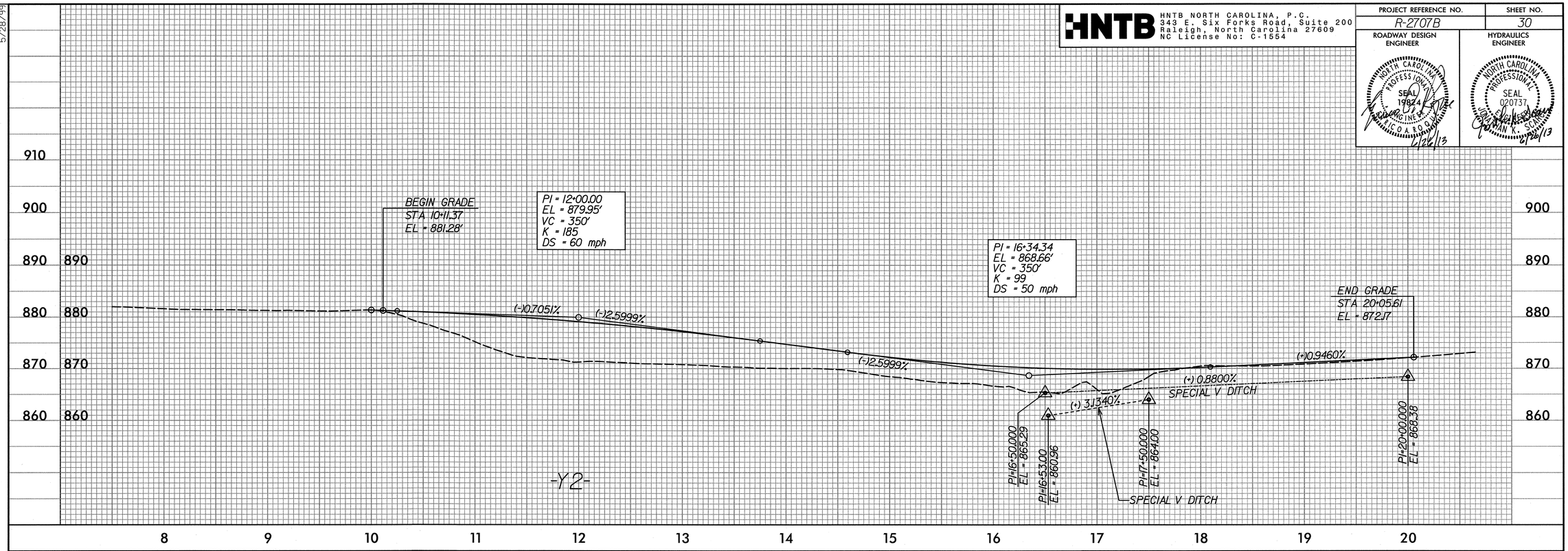
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	30

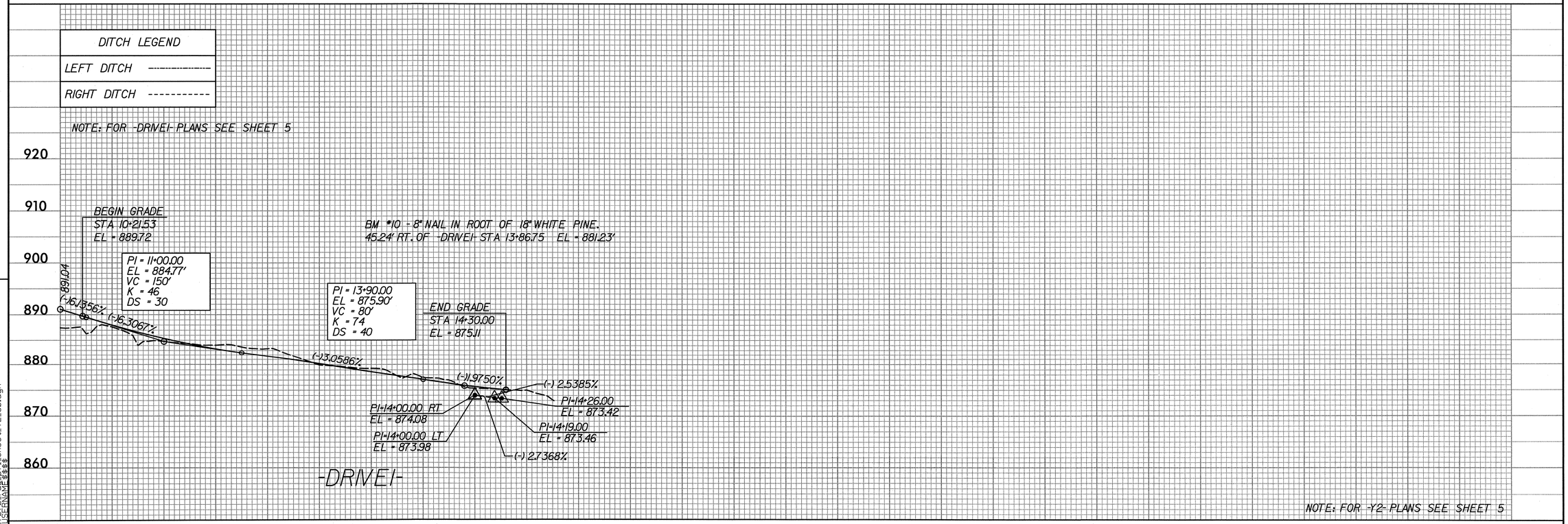
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER
1/26/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER
JOHN K. SCHNAIT
1/26/13





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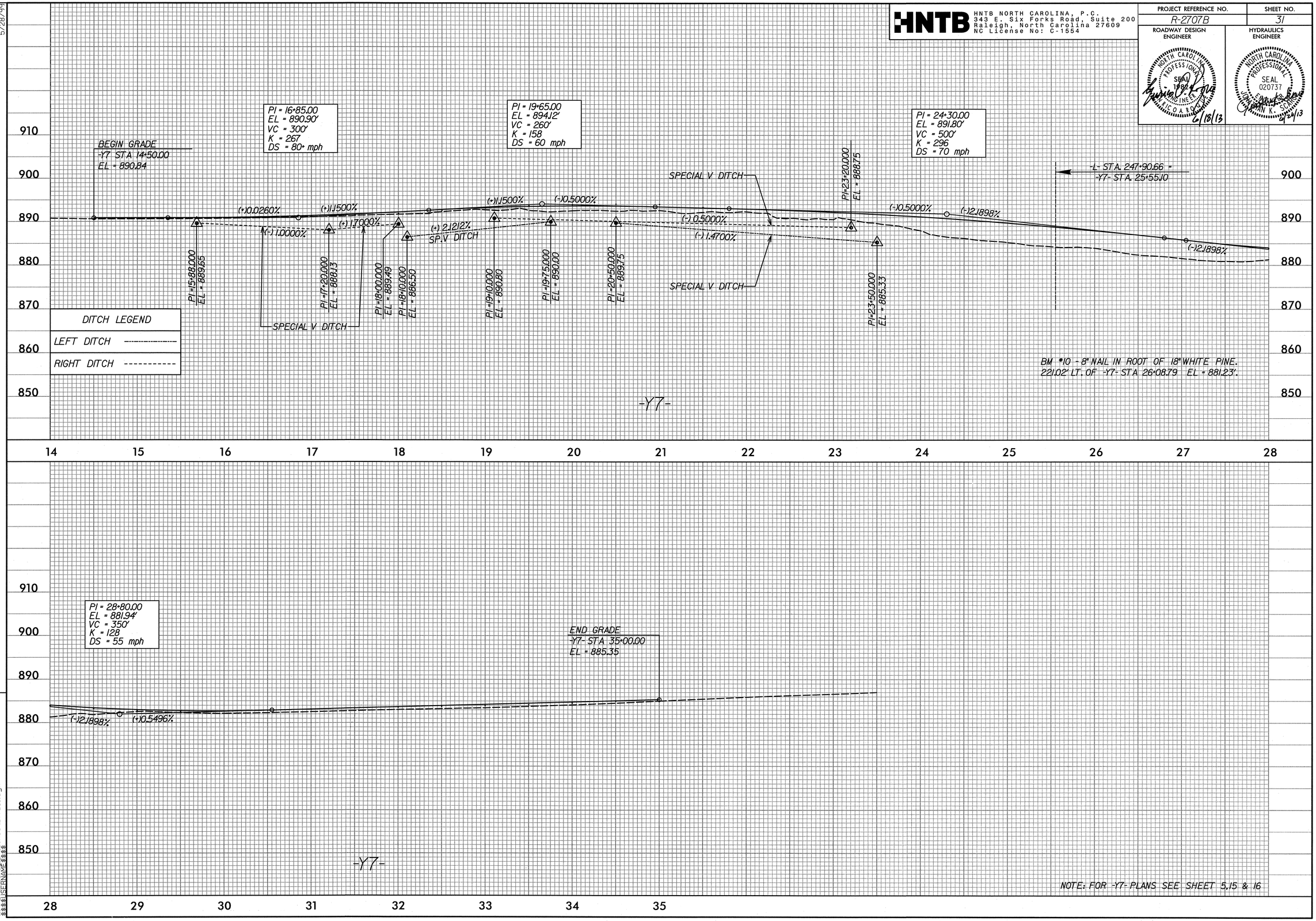
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	31

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER — 6/18/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 020737 — 6/21/13



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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	32

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 042 ENGINEER — 6/18/13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 6/20/13

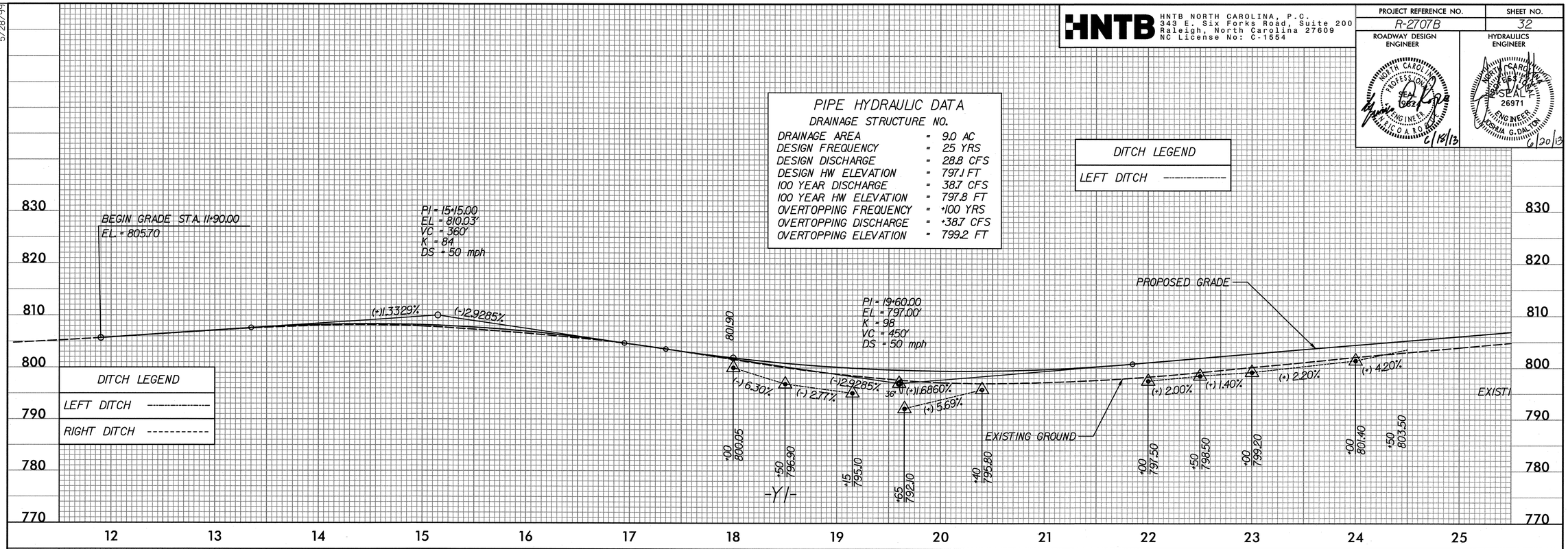
5/28/99

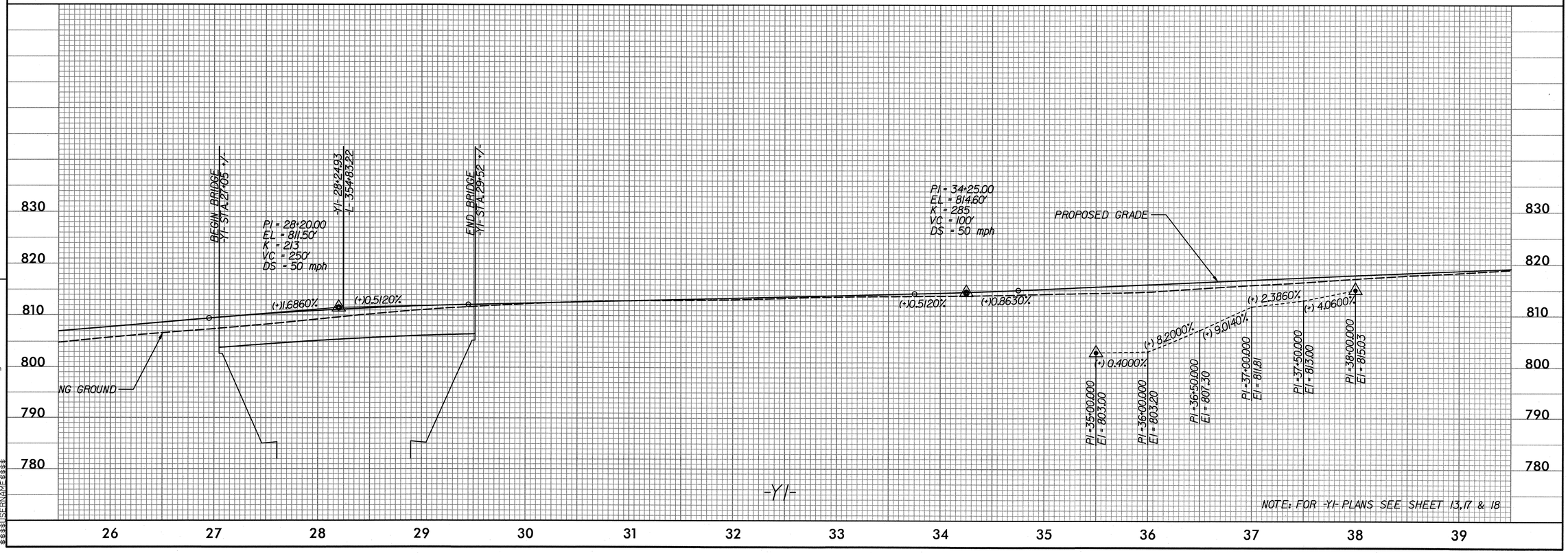
PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	9.0 AC
DESIGN FREQUENCY	=	25 YRS
DESIGN DISCHARGE	=	28.8 CFS
DESIGN HW ELEVATION	=	797.1 FT
100 YEAR DISCHARGE	=	38.7 CFS
100 YEAR HW ELEVATION	=	797.8 FT
OVERTOPPING FREQUENCY	=	+100 YRS
OVERTOPPING DISCHARGE	=	+38.7 CFS
OVERTOPPING ELEVATION	=	799.2 FT

DITCH LEGEND
LEFT DITCH ----------





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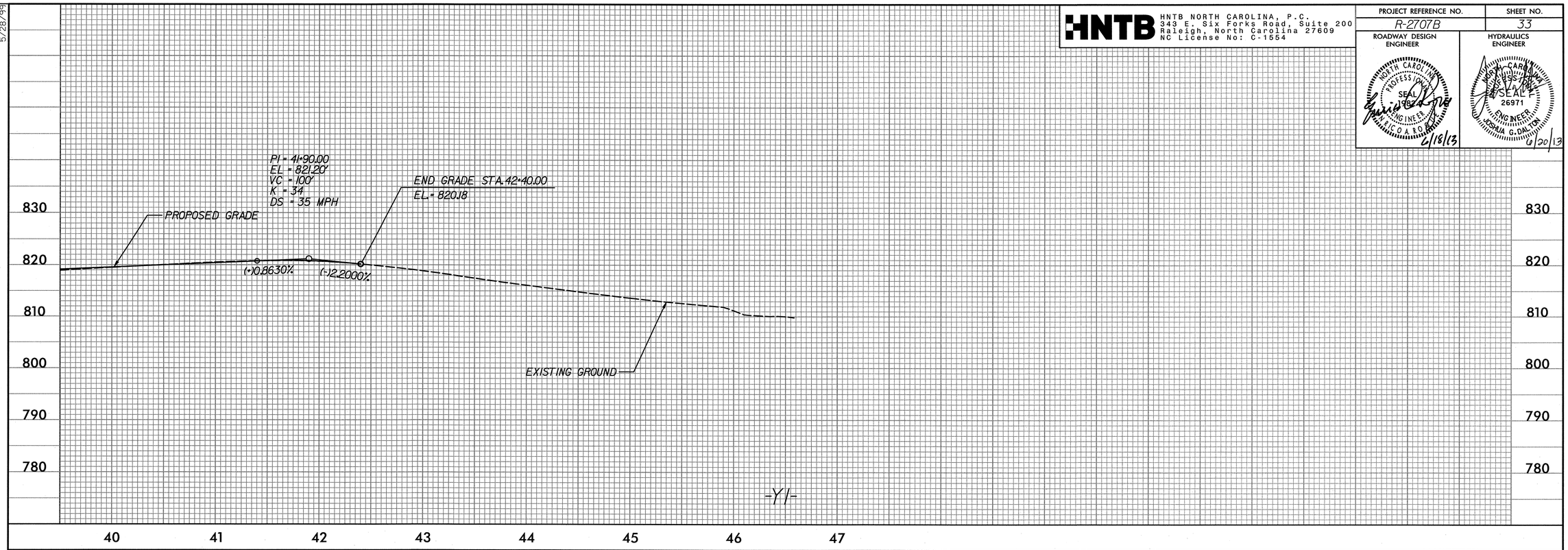
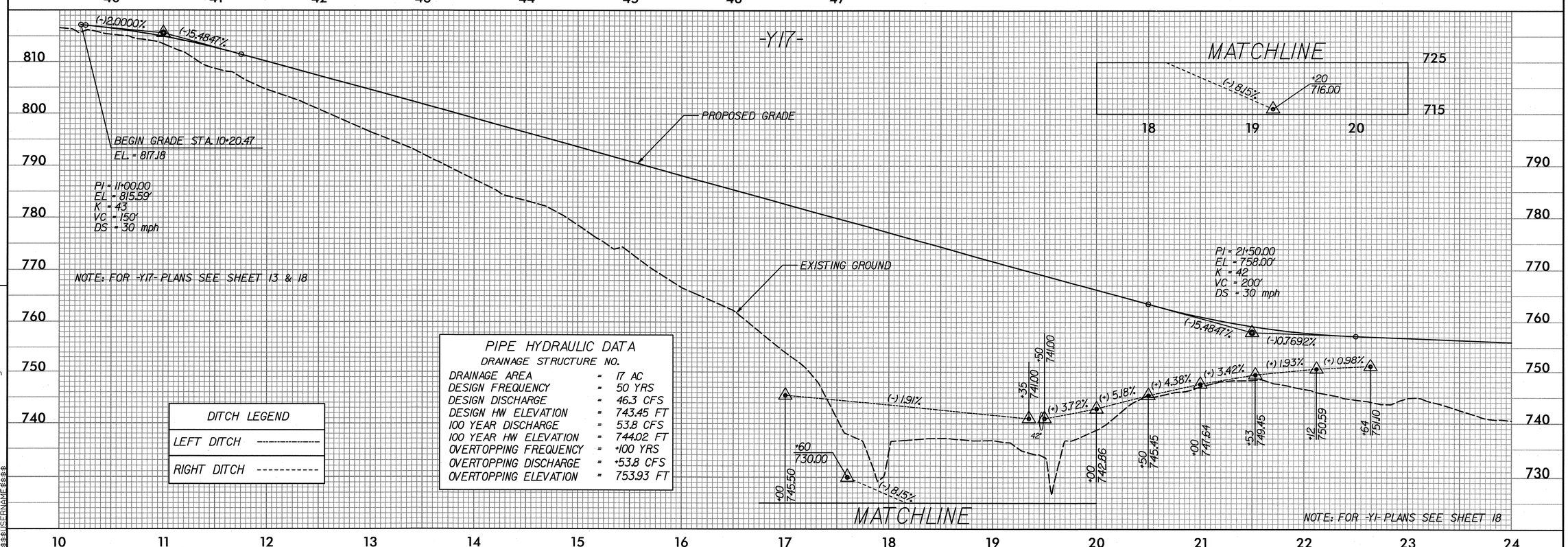
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	33

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 6/20/13





PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	17 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	46.3 CFS
DESIGN HW ELEVATION	=	743.45 FT
100 YEAR DISCHARGE	=	53.8 CFS
100 YEAR HW ELEVATION	=	744.02 FT
OVERTOPPING FREQUENCY	=	+100 YRS
OVERTOPPING DISCHARGE	=	+53.8 CFS
OVERTOPPING ELEVATION	=	753.93 FT

DITCH LEGEND

LEFT DITCH ----------

RIGHT DITCH ----------

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	34

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 19824 — 6/18/13

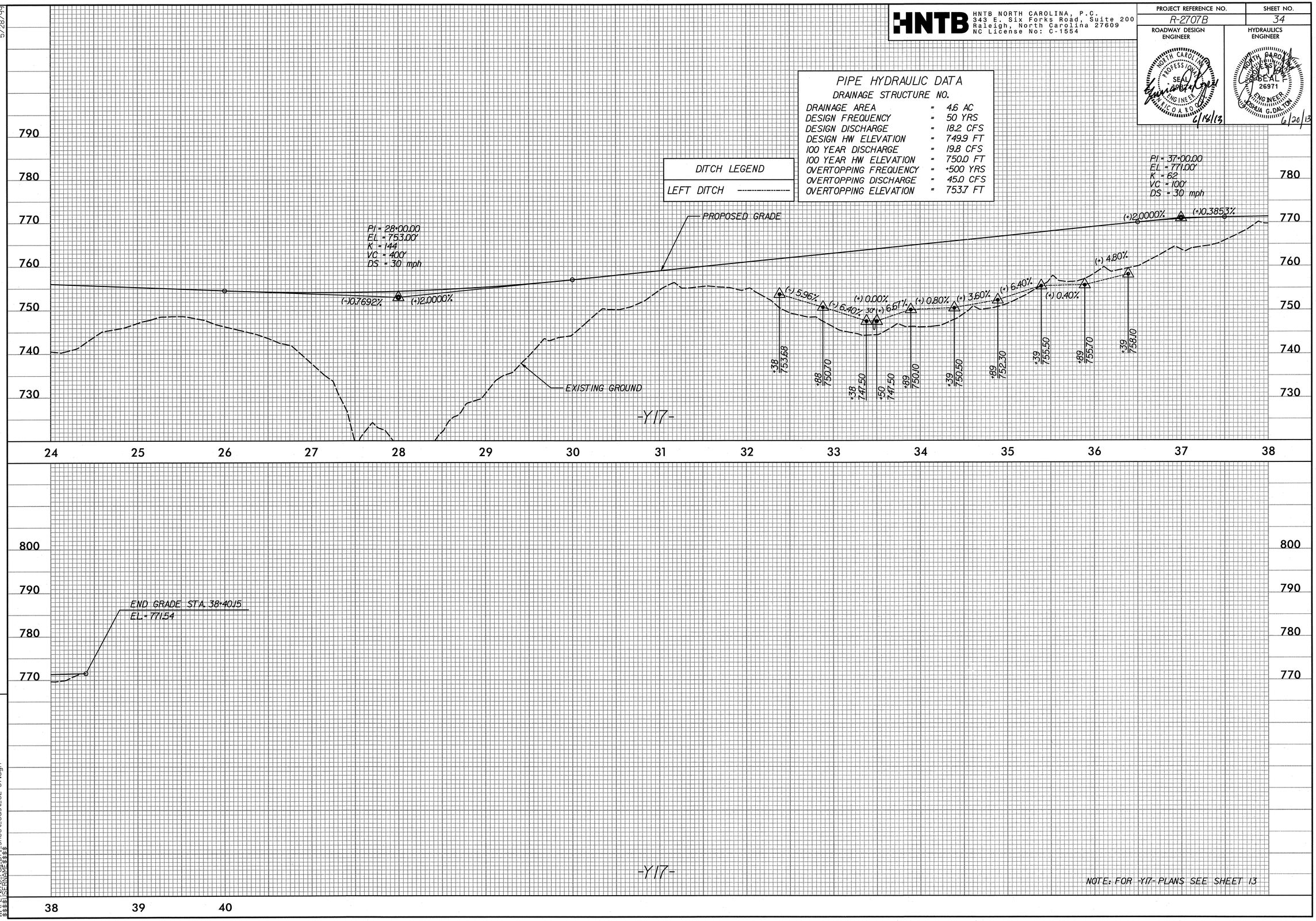
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — 6/20/13

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	4.6 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	18.2 CFS
DESIGN HW ELEVATION	=	749.9 FT
100 YEAR DISCHARGE	=	19.8 CFS
100 YEAR HW ELEVATION	=	750.0 FT
OVERTOPPING FREQUENCY	=	+500 YRS
OVERTOPPING DISCHARGE	=	45.0 CFS
OVERTOPPING ELEVATION	=	753.7 FT

DITCH LEGEND	
LEFT DITCH	----------



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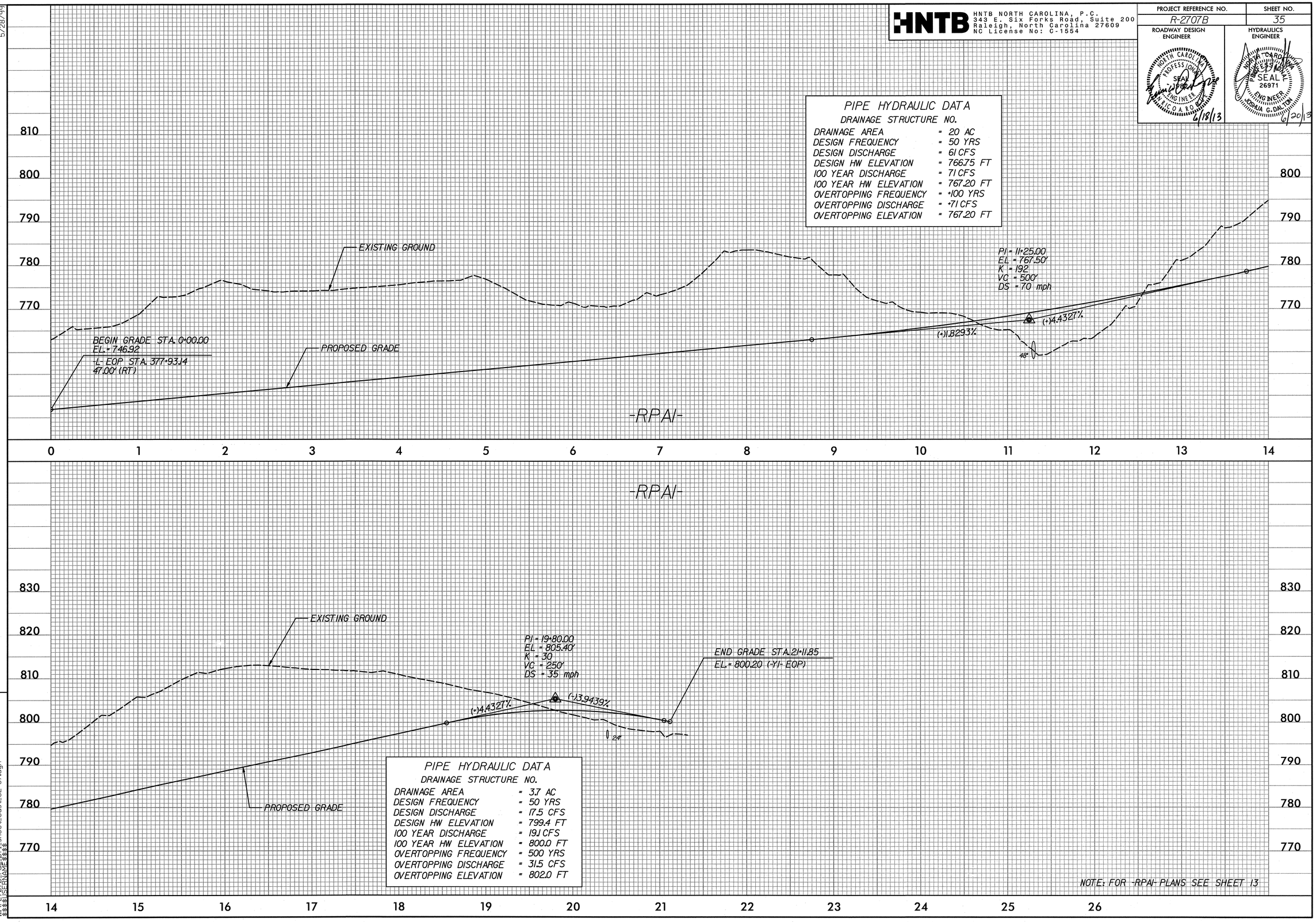
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	35

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — 6/20/13

5/28/99



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$$$$USERNAME$$$$

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

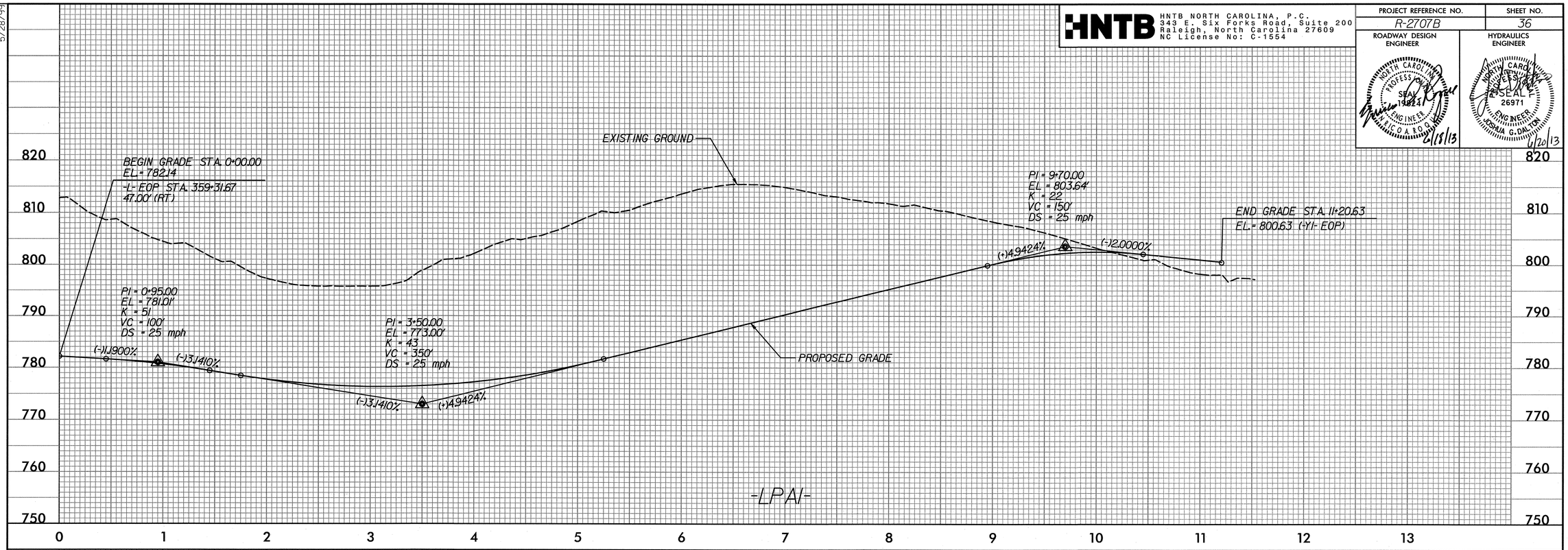
PROJECT REFERENCE NO.	SHEET NO.
R-2707B	36

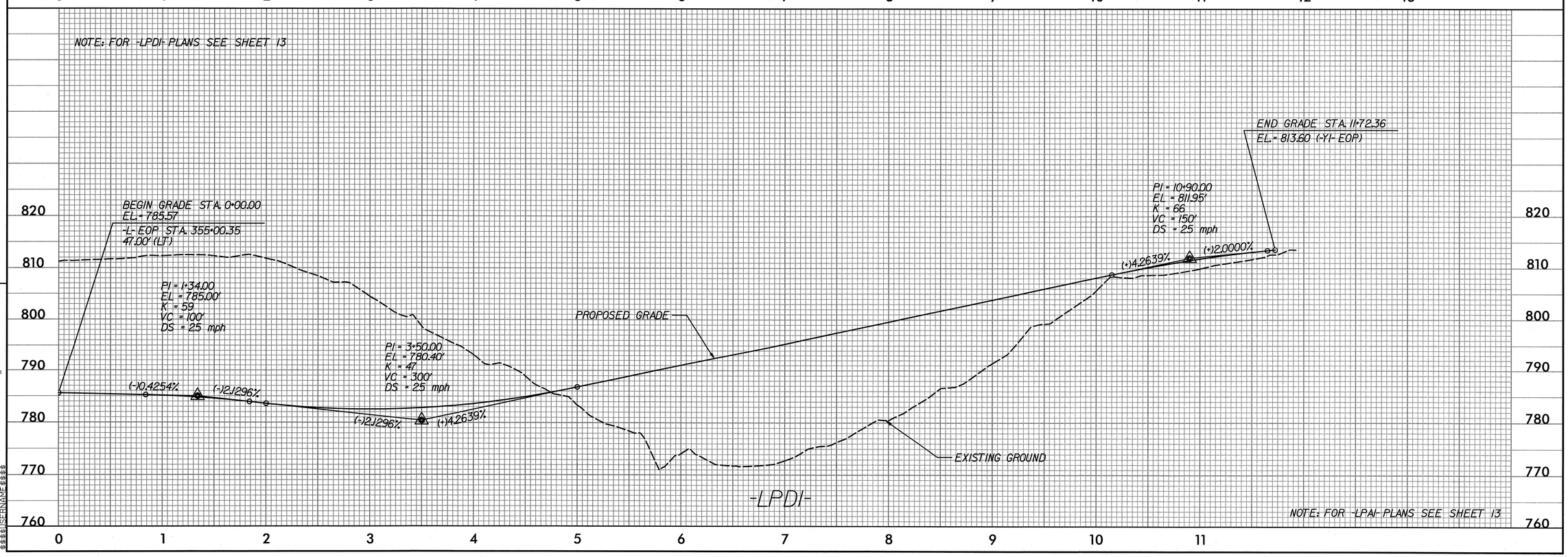
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19824 ENGINEER JAMES A. TOLLEY 2/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA C. DALTON 2/20/13





5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2707B	37

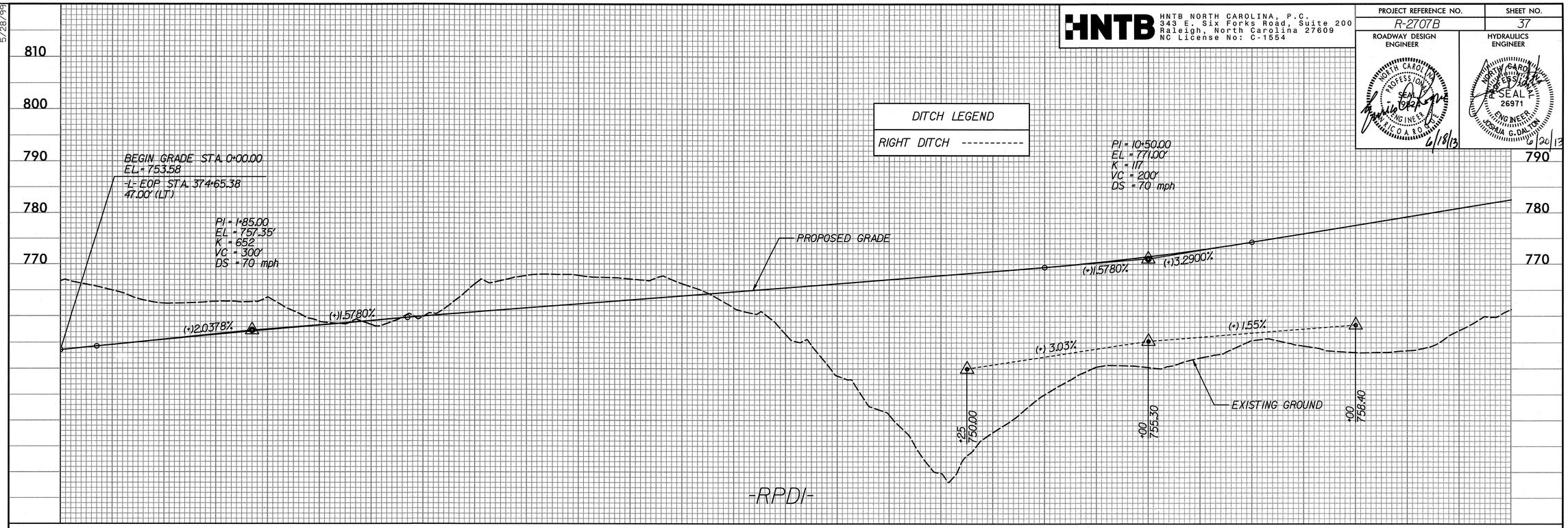
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER — 6/18/13

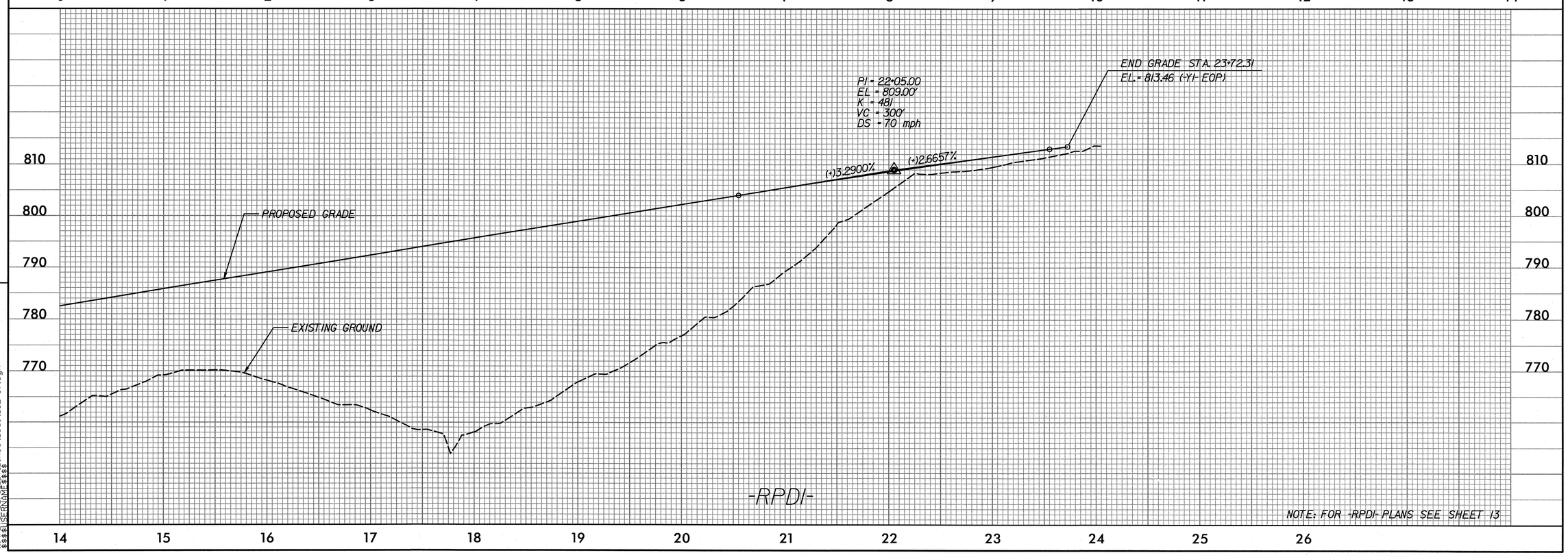
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — 6/20/13

5/28/99

DITCH LEGEND

RIGHT DITCH ----------





NOTE: FOR -RPDI- PLANS SEE SHEET 13

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NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707B	38

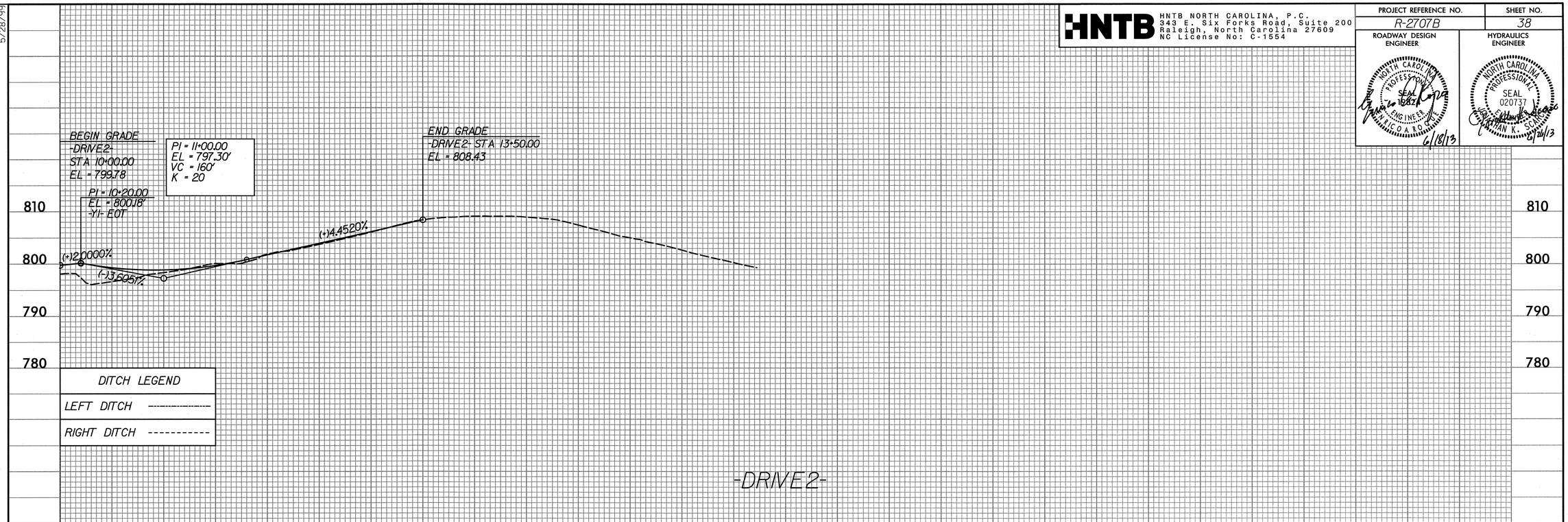
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16824 ENGINEER
6/18/13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020737 ENGINEER
6/18/13

5/28/99



NOTE: FOR -DEST- PLANS SEE SHEET 13 & 17

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