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

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This file or an individual page shall not be considered a certified document.

09/08/49

TIP PROJECT: R–2707F

CONTRACT: C203845

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

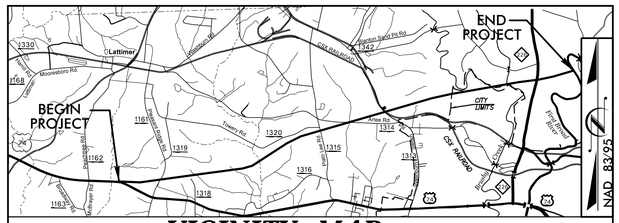
CLEVELAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2707F	1	

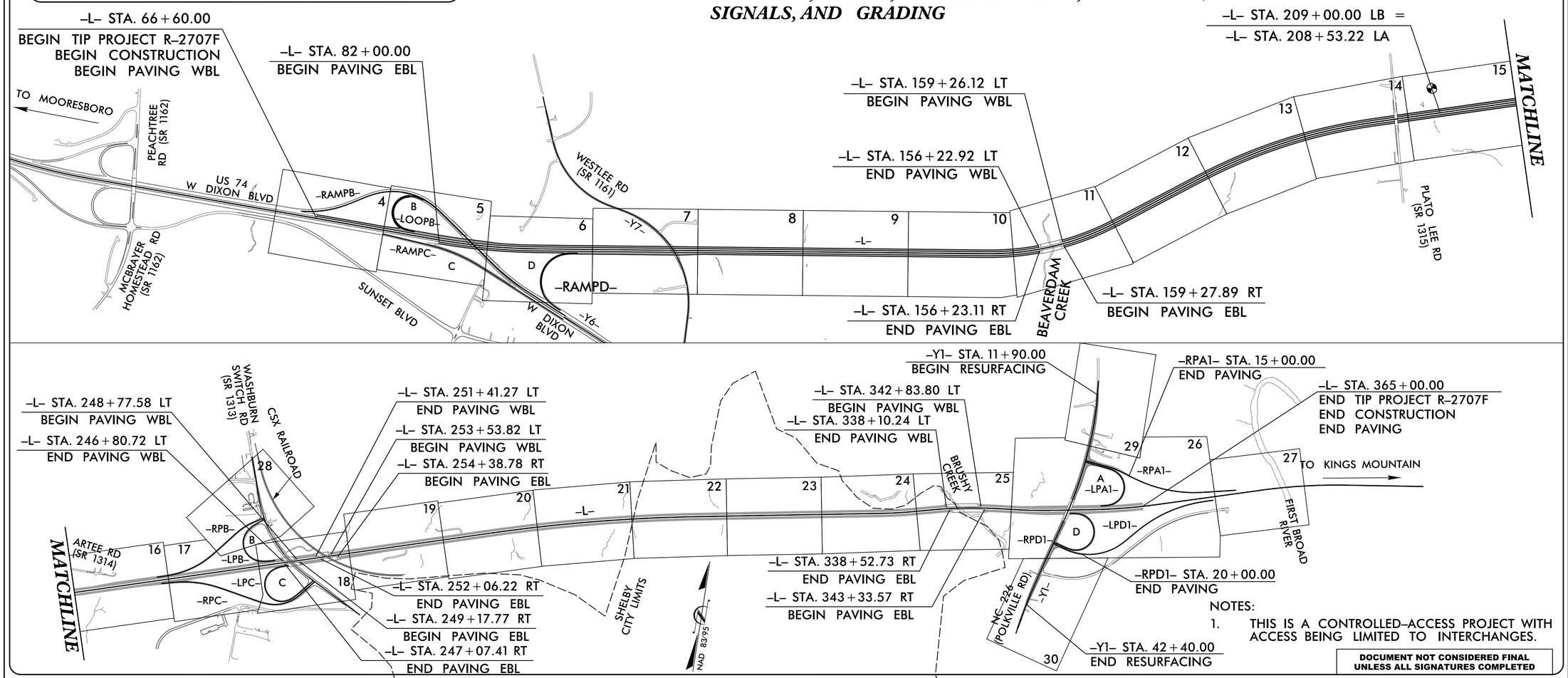
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34497.1.6		PE
34497.3.9		CONST

LOCATION: US 74 (SHELBY BYPASS) FROM EAST OF SR 1162 (PEACHTREE RD) TO EAST OF NC 226

TYPE OF WORK: DRAINAGE, PAVING, OVERHEAD SIGNS, SIGNALS, AND GRADING



VICINITY MAP

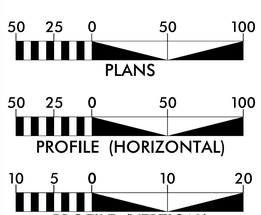


NOTES:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 10,700
ADT 2038 = 22,000
K = 11 %
D = 55 %
T = 17 % *
V = 70 MPH
* TTST 12% DUAL 5%
FUNC CLASS = FREEWAY
STATEWIDE TIER DESIGN

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT R–2707F	= 5.427 MILES
LENGTH EXISTING STRUCTURES T.I.P PROJECT R–2707F	= 0.233 MILES
TOTAL LENGTH T.I.P PROJECT R–2707F	= 5.660 MILES

TOTAL LENGTH BASED ON –L– CENTERLINE

EXISTING STRUCTURES LENGTH BASED ON EBL

Prepared In the Office of:

HNTB NORTH CAROLINA, P.C.

343 E. Six Forks Road, Raleigh NC, 27609

2018 STANDARD SPECIFICATIONS

LETTING DATE:
JANUARY 16, 2018

ROY TELLIER, PE
PROJECT ENGINEER

ANDREW HALL, EI
PROJECT DESIGN ENGINEER

GARY LOVERING, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

DocuSigned by:
Roy Tellier
5F7D8D80AE8C430...
12/13/2017

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY H. TELLIER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

08-DEC-2017 13:47
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HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY TELLIER, II

1/4/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-11	SURVEY CONTROL SHEETS
2A-1 THRU 2A-4	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	GUARDRAIL SUMMARY SHEET
3B-2	SHOULDER BERM GUTTER AND DOUBLE FACED CABLE GUIDERAIL SUMMARY SHEETS
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
4 THRU 30	PLAN SHEETS
31 THRU 51	PROFILE SHEETS
TMP-1 THRU TMP-9	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-23	PAVEMENT MARKING PLANS
SIGN-1 THRU SIGN-21	SIGNING PLANS
SIG-1 THRU SIG-3.0	SIGNAL PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADE LINE:

SURFACING:

THE ROUGH GRADING AND STRUCTURES ON THIS PROJECT HAVE BEEN DONE OR ARE NOW BEING DONE UNDER A PREVIOUS CONTRACT. THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04/225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01/560.02

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQURED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

SURVEY CONTROL:

SURVEY CONTROL SHEETS GENERATED FROM PREVIOUS TIP PROJECTS; R-2707AA, R-2707AB, AND R-2707B.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
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
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.01	Guide for Paving Shoulders Under Bridges - Method I
610.03	Guide for Paving Shoulders Under Bridges - Method III
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.20	Frames and Wide Slot Flat Grates
840.54	Manhole Frame and Cover
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
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
865.01	Cable Guiderail

8/17/99

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12/2/2016

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

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

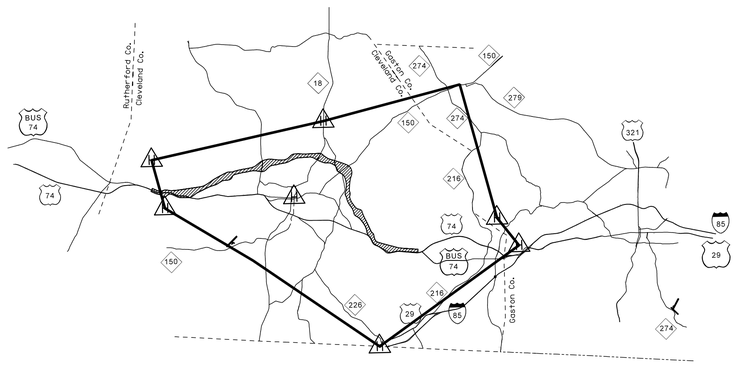
MISCELLANEOUS:

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

1/24/13

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

SURVEY CONTROL SHEET



GPS NETWORK

NOT TO SCALE

NOTES

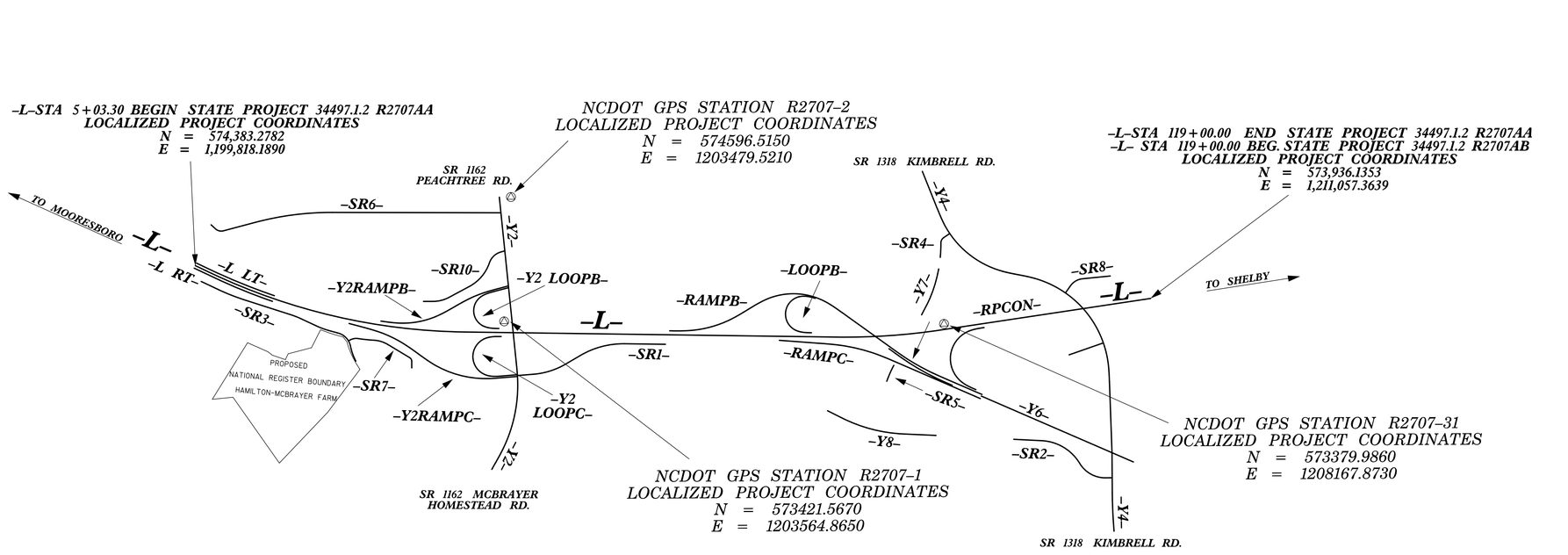
1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS 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.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   R2707A_LS_GPSCALIB_100701.PDF
   R2707A_LS_WGS84_100701.TXT
   R2707A_LS_LOCAL_100701.TXT
   R2707A_LS_CONTROL_100701.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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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 5+03.30 IS
N 75 36 14 W 3868.1352'
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

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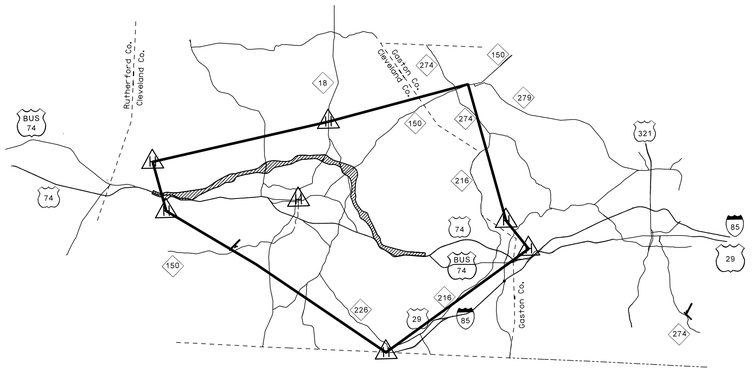
5/23/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-2
Location and Surveys	

SURVEY CONTROL SHEET



GPS NETWORK

NOT TO SCALE

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   R2707A_LS_GPSCALIB_100701.PDF
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NC GRID
NAD 83/95

NCDOT GPS STATION R2707-8
LOCALIZED PROJECT COORDINATES
N = 580239.3390
E = 1233459.6170

-L-STA 215+46.78 END STATE PROJECT 34497.1.2 R2707AB
LOCALIZED PROJECT COORDINATES
N = 577,151.0210 E = 1,219,982.0491

-L- STA 215+00.00 BEG. STATE PROJECT 34497.1.2 R2707B
LOCALIZED PROJECT COORDINATES
N = 577,151.0210 E = 1,219,982.0488

NCDOT GPS STATION R2707-6
LOCALIZED PROJECT COORDINATES
N = 578041.4940
E = 1223321.3870

NCDOT GPS STATION R2707-7
LOCALIZED PROJECT COORDINATES
N = 579006.8290
E = 1233137.4580

SR 1315 PLATO LEE RD.

TO SHELBY

-L-

-Y5-

NCDOT GPS STATION R2707-5
LOCALIZED PROJECT COORDINATES
N = 577485.5880
E = 1224323.7950

NCDOT GPS STATION R707-4
LOCALIZED PROJECT COORDINATES
N = 576194.7690
E = 1219011.5400

SR 1315 PLATO LEE RD.

-L-STA 119+00.00 END STATE PROJECT 34497.1.2 R2707AA
-L- STA 119+00.00 BEG. STATE PROJECT 34497.1.2 R2707AB
LOCALIZED PROJECT COORDINATES
N = 573,936.1353
E = 1,211,057.3639

-L-

TO MOORESBORO

NCDOT GPS STATION R2707-3
LOCALIZED PROJECT COORDINATES
N = 575077.6710
E = 1219235.6660

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M 77"
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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

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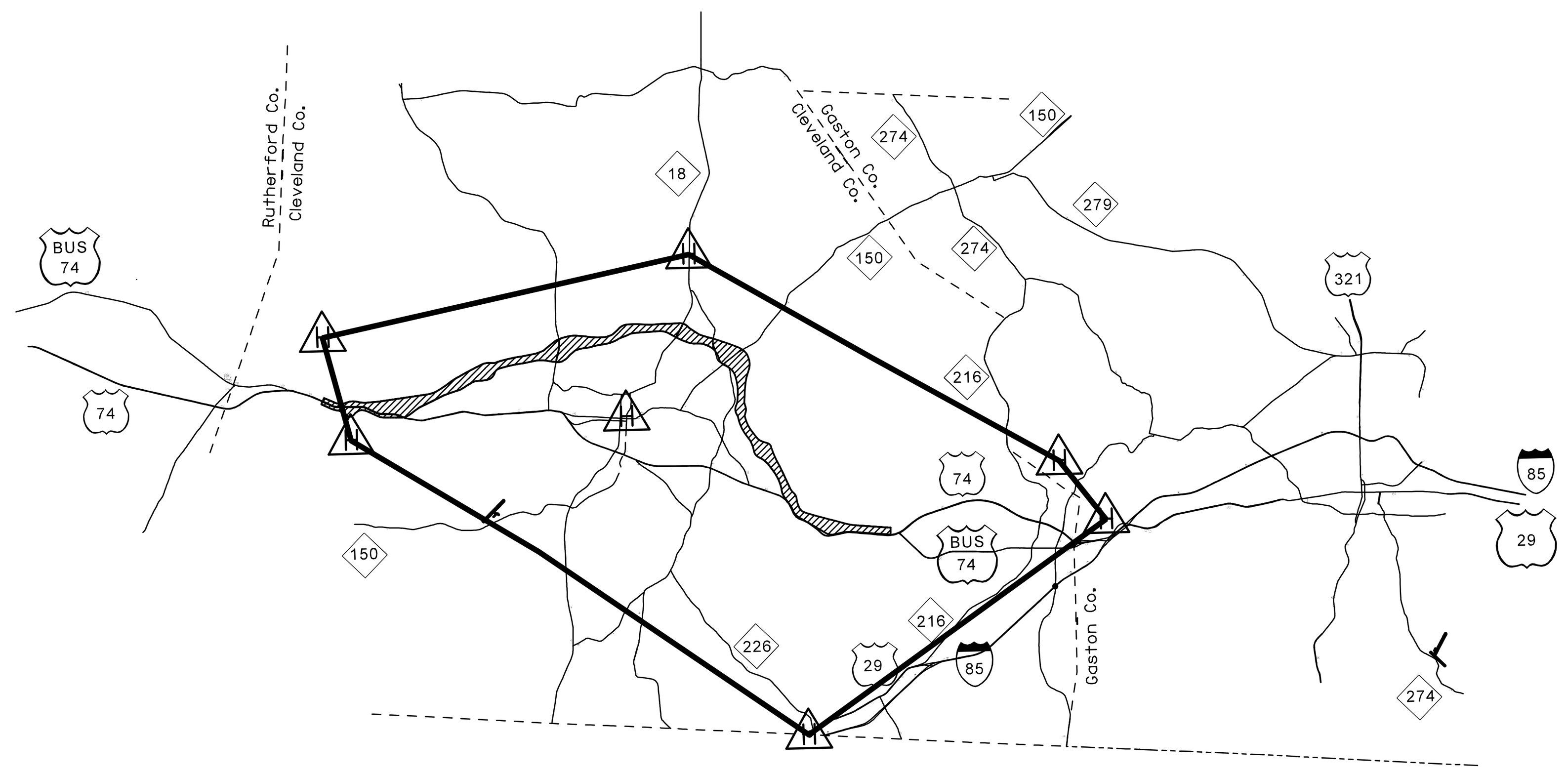
PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-3
Location and Surveys	

SURVEY CONTROL SHEET



GPS NETWORK

NOT TO SCALE

NAD 83

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_GPSCALIB_100909.HTM
   R2707B_LS_WGS84_100909.TXT
   R2707B_LS_LOCAL_100909.TXT
   R2707B_LS_CONTROL_100909.TXT

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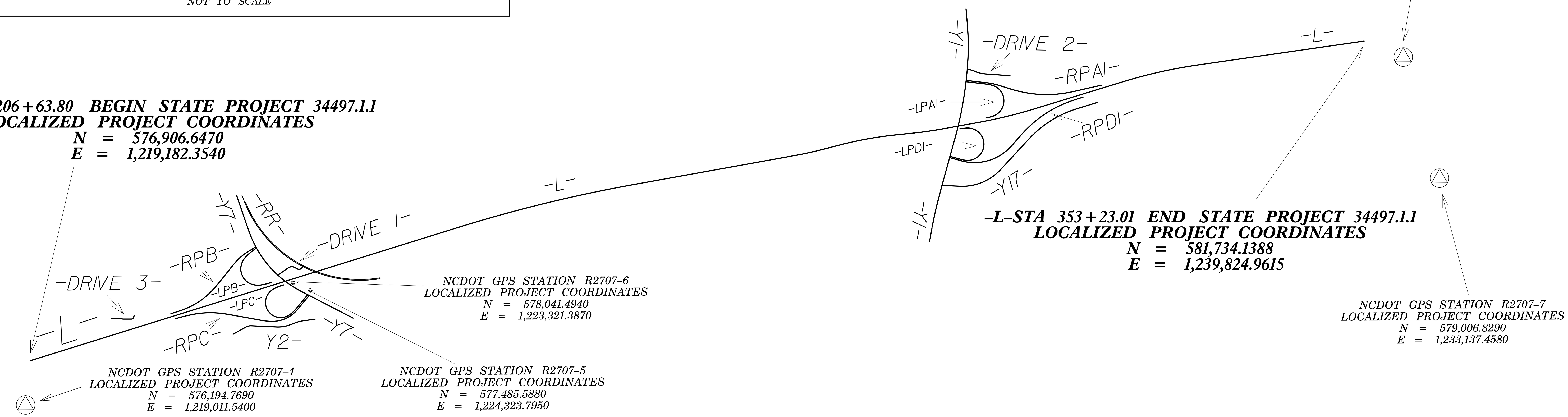

DATUM DESCRIPTION

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(ft) EASTING: 124297.658(ft) ELEVATION: 852.279'(ft) 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

△ 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

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HNTB

1/24/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-4
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET

(GPS CALIBRATION SHEET FROM R-2707AA)

GPS CALIBRATION REPORT

GPS CALIBRATION REPORT PROJECT : R2707AA

TIP NUMBER R2707AA
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	0.050SFT	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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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 5+03.30 IS N 75°36' 14" W 3868.1352'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Point Residuals

	WGS84 Coordinates	Calculated point	Local
	Latitude 35° 16'59.95696"N Longitude 81° 40'06.15783"W Height 751.773sft	Point MCBRAYER 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 2JSI3 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 HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:

   R2707A_LS_GPSCALIB_100701.PDF
   R2707A_LS_WGS84_100701.TXT
   R2707A_LS_LOCAL_100701.TXT
   R2707A_LS_CONTROL_100701.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.

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HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-5
Location and Surveys	

5/23/13

SURVEY CONTROL SHEET

(GPS CALIBRATION SHEET FROM R-2707AB)

GPS CALIBRATION REPORT

GPS CALIBRATION REPORT PROJECT : R2707AB

TIP NUMBER R2707AB
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
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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	0.050SFT	0.009	GPS15
VERTICAL	0.045SFT	0.008	MCBRAYER
THREE-DIMENL	0.057SFT	0.012	MCBRAYER

Point Residuals

WGS84 Coordinates	Calculated point	Local
Point MCBRAYER Latitude 35 16′59.95696"N Longitude 81 40′06.15783"W Height 751.773sft	Easting 1203773.275sft Elevation 856.819sft Horz error 0.035sft Vert error 0.045sft 3D error 0.057sft	Point McBrayer_Local Northing 568742.428sft Point MCBRAYER 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
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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

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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279′(ft)
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 5+03.30 IS
N 75°36′ 14" W 3868.1352′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES

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   THE FILES TO BE FOUND ARE AS FOLLOWS:

   R2707A_LS_GPSCALIB_100701.PDF
   R2707A_LS_WGS84_100701.TXT
   R2707A_LS_LOCAL_100701.TXT
   R2707A_LS_CONTROL_100701.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.

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-6
LOCATION AND SURVEYS	

FINAL

SURVEY CONTROL SHEET

(GPS CALIBRATION SHEET FROM R-2707B)

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

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LONGITUDE 81°32'14.87764"W
SITE SCALE FACTOR 1.0001559240
HEIGHT 747.565SFT

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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	0.050SFT	0.009	GPS15
VERTICAL	0.045SFT	0.008	MCBRAYER
THREE-DIMENL	0.057SFT	0.012	MCBRAYER

DATUM DESCRIPTION

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WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
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ELEVATION: 852.279'(ft)
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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

Latitude 35 16'59.95696"N
Longitude 81 40'06.15783"W
Height 751.773sft

Point LATT-2
Latitude 35 19'02.46223"N
Longitude 81 39'42.94665"W
Height 820.821sft

Point GPS4
Latitude 35 18'17.64678"N
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Height 770.106sft

Point M77
Latitude 35 17'53.47450"N
Longitude 81 32'14.87790"W
Height 747.535sft

Point WALLACE
Latitude 35 21'21.03039"N
Longitude 81 30'27.11508"W
Height 863.861sft

Point GPS15
Latitude 35 18'48.68592"N
Longitude 81 29'24.43979"W
Height 832.090sft

Point 2JSI3
Latitude 35 14'52.39137"N
Longitude 81 25'26.08075"W
Height 770.050sft

Point GPS23
Latitude 35 14'49.16395"N
Longitude 81 25'35.37802"W
Height 763.346sft

Point R26254
Latitude 35 13'23.79431"N
Longitude 81 23'00.98772"W
Height 846.141sft

Point W200
Latitude 35 10'05.36224"N
Longitude 81 27'02.08704"W
Height 776.498sft

Calculated point

Northing 568742.403sft
Easting 1203773.275sft
Elevation 856.819sft
Horz error 0.035sft
Vert error 0.045sft
3D error 0.057sft

Northing 581073.131sft
Easting 1206029.125sft
Elevation 925.966sft
Horz error 0.009sft
Vert error 0.004sft
3D error 0.010sft

Northing 576194.767sft
Easting 1219011.564sft
Elevation 875.093sft
Horz error 0.024sft
Vert error 0.017sft
3D error 0.029sft

Northing 573127.494sft
Easting 1242971.651sft
Elevation 852.249sft
Horz error 0.029sft
Vert error 0.030sft
3D error 0.042sft

Northing 593880.476sft
Easting 1252431.750sft
Elevation 968.736sft
Horz error 0.018sft
Vert error 0.001sft
3D error 0.018sft

Northing 578350.583sft
Easting 1257235.473sft
Elevation 936.723sft
Horz error 0.050sft
Vert error 0.024sft
3D error 0.056sft

Northing 553976.489sft
Easting 1276400.935sft
Elevation 874.121sft
Horz error 0.021sft
Vert error 0.044sft
3D error 0.049sft

Northing 553669.095sft
Easting 1275622.024sft
Elevation 867.424sft
Horz error 0.017sft
Vert error 0.007sft
3D error 0.018sft

Northing 544729.486sft
Easting 1288217.128sft
Elevation 949.783sft
Horz error 0.031sft
Vert error 0.017sft
3D error 0.036sft

Northing 525158.972sft
Easting 1267723.676sft
Elevation 880.183sft
Horz error 0.036sft
Vert error 0.039sft
3D error 0.053sft

Local

Point McBrayer_Local
Northing 568742.428sft
Easting 1203773.299sft
Elevation 856.774sft
Utilized Horz and Vert
Quality Survey quality

Point LATT-2_Local
Northing 581073.122sft
Easting 1206029.126sft
Elevation 925.970sft
Utilized Horz and Vert
Quality Survey quality

Point R2707-4_Local
Northing 576194.769sft
Easting 1219011.540sft
Elevation 875.110sft
Utilized Horz and Vert
Quality Survey quality

Point M77_Local
Northing 573127.522sft
Easting 1242971.658sft
Elevation 852.279sft
Utilized Horz and Vert
Quality Survey quality

Point WALLACE_Local
Northing 593880.490sft
Easting 1252431.739sft
Elevation 968.735sft
Utilized Horz and Vert
Quality Survey quality

Point R2707-15_Local
Northing 578350.547sft
Easting 1257235.438sft
Elevation 936.747sft
Utilized Horz and Vert
Quality Survey quality

Point 2-JS-13_Local
Northing 553976.474sft
Easting 1276400.950sft
Elevation 874.077sft
Utilized Horz and Vert
Quality Survey quality

Point R2707-23_Local
Northing 553669.094sft
Easting 1275622.041sft
Elevation 867.417sft
Utilized Horz and Vert
Quality Survey quality

Point R2625-4_Local
Northing 544729.474sft
Easting 1288217.099sft
Elevation 949.766sft
Utilized Horz and Vert
Quality Survey quality

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.

08-DEC-2017 13:47
\Roadway\Proj\R2707F_ls_1C-6.dgn
RWTB

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-7
Location and Surveys	

SURVEY CONTROL SHEET

(BASELINES & BENCHMARKS FROM R-2707AA)

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
51	BL-51	574330.0960	1199951.0580	777.82	6+46.09	9.65 LT
52	BL-52	573787.7590	1201029.3960	840.29	18+41.60	102.14 RT
53	BL-53	573539.9250	1201703.5230	863.31	25+41.98	181.21 RT
54	BL-54	573528.5710	1202429.1060	867.46	32+48.73	87.92 RT
GPS1	R2707-1 = BL-1	573421.5670	1203564.8650	857.78	43+80.14	152.12 RT
55	BL-55	573484.3420	1204642.2090	815.49	54+56.10	68.91 RT
56	BL-56	573481.7304	1206193.1674	869.44	70+06.83	42.09 RT
57	BL-57	573448.2746	1207572.8073	904.02	83+85.43	52.32 RT
58	BL-58	573345.4930	1207880.5420	910.16	86+85.84	163.89 RT
GPS31	R2707-31 = BL-3	573379.9860	1208167.8730	903.36	89+69.03	148.70 RT
59	BL-59	573674.8680	1209275.1970	900.41	100+98.79	2.65 RT
60	BL-60	573747.8850	1210159.0270	896.86	109+83.94	57.30 RT
61	BL-61	574007.8410	1211439.9910	884.96	122+88.96	16.02 LT
62	BL-62	574196.6720	1211949.1260	856.00	128+19.93	129.78 LT
63	BL-63	574117.4520	1212359.8770	863.93	132+15.05	7.60 RT
64	BL-64	574165.7160	1212705.1130	865.49	135+63.64	9.41 RT
65	BL-65	574311.9220	1213654.1150	839.65	145+23.34	12.28 RT
66	BL-66	574536.0740	1214854.5830	769.85	157+29.50	126.46 RT
67	BL-67	574774.0100	1215824.1240	829.63	166+85.29	305.06 RT
68	BL-68	575199.5170	1216535.5970	814.52	174+90.11	299.85 RT
69	BL-69	575543.4290	1217484.3040	833.90	184+75.79	516.09 RT
70	BL-70	575899.8230	1218150.9200	848.57	192+77.03	545.30 RT
GPS4	R2707-4 = BL-4	576194.7690	1219011.5400	875.11	202+59.67	621.30 RT
71	BL-71	576719.3775	1219753.9080	846.57	211+55.67	346.13 RT
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

BY

POINT	DESC.	NORTH	EAST	ELEVATION	SR3 STATION	OFFSET
184	BY184 = BL-53	573539.9250	1201703.5230	863.31	20+61.05	102.57 LT
185	BY-185	573149.7890	1201741.2030	849.14	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
187	BY1-187	573881.1120	1203503.7520	866.48	18+92.39	21.02 RT
186	BY1-186 = R2707-1	573421.5670	1203564.8650	857.78	23+55.68	4.46 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
188	BY2-188 = R2707-1	573421.5670	1203564.8650	857.78	23+55.68	4.46 RT
189	BY2-189	572653.5030	1203419.2600	835.16	31+59.00	153.82 RT
190	BY2-190	572001.6760	1203339.5730	829.78	38+21.31	22.69 LT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
191	BY3-191	574306.3750	1208596.4200	902.60	95+17.72	719.78 LT
192	BY3-192 = R2707-31	573379.9860	1208167.8730	903.36	89+69.03	148.70 RT
193	BY3-193	572864.1070	1207894.4440	896.50	86+77.18	645.39 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
194	BY4-194 = BL-60	573747.8850	1210159.0270	896.86	36+32.25	126.41 RT
195	BY4-195	572968.0350	1210559.6090	887.32	45+74.91	8.36 RT
196	BY4-196	572250.1070	1210605.8100	872.91	52+93.92	15.51 LT
197	BY4-197	571473.0730	1210583.4530	870.98	60+70.07	14.94 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
198	BY5-198	577349.0600	1218681.4870	889.61	11+13.94	20.52 RT
199	BY5-199	576630.4710	1218866.3930	873.82	18+55.90	13.26 RT
220	BY5-220 = R2707-4	576194.7690	1219011.5400	875.11	23+13.69	23.22 LT

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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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 5+03.30 IS
N 75 36 14 W 3868.1352'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

```
****************************************
BM1       ELEVATION = 780.10
N 574452      E 1199980
L STATION 6+19.00 132 LEFT
RR SPIKE IN 18 INCH OAK
****************************************
****************************************
BM2       ELEVATION = 866.06
N 573685      E 1201854
L STATION 26+61.00 11 RIGHT
RR SPIKE IN 30 INCH OAK
****************************************
****************************************
BM3       ELEVATION = 832.22
N 572054      E 1203304
L STATION 41+46.00 1524 RIGHT
RR SPIKE IN 18 INCH MAPLE
****************************************
****************************************
BM4       ELEVATION = 908.06
N 573223      E 1207632
L STATION 84+41.00 278 RIGHT
RR SPIKE IN 28 INCH OAK
****************************************
****************************************
BM5       ELEVATION = 908.12
N 574478      E 1208631
L STATION 95+76.00 885 LEFT
RR SPIKE IN 28 INCH OAK
****************************************
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NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 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.*

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2707A_LS_GPSCALIB_100701.PDF
   R2707A_LS_WGS84_100701.TXT
   R2707A_LS_LOCAL_100701.TXT
   R2707A_LS_CONTROL_100701.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.

5/23/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-8
Location and Surveys	

SURVEY CONTROL SHEET

(BASELINES & BENCHMARKS FROM R-2707AB)

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
51	BL-51	574330.0960	1199951.0580	777.82	6+46.09	9.65 LT
52	BL-52	573787.7590	1201029.3960	840.29	18+41.60	102.14 RT
53	BL-53	573539.9250	1201703.5230	863.31	25+41.98	181.21 RT
54	BL-54	573528.5710	1202429.1060	867.46	32+48.73	87.92 RT
GPS1	R2707-1 ▪ BL-1	573421.5670	1203564.8650	857.78	43+80.14	152.12 RT
55	BL-55	573484.3420	1204642.2090	815.49	54+56.10	68.91 RT
56	BL-56	573481.7304	1206193.1674	869.44	70+06.83	42.09 RT
57	BL-57	573448.2746	1207572.8073	904.02	83+85.43	52.32 RT
58	BL-58	573345.4930	1207880.5420	910.16	86+85.84	163.89 RT
GPS31	R2707-31 ▪ BL-3	573379.9860	1208167.8730	903.36	89+69.03	148.70 RT
59	BL-59	573674.8680	1209275.1970	900.41	100+98.79	2.65 RT
60	BL-60	573747.8850	1210159.0270	896.86	109+83.94	57.30 RT
61	BL-61	574007.8410	1211439.9910	884.96	122+88.96	16.02 LT
62	BL-62	574196.6720	1211949.1260	856.00	128+19.93	129.78 LT
63	BL-63	574117.4520	1212359.8770	863.93	132+15.05	7.60 RT
64	BL-64	574165.7160	1212705.1130	865.49	135+63.64	9.41 RT
65	BL-65	574311.9220	1213654.1150	839.65	145+23.34	12.28 RT
66	BL-66	574536.0740	1214854.5830	769.85	157+29.50	126.46 RT
67	BL-67	574774.0100	1215824.1240	829.63	166+85.29	305.06 RT
68	BL-68	575199.5170	1216535.5970	814.52	174+90.11	299.85 RT
69	BL-69	575543.4290	1217484.3040	833.90	184+75.79	516.09 RT
70	BL-70	575899.8230	1218150.9200	848.57	192+77.03	545.30 RT
GPS4	R2707-4 ▪ BL-4	576194.7690	1219011.5400	875.11	202+59.67	621.30 RT
71	BL-71	576719.3775	1219753.9080	846.57	211+55.67	346.13 RT
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

BY

POINT	DESC.	NORTH	EAST	ELEVATION	SR3 STATION	OFFSET
184	BY184 ▪ BL-53	573539.9250	1201703.5230	863.31	20+61.05	102.57 LT
185	BY-185	573149.7890	1201741.2030	849.14	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
187	BY1-187	573881.1120	1203503.7520	866.48	18+92.39	21.02 RT
186	BY1-186 ▪ R2707-1	573421.5670	1203564.8650	857.78	23+55.68	4.46 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
188	BY2-188 ▪ R2707-1	573421.5670	1203564.8650	857.78	23+55.68	4.46 RT
189	BY2-189	572653.5030	1203419.2600	835.16	31+59.00	153.82 RT
190	BY2-190	572001.6760	1203339.5730	829.78	38+21.31	22.69 LT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
191	BY3-191	574306.3750	1208596.4200	902.60	95+17.72	719.78 LT
192	BY3-192 ▪ R2707-31	573379.9860	1208167.8730	903.36	89+69.03	148.70 RT
193	BY3-193	572864.1070	1207894.4440	896.50	86+77.18	645.39 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
194	BY4-194 ▪ BL-60	573747.8850	1210159.0270	896.86	36+32.25	126.41 RT
195	BY4-195	572968.0350	1210559.6090	887.32	45+74.91	8.36 RT
196	BY4-196	572250.1070	1210605.8100	872.91	52+93.92	15.51 LT
197	BY4-197	571473.0730	1210583.4530	870.98	60+70.07	14.94 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
198	BY5-198	577349.0600	1218681.4870	889.61	11+13.94	20.52 RT
199	BY5-199	576630.4710	1218866.3930	873.82	18+55.90	13.26 RT
220	BY5-220 ▪ R2707-4	576194.7690	1219011.5400	875.11	23+13.69	23.22 LT

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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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 5+03.30 IS
N 75 36 14 W 3868.1352'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

```
****************************************
BM1       ELEVATION = 780.10
N 574452      E 1199980
L STATION 6+19.00 132 LEFT
RR SPIKE IN 18 INCH OAK
****************************************
****************************************
BM2       ELEVATION = 866.06
N 573685      E 1201854
L STATION 26+61.00 11 RIGHT
RR SPIKE IN 30 INCH OAK
****************************************
****************************************
BM3       ELEVATION = 832.22
N 572054      E 1203304
L STATION 41+46.00 1524 RIGHT
RR SPIKE IN 18 INCH MAPLE
****************************************
****************************************
BM4       ELEVATION = 908.06
N 573223      E 1207632
L STATION 84+41.00 278 RIGHT
RR SPIKE IN 28 INCH OAK
****************************************
****************************************
BM5       ELEVATION = 908.12
N 574478      E 1208631
L STATION 95+76.00 885 LEFT
RR SPIKE IN 28 INCH OAK
****************************************
```

SURVEY CONTROL SHEET R-2707AB

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 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.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2707A_LS_GPSCALIB_100701.PDF
   R2707A_LS_WGS84_100701.TXT
   R2707A_LS_LOCAL_100701.TXT
   R2707A_LS_CONTROL_100701.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.

08-DEC-2017 13:47
\Roadway Proj\R2707F_ls_1C-8.dgn
MTB

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-9
Location and Surveys	

FINAL

SURVEY CONTROL SHEET

(BASELINES & BENCHMARKS FROM 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 578862 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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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 8395 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.*

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.

08-DEC-2017 13:47
\Roadway\Proj\R2707F_ls_1C-9.dgn
mnb

1/24/13

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-10
Location and Surveys	

SURVEY CONTROL SHEET *FINAL*

DESIGN ALIGNMENTS (FROM R-2707AA & R-2707AB)

L

TYPE	STATION	NORTH	EAST
POT	5+03.30	574383.2782	1199818.1890
PC	7+08.20	574294.4894	1200002.8534
PT	37+98.46	573584.6946	1202986.1720
PC	81+73.98	573501.6647	1207360.9053
PT	94+13.31	573579.0588	1208596.4465
TS	148+35.20	574357.6165	1213962.1485
SC	151+35.20	574405.1838	1214258.3255
CS	164+69.59	574911.1673	1215483.2444
ST	167+69.59	575086.4879	1215726.6497
TS	176+68.62	575622.9243	1216448.1023
SC	179+68.62	575800.0677	1216690.2096
CS	198+96.74	576666.6065	1218404.7363
ST	201+96.74	576756.4817	1218690.9498
POT	290+24.47	579336.3265	1227133.2915

RAMPB

TYPE	STATION	NORTH	EAST
TS	11+22.45	573585.9611	1205396.2538
SC	13+72.45	573589.2276	1205646.1297
CS	18+55.39	573714.0248	1206109.7955
SRS	21+05.39	573836.6234	1206327.5528
SC	23+55.39	573954.7577	1206547.5728
CS	30+43.39	573927.1315	1207213.9978
ST	32+93.39	573791.1923	1207423.4853
TS	39+93.39	573380.1024	1207990.0584
SC	41+93.39	573264.6625	1208153.3641
CS	45+70.63	573077.1168	1208480.3217
ST	47+70.63	572994.4321	1208662.4161
POT	52+13.37	572816.3719	1209067.7734

LOOPB

TYPE	STATION	NORTH	EAST
TS	10+00.00	573554.2843	1207065.2656
SC	12+00.00	573589.2242	1206870.3813
CS	16+99.78	573976.5872	1206914.8624
SC	18+99.78	573958.1805	1207110.9168

Y4

TYPE	STATION	NORTH	EAST
POT	9+99.19	575445.6750	1208379.8506
TS	14+66.68	575011.1239	1208552.2208
SC	16+66.68	574827.6023	1208631.5332
CS	25+65.27	574268.8226	1209303.3382
SRS	27+65.27	574224.2669	1209498.2366
SC	29+65.27	574180.2008	1209693.2584
CS	43+79.60	573163.1992	1210556.3468
ST	45+79.60	572963.6072	1210568.1079
POT	54+19.60	572124.0129	1210594.2120
PC	58+95.46	571648.1463	1210595.2283
PT	62+03.69	571340.1018	1210604.5521
POT	63+43.44	571200.5855	1210612.7065

RAMPC

TYPE	STATION	NORTH	EAST
POT	10+00.00	573467.4626	1206686.1586
TS	14+66.22	573430.1753	1207150.8836
SC	17+16.22	573405.2446	1207399.5978
CS	21+67.26	573295.1882	1207836.1123
ST	24+17.26	573199.2200	1208066.9161
POT	34+87.58	572768.7627	1209046.8602

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	572798.0607	1209059.7298
POT	29+50.00	572013.8165	1210845.0761

RAMPD

TYPE	STATION	NORTH	EAST
TS	10+00.00	573604.0436	1209095.9469
SC	12+00.00	573556.8175	1208902.3485
CS	19+04.26	572970.8681	1208822.8211
ST	21+04.26	572873.7491	1208996.8284

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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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 5+03.30 IS
N 75 36 14 W 3868.1352'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

08-DEC-2017 3:47
\\Broadway\Proj\R2707F_1s_1C-10.dgn
MATB

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	1C-11
Location and Surveys	

SURVEY CONTROL SHEET

DESIGN ALIGNMENTS (FROM R-2707B)

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

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

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.

NOTES

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(ft) EASTING: 124297.658(ft)
ELEVATION: 852.279'(ft)
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

08-DEC-2017 13:47
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HNTB

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 ... TELLIER II 12/12/2017	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 ... MORRISON 12/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

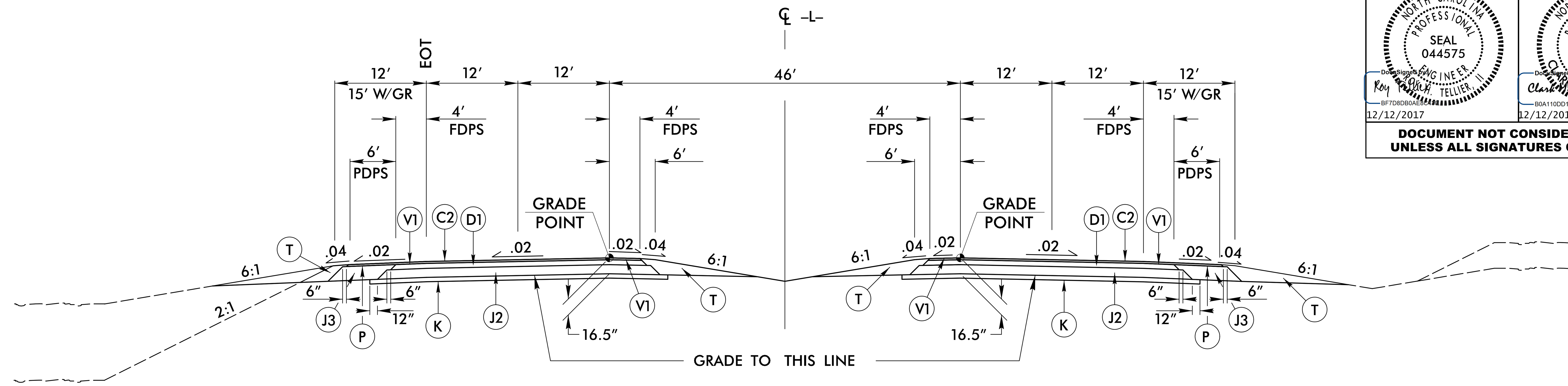
FINAL PAVEMENT SCHEDULE

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.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J1	PROP. 6" AGGREGATE BASE COURSE.
J2	PROP. 10" AGGREGATE BASE COURSE.
J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
K	SOIL STABILIZATION BASE TO BE TREATED WITH LIME TO A DEPTH OF 8", AT A RATE OF 20 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER OR BASE TO BE TREATED WITH CEMENT TO A DEPTH OF 7", AT A RATE OF 55 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
P	PRIME COAT AT THE RATE OF 0.35 GAL. / SQ. YD.
R1	5" MONOLITHIC CONCRETE ISLAND
R2	SHOULDER BERM GUTTER
R3	EXPRESSWAY GUTTER
R4	PROP. 2'-6" CURB AND GUTTER
T	EARTH MATERIAL.
V1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

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

GEOTEXTILE FOR PAVEMENT STABILIZATION LOCATIONS
STATION RANGES TO BE INVESTIGATED DURING CONSTRUCTION

-L- STA. 113+00 TO 117+00
-L- STA. 125+50 TO 130+50
-L- STA. 148+00 TO 156+20
-L- STA. 158+85 TO 163+00
-L- STA. 179+00 TO 184+00
-L- STA. 220+00 TO 268+00
-L- STA. 291+50 TO 295+50
-L- STA. 319+00 TO 333+50
-L- STA. 336+00 TO 338+50
-L- STA. 342+50 TO 351+00
-L- STA. 364+50 TO 365+00
-RPD1- STA. 6+50 TO 22+00
-LPD1- STA. 5+00 TO 10+00
-RPB- STA. 10+00 TO 23+00
-RPC- STA. 10+00 TO 21+00
-LPB- STA. 10+00 TO 16+00
-LPC- STA. 10+00 TO 15+50

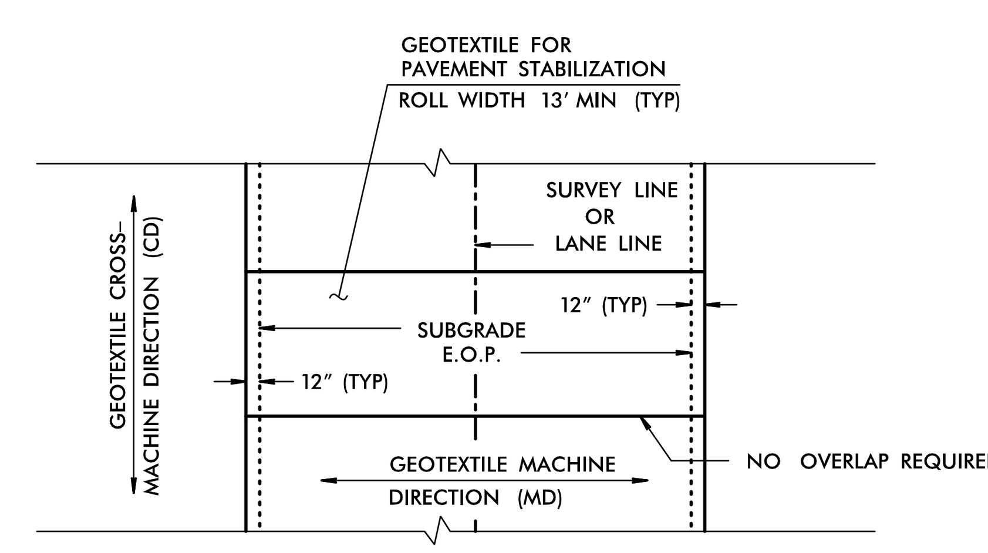


TYPICAL SECTION NO. 1

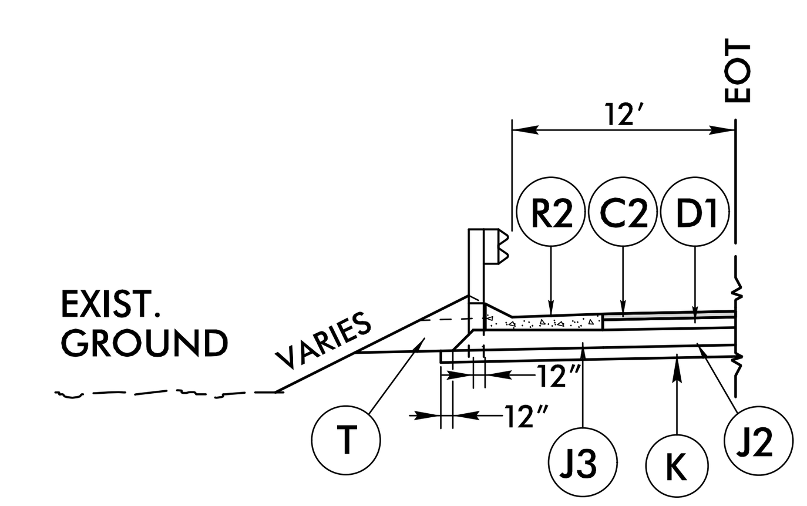
US 74 (SHELBY BYPASS)

USE TYPICAL SECTION NO. 1

FROM -L- STA. 66+60.00 TO STA. 156+22.92 +/- (BEGIN EXISTING BRIDGE) (WBL)
FROM -L- STA. 82+00.00 TO STA. 156+23.11 +/- (BEGIN EXISTING BRIDGE) (EBL)
FROM -L- STA. 159+26.12 +/- (END EXISTING BRIDGE) TO STA. 246+80.72 +/- (BEGIN EXISTING BRIDGE) (WBL)
FROM -L- STA. 159+27.89 +/- (END EXISTING BRIDGE) TO STA. 246+07.41 +/- (BEGIN EXISTING BRIDGE) (EBL)
FROM -L- STA. 248+77.58 +/- (END EXISTING BRIDGE) TO STA. 251+41.27 +/- (BEGIN EXISTING BRIDGE) (WBL)
FROM -L- STA. 249+17.77 +/- (END EXISTING BRIDGE) TO STA. 252+06.22 +/- (BEGIN EXISTING BRIDGE) (EBL)
FROM -L- STA. 253+53.82 +/- (END EXISTING BRIDGE) TO STA. 338+10.24 +/- (BEGIN EXISTING BRIDGE) (WBL)
FROM -L- STA. 254+38.78 +/- (END EXISTING BRIDGE) TO STA. 338+52.73 +/- (BEGIN EXISTING BRIDGE) (EBL)
FROM -L- STA. 342+83.80 +/- (END EXISTING BRIDGE) TO STA. 365+00.00 (WBL)
FROM -L- STA. 343+33.57 +/- (END EXISTING BRIDGE) TO STA. 365+00.00 (EBL)



GEOTEXTILE FOR PAVEMENT STABILIZATION PLACEMENT
(PLAN VIEW)
(100% COVERAGE REQUIRED)

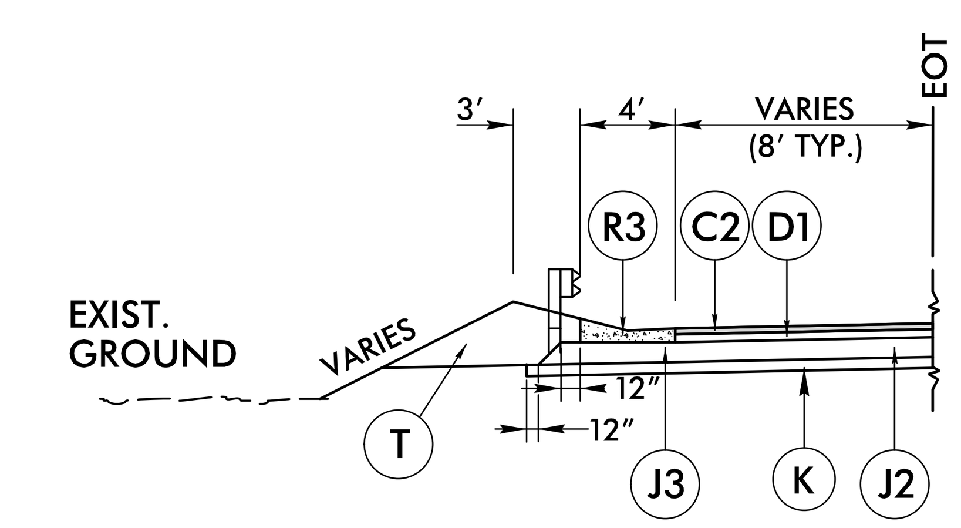


TYPICAL SECTION NO. 1A

SHOULDER BERM GUTTER LOCATIONS

USE TYPICAL SECTION NO. 1A IN CONJUNCTION WITH TYPICAL SECTION NO. 1

-L- STA. 127+00.00 TO STA. 129+55.00 RT
-L- STA. 150+00.00 TO STA. 156+22.60 LT
-L- STA. 159+26.12 TO STA. 162+50.00 LT
-L- STA. 178+95.00 TO STA. 184+00.00 RT



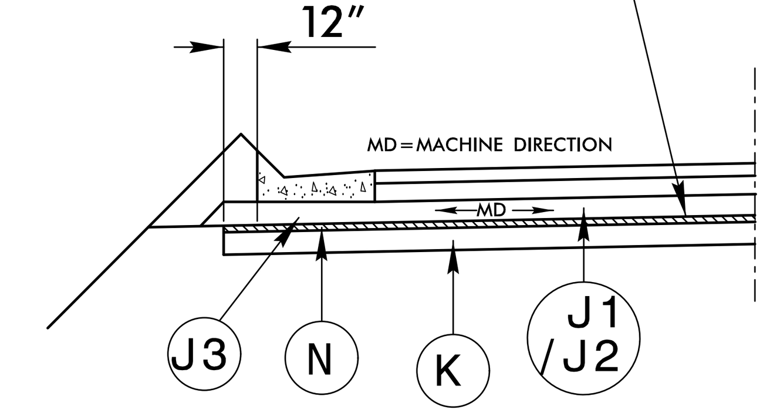
TYPICAL SECTION NO. 1B

EXPRESSWAY GUTTER LOCATIONS

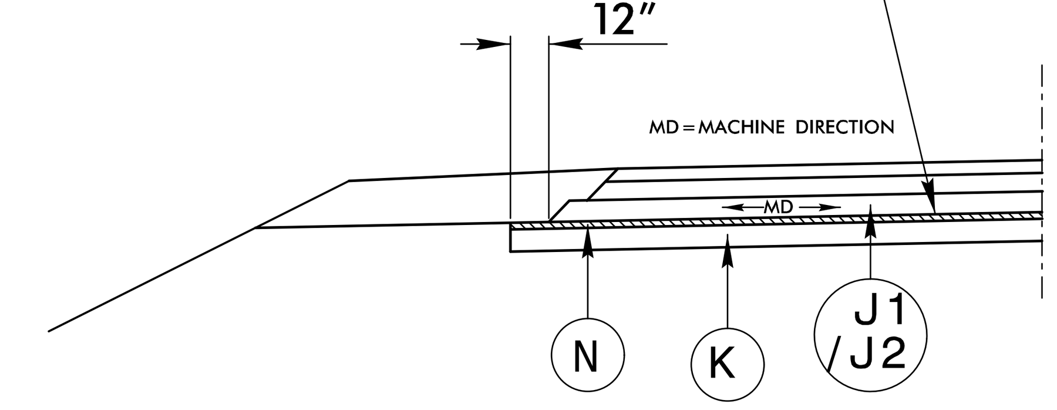
USE TYPICAL SECTION NO. 1B IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1, 4 & 5

-L- STA. 220+60.00 TO STA. 229+54.77 LT
-L- STA. 246+00.57 TO STA. 246+53.35 LT
-L- STA. 248+50.00 TO STA. 251+14.92 LT
-L- STA. 253+27.46 TO STA. 270+70.00 LT
-L- STA. 279+00.00 TO STA. 281+50.00 LT
-L- STA. 292+00.00 TO STA. 296+05.00 LT
-L- STA. 319+50.00 TO STA. 333+50.00 LT
-L- STA. 346+50.00 TO STA. 351+00.00 LT
-RPB- STA. 10+00.00 TO STA. 14+00.00 LT
-LPC- STA. 10+10.91 TO STA. 12+77.74 LT

-L- STA. 219+00.00 TO STA. 230+00.00 RT
-L- STA. 249+48.74 TO STA. 252+34.23 RT
-L- STA. 254+68.39 TO STA. 263+65.00 RT
-L- STA. 263+95.01 TO STA. 267+50.00 RT
-L- STA. 278+00.00 TO STA. 279+50.00 RT
-L- STA. 291+50.00 TO STA. 296+12.50 RT
-L- STA. 322+50.00 TO STA. 328+00.00 RT
-L- STA. 338+50.00 TO STA. 338+82.80 RT
-L- STA. 343+69.42 TO STA. 346+50.00 RT
-RPC- STA. 10+00.00 TO STA. 14+00.00 RT



GEOTEXTILE FOR PAVEMENT STABILIZATION
DETAIL WITH CURB & GUTTER



GEOTEXTILE FOR PAVEMENT STABILIZATION
DETAIL WITH SHOULDER SECTION

6/2/99

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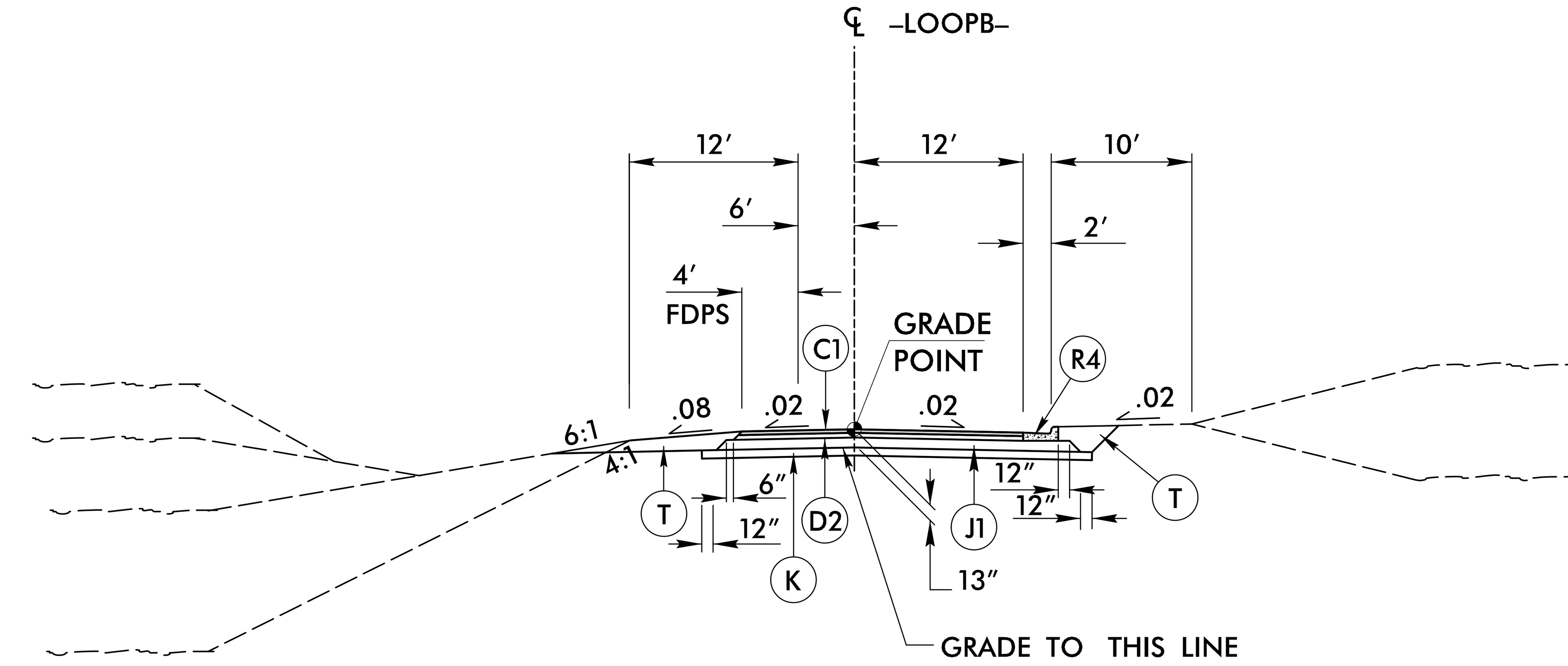
PROJECT REFERENCE NO.	SHEET NO.
R-2707F	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER 12/12/2017	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER 12/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/2/99

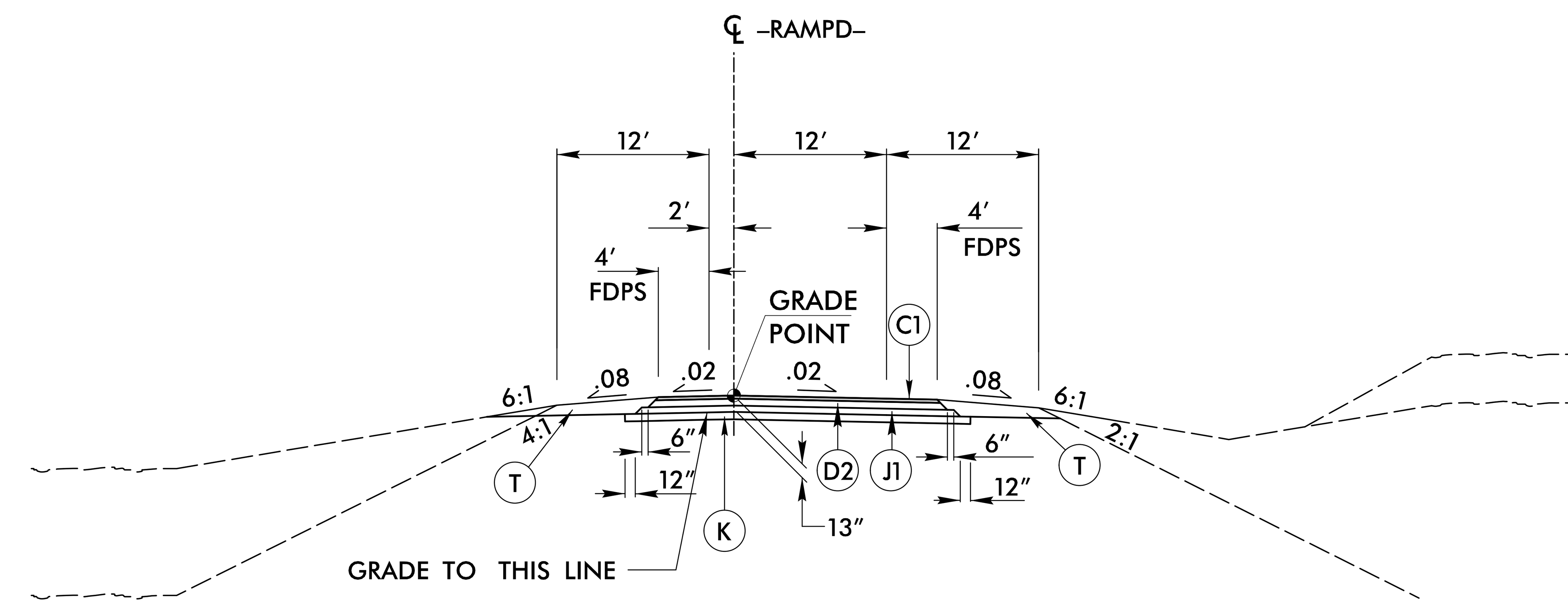
FINAL PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
D1	3.5" I19.0C
D2	4" I19.0B
J1	6" ABC
J2	10" ABC
J3	VAR. ABC
K	8" SL SUBBASE OR 7" SC SUBBASE
N	GEOTEXTILE PAVE. STAB.
P	0.35 PRIME COAT
R1	5" MONO. CONC. ISLAND
R2	SHOULDER BERM GUTTER
R3	EXPRESSWAY GUTTER
R4	2'-6" C&G
T	EARTH MATERIAL
V1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

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



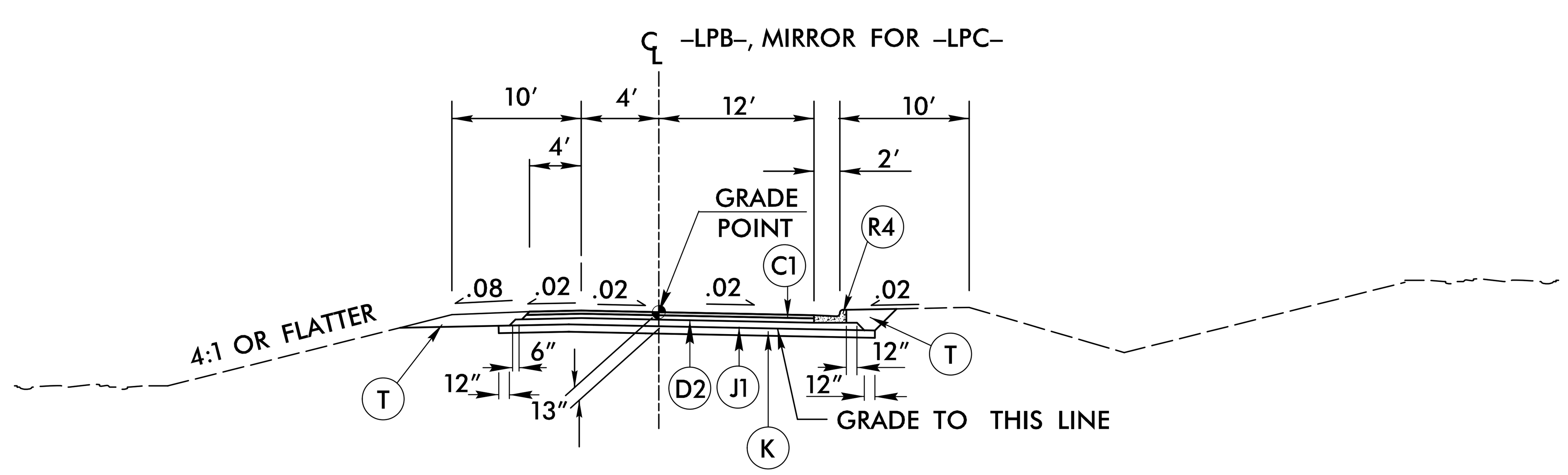
TYPICAL SECTION NO. 2

LOOP B AT W. DIXON BLVD INTERCHANGE
USE TYPICAL SECTION NO. 2
FROM STA. -LOOPB- 10+00.00 TO STA. 17+24.03



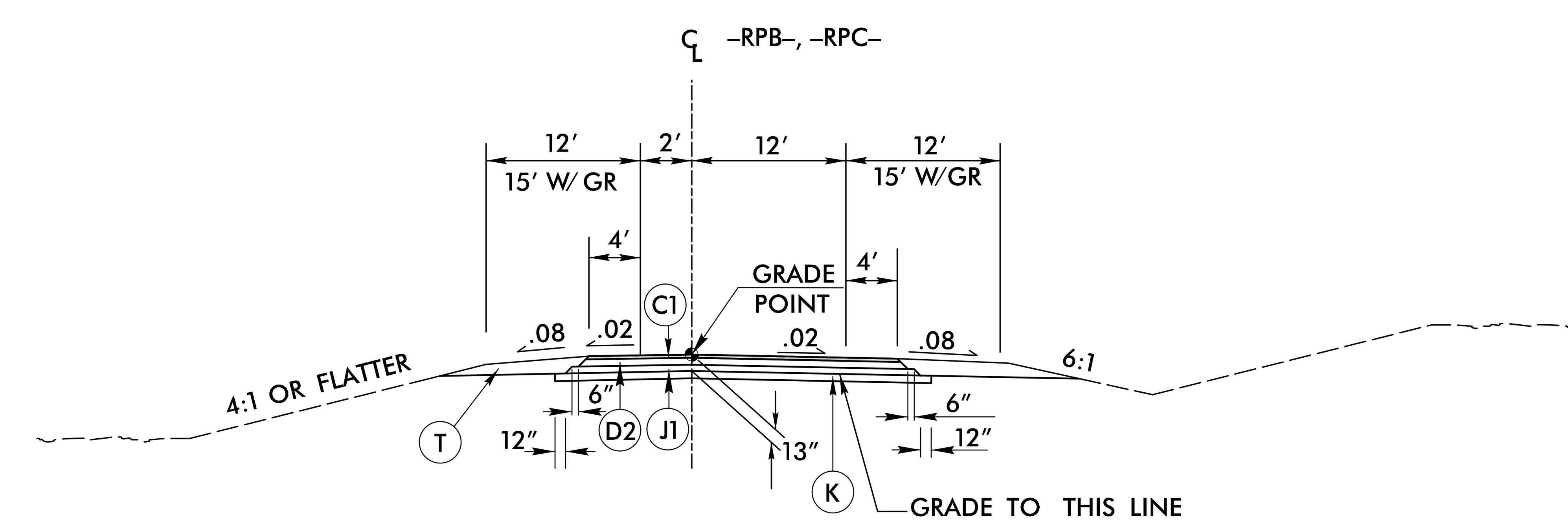
TYPICAL SECTION NO. 3

RAMP D AT W. DIXON BLVD INTERCHANGE
USE TYPICAL SECTION NO. 3:
FROM STA. -RAMPD- 10+00.00 TO STA. 17+88.46



TYPICAL SECTION NO. 4

WASHBURN SWITCH RD INTERCHANGE LOOP B & LOOP C
USE TYPICAL SECTION NO. 4 :
-LPB- STA. 10+00.00 TO -LPB- STA. 17+96.36
-LPC- STA. 10+00.00 TO -LPC- STA. 18+73.33



TYPICAL SECTION NO. 5

WASHBURN SWITCH RD INTERCHANGE RAMP B & RAMP C
USE TYPICAL SECTION NO. 5 :
-RPB- STA. 10+00.00 TO -RPB- STA. 24+50.00
-RPC- STA. 10+00.00 TO -RPC- STA. 27+45.10

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 044575 12/12/2017	SEAL 022896 12/12/2017

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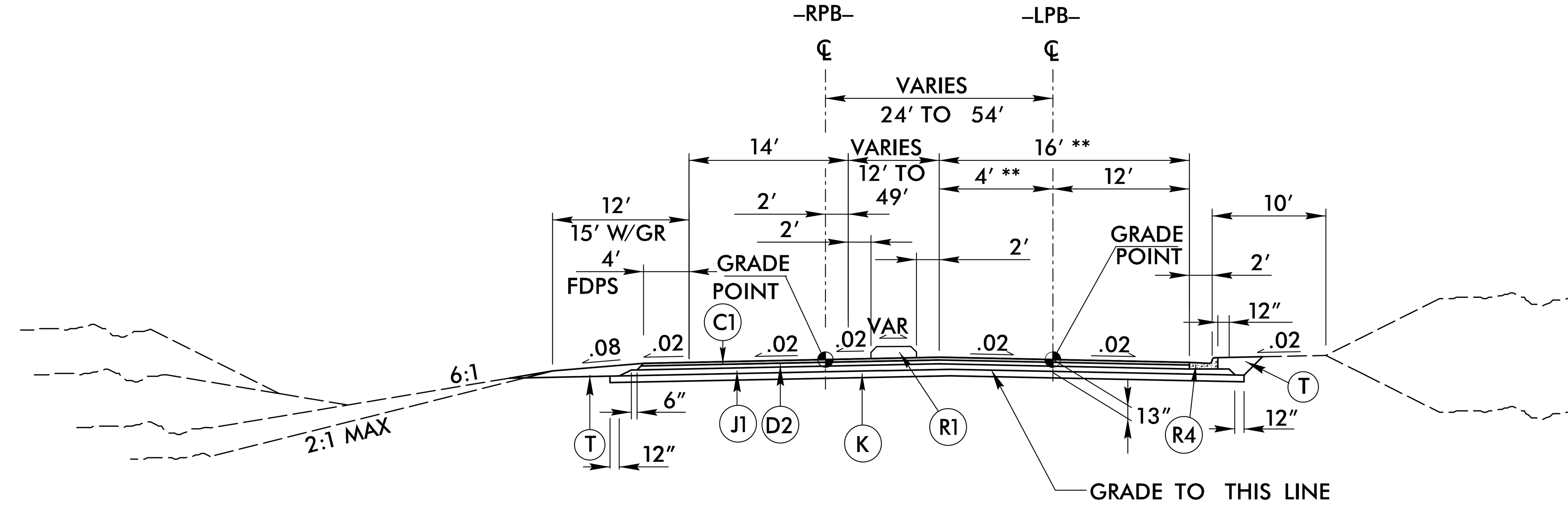
6/2/99

FINAL PAVEMENT SCHEDULE

C1	3" S9.5B
C2	3" S9.5C
D1	3.5" I19.0C
D2	4" I19.0B
J1	6" ABC
J2	10" ABC
J3	VAR. ABC
K	8" SL SUBBASE OR 7" SC SUBBASE
N	GEOTEXTILE PAVE. STAB.
P	0.35 PRIME COAT
R1	5" MONO. CONC. ISLAND
R2	SHOULDER BERM GUTTER
R3	EXPRESSWAY GUTTER
R4	2'-6" C&G
T	EARTH MATERIAL
V1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

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



TYPICAL SECTION NO. 6

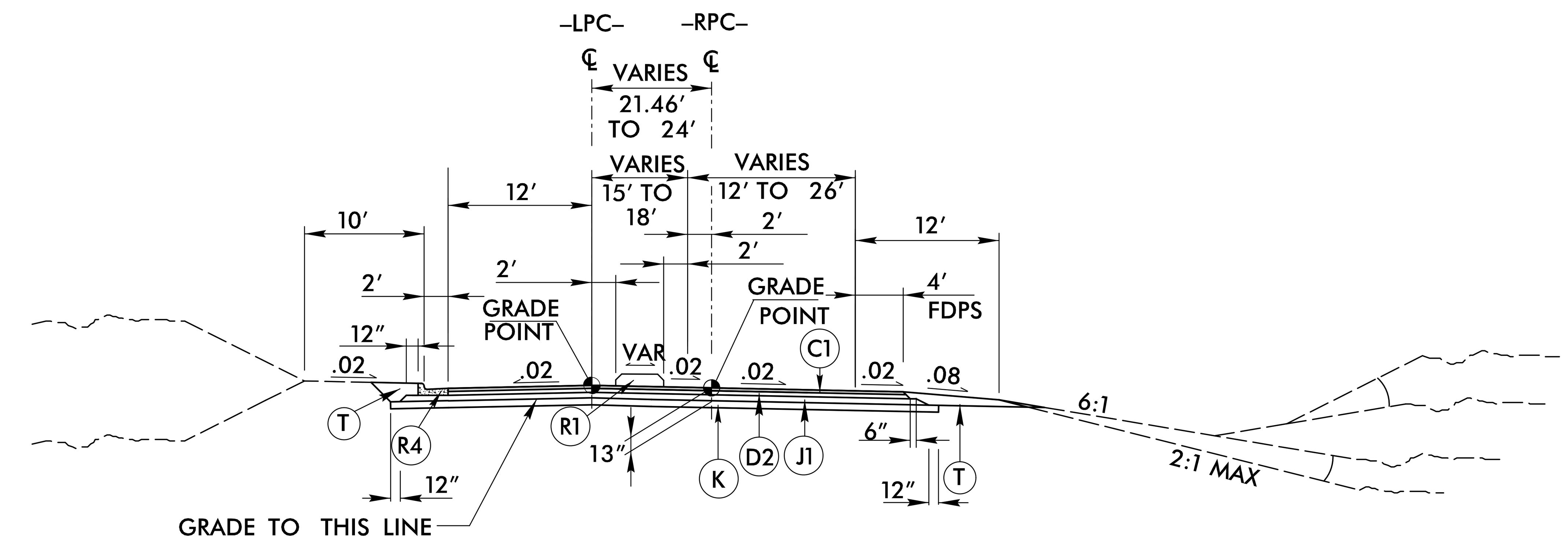
WASHBURN SWITCH RD INTERCHANGE RAMP B & LOOP B

USE TYPICAL SECTION NO. 6:

-RPB- STA. 24+50.00 TO STA. 26+57.75

-LPB- STA. 17+96.36 TO STA. 19+95.34

NOTES: ** VARIES 16' TO 28'
VARIES 4' TO 16'



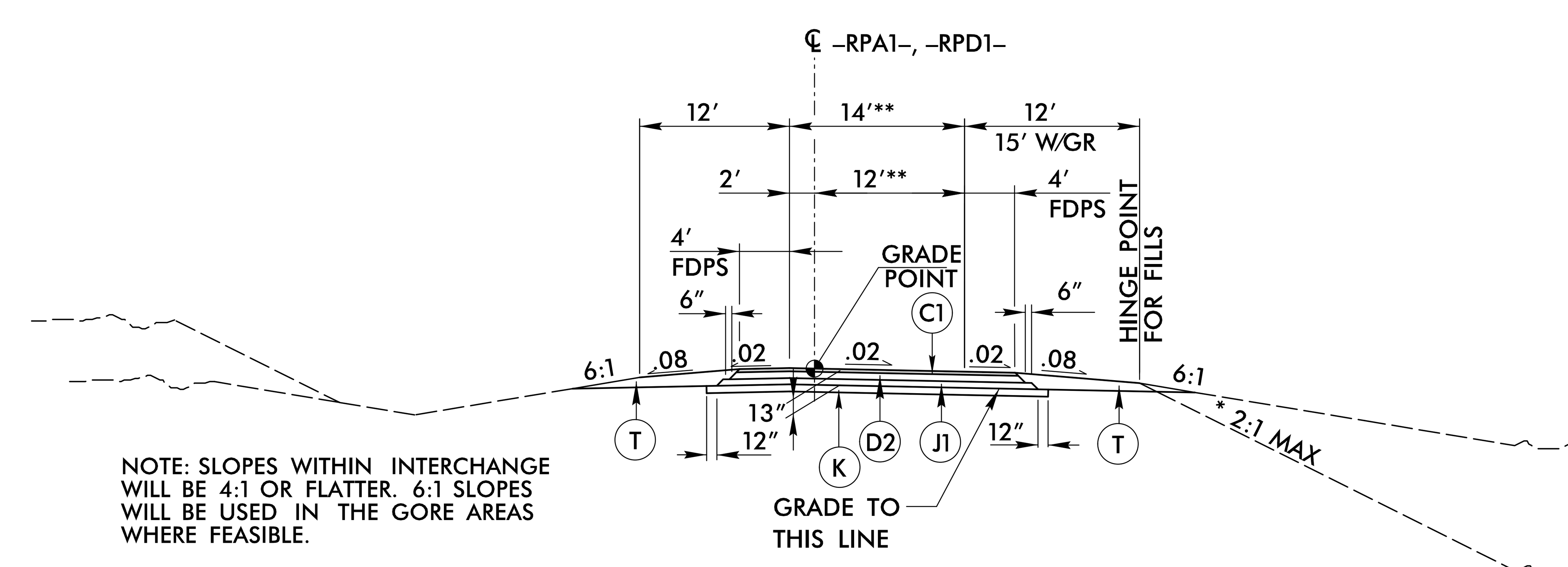
TYPICAL SECTION NO. 7

WASHBURN SWITCH RD INTERCHANGE RAMP C & LOOP C

USE TYPICAL SECTION NO. 7:

-RPC- STA. 27+45.10 TO STA. 32+02.09

-LPC- STA. 18+73.33 TO STA. 23+26.50



NOTE: SLOPES WITHIN INTERCHANGE WILL BE 4:1 OR FLATTER. 6:1 SLOPES WILL BE USED IN THE GORE AREAS WHERE FEASIBLE.

NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE
** VARIES 12'-0" TO 21'-6"
VARIES 14'-0" TO 23'-6"

TYPICAL SECTION NO. 8

NC 226 INTERCHANGE RAMP A & RAMP D

USE TYPICAL SECTION NO. 8:

**-RPA1- STA. 0+00.00 TO STA. 17+03.82

-RPD1- STA. 0+00.00 TO STA. 21+28.98 (MIRROR TYPICAL)

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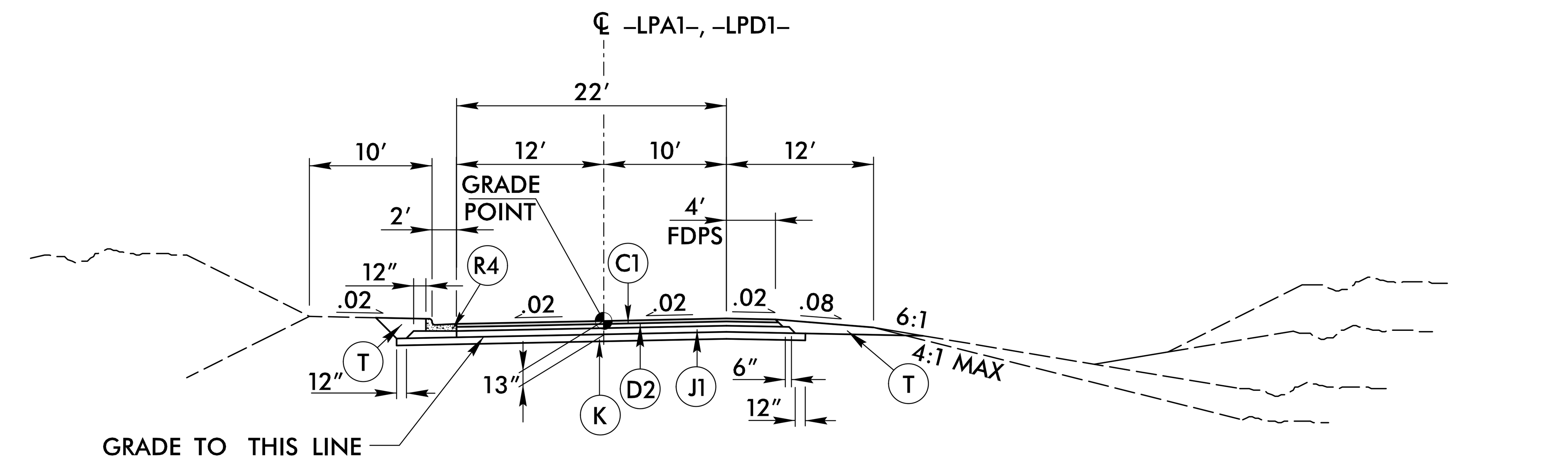
PROJECT REFERENCE NO.	SHEET NO.
R-2707F	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 ... TELLIER II 12/12/2017	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 ... MORRISON 12/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/2/99

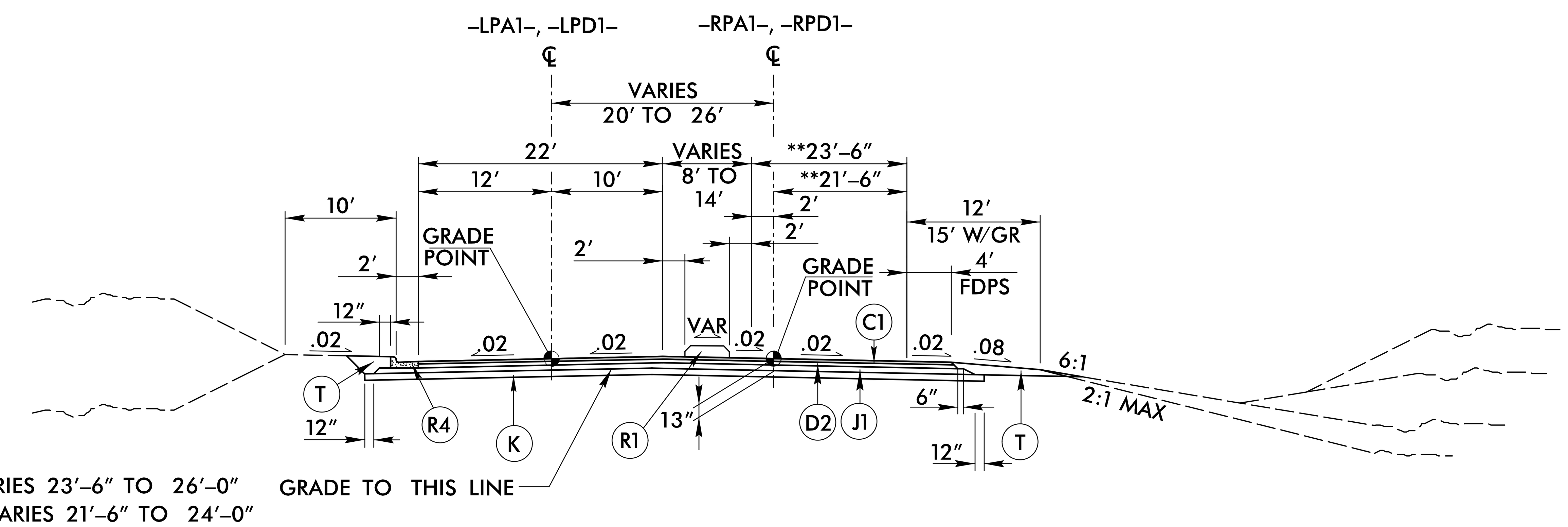
FINAL PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	3" S9.5C
D1	3.5" I19.0C
D2	4" I19.0B
J1	6" ABC
J2	10" ABC
J3	VAR. ABC
K	8" SL SUBBASE OR 7" SC SUBBASE
N	GEOTEXTILE PAVE. STAB.
P	0.35 PRIME COAT
R1	5" MONO. CONC. ISLAND
R2	SHOULDER BERM GUTTER
R3	EXPRESSWAY GUTTER
R4	2'-6" C&G
T	EARTH MATERIAL
V1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

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



TYPICAL SECTION NO. 9

NC 226 INTERCHANGE LOOP A & LOOP D
USE TYPICAL SECTION NO. 9:
-LPA1- STA. 0+00.00 TO STA. 7+28.39
-LPD1- STA. 0+00.00 TO STA. 9+20.85 (MIRROR TYPICAL)

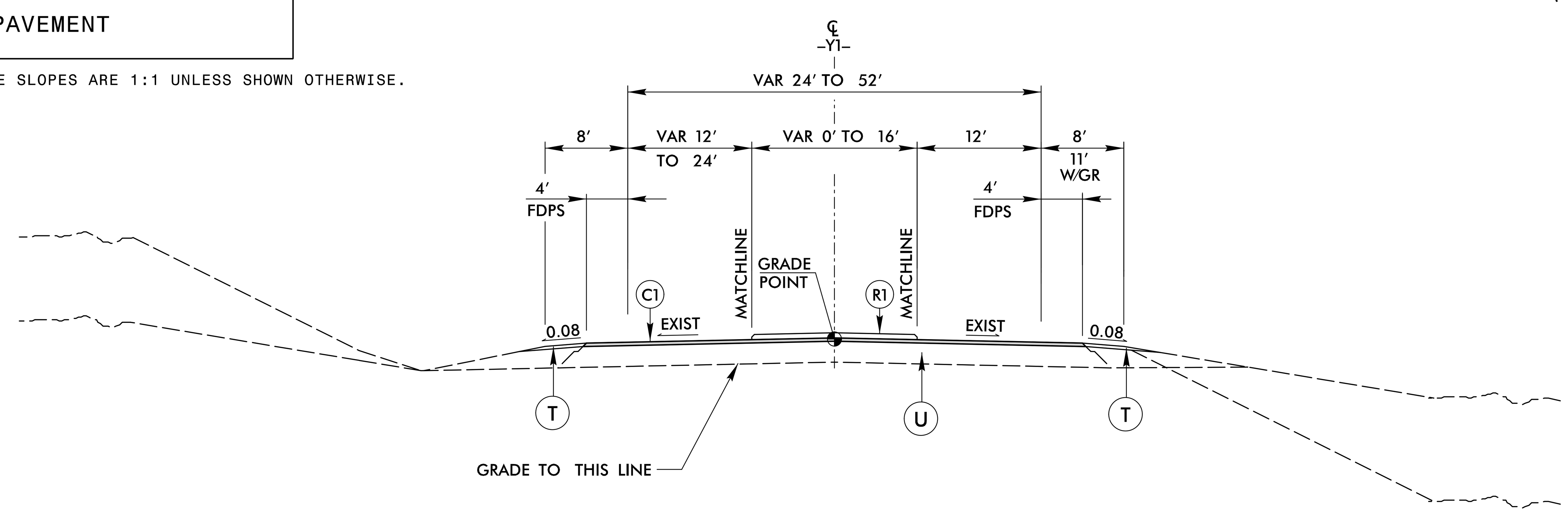


NOTES: ** VARIES 23'-6" TO 26'-0"
VARIES 21'-6" TO 24'-0"

TYPICAL SECTION NO. 10

NC 226 INTERCHANGE RAMP A & LOOP A
NC 226 INTERCHANGE RAMP D & LOOP D

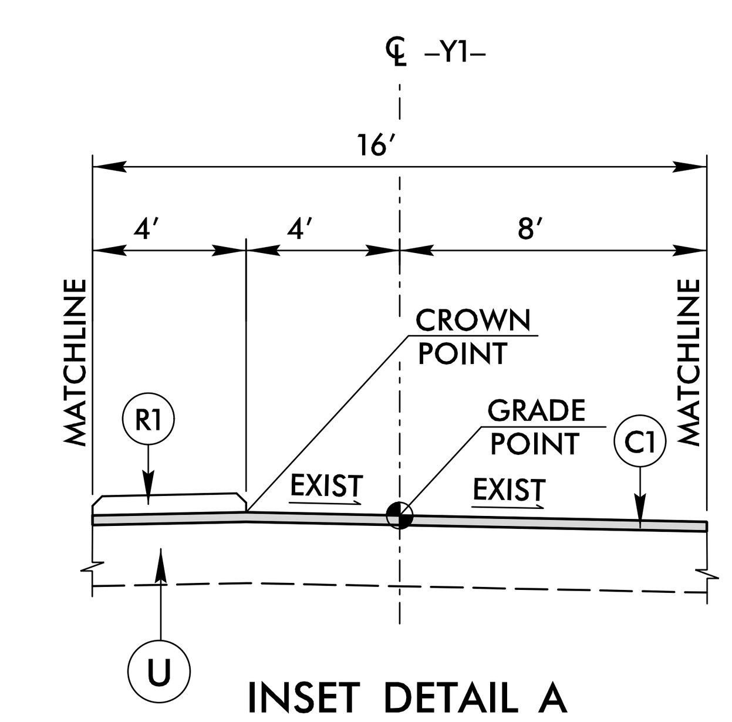
USE TYPICAL SECTION NO. 10:
-RPA1- STA. 17+03.82 TO STA. 20+96.85
-LPA1- STA. 7+28.39 TO STA. 11+17.67
-RPD1- STA. 21+28.98 TO STA. 23+69.31 (MIRROR TYPICAL)
-LPD1- STA. 9+20.85 TO STA. 11+62.36 (MIRROR TYPICAL)



TYPICAL SECTION NO. 11

NC 226 (POLKVILLE RD)

USE TYPICAL SECTION NO. 11
-Y1- STA 11+90 TO STA 27+68 +/- (BEGIN BRIDGE)
-Y1- STA 29+90 +/- (END BRIDGE) TO STA 42+40.00



INSET DETAIL A

NOTE: USE THIS DETAIL IN CONJUNCTION WITH TYPICAL SECTION NO. 11 AT THE FOLLOWING LOCATIONS.

-Y1- NC 226 (POLKVILLE RD) STA 17+70.24 TO STA 20+68.00
-Y1- NC 226 (POLKVILLE RD) STA 24+80.00 TO STA 32+80.00
-Y1- NC 226 (POLKVILLE RD) STA 36+08.19 TO STA 37+32.64

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COMPUTED BY: *RHT* **DATE:** *02/06/17*

CHECKED BY: *DWB* **DATE:** *02/13/17*

"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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

GUARDRAIL SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	*3B-1*

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER (LF)	REMOVE EXISTING GUARDRAIL (LF)	REMOVE & RESET EXISTING GUARDRAIL (LF)	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-3	CAT-1	B-77	G	NG				
-L-	73+50.00	74+25.00	MED	75.00'			74+50.00	77+38.00	21.0'	23.0'	75.0'		5.00'						1		50	75	TIE TO EXISTING GUARDRAIL
-L-	73+50.00	78+37.00	MED	487.50'			74+50.00	77+38.00	13.0'	23.0'	75.0'	75.0'	5.00'	5.00'					1				
-L-	77+63.00	78+38.00	MED	75.00'			77+38.00		21.0'	23.0'	75.0'								1				
-L-	83+70.00	88+65.00	MED	750.00'			BRIDGE	BRIDGE	20.0'	23.0'	25.0'	25.0'	1.50'	1.50'			4		2	240			
-L-	108+98.00	112+98.00	MED	700.00'			BRIDGE	BRIDGE	20.0'	23.0'	37.5'	37.5'	1.75'	1.75'			4		2	100			
-L-	109+44.72	112+13.47	LT	268.75'			110+88.32		13.0'	15.0'	50.0'		1.00'		1		1			144			
-L-	114+50.00	118+56.25	RT	406.25'			116+57.00		12.0'	15.0'	50.0'		1.00'		1	1							
-L-	126+50.00	129+56.25	RT	306.25'			128+25.00		12.3'	14.3'	50.0'		1.00'		1	1							SHOULDER BERM GUTTER INSTALLATION
-L-	149+65.85	156+47.10	RT	681.25'			151+50.00	BRIDGE	12.0'	15.0'	50.0'		1.00'		1		1						
-L-	149+85.70	156+48.20	LT	662.50'				BRIDGE	12.3'	14.3'	50.0'		1.00'			1	1						SHOULDER BERM GUTTER INSTALLATION
-L-	154+28.35	156+47.10	MED	218.75'			156+47.10		12.0'	15.0'	200.0'		14.83'		1		1						
-L-	159+02.12	163+58.37	LT	456.25'			BRIDGE		12.3'	14.3'	50.0'		1.00'		1		1						SHOULDER BERM GUTTER INSTALLATION
-L-	159+02.12	161+33.23	LT	231.25'			BRIDGE		4.0'	7.0'	162.5'		10.00'		1		1						
-L-	159+03.90	160+66.40	RT	162.50'				BRIDGE	10.0'	10.0'						1	1						
-L-	177+50.00	184+18.75	RT	668.75'			180+00.00	182+20.00	12.3'	14.3'	50.0'		1.00'		1	1							SHOULDER BERM GUTTER INSTALLATION
-L-	179+31.25	182+50.00	LT	318.75'			181+00.00		12.0'	15.0'	50.0'		1.00'		1	1							
-L-	202+33.16	204+58.16	MED	375.00'			BRIDGE		18.0'	15.0'	62.5'	62.5'	3.50'	3.50'					2				
-L-	219+00.00		RT	2206.25'			221+41.00		12.0'	15.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-RPC-		21+10.23	RT					19+50.00	12.0'	15.0'													
-L-	220+53.75		LT	2343.75'			221+75.00		12.0'	15.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-RPB-		24+55.78	LT				24+55.78	22+50.00	12.0'	15.0'													(STA. -L- 220+60.00 TO STA. -RPB- 14+00)
-LPC-	12+81.00		LT	281.25'			BRIDGE		18.0'	18.0'	50.0'		1.00'		1		1		1				
-L-		247+63.29	RT					BRIDGE															
-L-	246+02.38	246+77.38	LT	75.00'			BRIDGE		19.0'	19.0'						1	1						
-L-	245+08.57	247+27.32	MED	218.75'							200.0'	14.9'			1		1						
-L-	248+25.68	251+38.70	LT	313.02'			BRIDGE	BRIDGE	14.0'	20.0'							2						BETWEEN OVERPASS & RAILROAD BRIDGE
-L-	248+56.44	251+67.84	LT	311.40'			BRIDGE	BRIDGE	4.0'	7.0'							2						BETWEEN OVERPASS & RAILROAD BRIDGE
-L-	248+91.09	252+27.20	RT	336.11'			BRIDGE	BRIDGE	4.0'	7.0'							2						BETWEEN OVERPASS & RAILROAD BRIDGE
-L-	249+26.29	252+59.41	RT	333.12'			BRIDGE	BRIDGE	14.0'	20.0'							2						BETWEEN OVERPASS & RAILROAD BRIDGE
-L-	253+03.69	271+22.39	LT	1818.75'			266+85.00		12.0'	16.0'	50.0'		1.00'		1		1						EXPRESSWAY GUTTER INSTALLATION; DUKE DRIVEWAY
-L-	253+32.84	255+51.59	MED	218.75'			BRIDGE		4.0'	6.0'				3.50'	1		1						EXPRESSWAY GUTTER INSTALLATION; DUKE DRIVEWAY
-L-	254+44.00	263+63.00	RT	919.00'			256+00.00	DRIVEWAY	8.0'	14.0'						1	1						
-L-	264+00.00	267+56.25	RT	356.25'			265+70.00		8.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION; DUKE DRIVEWAY
-L-	276+50.00	279+56.25	RT	243.75'			278+45.00		12.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-L-	278+44.75	282+01.00	LT	356.25'			280+20.00		8.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-L-	290+50.00	296+18.75	RT	556.25'			292+49.00	294+65.00	12.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-L-	291+93.75	297+00.00	LT	506.25'			293+89.00		12.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-L-	319+50.00	338+01.97	LT	1850.00'			322+00.00	333+31.25	12.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-L-	322+00.00	333+31.25	RT	1131.25'			322+64.00	BRIDGE	12.0'	14.0'	50.0'		1.00'		1	1							EXPRESSWAY GUTTER INSTALLATION
-L-	336+28.40	338+72.24	MED	243.75'			BRIDGE		4.0'	7.0'	50.0'		1.00'		1		1						
-L-	336+31.16	339+08.64	RT	275.00'			BRIDGE		12.0'	12.0'	50.0'		1.00'		1		1						
-L-	342+23.45	351+54.70	LT	931.25'				BRIDGE	12.0'	16.0'	50.0'		1.00'		1		1						EXPRESSWAY GUTTER INSTALLATION
-L-	342+65.16	345+65.16	MED	300.00'				BRIDGE	4.0'	7.0'	50.0'		1.00'		1		1						
-L-	343+46.95	350+49.61	RT	706.25'			BRIDGE	347+53.80	12.0'	16.0'		50.0'		1.00'		1	1						EXPRESSWAY GUTTER INSTALLATION
-L-	353+89.61	355+76.95	LT	75.00'			BRIDGE	349+52.00	20.0'	23.0'	50.0'		1.00'						1	75			
-L-	353+89.61	355+76.95	MED LT	75.00'				BRIDGE	20.0'	23.0'	50.0'	1.0'							1	75			
		SUBTOTAL		23825.15'																			
		LESS ANCHOR DEDUCTIONS																					
	GREU, TL-3	26 @ 50.00'	=	1300.00'																			
	CAT-1	18 @ 6.25'	=	112.50'																			
	B-77	34 @ 18.75'	=	637.50'																			
TOTAL				21775.2											26	18	34		12	634	50	75	
			SAY	21800'											26	18	34		12	650	50	75	
	10 ADDITIONAL GUARDRAIL POSTS																						

COMPUTED BY: RHT DATE: 2/7/2017
CHECKED BY: DWB DATE: 2/7/2017

PROJECT NO.	SHEET NO.
R-2707F	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SHOULDER BERM GUTTER SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH
-L-	127+00	129+55	RT	255
-L-	150+00	156+23	LT	623
-L-	159+26	162+50	LT	324
-L-	178+95	184+00	RT	505
		TOTAL:		1707
		SAY:		1750

DOUBLE FACED CABLE GUIDERAIL SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH	INTERMEDIATE ANCHORS	TERMINAL ANCHORS
-L-	66+27	73+50	MEDIAN	723	0	2
-L-	78+38	83+70	MEDIAN	532	0	2
-L-	88+65	108+98	MEDIAN	2033	0	2
-L-	112+98	156+03	MEDIAN	4305	4	2
-L-	159+49	202+33	MEDIAN	4284	4	2
-L-	204+58	246+64	MEDIAN	4206	4	2
-L-	254+57	337+94	MEDIAN	8337	8	2
-L-	343+51	353+90	MEDIAN	1039	0	2
-L-	355+77	365+00	MEDIAN	923	1	2
ADDITIONAL GUIDERAIL POSTS		10				
		TOTAL:		26382	21	18
		SAY:		26500	39	

NOTE: GUIDERAIL LENGTH MEASURED BETWEEN ANCHORS TERMINALS; DO NOT DEDUCT LENGTH OF ANCHOR UNITS.

COMPUTED BY: ABH DATE: 2/8/2017

CHECKED BY: RHT DATE: 2/8/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707F	3D-1

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

STATION	LOCATION (LT, RT, OR CL)*	PREVIOUS CONTRACT STRUCTURE NO.	R-2707F STRUCTURE NO.	TOP ELEVATION	FRAME, GRATES, AND HOOD STANDARD 840.03 E	FRAME, GRATES, AND HOOD STANDARD 840.03 F	FRAME, GRATES, AND HOOD STANDARD 840.03 G	CONCRETE TRANSITIONAL SECTION: DROP INLET STD. 852.04	CONCRETE TRANSITIONAL SECTION: CATCH BASIN STD. 852.05	G.D.I. FRAME WITH FLAT GRATE STD. 840.20	G.D.I. FRAME WITH SAG GRATE STD. 840.22	ADJUSTMENT OF CATCH BASINS	ADJUSTMENT OF JB	ADJUSTMENT OF DI	ADJUSTMENT OF 3GI	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO SAG GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	TRAFFIC BEARING JUNCTION BOX STD. 840. 24	MANHOLE FRAME AND COVER STD. 840.54	STEEL GRATE AND FRAME STD. 840.37	CONVERT EXIST. D I TO JB	ANGLED VANE GRATES AND FRAME STD. 840.33	REMOVE TEMPORARY STEEL COVER	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	REMARKS
SHEET 5																												
-LPB- 13+78	RT.	0806	0501	856.7	1							1															1		CB
-LPB- 12+75	RT.	0808	0502	857.8			1					1																	CB
SHEET 7																												
-L- 109+00	LT.	0909	0701	893.0									1									1					1		JB w/MH
-L- 112+00	LT.	0910	0702	889.0									1									1					1		JB w/MH
SHEET 8																												
-L- 117+50	RT.	0918	0801	882.6										1		1											1		2GI
SHEET 18																												
-LPC- 19+54	RT	0529	1801	876.6				1						1														
-RPC- 27+88	LT	0530	1802	876.6				1						1														
SHEET 26																												
-Y1- 20+20	LT	1311	2601	799.5				1						1														
-Y1- 22+11	LT	1309	2602	801.3				1						1														
-Y1- 23+50	LT	1308	2603	803.6				1						1														
-Y1- 25+00	LT	1307	2604	806.2				1						1														
-LPD1- 9+22	LT	1326	2605	805.7				1						1														
SHEET 28																												
-RPB- 25+65	RT	0516	2801	895.9				1						1														
-RPB- 26+45	RT	0518	2802	894.5				1						1														
-LPB- 19+72	LT	0519	2803	894.8				1						1														
SHEET 29																												
-Y1- 19+00	LT	1703	2901	800.2				1						1														
SHEET 3D-1 TOTALS					1		1	11				2	2	12		1						2				4		
PROJECT TOTALS					1		1	11				2	2	12		1						2				4*		

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

*NOTE: REMOVAL OF TEMPORARY STEEL COVER INCIDENTAL TO UNCLASSIFIED EXCAVATION

COMPUTED BY: GEOTECHNICAL UNIT

PROJECT NO.	SHEET NO.
R-2707F	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY								750	
			TOTAL CY/TONS/SY:		0	0	0*	750	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization
*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY			87700	
		TOTAL SY:	87700	

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	4

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

SEAL 044575

12/13/2017

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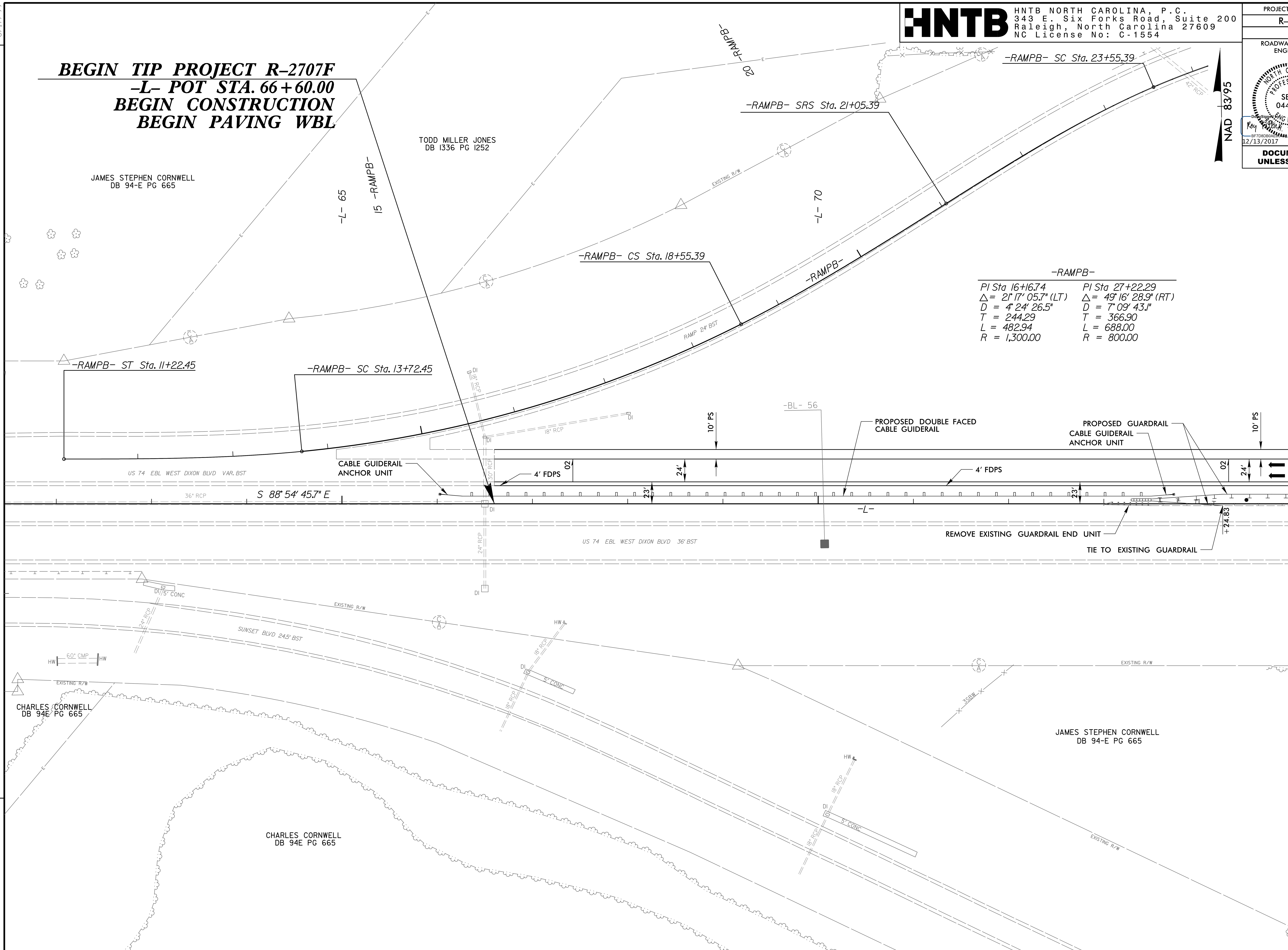
BEGIN TIP PROJECT R-2707F
-L- POT STA. 66+60.00
BEGIN CONSTRUCTION
BEGIN PAVING WBL
TODD MILLER JONES
DB 1336 PG 1252
JAMES STEPHEN CORNWELL
DB 94-E PG 665
-RAMPB- SC Sta. 23+55.39
-RAMPB- SRS Sta. 21+05.39
-RAMPB- CS Sta. 18+55.39
-RAMPB- ST Sta. 11+22.45
-RAMPB- SC Sta. 13+72.45
-L- 65
-L- 70
-L- 75
-RAMPB-
PI Sta 16+16.74
△= 21° 17' 05.7" (LT)
D = 4° 24' 26.5"
T = 244.29
L = 482.94
R = 1,300.00
PI Sta 27+22.29
△= 49° 16' 28.9" (RT)
D = 7° 09' 43.1"
T = 366.90
L = 688.00
R = 800.00
NAD 83/95
PROPOSED DOUBLE FACED CABLE GUIDERAIL
PROPOSED GUARDRAIL
CABLE GUIDERAIL ANCHOR UNIT
4' FDPS
10' PS
S 88° 54' 45.7" E
US 74 EBL WEST DIXON BLVD VAR. BST
US 74 EBL WEST DIXON BLVD 36' BST
REMOVE EXISTING GUARDRAIL END UNIT
TIE TO EXISTING GUARDRAIL
-BL- 56
SUNSET BLVD 24.5' BST
EXISTING R/W
CHARLES CORNWELL
DB 94E PG 665
JAMES STEPHEN CORNWELL
DB 94-E PG 665
MATCH LINE -L- STA 75+00.00
SEE SHEET 5

REVISIONS

NOTE: -RAMPB- ALIGNMENT SHOWN FOR INFORMATION ONLY.

FOR -L- PROFILE, SEE SHEET 31

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

SEAL 044575 — 1/4/2018

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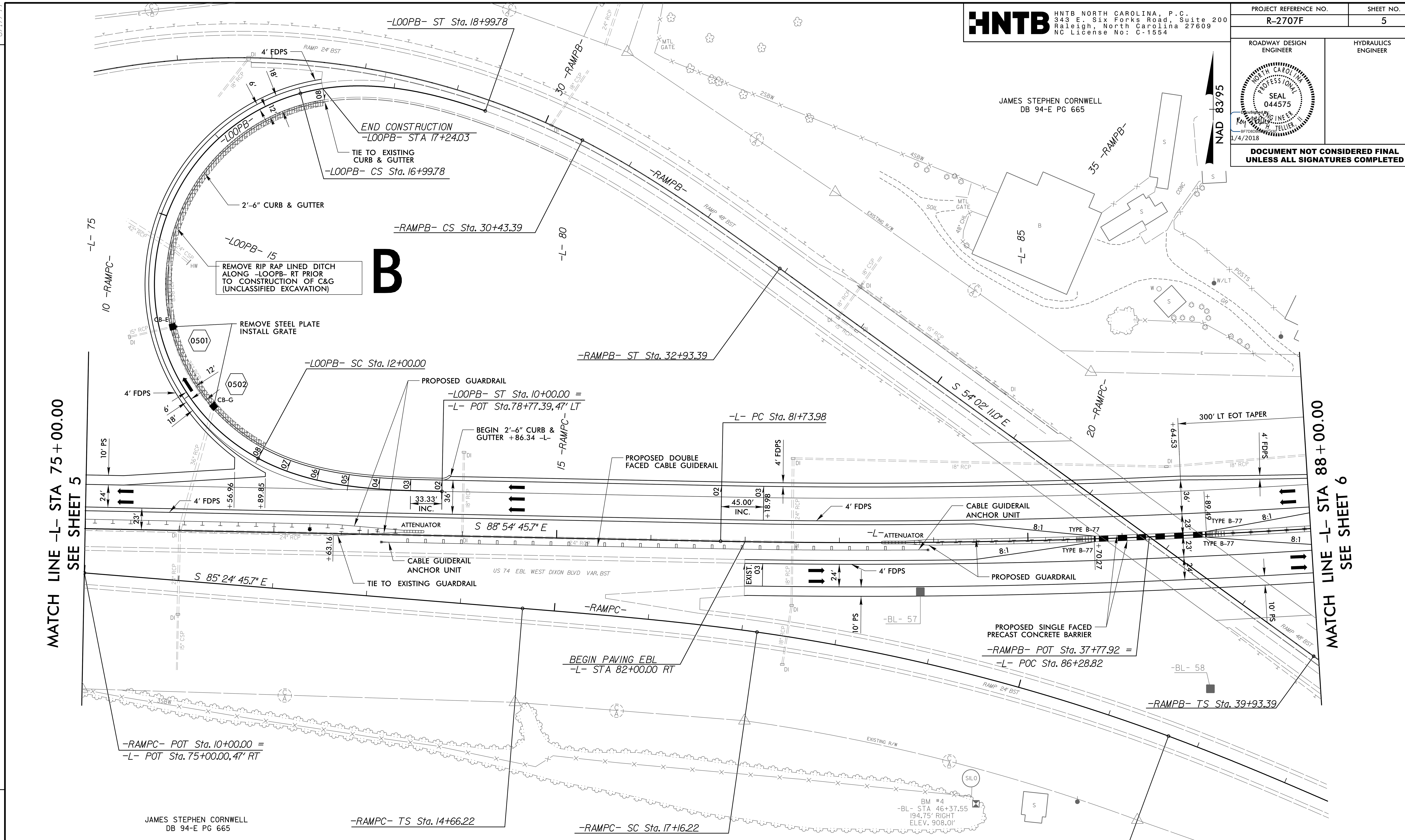

-LOOPB- ST Sta. 18+99.78
4' FDPS
END CONSTRUCTION
-LOOPB- STA 17+24.03
TIE TO EXISTING CURB & GUTTER
-LOOPB- CS Sta. 16+99.78
2'-6" CURB & GUTTER
-RAMPB- CS Sta. 30+43.39
REMOVE RIP RAP LINED DITCH ALONG -LOOPB- RT PRIOR TO CONSTRUCTION OF C&G (UNCLASSIFIED EXCAVATION)
B
REMOVE STEEL PLATE INSTALL GRATE
0501
0502
-LOOPB- SC Sta. 12+00.00
PROPOSED GUARDRAIL
-LOOPB- ST Sta. 10+00.00 =
-L- POT Sta.78+77.39, 47' LT
BEGIN 2'-6" CURB & GUTTER +86.34 -L-
-RAMPB- ST Sta. 32+93.39
JAMES STEPHEN CORNWELL
DB 94-E PG 665
NAD 83/95
S 54° 02' 11.0" E
-L- PC Sta. 81+73.98
PROPOSED DOUBLE FACED CABLE GUIDERAIL
300' LT EOT TAPER
CABLE GUIDERAIL ANCHOR UNIT
ATTENUATOR
S 88° 54' 45.7" E
CABLE GUIDERAIL ANCHOR UNIT
TIE TO EXISTING GUARDRAIL
US 74 EBL WEST DIXON BLVD VAR. BST
S 85° 24' 45.7" E
PROPOSED GUARDRAIL
-RAMPC-
BEGIN PAVING EBL
-L- STA 82+00.00 RT
PROPOSED SINGLE FACED PRECAST CONCRETE BARRIER
-RAMPB- POT Sta. 37+77.92 =
-L- POC Sta. 86+28.82
-RAMPB- TS Sta. 39+93.39
MATCH LINE -L- STA 75+00.00 SEE SHEET 5
MATCH LINE -L- STA 88+00.00 SEE SHEET 6
-RAMPC- POT Sta. 10+00.00 =
-L- POT Sta. 75+00.00, 47' RT
BM #4
-BL- STA 46+37.55
194.75' RIGHT
ELEV. 908.01'
-RAMPC- TS Sta. 14+66.22
-RAMPC- SC Sta. 17+16.22
-RAMPC- CS Sta. 21+67.26

-L-
PI Sta 87+95.02
Δ = 9° 20' 35.7" (LT)
D = 0° 45' 14.0"
L = 1,239.34'
T = 621.04'
R = 7,600.00'
DS = 70 MPH
e = .03

-RAMPB-
PI Sta 27+22.29
Δ = 49° 16' 28.9" (RT)
D = 7° 09' 43.1"
T = 366.90
L = 688.00
R = 800.00

-LOOPB-
PIs Sta 11+34.95
Θs = 27° 17' 01.3"
Ls = 200.00'
LT = 134.95'
ST = 68.14'

PI Sta 17+24.50
Δ = 136° 21' 33.1" (RT)
D = 27° 17' 01.3"
L = 499.78'
T = 524.50'
R = 210.00'
DS = 25 MPH
e = .08

PIs Sta 17+83.31
Θs = 7° 13' 50.3"
Θs = 27° 19' 26.8"
Ls = 200.00'
LT = 122.34'
ST = 83.53'

-RAMPC-
PI Sta 19+42.61
Δ = 12° 18' 21.9" (RT)
D = 2° 43' 42.1"
T = 226.39
L = 451.04
R = 2,100.00

PIs Sta 22+50.62
Θs = 27° 19' 26.8"
Ls = 250.00'
LT = 166.70'
ST = 83.36'

NOTE: -RAMPB- & -RAMPC- ALIGNMENTS SHOWN FOR INFORMATION ONLY.

FOR -L- PROFILE, SEE SHEET 31
FOR -LOOPB- PROFILE, SEE SHEET 43

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	6

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ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER
12/13/2017

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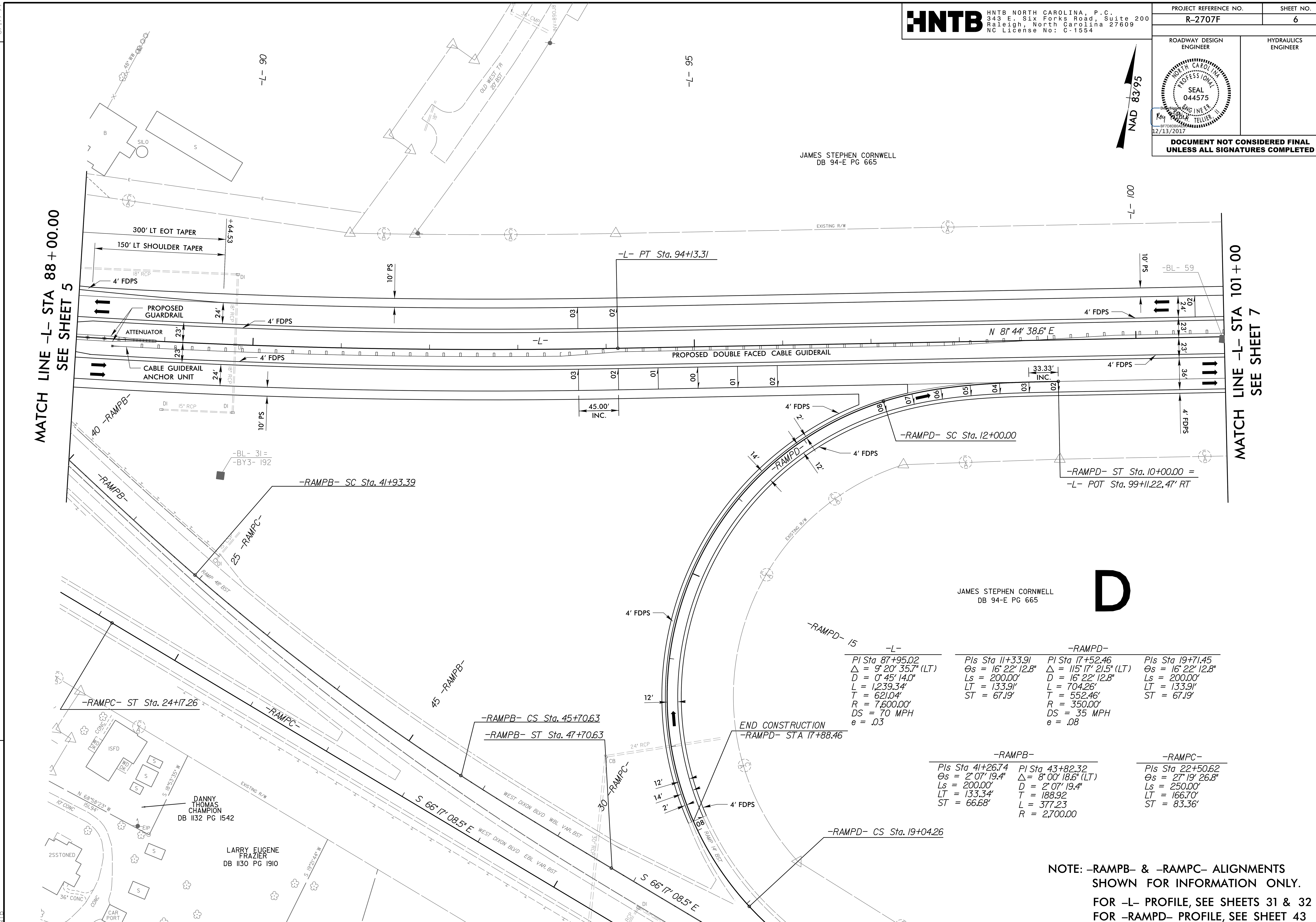

-L-
PI Sta 87+95.02
Δ = 9° 20' 35.7" (LT)
D = 0° 45' 14.0"
L = 1,239.34'
T = 621.04'
R = 7,600.00'
DS = 70 MPH
e = .03

-RAMPD-
PIs Sta 11+33.91
θs = 16° 22' 12.8"
Ls = 200.00'
LT = 133.91'
ST = 67.19'

PI Sta 17+52.46
Δ = 115° 17' 21.5" (LT)
D = 16° 22' 12.8"
L = 704.26'
T = 552.46'
R = 350.00'
DS = 35 MPH
e = .08

PIs Sta 19+71.45
θs = 16° 22' 12.8"
Ls = 200.00'
LT = 133.91'
ST = 67.19'

-RAMPB-
PIs Sta 41+26.74
θs = 2° 07' 19.4"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

PI Sta 43+82.32
Δ = 8° 00' 18.6" (LT)
D = 2° 07' 19.4"
T = 188.92
L = 377.23
R = 2,700.00

-RAMPC-
PIs Sta 22+50.62
θs = 27° 19' 26.8"
Ls = 250.00'
LT = 166.70'
ST = 83.36'

NOTE: -RAMPB- & -RAMPC- ALIGNMENTS SHOWN FOR INFORMATION ONLY.

FOR -L- PROFILE, SEE SHEETS 31 & 32
FOR -RAMPD- PROFILE, SEE SHEET 43

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	7

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 ... TELLIER, II 12/13/2017	

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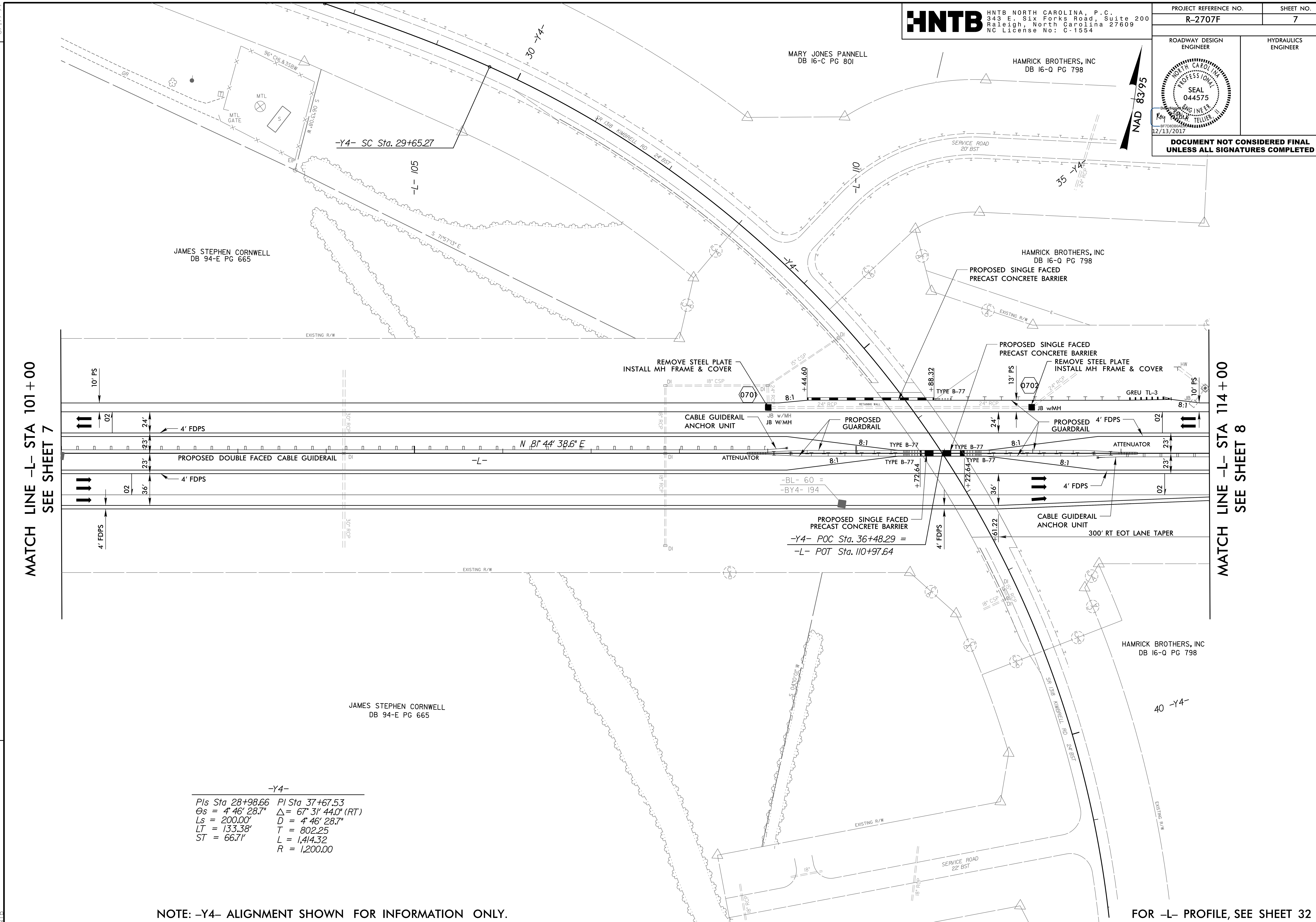

MARY JONES PANNELL
DB 16-C PG 801
HAMRICK BROTHERS, INC
DB 16-Q PG 798
NAD 83/95
30 -Y4-
35 -Y4-
40 -Y4-
-Y4- SC Sta. 29+65.27
-L- 105
-L- 110
SR 1318 KIMBRELL RD 24' BST
SERVICE ROAD 20' BST
SERVICE ROAD 22' BST
JAMES STEPHEN CORNWELL
DB 94-E PG 665
PROPOSED SINGLE FACED PRECAST CONCRETE BARRIER
EXISTING R/W
REMOVE STEEL PLATE INSTALL MH FRAME & COVER
CABLE GUIDERAIL ANCHOR UNIT
PROPOSED GUARDRAIL
4' FDPS
10' PS
13' PS
GREU TL-3
TYPE B-77
ATTENUATOR
N 81° 44' 38.6" E
-L-
PROPOSED DOUBLE FACED CABLE GUIDERAIL
-BL- 60 =
-BY4- 194
-Y4- POC Sta. 36+48.29 =
-L- POT Sta. 110+97.64
300' RT EOT LANE TAPER
MATCH LINE -L- STA 101+00 SEE SHEET 7
MATCH LINE -L- STA 114+00 SEE SHEET 8

-Y4-	
PIs Sta 28+98.66	PI Sta 37+67.53
Θs = 4° 46' 28.7"	Δ = 67° 31' 44.0" (RT)
Ls = 200.00'	D = 4° 46' 28.7"
LT = 133.38'	T = 802.25
ST = 66.71'	L = 1,414.32
	R = 1,200.00

NOTE: -Y4- ALIGNMENT SHOWN FOR INFORMATION ONLY.

FOR -L- PROFILE, SEE SHEET 32

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	8

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 ROY K. TELLIER, II

12/13/2017

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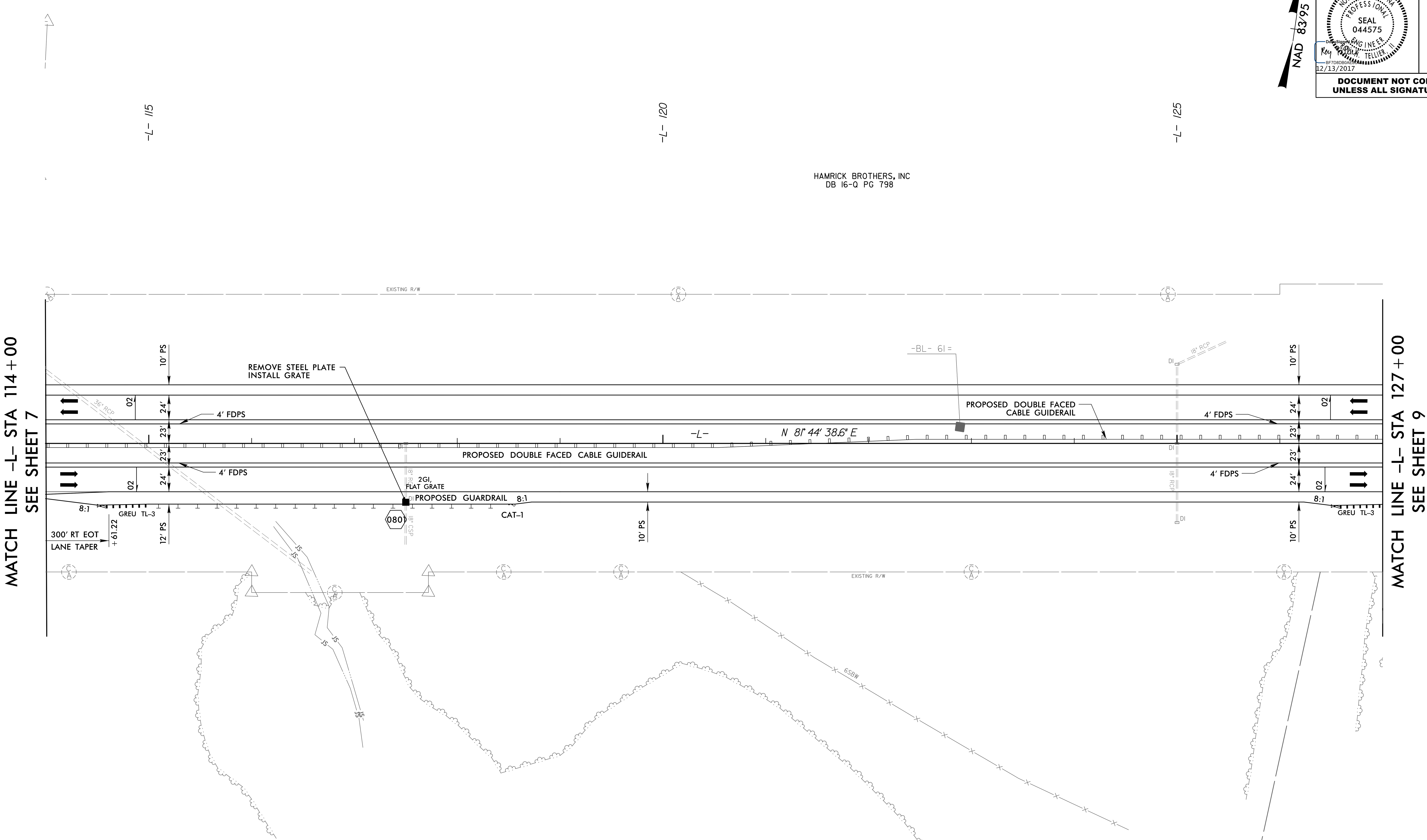

NAD 83/95
-L- 115
-L- 120
-L- 125
HAMRICK BROTHERS, INC
DB 16-Q PG 798
EXISTING R/W
MATCH LINE -L- STA 114+00
SEE SHEET 7
MATCH LINE -L- STA 127+00
SEE SHEET 9
REMOVE STEEL PLATE
INSTALL GRATE
-BL- 61 =
PROPOSED DOUBLE FACED
CABLE GUIDERAIL
4' FDPS
-L-
N 81° 44' 38.6" E
PROPOSED DOUBLE FACED CABLE GUIDERAIL
10' PS
24'
23'
02
12' PS
2GI,
FLAT GRATE
PROPOSED GUARDRAIL
8:1
GREU TL-3
CAT-1
080
300' RT EOT
LANE TAPER
+61.22
DI
18" RCP
36" RCP
6SBW
HAMRICK BROTHERS, INC
DB 16-Q PG 798
N 04°03'11" E

FOR -L- PROFILE, SEE SHEETS 32 & 33

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	9

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 12/13/2017	

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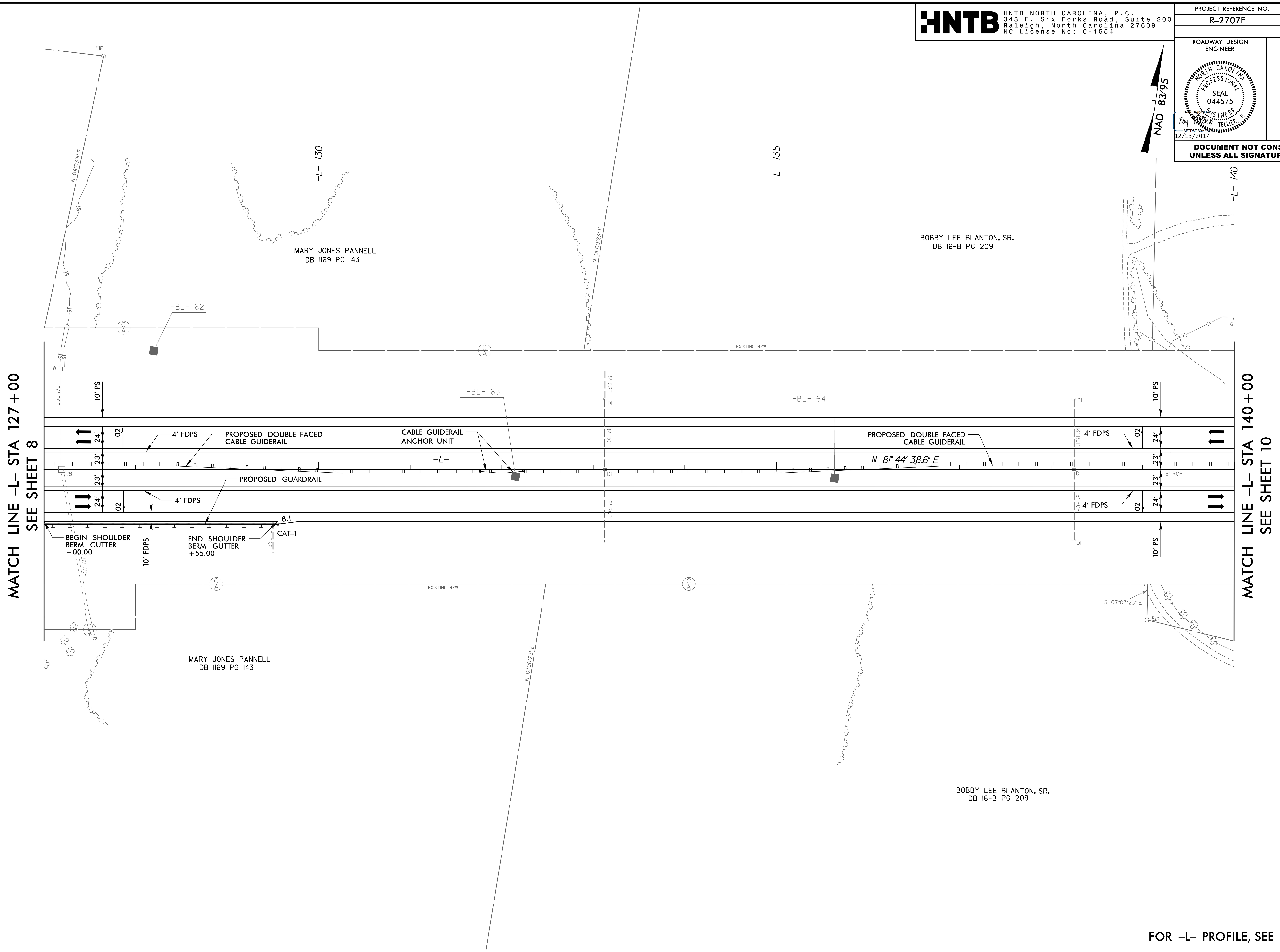

NAD 83/95
MATCH LINE -L- STA 127+00
SEE SHEET 8
MATCH LINE -L- STA 140+00
SEE SHEET 10
-L- 130
-L- 135
-L- 140
MARY JONES PANNELL
DB 1169 PG 143
BOBBY LEE BLANTON, SR.
DB 16-B PG 209
-BL- 62
-BL- 63
-BL- 64
EXISTING R/W
EIP
N 04°03'11" E
N 01°00'23" E
S 07°07'23" E
10' PS
4' FDPS
10' FDPS
PROPOSED DOUBLE FACED
CABLE GUIDERAIL
CABLE GUIDERAIL
ANCHOR UNIT
PROPOSED GUARDRAIL
-L-
N 81° 44' 38.6" E
BEGIN SHOULDER
BERM GUTTER
+00.00
END SHOULDER
BERM GUTTER
+55.00
8:1
CAT-1
24'
23'
DI
JB
HW

FOR -L- PROFILE, SEE SHEET 33

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	10

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

SEAL 044575 — NORTH CAROLINA PROFESSIONAL ENGINEER — 12/13/2017

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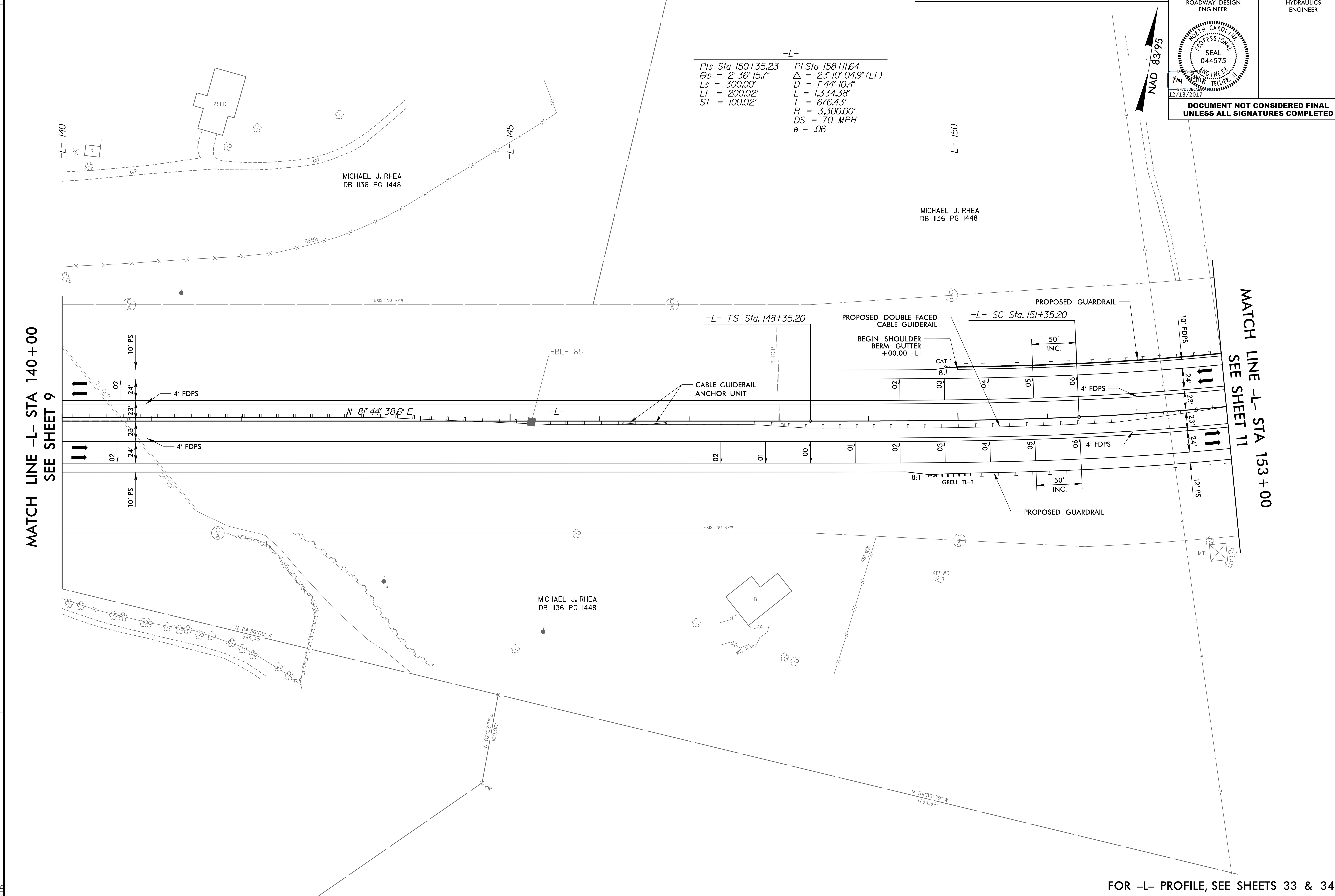
-L-
PIs Sta 150+35.23
Θs = 2° 36' 15.7"
Ls = 300.00'
LT = 200.02'
ST = 100.02'
PI Sta 158+11.64
Δ = 23° 10' 04.9" (LT)
D = 1° 44' 10.4"
L = 1,334.38'
T = 676.43'
R = 3,300.00'
DS = 70 MPH
e = .06
NAD 83/95
MICHAEL J. RHEA
DB 1136 PG 1448
-L- 140
-L- 145
-L- 150
EXISTING R/W
-L- TS Sta. 148+35.20
-L- SC Sta. 151+35.20
PROPOSED DOUBLE FACED CABLE GUIDERAIL
BEGIN SHOULDER BERM GUTTER +00.00 -L-
PROPOSED GUARDRAIL
CABLE GUIDERAIL ANCHOR UNIT
-BL- 65
N 81° 44' 38.6" E
-L-
10' PS
4' FDPS
10' FDPS
12' PS
50' INC.
CAT-1
GREU TL-3
MATCH LINE -L- STA 140+00
SEE SHEET 9
MATCH LINE -L- STA 153+00
SEE SHEET 11
N 84°36'09" W
598.62'
N 84°36'09" W
1754.96'
EIP
2SFD
MTL
WD RAIL
FOR -L- PROFILE, SEE SHEETS 33 & 34

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	11

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

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575

12/13/2017

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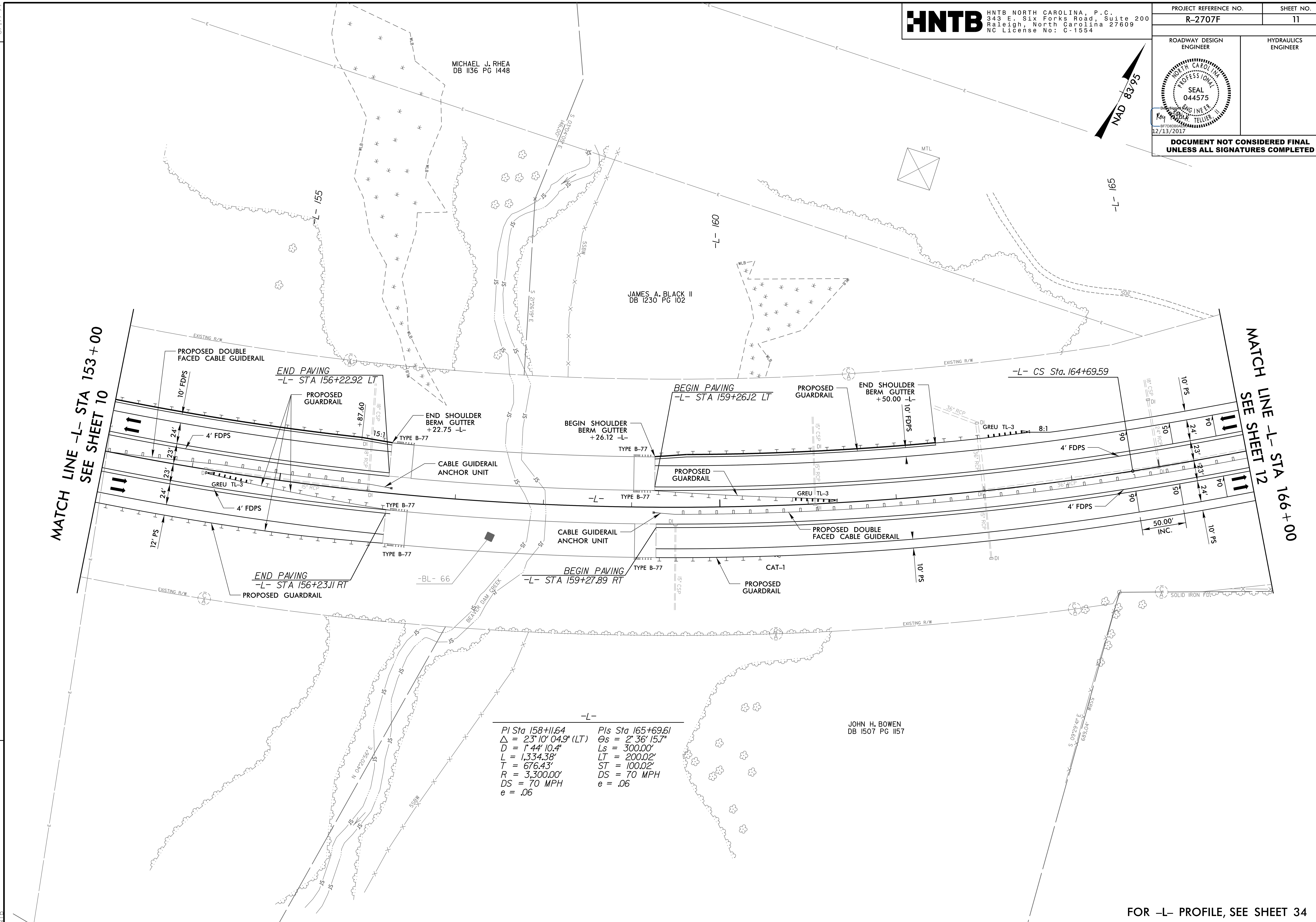
8/17/99



NAD 83/95
MICHAEL J. RHEA
DB 1136 PG 1448
JAMES A. BLACK II
DB 1230 PG 102
JOHN H. BOWEN
DB 1507 PG 1157
MTL
-L- 155
-L- 160
-L- 165
MATCH LINE -L- STA 153+00
SEE SHEET 10
MATCH LINE -L- STA 166+00
SEE SHEET 12
PROPOSED DOUBLE FACED CABLE GUIDERAIL
END PAVING
-L- STA 156+22.92 LT
PROPOSED GUARDRAIL
END SHOULDER BERM GUTTER +22.75 -L-
CABLE GUIDERAIL ANCHOR UNIT
BEGIN SHOULDER BERM GUTTER +26.12 -L-
BEGIN PAVING
-L- STA 159+26.12 LT
PROPOSED GUARDRAIL
END SHOULDER BERM GUTTER +50.00 -L-
-L- CS Sta. 164+69.59
4' FDPS
10' FDPS
12' PS
10' PS
GREU TL-3
TYPE B-77
CAT-1
END PAVING
-L- STA 156+23.11 RT
PROPOSED GUARDRAIL
BEGIN PAVING
-L- STA 159+27.89 RT
-BL- 66
BEAVER DAM CREEK
EXISTING R/W
50.00' INC.
SOLID IRON FD.
-L-
PI Sta 158+11.64
Δ = 23° 10' 04.9" (LT)
D = 1° 44' 10.4"
L = 1,334.38'
T = 676.43'
R = 3,300.00'
DS = 70 MPH
e = .06
PIs Sta 165+69.61
θs = 2° 36' 15.7"
Ls = 300.00'
LT = 200.02'
ST = 100.02'
DS = 70 MPH
e = .06

FOR -L- PROFILE, SEE SHEET 34

08-DEC-2017 13:48
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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	12

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER R. TELLIER, II 12/13/2017	

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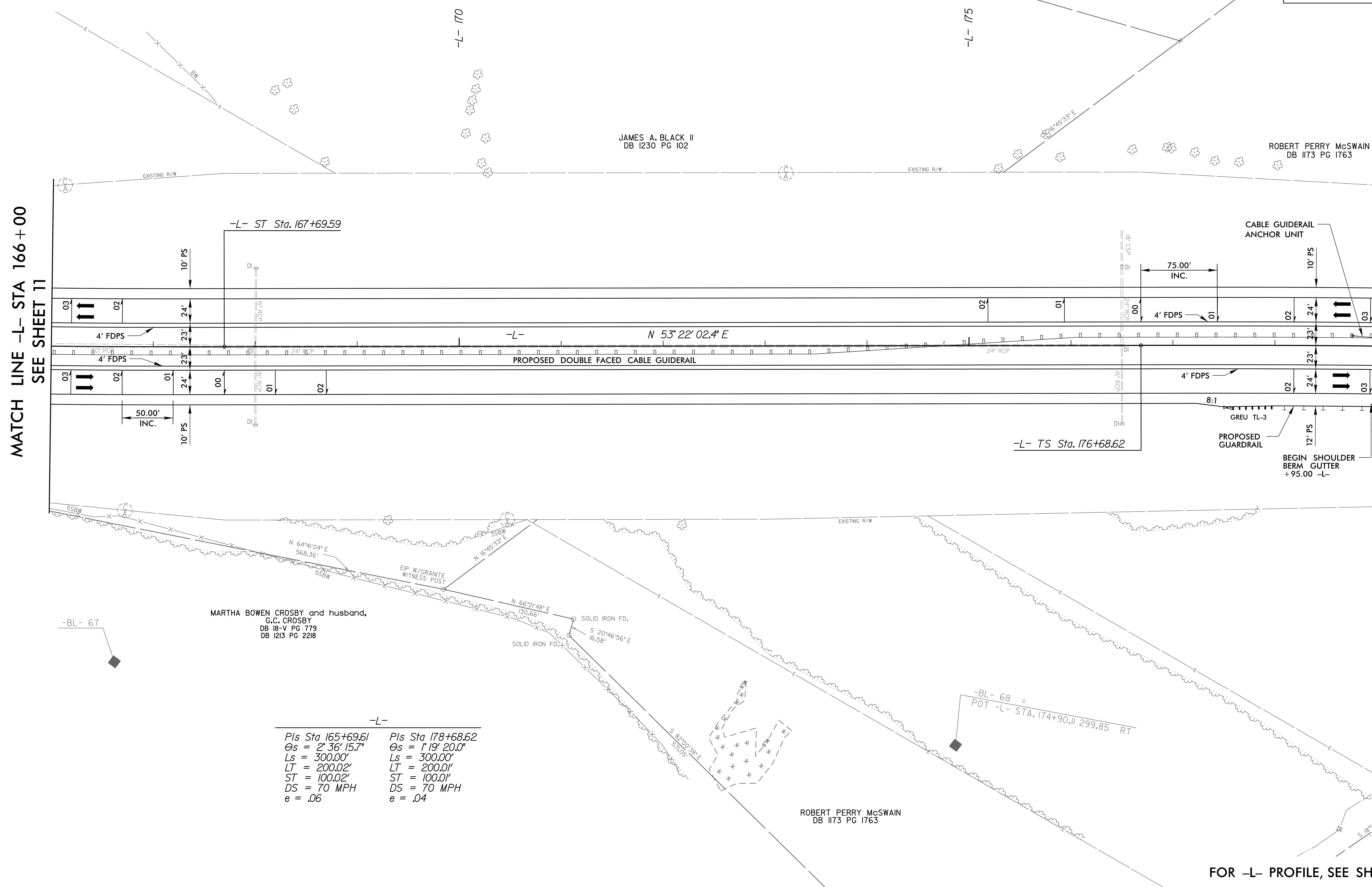
NAD 83/95
N 69°27'31" E
1094.88'
-L- 170
-L- 175
JAMES A. BLACK II
DB 1230 PG 102
ROBERT PERRY McSWAIN
DB 1173 PG 1763
EXISTING R/W
MATCH LINE -L- STA 166+00
SEE SHEET 11
MATCH LINE -L- STA 179+00
SEE SHEET 13
-L- ST Sta. 167+69.59
-L- TS Sta. 176+68.62
CABLE GUIDERAIL
ANCHOR UNIT
75.00'
INC.
50.00'
INC.
10' PS
12' PS
4' FDPS
-L-
N 53° 22' 02.4" E
PROPOSED DOUBLE FACED CABLE GUIDERAIL
8:1
GREU TL-3
PROPOSED
GUARDRAIL
BEGIN SHOULDER
BERM GUTTER
+95.00 -L-
N 64°41'04" E
568.36'
EIP W/GRANITE
WITNESS POST
N 16°45'33" E
N 66°21'48" E
130.66'
SOLID IRON FD.
S 20°46'56" E
16.58'
MARTHA BOWEN CROSBY and husband,
G.C. CROSBY
DB 18-V PG 779
DB 1213 PG 2218
-BL- 67
-BL- 68 =
POT -L- STA. 174+90.11 299.85 RT
ROBERT PERRY McSWAIN
DB 1173 PG 1763

-L-

PIs Sta 165+69.61	PIs Sta 178+68.62
Θs = 2° 36' 15.7"	Θs = 1° 19' 20.0"
Ls = 300.00'	Ls = 300.00'
LT = 200.02'	LT = 200.01'
ST = 100.02'	ST = 100.01'
DS = 70 MPH	DS = 70 MPH
e = .06	e = .04

FOR -L- PROFILE, SEE SHEETS 34 & 35

08-DEC-2017 13:48
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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	13

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER R. TELLIER, II 12/13/2017	

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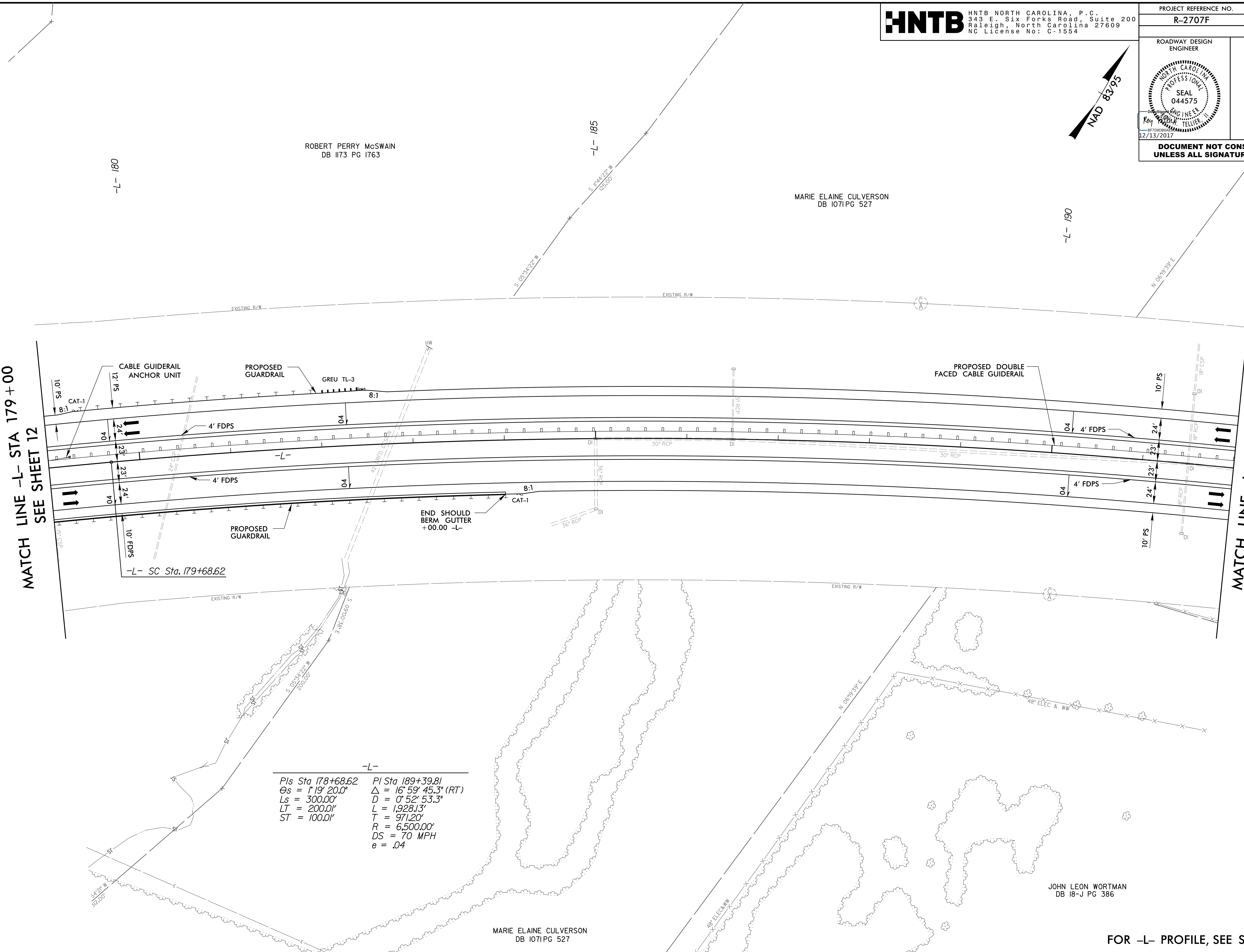

NAD 83/95
ROBERT PERRY McSWAIN
DB 1173 PG 1763
MARIE ELAINE CULVERSON
DB 1071 PG 527
-L- 180
-L- 185
-L- 190
EXISTING R/W
MATCH LINE -L- STA 179+00
SEE SHEET 12
MATCH LINE -L- STA 192+00
SEE SHEET 14
CABLE GUIDERAIL ANCHOR UNIT
PROPOSED GUARDRAIL
GREU TL-3
PROPOSED DOUBLE FACED CABLE GUIDERAIL
4' FDPS
10' PS
12' PS
10' FDPS
CAT-1
8:1
-L-
30" RCP
36" RCP
END SHOULD BERM GUTTER
+00.00 -L-
-L- SC Sta. 179+68.62
48" ELEC & WW
JOHN LEON WORTMAN
DB 18-J PG 386
MARIE ELAINE CULVERSON
DB 1071 PG 527

-L-

PIs Sta 178+68.62	PI Sta 189+39.81
Θs = 1° 19' 20.0"	Δ = 16° 59' 45.3" (RT)
Ls = 300.00'	D = 0° 52' 53.3"
LT = 200.01'	L = 1,928.13'
ST = 100.01'	T = 971.20'
	R = 6,500.00'
	DS = 70 MPH
	e = .04

FOR -L- PROFILE, SEE SHEET 35

08-DEC-2017 13:48
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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	14

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 ... TELLIER 12/13/2017	

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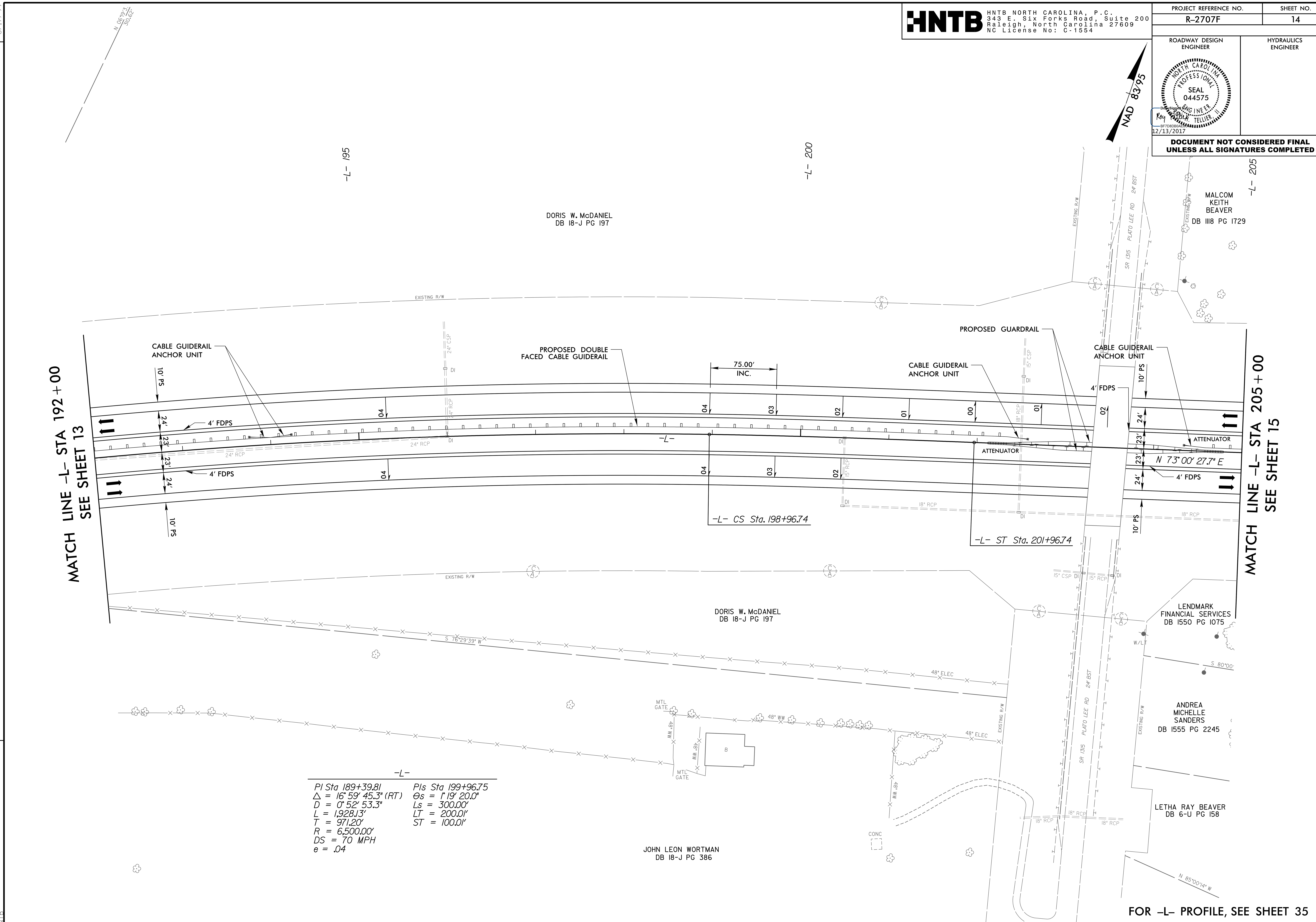

NAD 83/95
-L- 195
-L- 200
-L- 205
DORIS W. McDANIEL DB 18-J PG 197
MALCOM KEITH BEAVER DB 1118 PG 1729
EXISTING R/W
CABLE GUIDERAIL ANCHOR UNIT
PROPOSED DOUBLE FACED CABLE GUIDERAIL
75.00' INC.
CABLE GUIDERAIL ANCHOR UNIT
PROPOSED GUARDRAIL
CABLE GUIDERAIL ANCHOR UNIT
4' FDPS
10' PS
ATTENUATOR
N 73° 00' 27.7" E
MATCH LINE -L- STA 192+00 SEE SHEET 13
MATCH LINE -L- STA 205+00 SEE SHEET 15
-L- CS Sta. 198+96.74
-L- ST Sta. 201+96.74
24" RCP
18" RCP
15" CSP
SR 1315 PLATO LEE RD 24' BST
S 76°29'39" W
48" ELEC
48" WW
MTL GATE
LENDMARK FINANCIAL SERVICES DB 1550 PG 1075
ANDREA MICHELLE SANDERS DB 1555 PG 2245
LETHA RAY BEAVER DB 6-U PG 158
JOHN LEON WORTMAN DB 18-J PG 386
CONC
N 85°00'14" W

-L-

PI Sta 189+39.81	PIs Sta 199+96.75
Δ = 16° 59' 45.3" (RT)	Θs = 1° 19' 20.0"
D = 0° 52' 53.3"	Ls = 300.00'
L = 1,928.13'	LT = 200.01'
T = 971.20'	ST = 100.01'
R = 6,500.00'	
DS = 70 MPH	
e = .04	

FOR -L- PROFILE, SEE SHEET 35

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	15

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 044575	

12/13/2017

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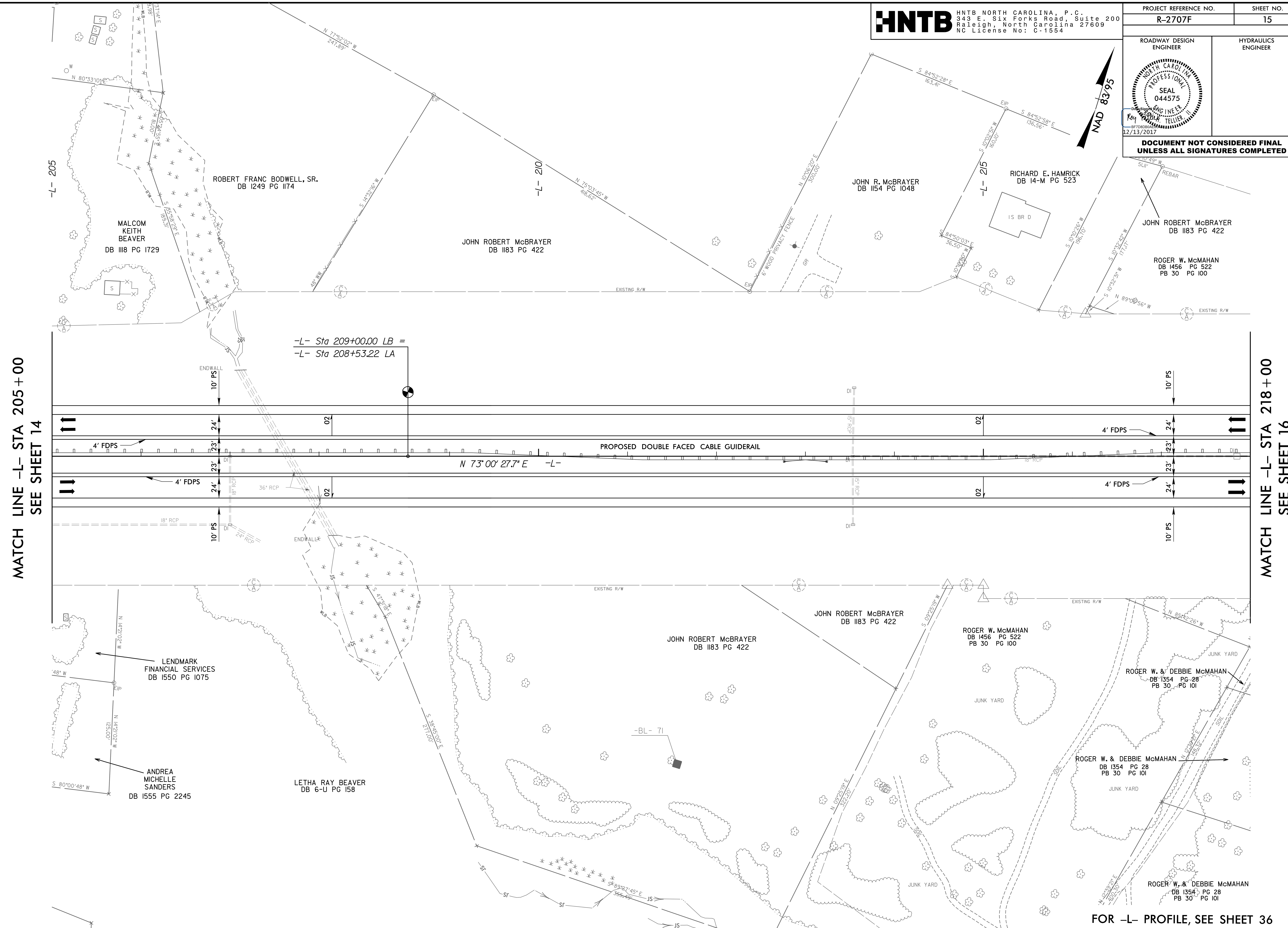

NAD 83/95
MATCH LINE -L- STA 205+00 SEE SHEET 14
MATCH LINE -L- STA 218+00 SEE SHEET 16
-L- 205
-L- 210
-L- 215
ROBERT FRANC BODWELL, SR. DB 1249 PG 1174
MALCOM KEITH BEAVER DB 1118 PG 1729
JOHN ROBERT McBRAYER DB 1183 PG 422
JOHN R. McBRAYER DB 1154 PG 1048
RICHARD E. HAMRICK DB 14-M PG 523
JOHN ROBERT McBRAYER DB 1183 PG 422
ROGER W. McMAHAN DB 1456 PG 522 PB 30 PG 100
-L- Sta 209+00.00 LB =
-L- Sta 208+53.22 LA
PROPOSED DOUBLE FACED CABLE GUIDERAIL
N 73° 00' 27.7" E -L-
4' FDPS
10' PS
EXISTING R/W
6' WOOD PRIVACY FENCE
1S BR D
ENDWALL
LENDMARK FINANCIAL SERVICES DB 1550 PG 1075
ANDREA MICHELLE SANDERS DB 1555 PG 2245
LETHA RAY BEAVER DB 6-U PG 158
JOHN ROBERT McBRAYER DB 1183 PG 422
ROGER W. McMAHAN DB 1456 PG 522 PB 30 PG 100
ROGER W. & DEBBIE McMAHAN DB 1354 PG 28 PB 30 PG 101
JUNK YARD
-BL- 71

FOR -L- PROFILE, SEE SHEET 36

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	16

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER
12/13/2017

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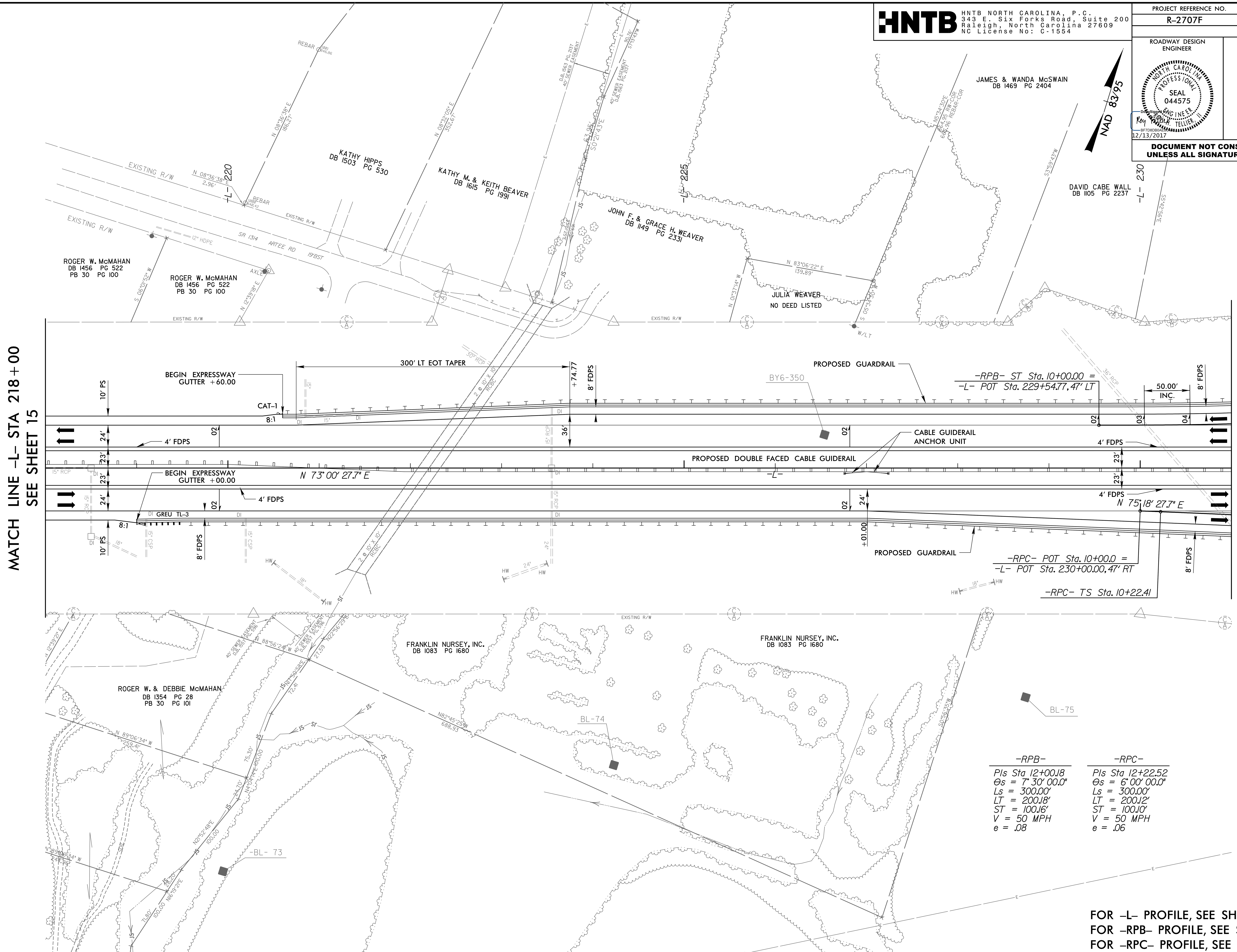

-RPB-	-RPC-
PIs Sta 12+00.18	PIs Sta 12+22.52
Θs = 7° 30' 00.0"	Θs = 6° 00' 00.0"
Ls = 300.00'	Ls = 300.00'
LT = 200.18'	LT = 200.12'
ST = 100.16'	ST = 100.10'
V = 50 MPH	V = 50 MPH
e = .08	e = .06

FOR -L- PROFILE, SEE SHEET 36
FOR -RPB- PROFILE, SEE SHEET 44
FOR -RPC- PROFILE, SEE SHEET 45

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	17

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 044575 12/13/2017	

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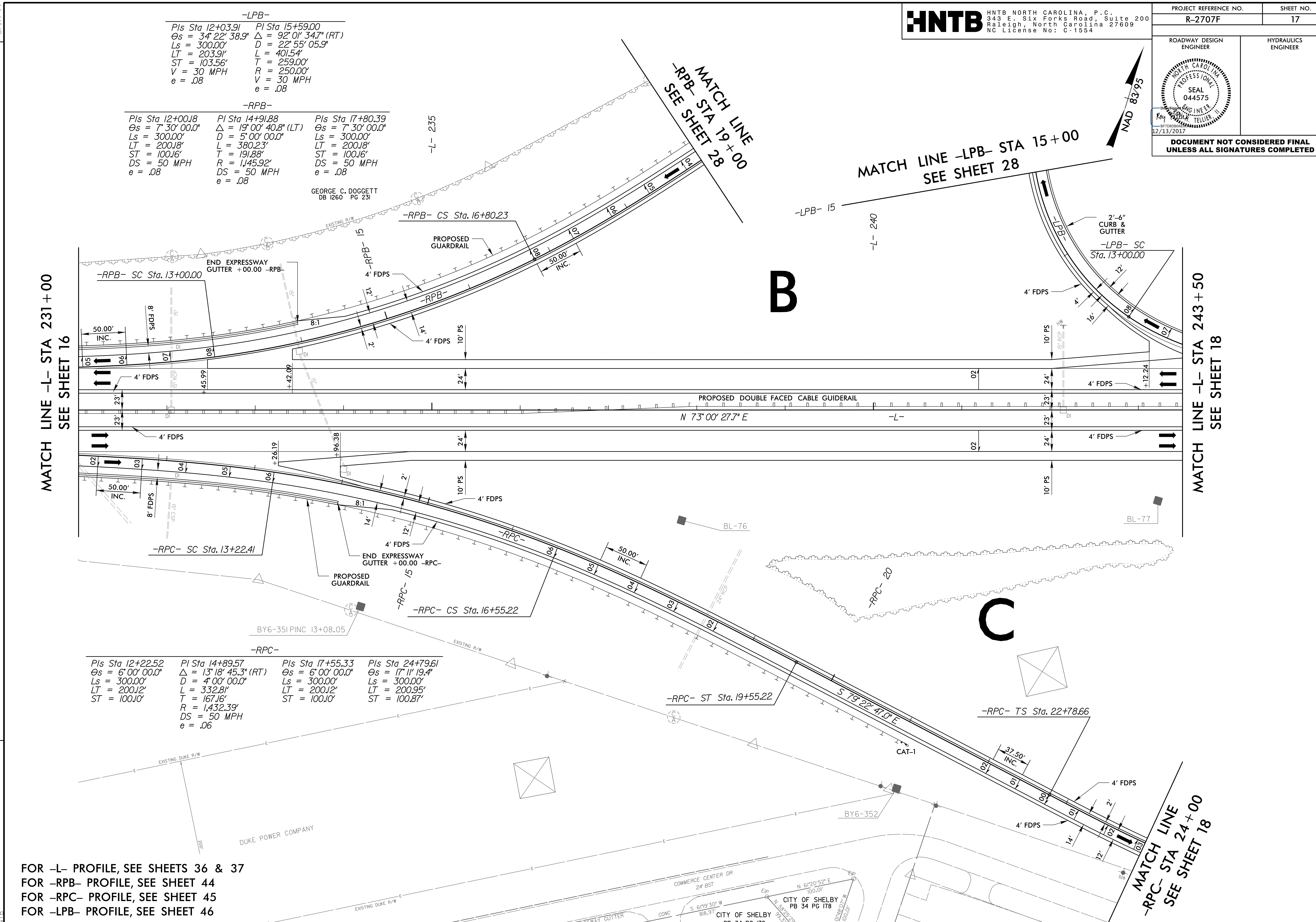

-LPB-
PIs Sta 12+03.91
Θs = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'
V = 30 MPH
e = .08
PI Sta 15+59.00
Δ = 92° 01' 34.7" (RT)
D = 22° 55' 05.9"
L = 401.54'
T = 259.00'
R = 250.00'
V = 30 MPH
e = .08
-RPB-
PIs Sta 12+00.18
Θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'
DS = 50 MPH
e = .08
PI Sta 14+91.88
Δ = 19° 00' 40.8" (LT)
D = 5° 00' 00.0"
L = 380.23'
T = 191.88'
R = 1,145.92'
DS = 50 MPH
e = .08
PIs Sta 17+80.39
Θs = 7° 30' 00.0"
Ls = 300.00'
LT = 200.18'
ST = 100.16'
DS = 50 MPH
e = .08
GEORGE C. DOGGETT
DB 1260 PG 231
MATCH LINE -RPB- STA 19+00 SEE SHEET 28
MATCH LINE -LPB- STA 15+00 SEE SHEET 28
NAD 83/95
-RPB- CS Sta. 16+80.23
PROPOSED GUARDRAIL
END EXPRESSWAY GUTTER +00.00 -RPB-
-RPB- SC Sta. 13+00.00
4' FDPS
8' FDPS
50.00' INC.
2'-6" CURB & GUTTER
-LPB- SC Sta. 13+00.00
B
MATCH LINE -L- STA 231+00 SEE SHEET 16
MATCH LINE -L- STA 243+50 SEE SHEET 18
PROPOSED DOUBLE FACED CABLE GUIDERAIL
N 73° 00' 27.7" E
-L-
10' PS
24'
23'
-RPC- SC Sta. 13+22.41
END EXPRESSWAY GUTTER +00.00 -RPC-
-RPC- CS Sta. 16+55.22
-RPC- ST Sta. 19+55.22
-RPC- TS Sta. 22+78.66
S 79° 22' 47.0" E
37.50' INC.
CAT-1
BL-76
BL-77
C
BY6-351 PINC 13+08.05
BY6-352
EXISTING R/W
EXISTING DUKE R/W
DUKE POWER COMPANY
-RPC-
PIs Sta 12+22.52
Θs = 6° 00' 00.0"
Ls = 300.00'
LT = 200.12'
ST = 100.10'
PI Sta 14+89.57
Δ = 13° 18' 45.3" (RT)
D = 4° 00' 00.0"
L = 332.81'
T = 167.16'
R = 1,432.39'
DS = 50 MPH
e = .06
PIs Sta 17+55.33
Θs = 6° 00' 00.0"
Ls = 300.00'
LT = 200.12'
ST = 100.10'
PIs Sta 24+79.61
Θs = 17° 11' 19.4"
Ls = 300.00'
LT = 200.95'
ST = 100.87'
COMMERCE CENTER DR 24' BST
CITY OF SHELBY PB 34 PG 178
EXPRESSWAY GUTTER
MATCH LINE -RPC- STA 24+00 SEE SHEET 18

FOR -L- PROFILE, SEE SHEETS 36 & 37
FOR -RPB- PROFILE, SEE SHEET 44
FOR -RPC- PROFILE, SEE SHEET 45
FOR -LPB- PROFILE, SEE SHEET 46

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	18

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER — 12/13/2017

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NAD 83/95

REVISIONS

-LPB-
PIs Sta 12+03.91
Θs = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'
DS = 30 MPH
e = .08

-RPC-
PIs Sta 24+79.61
Θs = 17° 11' 19.4"
Ls = 300.00'
LT = 200.95'
ST = 100.87'

PI Sta 27+77.96
Δ = 43° 27' 50.7" (LT)
D = 11° 27' 33.0"
L = 379.30'
T = 199.30'
R = 500.00'
DS = 50 MPH
e = .08

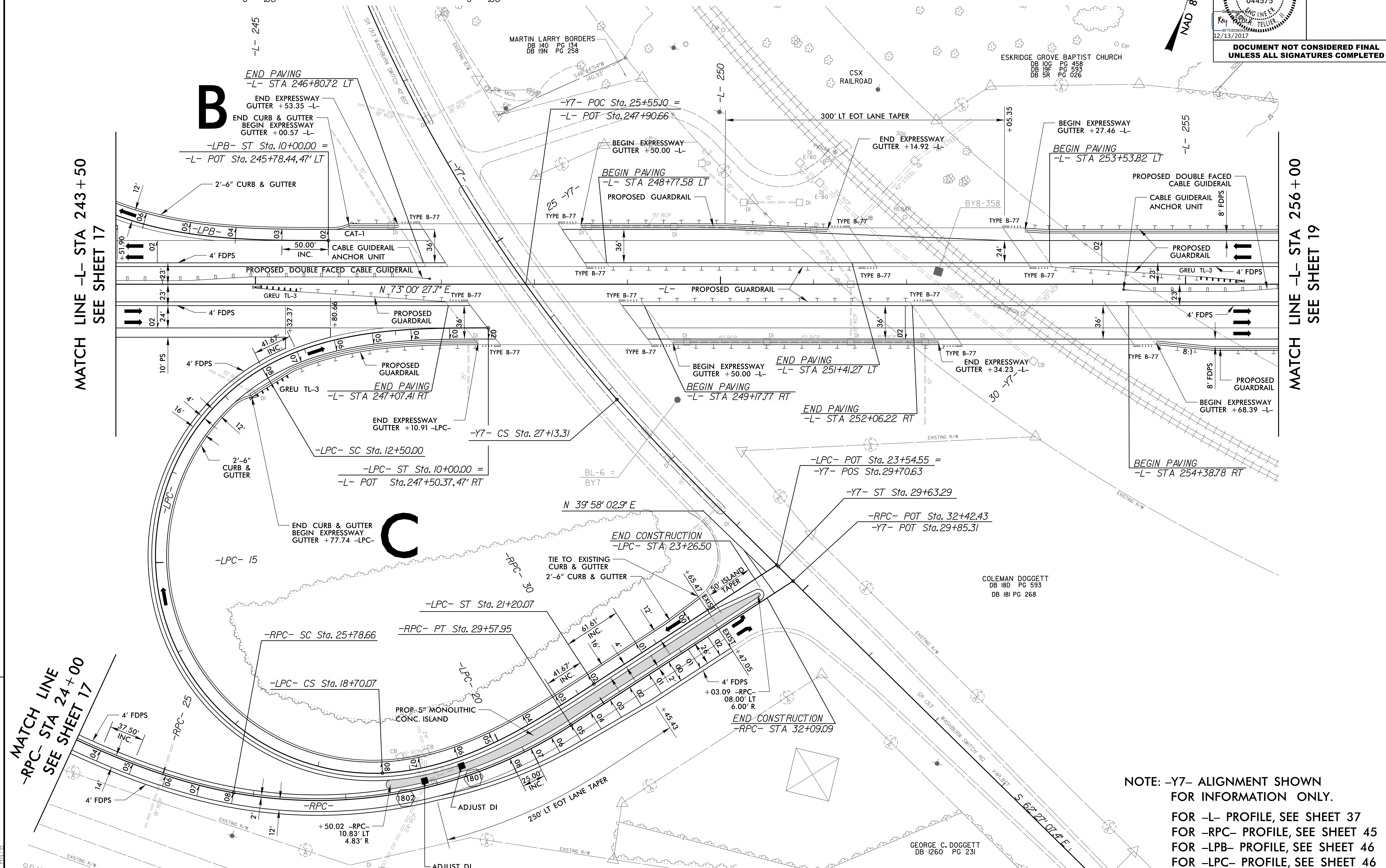
-LPC-
PIs Sta 11+69.23
Θs = 30° 36' 24.2"
Ls = 250.00'
LT = 169.23'
ST = 85.67'

PI Sta 21+82.52
Δ = 151° 49' 36.4" (LT)
D = 24° 29' 07.4"
L = 620.07'
T = 932.52'
R = 234.00'
DS = 30 MPH
e = .08

PIs Sta 19+55.74
Θs = 30° 36' 24.2"
Ls = 250.00'
LT = 169.23'
ST = 85.67'

-Y7-
PI Sta 22+28.38
Δ = 35° 05' 02.3" (LT)
D = 3° 30' 00.0"
T = 517.47
L = 1,002.40
R = 1,637.02

PIs Sta 27+96.68
Θs = 4° 22' 28.7"
Ls = 249.98'
LT = 169.70'
ST = 83.37'



MATCH LINE -L- STA 243+50
SEE SHEET 17
MATCH LINE -L- STA 256+00
SEE SHEET 19
MATCH LINE -RPC- STA 24+00
SEE SHEET 17
B
C
END PAVING -L- STA 246+80.72 LT
END EXPRESSWAY GUTTER +53.35 -L-
END CURB & GUTTER BEGIN EXPRESSWAY GUTTER +00.57 -L-
-LPB- ST Sta. 10+00.00 = -L- POT Sta. 245+78.44, 47' LT
2'-6" CURB & GUTTER
CAT-1
50.00' INC.
CABLE GUIDERAIL ANCHOR UNIT
4' FDPS
PROPOSED DOUBLE FACED CABLE GUIDERAIL
GREU TL-3
N 73° 00' 27.7" E
PROPOSED GUARDRAIL
TYPE B-77
41.67' INC.
GREU TL-3
END PAVING -L- STA 247+07.41 RT
END EXPRESSWAY GUTTER +10.91 -LPC-
-Y7- CS Sta. 27+13.31
-LPC- SC Sta. 12+50.00
-LPC- ST Sta. 10+00.00 = -L- POT Sta. 247+50.37, 47' RT
END CURB & GUTTER BEGIN EXPRESSWAY GUTTER +77.74 -LPC-
BL-6 = BY7
MARTIN LARRY BORDERS DB 140 PG 134 DB 19N PG 258
SR 1313 WASHBURN SWITCH 42' BST
-Y7- POC Sta. 25+55.10 = -L- POT Sta. 247+90.66
BEGIN EXPRESSWAY GUTTER +50.00 -L-
BEGIN PAVING -L- STA 248+77.58 LT
PROPOSED GUARDRAIL
CSX RAILROAD
300' LT EOT LANE TAPER
END EXPRESSWAY GUTTER +14.92 -L-
BY8-358
ESKRIDGE GROVE BAPTIST CHURCH DB 10G PG 458 DB 19F PG 593 DB 5R PG 026
BEGIN EXPRESSWAY GUTTER +27.46 -L-
BEGIN PAVING -L- STA 253+53.82 LT
PROPOSED DOUBLE FACED CABLE GUIDERAIL
CABLE GUIDERAIL ANCHOR UNIT
8' FDPS
PROPOSED GUARDRAIL
GREU TL-3
4' FDPS
BEGIN EXPRESSWAY GUTTER +50.00 -L-
END PAVING -L- STA 251+41.27 LT
BEGIN PAVING -L- STA 249+17.77 RT
END EXPRESSWAY GUTTER +34.23 -L-
END PAVING -L- STA 252+06.22 RT
BEGIN EXPRESSWAY GUTTER +68.39 -L-
BEGIN PAVING -L- STA 254+38.78 RT
-LPC- POT Sta. 23+54.55 = -Y7- POS Sta. 29+70.63
-Y7- ST Sta. 29+63.29
-RPC- POT Sta. 32+42.43 -Y7- POT Sta. 29+85.31
N 39° 58' 02.9" E
END CONSTRUCTION -LPC- STA 23+26.50
TIE TO EXISTING CURB & GUTTER
2'-6" CURB & GUTTER
50' ISLAND TAPER
COLEMAN DOGGETT DB 18D PG 593 DB 18I PG 268
-LPC- ST Sta. 21+20.07
-RPC- PT Sta. 29+57.95
-RPC- SC Sta. 25+78.66
-LPC- CS Sta. 18+70.07
61.61' INC.
41.67' INC.
PROP. 5" MONOLITHIC CONC. ISLAND
4' FDPS
+03.09 -RPC- 08.00' LT 6.00' R
END CONSTRUCTION -RPC- STA 32+09.09
37.50' INC.
25.00' INC.
+50.02 -RPC- 10.83' LT 4.83' R
ADJUST DI
250' LT EOT LANE TAPER
SR 1313 WASHBURN SWITCH RD VAR. R/W
S 62° 27' 07.4" E
GEORGE C. DOGGETT DB 1260 PG 231
EXISTING R/W

NOTE: -Y7- ALIGNMENT SHOWN FOR INFORMATION ONLY.

FOR -L- PROFILE, SEE SHEET 37
FOR -RPC- PROFILE, SEE SHEET 45
FOR -LPB- PROFILE, SEE SHEET 46
FOR -LPC- PROFILE, SEE SHEET 46

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER, II 12/13/2017	

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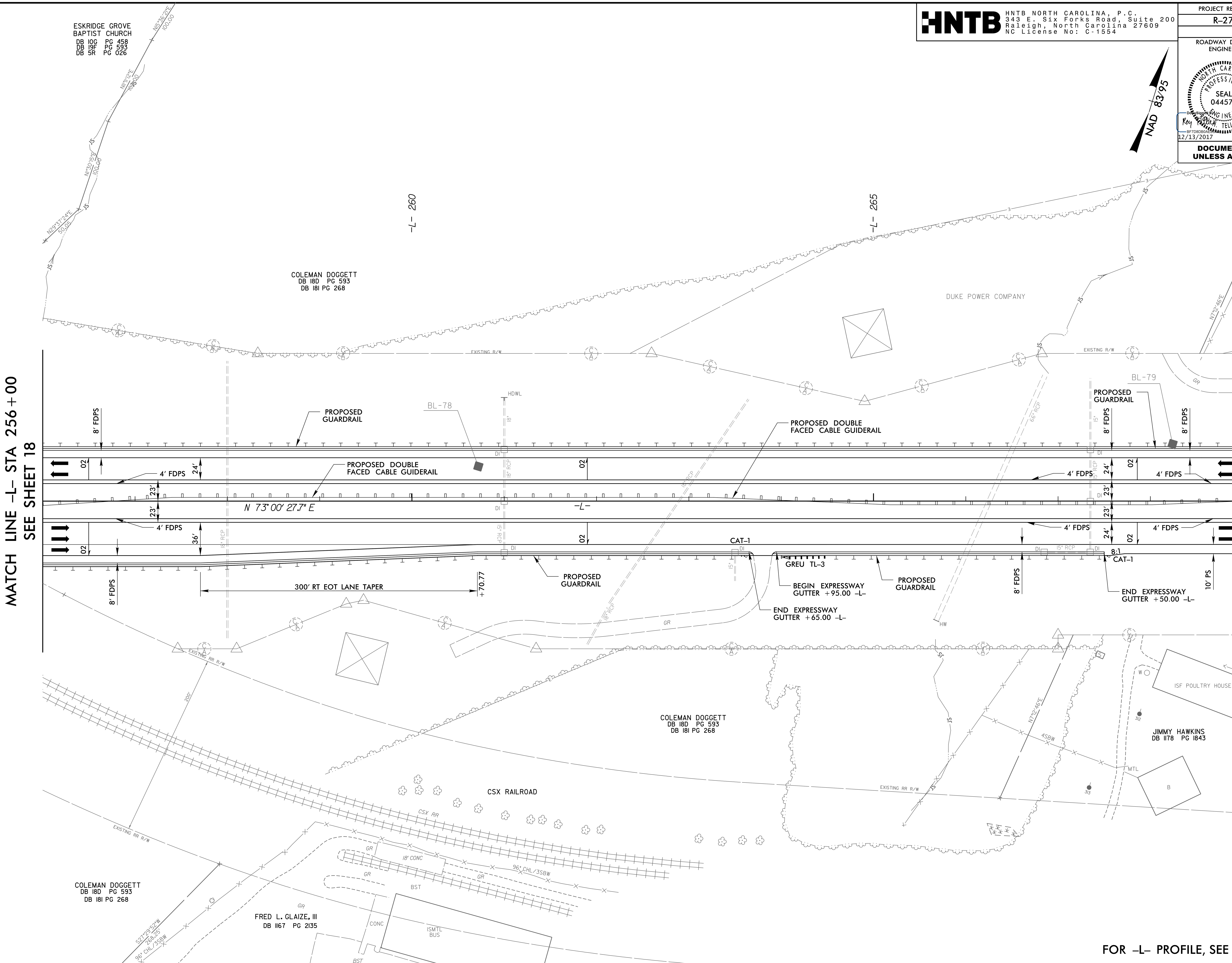

NAD 83/95
ESKRIDGE GROVE BAPTIST CHURCH
DB 10G PG 458
DB 19F PG 593
DB 5R PG 026
-L- 260
-L- 265
COLEMAN DOGGETT
DB 18D PG 593
DB 181 PG 268
DUKE POWER COMPANY
EXISTING R/W
MATCH LINE -L- STA 256+00
SEE SHEET 18
MATCH LINE -L- STA 269+00
SEE SHEET 20
PROPOSED GUARDRAIL
BL-78
BL-79
HDWL
PROPOSED DOUBLE FACED CABLE GUIDERAIL
8' FDPS
4' FDPS
24'
23'
36'
N 73° 00' 27.7" E
-L-
CAT-1
GREU TL-3
BEGIN EXPRESSWAY GUTTER +95.00 -L-
END EXPRESSWAY GUTTER +65.00 -L-
END EXPRESSWAY GUTTER +50.00 -L-
300' RT EOT LANE TAPER
+70.77
10' PS
8:1
ISF POULTRY HOUSE
JIMMY HAWKINS
DB 1178 PG 1843
CSX RAILROAD
CSX RR
EXISTING RR R/W
18' CONC
96" CHL/3SBW
GR
BST
CONC
ISMTL BUS
FRED L. GLAIZE, III
DB 1167 PG 2135

FOR -L- PROFILE, SEE SHEETS 37 & 38

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER 12/13/2017	

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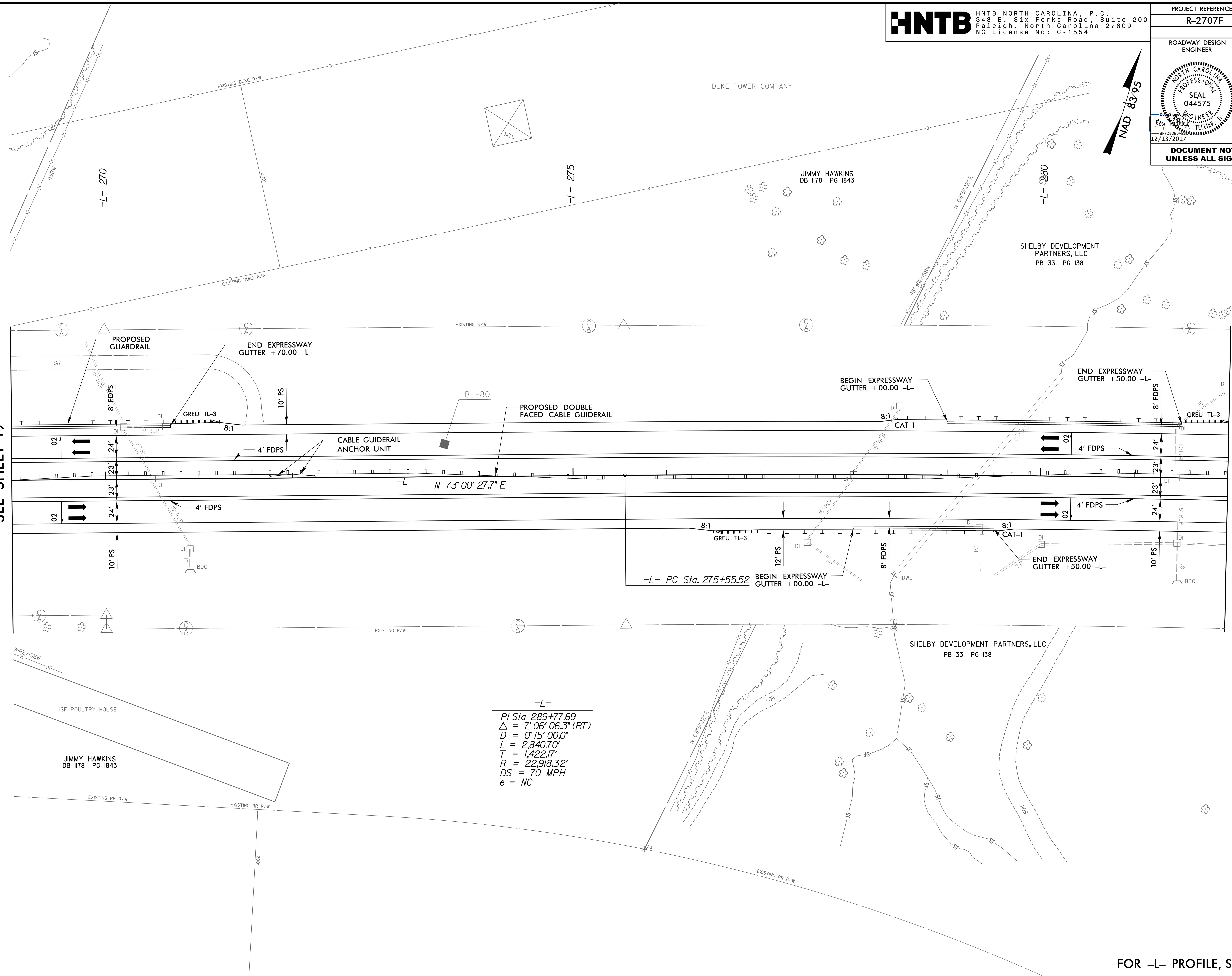

NAD 83/95
DUKE POWER COMPANY
EXISTING DUKE R/W
JIMMY HAWKINS
DB 1178 PG 1843
SHELBY DEVELOPMENT PARTNERS, LLC
PB 33 PG 138
-L- 270
-L- 275
-L- 280
EXISTING R/W
MATCH LINE -L- STA 269+00 SEE SHEET 19
MATCH LINE -L- STA 282+00 SEE SHEET 21
PROPOSED GUARDRAIL
END EXPRESSWAY GUTTER +70.00 -L-
GREU TL-3
8:1
BL-80
PROPOSED DOUBLE FACED CABLE GUIDERAIL
CABLE GUIDERAIL ANCHOR UNIT
4' FDPS
8' FDPS
10' PS
12' PS
24'
23'
-L-
N 73° 00' 27.7" E
BEGIN EXPRESSWAY GUTTER +00.00 -L-
END EXPRESSWAY GUTTER +50.00 -L-
CAT-1
-L- PC Sta. 275+55.52
DI
BDO
15" RCP
EXISTING R/W
WIRE/ISBW
ISF POULTRY HOUSE
JIMMY HAWKINS
DB 1178 PG 1843
EXISTING RR R/W
-L-
PI Sta 289+77.69
Δ = 7° 06' 06.3" (RT)
D = 0° 15' 00.0"
L = 2,840.70'
T = 1,422.17'
R = 22,918.32'
DS = 70 MPH
e = NC

FOR -L- PROFILE, SEE SHEET 38

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NC License No: C-1554

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

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER KEVIN TELLIER

DocuSigned by: Kevin Tellier BF70B0B0A5E8...
12/13/2017

HYDRAULICS ENGINEER

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8/17/99

NAD 83/95

SHELBY DEVELOPMENT PARTNERS, LLC
PB 33 PG 138

1" EIP WITH BURNT CHIMNEY CAP

SHELBY DEVELOPMENT PARTNERS, LLC
PB 33 PG 138

-L- 285

-L- 290

-L- 295

EXISTING R/W

66" RCP
54" RCP
JB w/MH
JB w/MH

MATCH LINE -L- STA 282+00
SEE SHEET 20

10' PS
24'
23'
23'
24'
02
4' FDPS
18"
15"
DI
54" RCP
BL-81

PROPOSED DOUBLE FACED CABLE GUIDERAIL

-L-

BEGIN EXPRESSWAY GUTTER +00.00 -L-

PROPOSED GUARDRAIL

8:1

CAT-1

8' FDPS

CABLE GUIDERAIL ANCHOR UNIT

4' FDPS

8:1

GREU TL-3

BEGIN EXPRESSWAY GUTTER +50.00 -L-

PROPOSED GUARDRAIL

8' FDPS

HDWL

MATCH LINE -L- STA 295+00
SEE SHEET 22

EXISTING R/W

-L-
PI Sta 289+77.69
△ = 7° 06' 06.3" (RT)
D = 0° 15' 00.0"
L = 2,840.70'
T = 1,422.17'
R = 22,918.32'
DS = 70 MPH
e = NC

SHELBY DEVELOPMENT PARTNERS, LLC
PB 33 PG 138

JS
WLB
SOIL

S52°54'18"W
104.00

S58°26'10"W
162.00

S58°26'10"W
182.29

12" CHL & S58W

WAL-MART STORES EAST, LP
DB 1359 PG 1800

DETENTION BASIN

FOR -L- PROFILE, SEE SHEETS 38 & 39

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

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ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

SEAL 044575
12/13/2017

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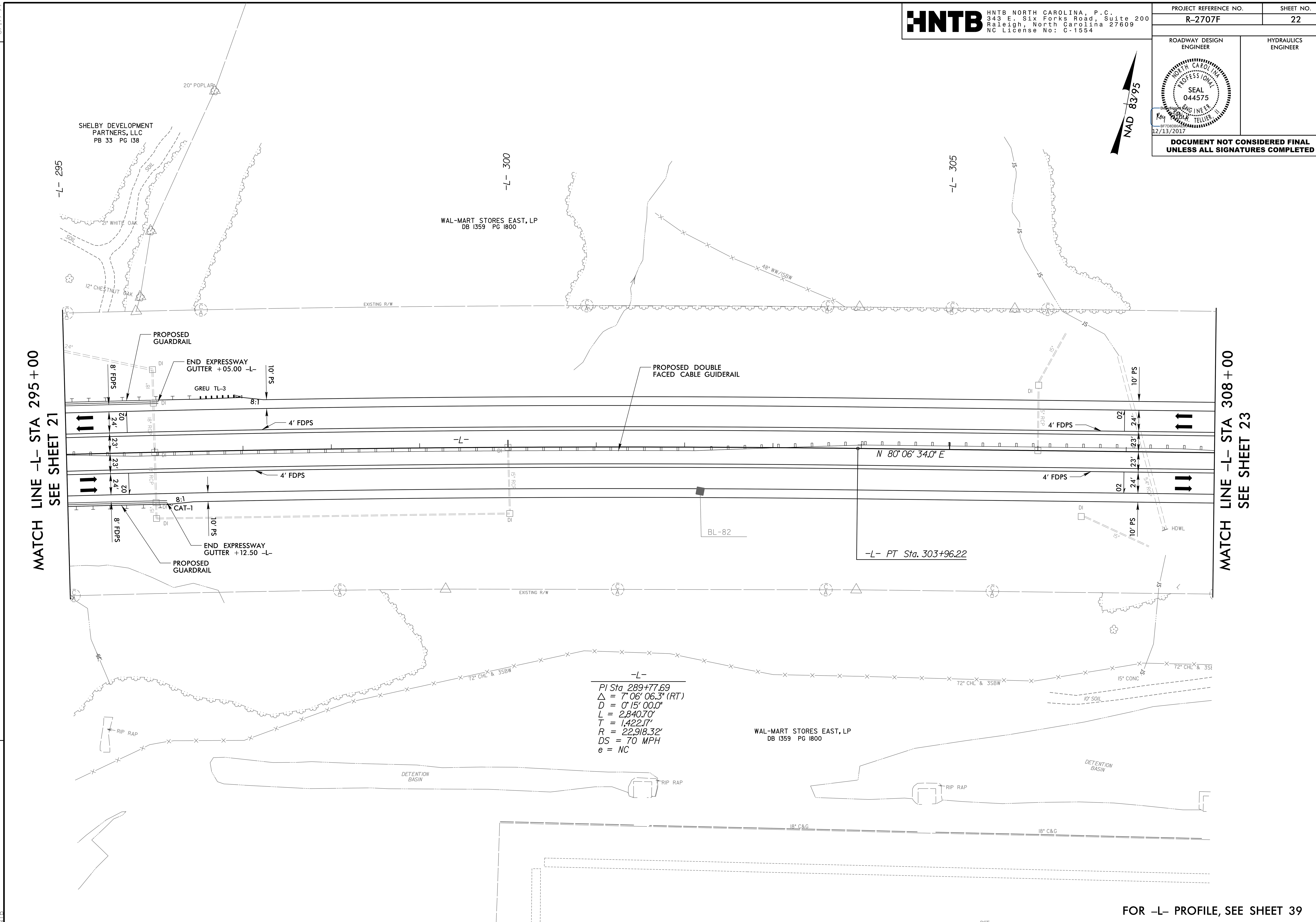

NAD 83/95
SHELBY DEVELOPMENT PARTNERS, LLC
PB 33 PG 138
WAL-MART STORES EAST, LP
DB 1359 PG 1800
-L- 295
-L- 300
-L- 305
20" POPLAR
21" WHITE OAK
12" CHESTNUT OAK
48" WW/ISBW
EXISTING R/W
PROPOSED GUARDRAIL
END EXPRESSWAY GUTTER +05.00 -L-
GREU TL-3
8:1
8' FDPS
10' PS
4' FDPS
PROPOSED DOUBLE FACED CABLE GUIDERAIL
-L-
N 80° 06' 34.0" E
24'
23'
02
CAT-1
END EXPRESSWAY GUTTER +12.50 -L-
PROPOSED GUARDRAIL
BL-82
-L- PT Sta. 303+96.22
DI
HDWL
MATCH LINE -L- STA 295+00
SEE SHEET 21
MATCH LINE -L- STA 308+00
SEE SHEET 23
-L-
PI Sta 289+77.69
△ = 7° 06' 06.3" (RT)
D = 0° 15' 00.0"
L = 2,840.70'
T = 1,422.17'
R = 22,918.32'
DS = 70 MPH
e = NC
WAL-MART STORES EAST, LP
DB 1359 PG 1800
72" CHL & 3SBW
15" CONC
10' SOIL
RIP RAP
DETENTION BASIN
18" C&G
BST

FOR -L- PROFILE, SEE SHEET 39

REVISIONS

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER R. TELLIER, II 12/13/2017	

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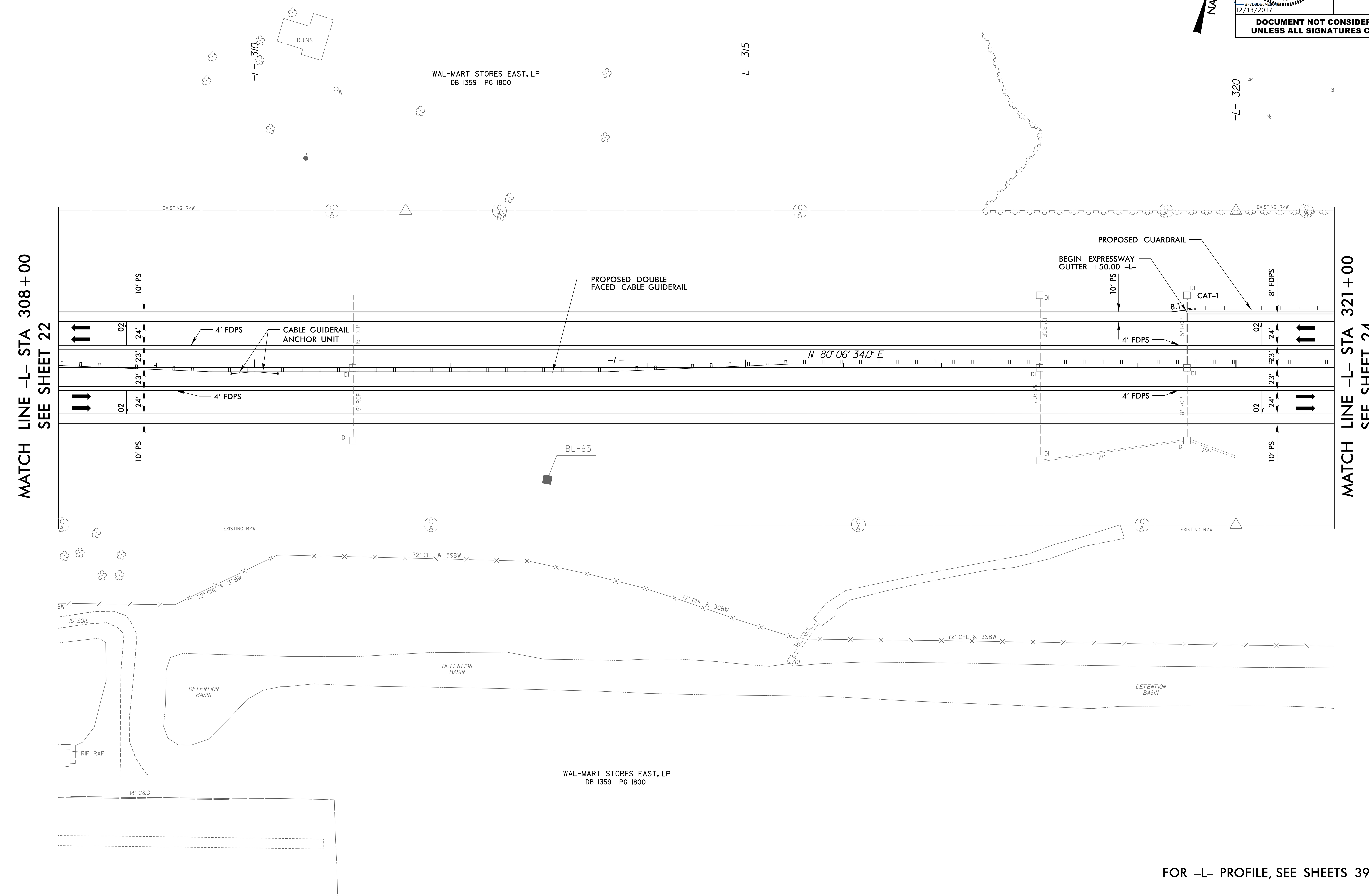
NAD 83/95
RUINS
-L- 310
-L- 315
-L- 320
WAL-MART STORES EAST, LP
DB 1359 PG 1800
EXISTING R/W
PROPOSED GUARDRAIL
BEGIN EXPRESSWAY GUTTER +50.00 -L-
CAT-1
8:1
10' PS
8' FDPS
PROPOSED DOUBLE FACED CABLE GUIDERAIL
4' FDPS
CABLE GUIDERAIL ANCHOR UNIT
-L-
N 80° 06' 34.0" E
24'
23'
15" RCP
18" RCP
DI
BL-83
18"
24"
MATCH LINE -L- STA 308+00
SEE SHEET 22
MATCH LINE -L- STA 321+00
SEE SHEET 24
72" CHL & 3SBW
10' SOIL
DETENTION BASIN
RIP RAP
18" C&G
WAL-MART STORES EAST, LP
DB 1359 PG 1800

FOR -L- PROFILE, SEE SHEETS 39 & 40

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER, II 12/13/2017	

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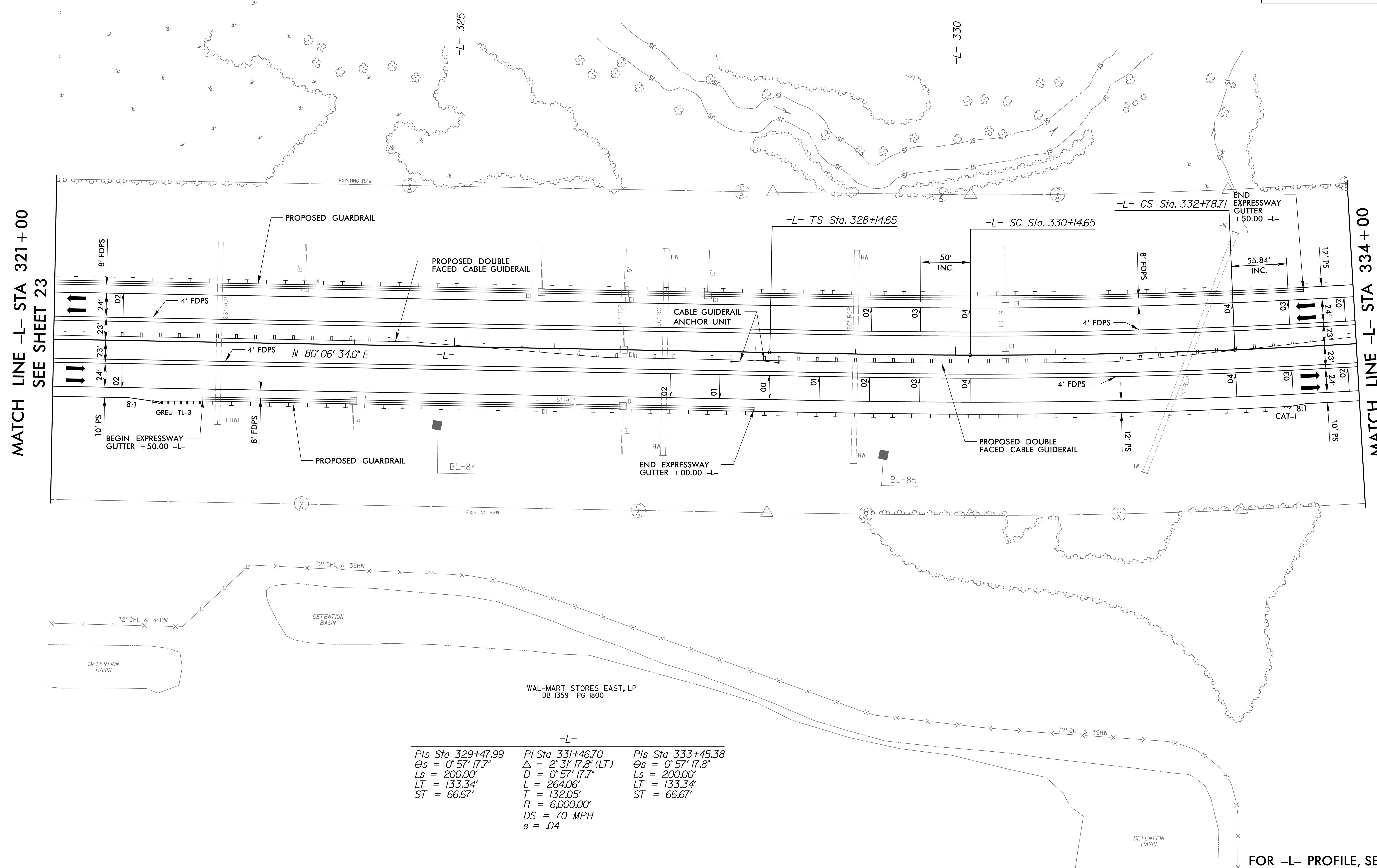

-L-

PIs Sta 329+47.99	PI Sta 331+46.70	PIs Sta 333+45.38
Θs = 0° 57' 17.7"	Δ = 2° 31' 17.8" (LT)	Θs = 0° 57' 17.8"
Ls = 200.00'	D = 0° 57' 17.7"	Ls = 200.00'
LT = 133.34'	L = 264.06'	LT = 133.34'
ST = 66.67'	T = 132.05'	ST = 66.67'
	R = 6,000.00'	
	DS = 70 MPH	
	e = .04	

FOR -L- PROFILE, SEE SHEET 40

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 — 12/13/2017	

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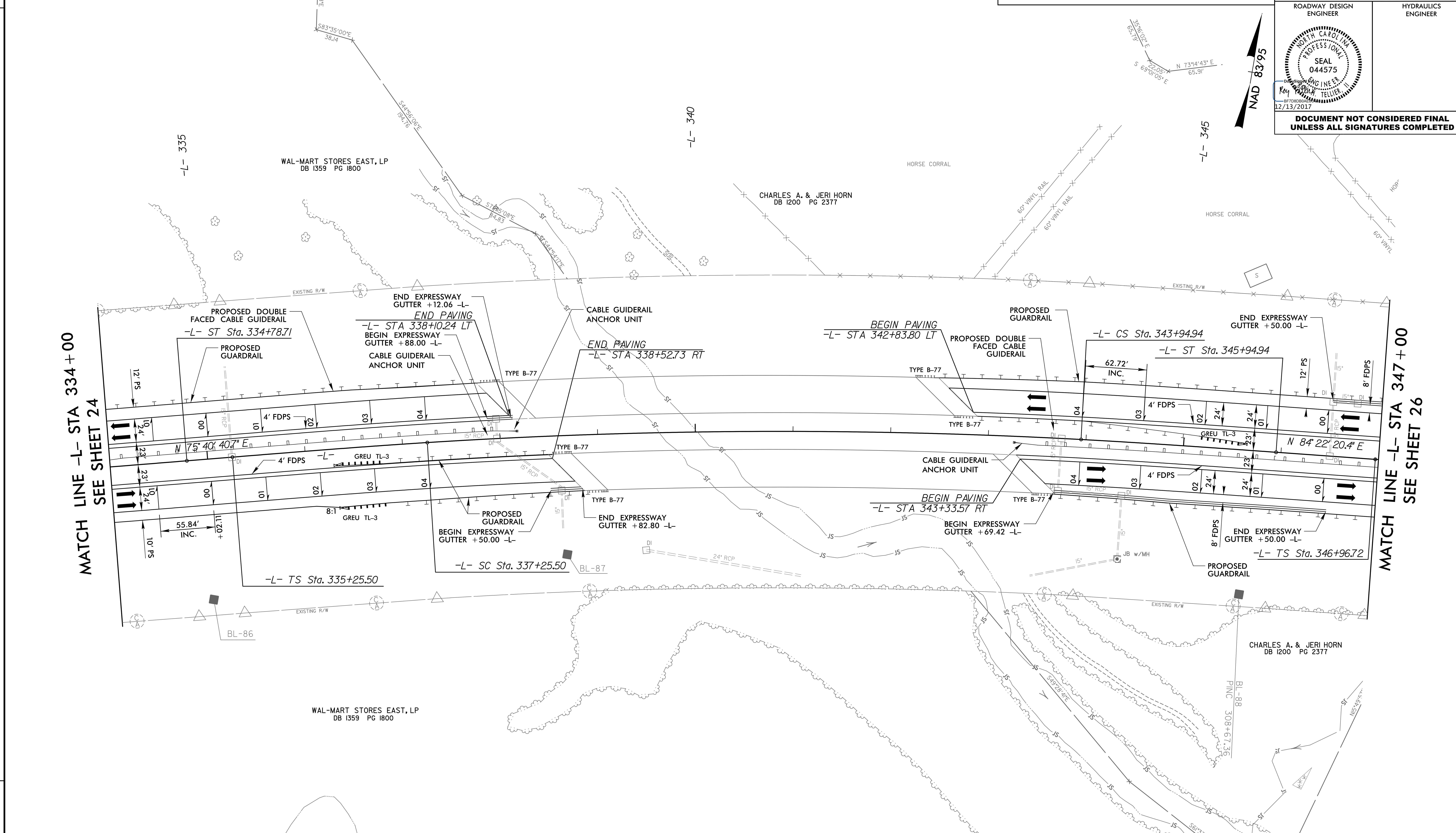

NAD 83/95
-L- 335
-L- 340
-L- 345
WAL-MART STORES EAST, LP
DB 1359 PG 1800
CHARLES A. & JERI HORN
DB 1200 PG 2377
HORSE CORRAL
EXISTING R/W
MATCH LINE -L- STA 334+00
SEE SHEET 24
MATCH LINE -L- STA 347+00
SEE SHEET 26
PROPOSED DOUBLE FACED CABLE GUIDERAIL
-L- ST Sta. 334+78.71
PROPOSED GUARDRAIL
END EXPRESSWAY GUTTER +12.06 -L-
END PAVING
-L- STA 338+10.24 LT
BEGIN EXPRESSWAY GUTTER +88.00 -L-
CABLE GUIDERAIL ANCHOR UNIT
END PAVING
-L- STA 338+52.73 RT
TYPE B-77
4' FDPS
N 75° 40' 40.7" E
GREU TL-3
55.84' INC.
10' PS
12' PS
8:1
BEGIN EXPRESSWAY GUTTER +50.00 -L-
END EXPRESSWAY GUTTER +82.80 -L-
-L- TS Sta. 335+25.50
-L- SC Sta. 337+25.50
BL-86
BL-87
BL-88
PINC 308+67.36
24" RCP
15" RCP
BEGIN PAVING
-L- STA 342+83.80 LT
PROPOSED DOUBLE FACED CABLE GUIDERAIL
-L- CS Sta. 343+94.94
-L- ST Sta. 345+94.94
62.72' INC.
END EXPRESSWAY GUTTER +50.00 -L-
N 84° 22' 20.4" E
CABLE GUIDERAIL ANCHOR UNIT
BEGIN PAVING
-L- STA 343+33.57 RT
BEGIN EXPRESSWAY GUTTER +69.42 -L-
JB w/MH
8' FDPS
-L- TS Sta. 346+96.72
60' VINYL RAIL

-L-

PIs Sta 333+45.38	PIs Sta 336+58.83	PI Sta 340+60.60	PIs Sta 344+61.60
Θs = 0° 57' 17.7"	Θs = 1° 00' 00.0"	Δ = 6° 41' 39.7" (RT)	Θs = 1° 00' 00.0"
Ls = 200.00'	Ls = 200.00'	D = 1° 00' 00.0"	Ls = 200.00'
LT = 133.34'	LT = 133.34'	L = 669.44'	LT = 133.34'
ST = 66.67'	ST = 66.67'	T = 335.10'	ST = 66.67'
DS = 70 MPH		R = 5,729.58'	
e = .04		DS = 70 MPH	
		e = .04	

FOR -L- PROFILE, SEE SHEET 40 & 41

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 R. H. TELLIER, II
DocuSigned by: Roy Tellier 12/13/2017

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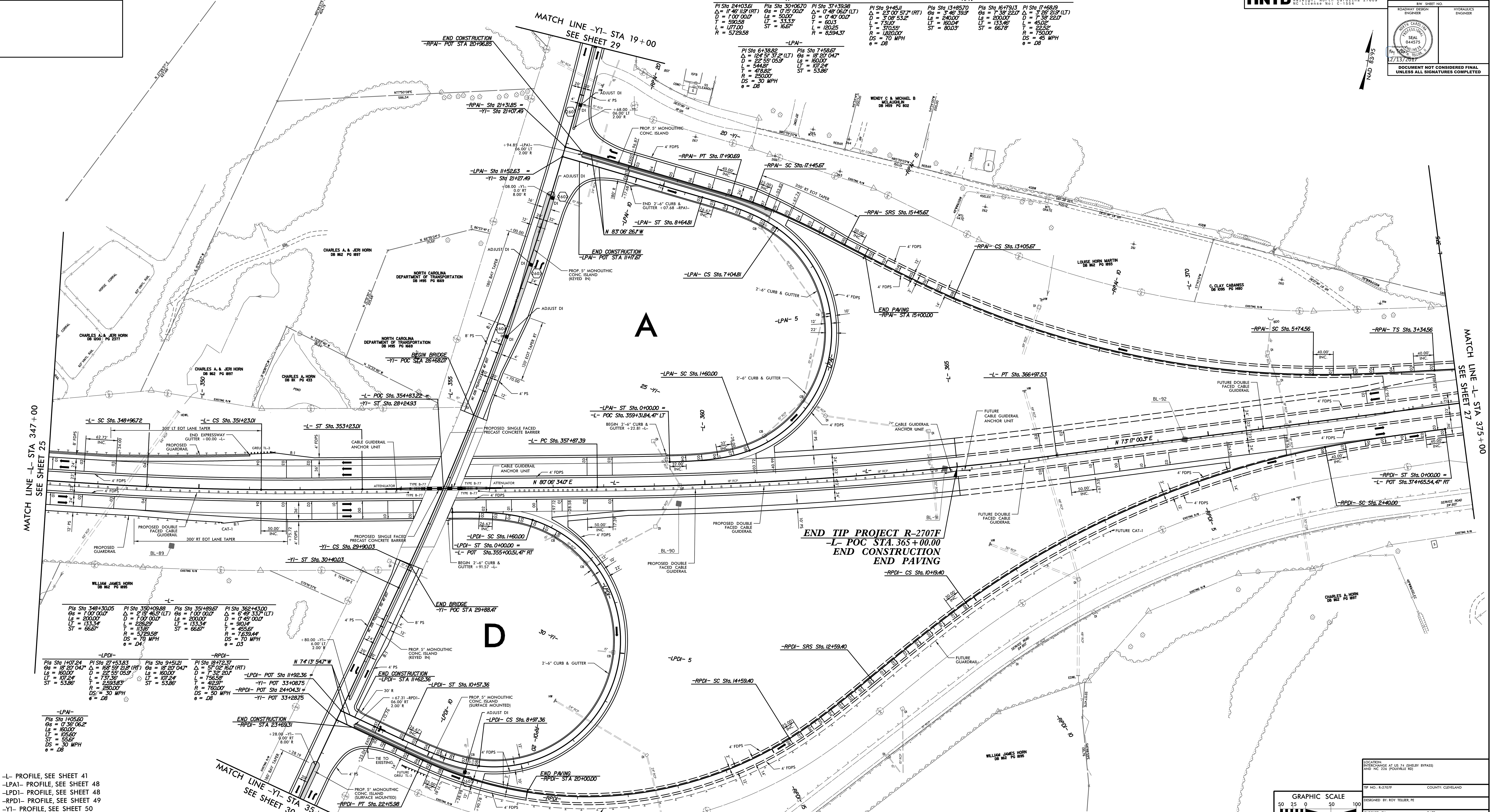

-Y1-

PI Sta 24+03.61	PIs Sta 30+06.70	PI Sta 37+39.98
Δ = 11° 46′ 11.9″ (RT)	Θs = 0° 15′ 00.0″	Δ = 0° 48′ 06.0″ (LT)
D = 1° 00′ 00.0″	Ls = 50.00′	D = 0° 40′ 00.0″
T = 590.58	LT = 33.33′	T = 60.13
L = 1,177.00	ST = 16.67′	L = 120.25
R = 5,729.58		R = 8,594.37

-RPA1-

PI Sta 9+45.11	PIs Sta 13+85.70	PIs Sta 16+79.13	PI Sta 17+68.19
Δ = 23° 00′ 57.7″ (RT)	Θs = 3° 46′ 39.9″	Θs = 7° 38′ 22.0″	Δ = 3° 26′ 21.9″ (LT)
D = 3° 08′ 53.2″	Ls = 240.00′	Ls = 200.00′	D = 7° 38′ 22.0″
L = 731.10′	LT = 160.04′	LT = 133.46′	L = 45.02′
T = 370.55′	ST = 80.03′	ST = 66.78′	T = 22.52′
R = 1,820.00′			R = 750.00′
DS = 70 MPH			DS = 45 MPH
e = .08			e = .08

-LPA1-

PI Sta 6+38.82	PIs Sta 7+58.67
Δ = 124° 51′ 37.2″ (LT)	Θs = 18° 20′ 04.7″
D = 22° 55′ 05.9″	Ls = 160.00′
L = 544.81′	LT = 107.24′
T = 478.82′	ST = 53.86′
R = 250.00′	
DS = 30 MPH	
e = .08	

-L-

PIs Sta 348+30.05	PI Sta 350+09.88	PIs Sta 351+89.67	PI Sta 362+43.00
Θs = 1° 00′ 00.0″	Δ = 2° 15′ 46.5″ (LT)	Θs = 1° 00′ 00.0″	Δ = 6° 49′ 33.7″ (LT)
Ls = 200.00′	D = 1° 00′ 00.0″	Ls = 200.00′	D = 0° 45′ 00.0″
LT = 133.34′	L = 226.29′	LT = 133.34′	L = 910.14′
ST = 66.67′	T = 113.16′	ST = 66.67′	T = 455.61′
	R = 5,729.58′		R = 7,639.44′
	DS = 70 MPH		DS = 70 MPH
	e = .04		e = .03

-LPD1-

PIs Sta 1+07.24	PI Sta 27+53.83	PIs Sta 9+51.21
Θs = 18° 20′ 04.7″	Δ = 168° 59′ 21.8″ (RT)	Θs = 18° 20′ 04.7″
Ls = 160.00′	D = 22° 55′ 05.9″	Ls = 160.00′
LT = 107.24′	L = 737.36′	LT = 107.24′
ST = 53.86′	T = 2,593.83′	ST = 53.86′
	R = 250.00′	
	DS = 30 MPH	
	e = .08	

-RPD1-

PI Sta 18+72.37
Δ = 57° 02′ 16.0″ (RT)
D = 7° 32′ 20.1″
L = 756.58′
T = 412.97′
R = 760.00′
DS = 50 MPH
e = .08

-LPA1-

PIs Sta 1+05.60
Θs = 0° 36′ 06.2″
Ls = 160.00′
LT = 105.60′
ST = 55.61′
DS = 30 MPH
e = .08

FOR -L- PROFILE, SEE SHEET 41
FOR -LPA1- PROFILE, SEE SHEET 48
FOR -LPD1- PROFILE, SEE SHEET 48
FOR -RPD1- PROFILE, SEE SHEET 49
FOR -Y1- PROFILE, SEE SHEET 50

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
INTERCHANGE AT US 74 (SHELBY BYPASS) AND NC 226 (POLKVILLE RD)

TIP NO.: R-2707F
COUNTY: CLEVELAND
DESIGNED BY: ROY TELLIER, PE
CHECKED BY:
DATE:

HNTB

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NC License No: C-1554

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER 12/13/2017	

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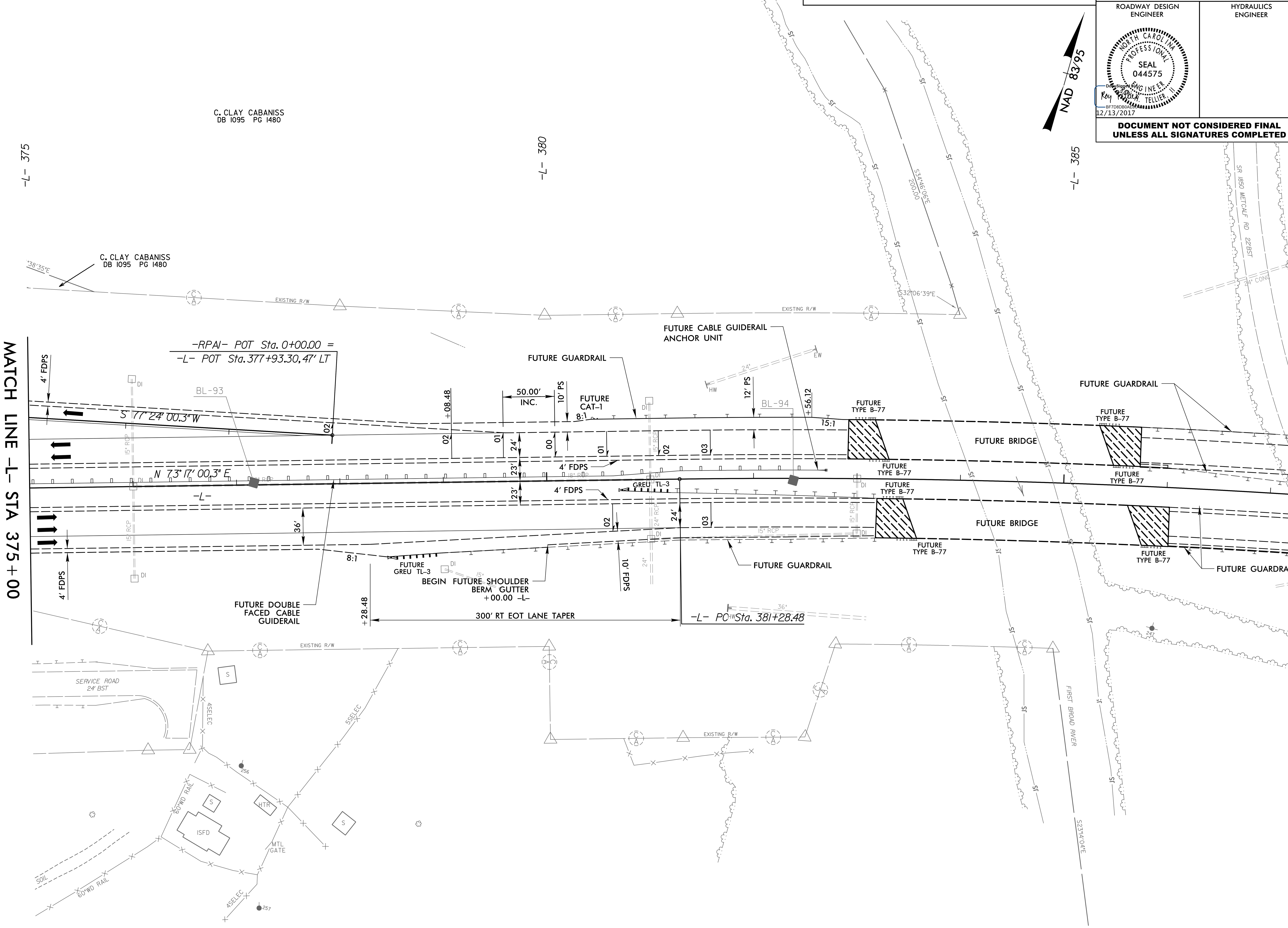

NAD 83/95
C. CLAY CABANISS
DB 1095 PG 1480
-L- 375
-L- 380
-L- 385
EXISTING R/W
MATCH LINE -L- STA 375+00
SEE SHEET 27
-RPA1- POT Sta. 0+00.00 =
-L- POT Sta. 377+93.30, 47' LT
BL-93
BL-94
S 77° 24' 00.3" W
N 73° 17' 00.3" E
-L-
4' FDPS
10' PS
12' PS
10' FDPS
50.00' INC.
FUTURE CAT-1
FUTURE GUARDRAIL
FUTURE CABLE GUIDERAIL ANCHOR UNIT
FUTURE TYPE B-77
FUTURE BRIDGE
GREU TL-3
FUTURE GREU TL-3
BEGIN FUTURE SHOULDER BERM GUTTER +00.00 -L-
FUTURE DOUBLE FACED CABLE GUIDERAIL
300' RT EOT LANE TAPER
-L- PC Sta. 381+28.48
+28.48
+08.48
+56.12
SERVICE ROAD 24' BST
SR 1850 METCALF RD 22' BST
FIRST BROAD RIVER
CHARLES A. HORN
DB 1162 PG 1897

-L-	-RPA1-	-RPD1-
PI Sta 387+19.11	PIs Sta 4+94.60	PIs Sta 1+60.04
Δ = 8° 50' 30.4" (RT)	θs = 3° 46' 39.9"	θs = 3° 46' 39.9"
D = 0° 45' 00.0"	Ls = 240.00'	Ls = 240.00'
L = 1,178.90'	LT = 160.04'	LT = 160.04'
T = 590.62'	ST = 80.03'	ST = 80.03'
R = 7,639.44'	DS = 70 MPH	DS = 70 MPH
DS = 70 MPH	e = .08	e = .08
e = .03		

FOR -L- PROFILE, SEE SHEET 42
FOR -RPA1- PROFILE, SEE SHEET 47
FOR -RPD1- PROFILE, SEE SHEET 49

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ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER

12/13/2017

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-LPB-

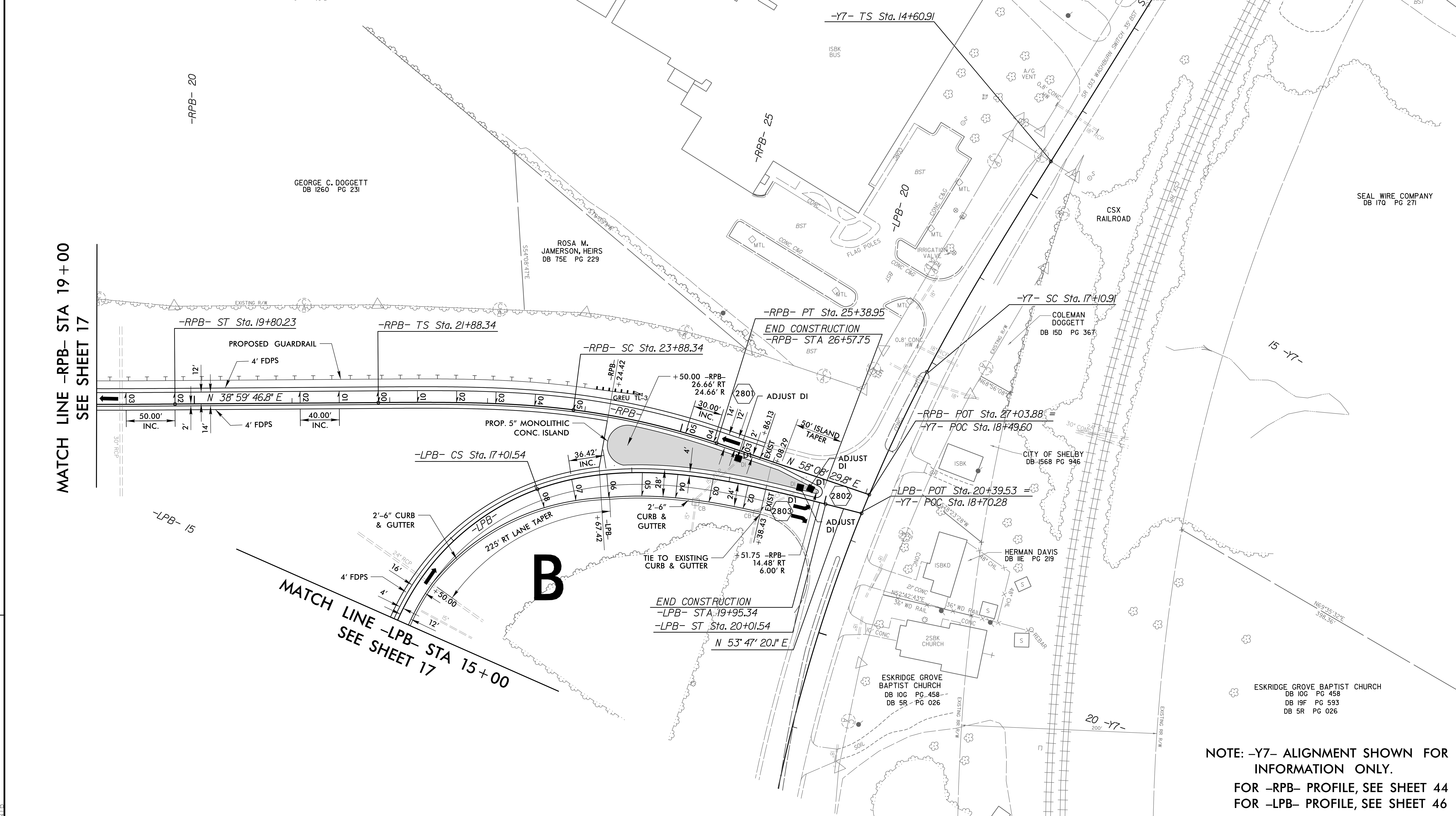
PI Sta 15+59.00	PIs Sta 18+05.10
△ = 92° 01' 34.7" (RT)	Θs = 34° 22' 38.9"
D = 22° 55' 05.9"	Ls = 300.00'
L = 401.54	LT = 203.91'
T = 259.00'	ST = 103.56'
R = 250.00'	DS = 30 MPH
DS = 30 MPH	e = .08
e = AS SHOWN	

-Y7-

PIs Sta 16+27.63	PI Sta 22+28.38
Θs = 4° 22' 30.0"	△ = 35° 05' 02.3" (LT)
Ls = 250.00'	D = 3° 30' 00.0"
LT = 166.72'	T = 517.47
ST = 83.38'	L = 1,002.40
	R = 1,637.02

-RPB-

PIs Sta 17+80.39	PIs Sta 23+21.80	PI Sta 24+63.90
Θs = 7° 30' 00.0"	Θs = 7° 38' 22.0"	△ = 11° 30' 21.0" (RT)
Ls = 300.00'	Ls = 200.00'	D = 7° 38' 22.0"
LT = 200.18'	LT = 133.46'	L = 150.61'
ST = 100.16'	ST = 66.78'	T = 75.56'
DS = 50 MPH	DS = 50 MPH	R = 750.00'
e = .08	e = .05	DS = 50 MPH
		e = .05


NAD 83/95
CAPITAL FUNDS, INC.
DB CORP 18 PG 604
JJI LIGHTING GROUP, INC.
DB 1125 PG 2356
GEORGE C. DOGGETT
DB 1260 PG 231
ROSA M. JAMERSON, HEIRS
DB 75E PG 229
CSX RAILROAD
SEAL WIRE COMPANY
DB 170 PG 271
COLEMAN DOGGETT
DB 15D PG 367
CITY OF SHELBY
DB 1568 PG 946
HERMAN DAVIS
DB 11E PG 219
ESKRIDGE GROVE BAPTIST CHURCH
DB 10G PG 458
DB 5R PG 026
ESKRIDGE GROVE BAPTIST CHURCH
DB 10G PG 458
DB 19F PG 593
DB 5R PG 026
-Y7- TS Sta. 14+60.91
-RPB- ST Sta. 19+80.23
-RPB- TS Sta. 21+88.34
-RPB- SC Sta. 23+88.34
-RPB- PT Sta. 25+38.95
END CONSTRUCTION
-RPB- STA 26+57.75
-Y7- SC Sta. 17+10.91
-RPB- POT Sta. 27+03.88 =
-Y7- POC Sta. 18+49.60
-LPB- CS Sta. 17+01.54
-LPB- POT Sta. 20+39.53 =
-Y7- POC Sta. 18+70.28
END CONSTRUCTION
-LPB- STA 19+95.34
-LPB- ST Sta. 20+01.54
N 53° 47' 20.1" E
N 38° 59' 46.8" E
N 58° 08' 29.8" E
S 18° 37' 06.3" E
PROPOSED GUARDRAIL
4' FDPS
PROP. 5" MONOLITHIC CONC. ISLAND
50' ISLAND TAPER
ADJUST DI
2'-6" CURB & GUTTER
225' RT LANE TAPER
TIE TO EXISTING CURB & GUTTER
+50.00 -RPB- 26.66' RT 24.66' R
+51.75 -RPB- 14.48' RT 6.00' R
MATCH LINE -RPB- STA 19+00
SEE SHEET 17
MATCH LINE -LPB- STA 15+00
SEE SHEET 17
B

NOTE: -Y7- ALIGNMENT SHOWN FOR INFORMATION ONLY.

FOR -RPB- PROFILE, SEE SHEET 44
FOR -LPB- PROFILE, SEE SHEET 46

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NC License No: C-1554

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER — 12/13/2017	

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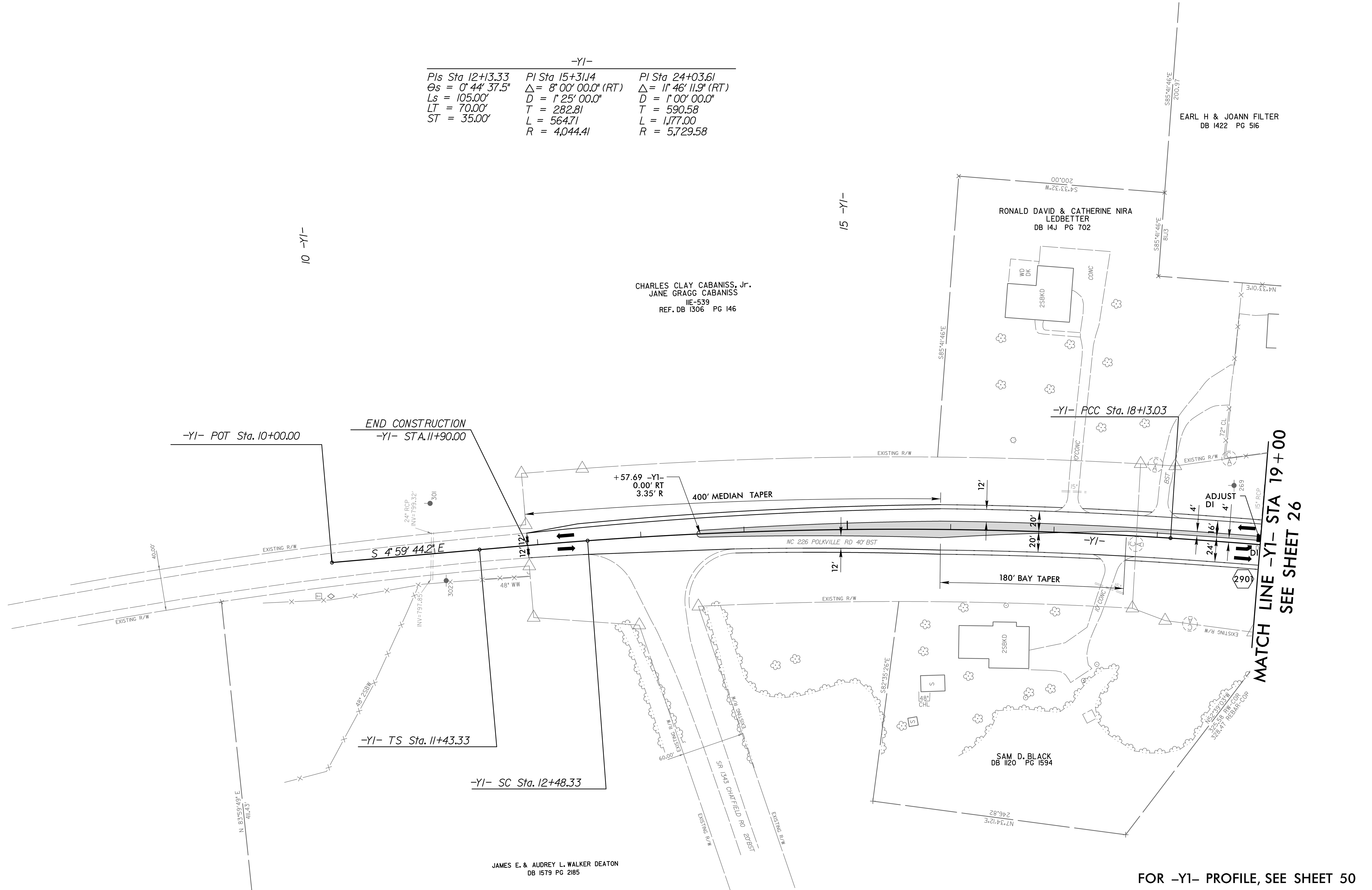
REVISIONS

-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'	T = 282.81	T = 590.58
ST = 35.00'	L = 564.71	L = 1,177.00
	R = 4,044.41	R = 5,729.58



NAD 83/95
EARL H & JOANN FILTER
DB 1422 PG 516
RONALD DAVID & CATHERINE NIRA LEDBETTER
DB 14J PG 702
CHARLES CLAY CABANISS, Jr.
JANE GRAGG CABANISS
11E-539
REF. DB 1306 PG 146
10 -Y1-
15 -Y1-
-Y1- POT Sta. 10+00.00
END CONSTRUCTION
-Y1- STA.11+90.00
+57.69 -Y1-
0.00' RT
3.35' R
400' MEDIAN TAPER
180' BAY TAPER
-Y1- PCC Sta. 18+13.03
ADJUST DI
S 4° 59' 44.2" E
NC 226 POLKVILLE RD 40' BST
EXISTING R/W
-Y1- TS Sta. 11+43.33
-Y1- SC Sta. 12+48.33
SR 1343 CHATFIELD RD 20' BST
SAM D. BLACK
DB 1120 PG 1594
JAMES E. & AUDREY L. WALKER DEATON
DB 1579 PG 2185
MATCH LINE -Y1- STA 19+00
SEE SHEET 26

FOR -Y1- PROFILE, SEE SHEET 50

08-DEC-2017 13:48
R2707F_rdy_psh29.dgn

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	30

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER R. TELLIER, II

12/13/2017

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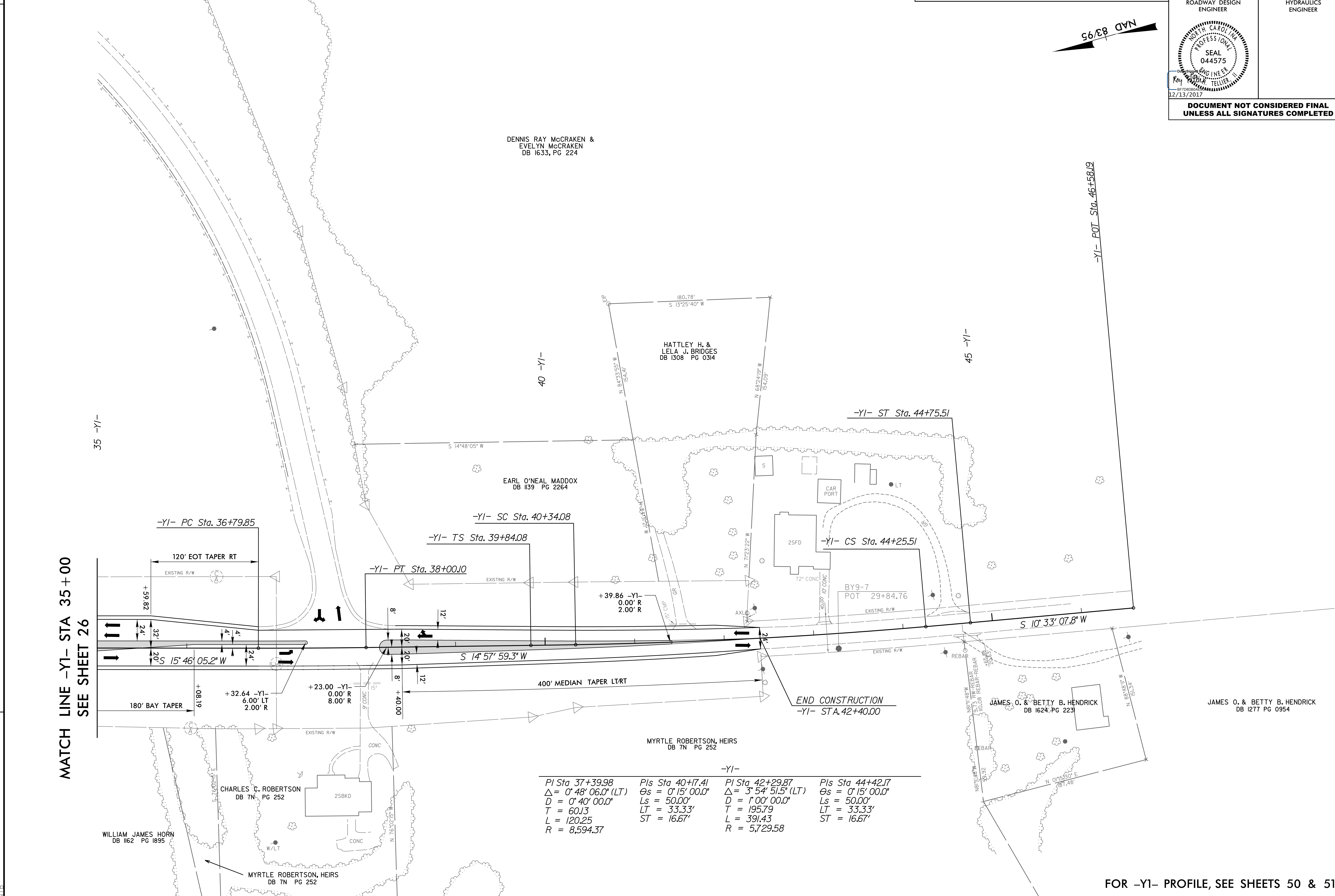
REVISIONS

8/17/99


NAD 83/95
DENNIS RAY McCRAKEN &
EVELYN McCRAKEN
DB 1633, PG 224
HATTLEY H. &
LELA J. BRIDGES
DB 1308 PG 0314
EARL O'NEAL MADDOX
DB 1139 PG 2264
MYRTLE ROBERTSON, HEIRS
DB 7N PG 252
CHARLES C. ROBERTSON
DB 7N PG 252
WILLIAM JAMES HORN
DB 1162 PG 1895
JAMES O. & BETTY B. HENDRICK
DB 1624 PG 2231
JAMES O. & BETTY B. HENDRICK
DB 1277 PG 0954
35 -Y1-
40 -Y1-
45 -Y1-
-Y1- POT Sta. 46+58.19
-Y1- ST Sta. 44+75.51
-Y1- CS Sta. 44+25.51
-Y1- SC Sta. 40+34.08
-Y1- TS Sta. 39+84.08
-Y1- PT Sta. 38+00.10
-Y1- PC Sta. 36+79.85
120' EOT TAPER RT
180' BAY TAPER
400' MEDIAN TAPER LT/RT
S 15° 46' 05.2" W
S 14° 57' 59.3" W
S 10° 33' 07.8" W
+39.86 -Y1-
0.00' R
2.00' R
+32.64 -Y1-
6.00' LT
2.00' R
+23.00 -Y1-
0.00' R
8.00' R
+59.82
+08.19
+40.00
BY9-7
POT 29+84.76
END CONSTRUCTION
-Y1- STA. 42+40.00
EXISTING R/W
S 14°48'05" W
180.78'
S 13°25'40" W
CAR PORT
2SFD
2SBKD
W/LT
CONC
AXLO
REBAR
LT
MATCH LINE -Y1- STA 35+00
SEE SHEET 26

-Y1-

PI Sta 37+39.98	PIs Sta 40+17.41	PI Sta 42+29.87	PIs Sta 44+42.17
△ = 0° 48' 06.0" (LT)	Θs = 0° 15' 00.0"	△ = 3° 54' 51.5" (LT)	Θs = 0° 15' 00.0"
D = 0° 40' 00.0"	Ls = 50.00'	D = 1° 00' 00.0"	Ls = 50.00'
T = 60.13	LT = 33.33'	T = 195.79	LT = 33.33'
L = 120.25	ST = 16.67'	L = 391.43	ST = 16.67'
R = 8,594.37		R = 5,729.58	

FOR -Y1- PROFILE, SEE SHEETS 50 & 51

08-DEC-2017 13:48
R:\Roadway\Proj\R2707F_rdy_psh30.dgn

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER, II
12/13/2017

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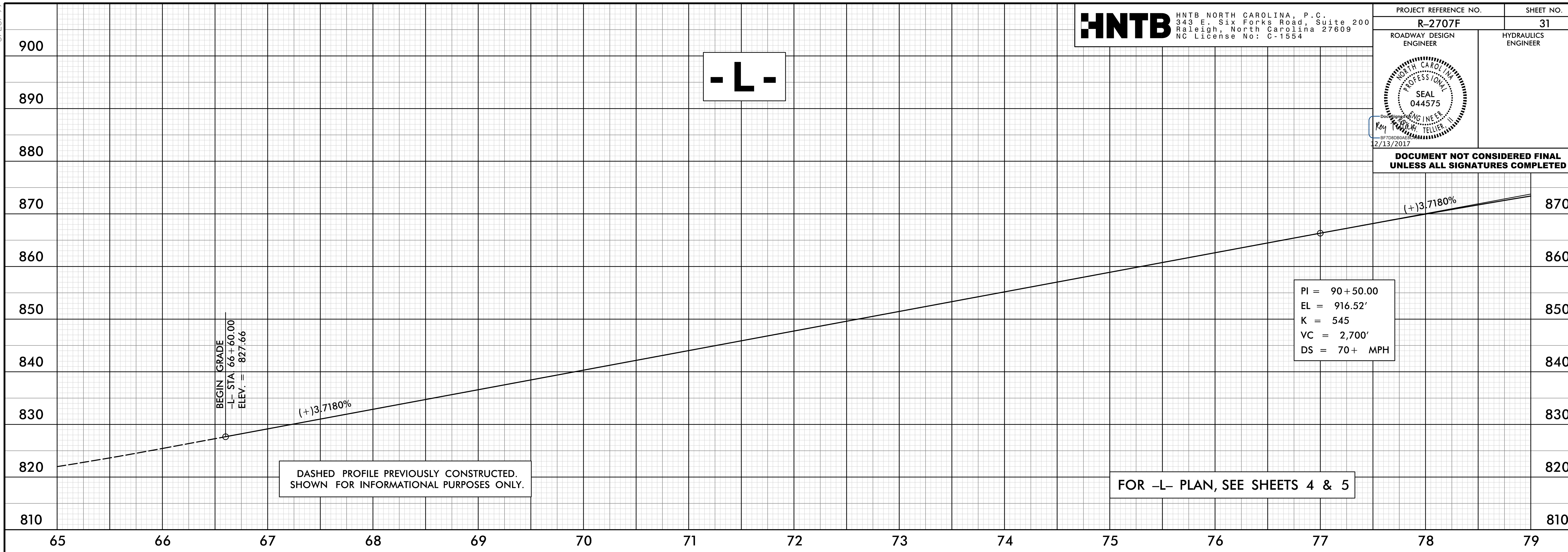

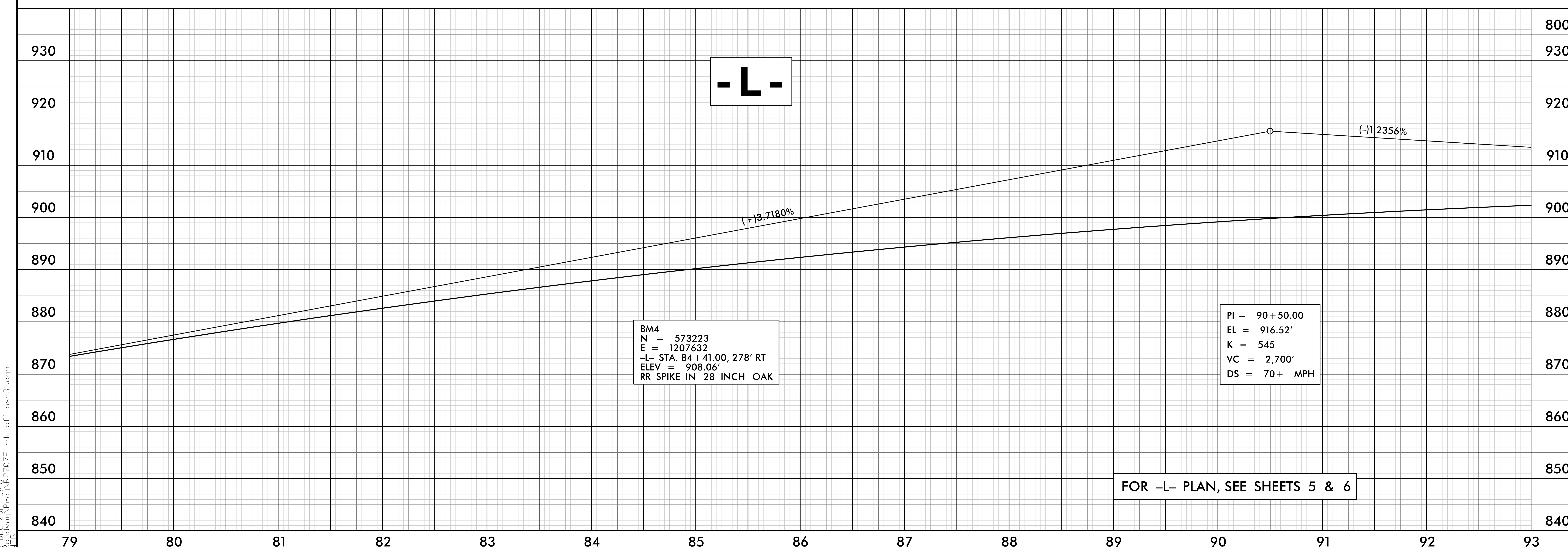

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	32

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY H. TELLIER, II

DocuSigned by: Roy Tellier
BF7D8DB0AE8C480...
12/13/2017

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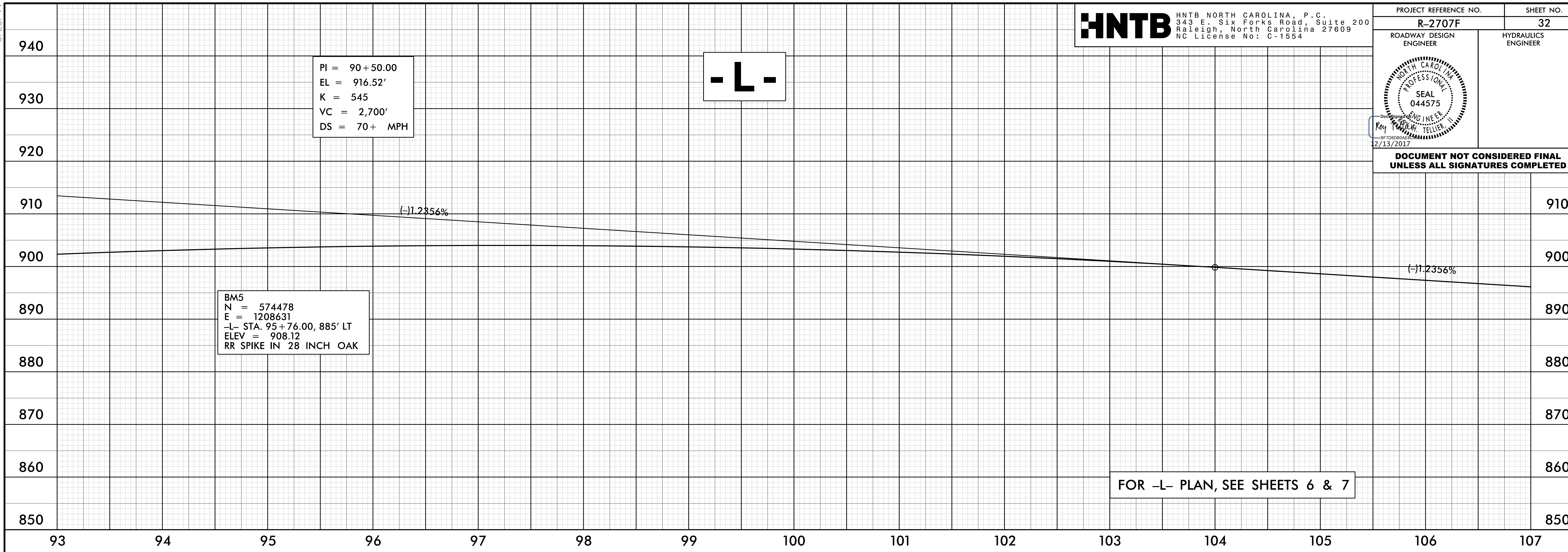

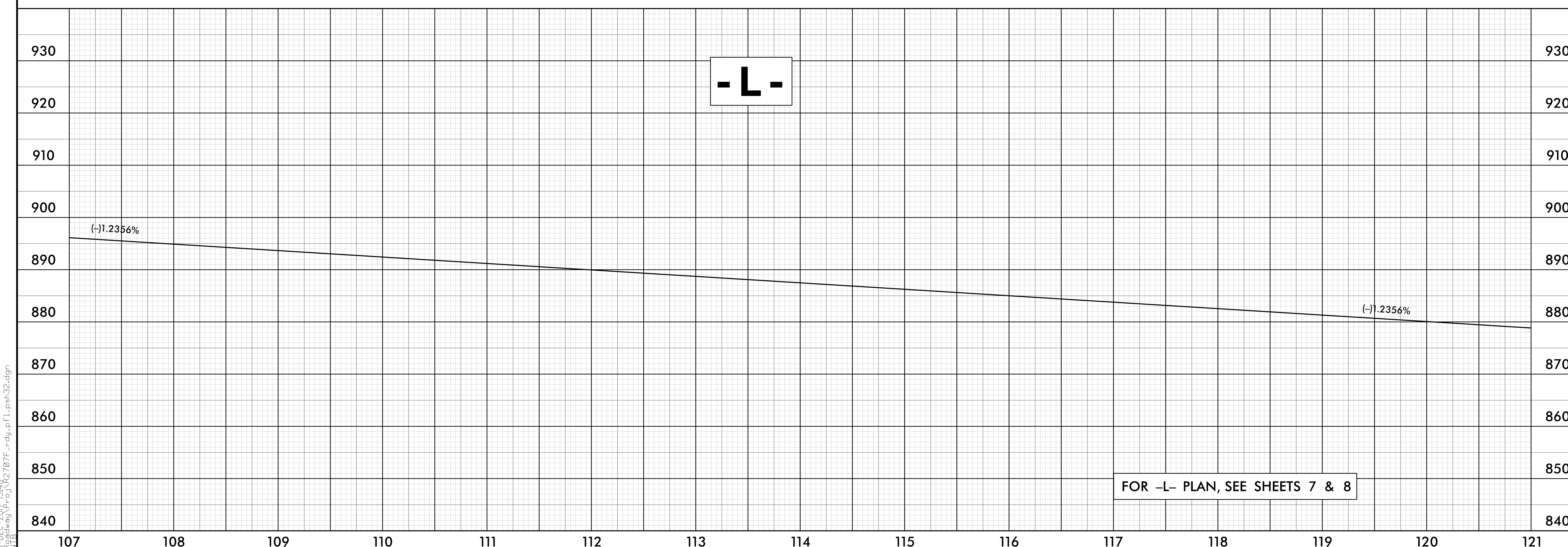

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\Roadway\Proj\R2707F_rdy_pfl_psh32.dgn
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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY H. TELLIER, II

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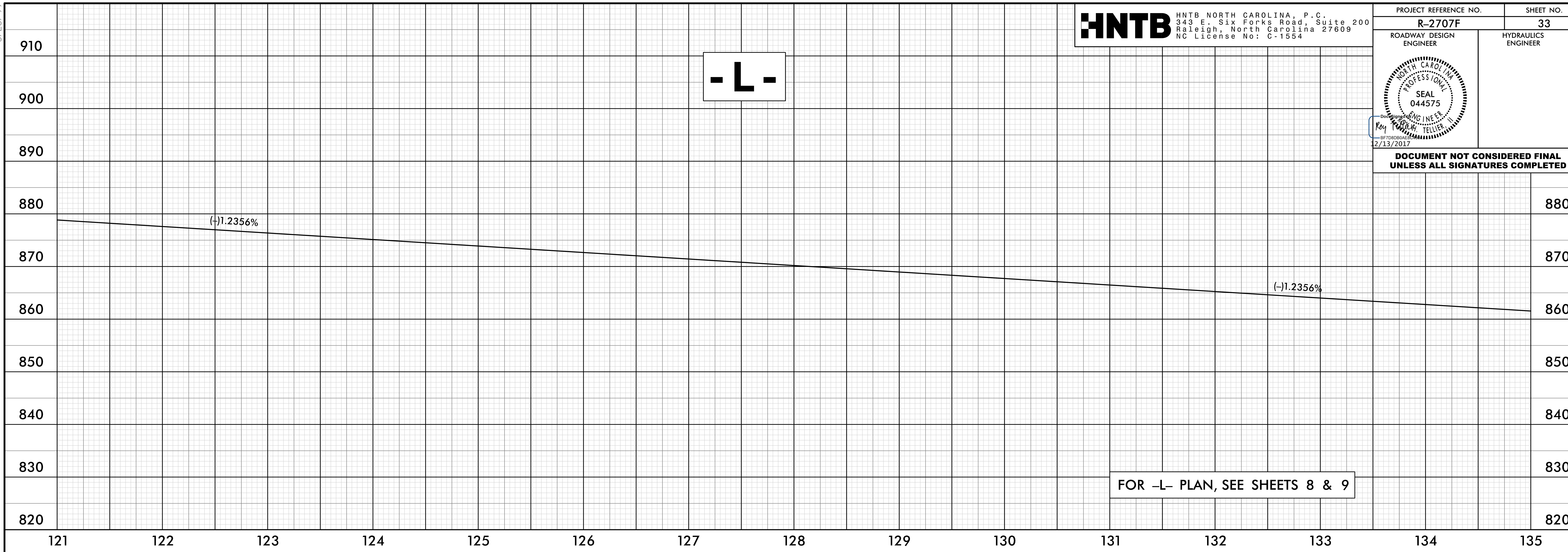

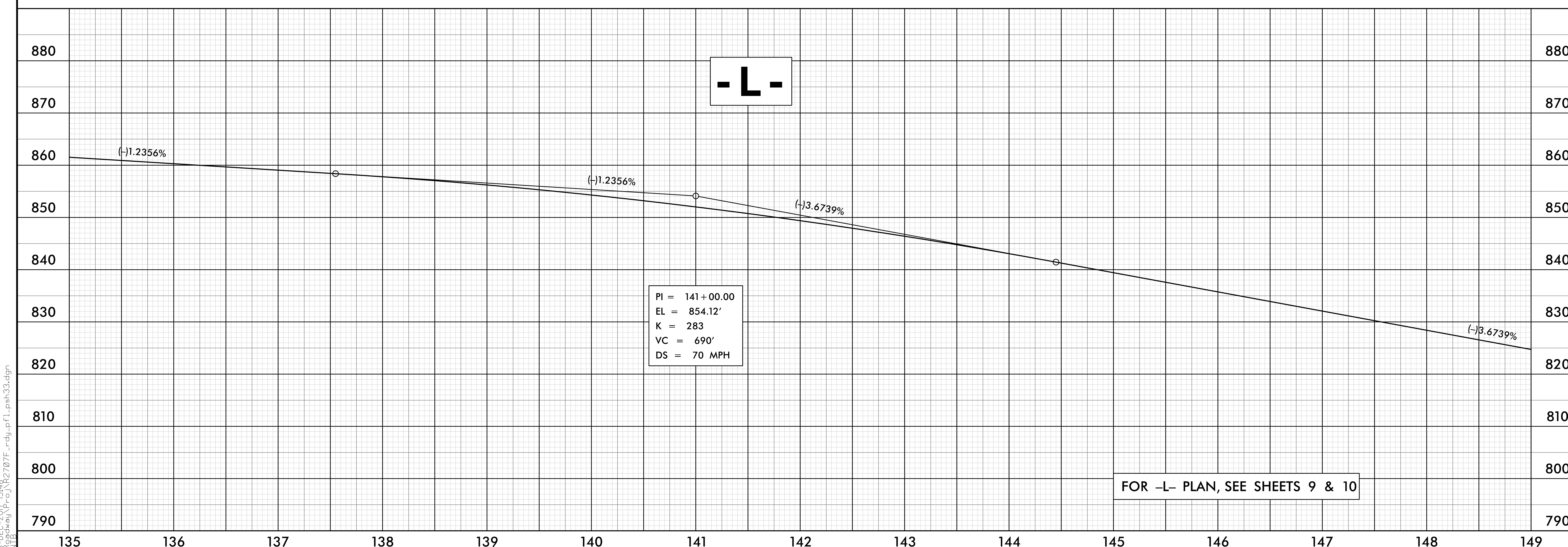

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER TELLIER
12/13/2017

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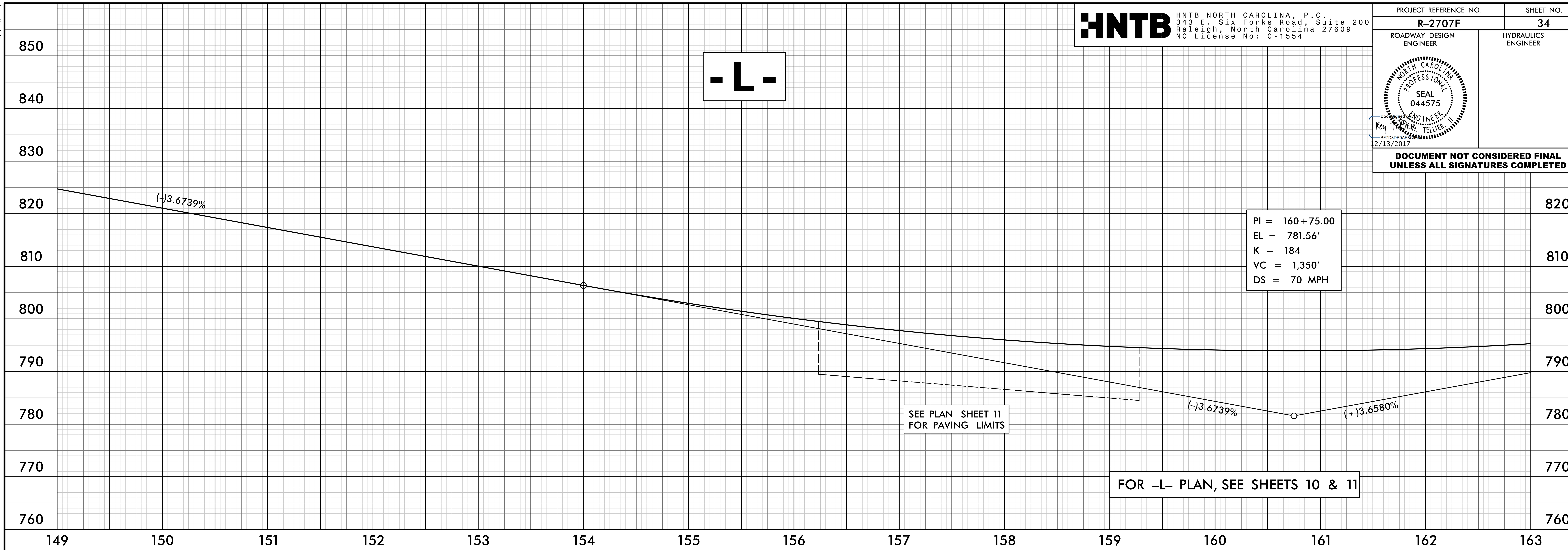

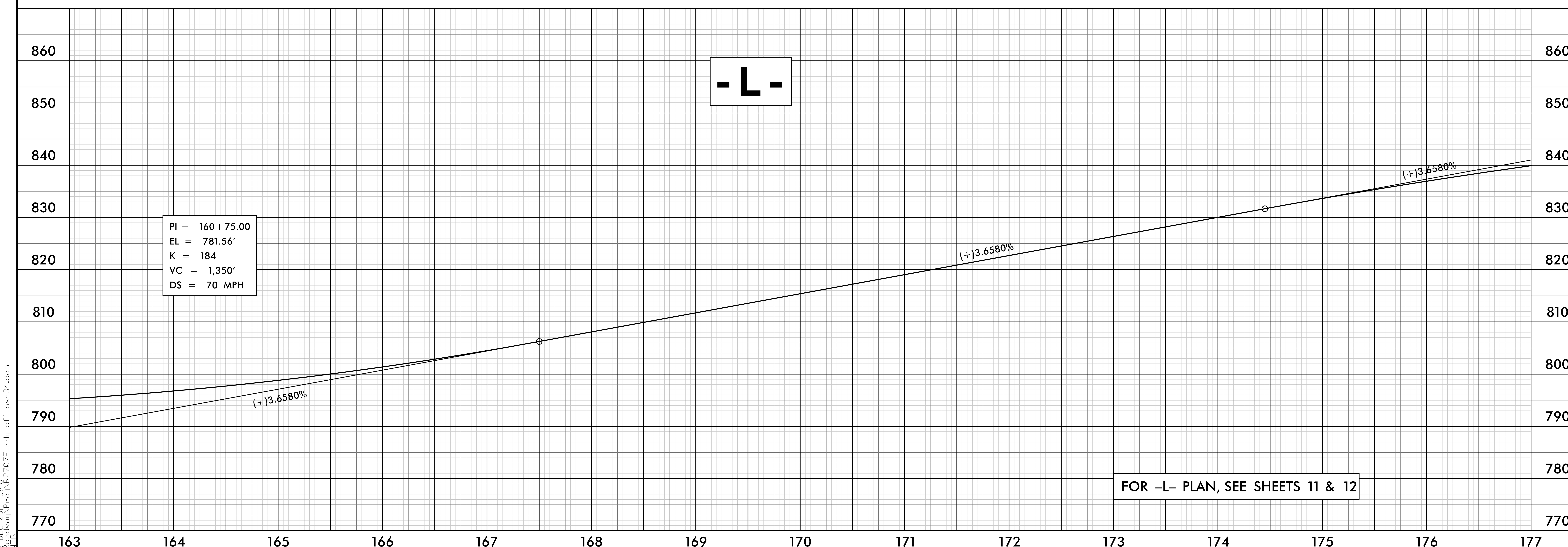

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER

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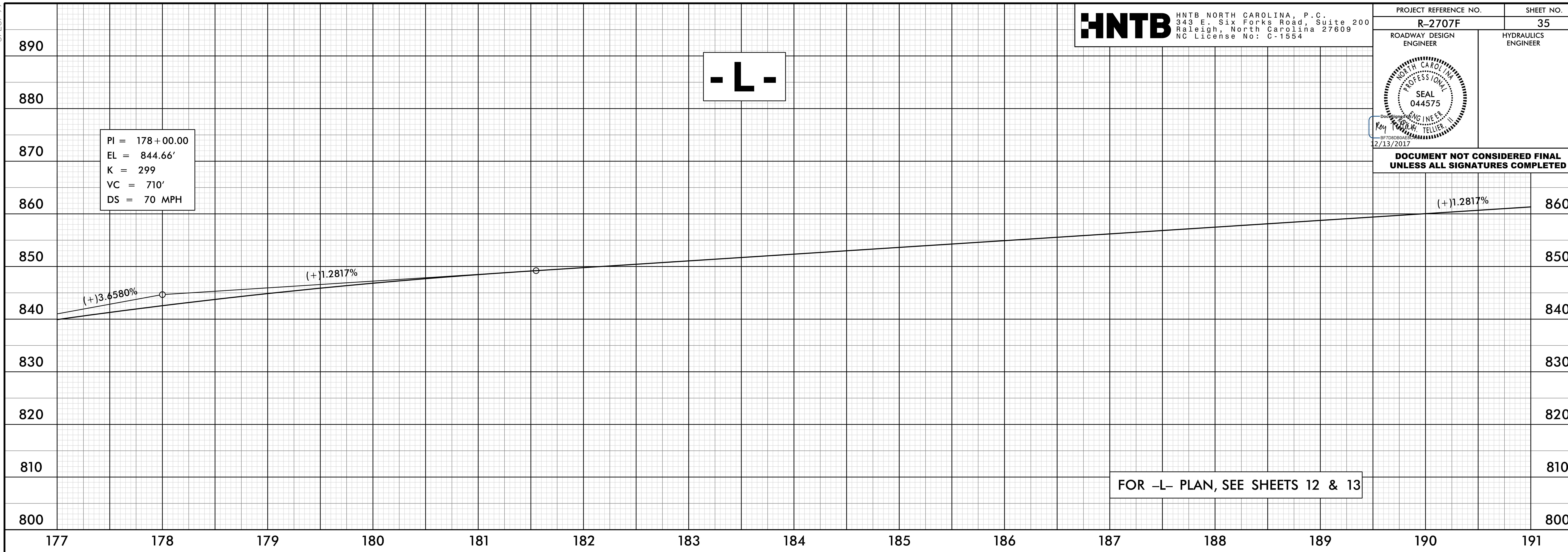

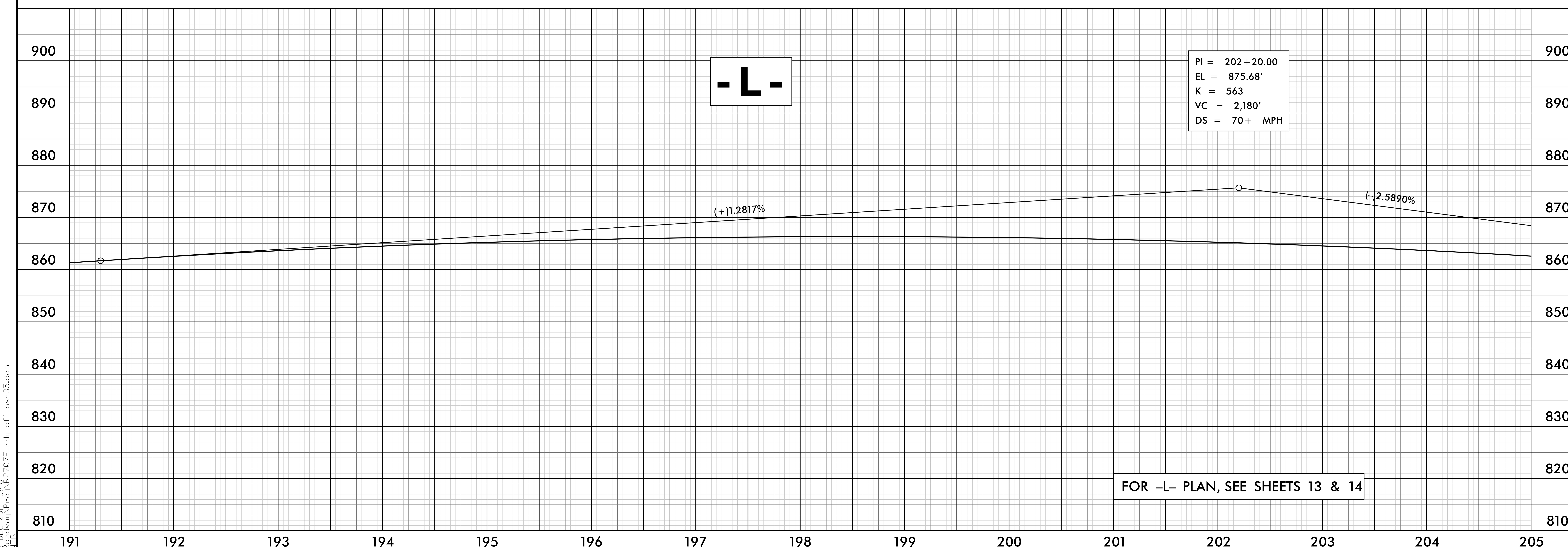

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER, II
12/13/2017

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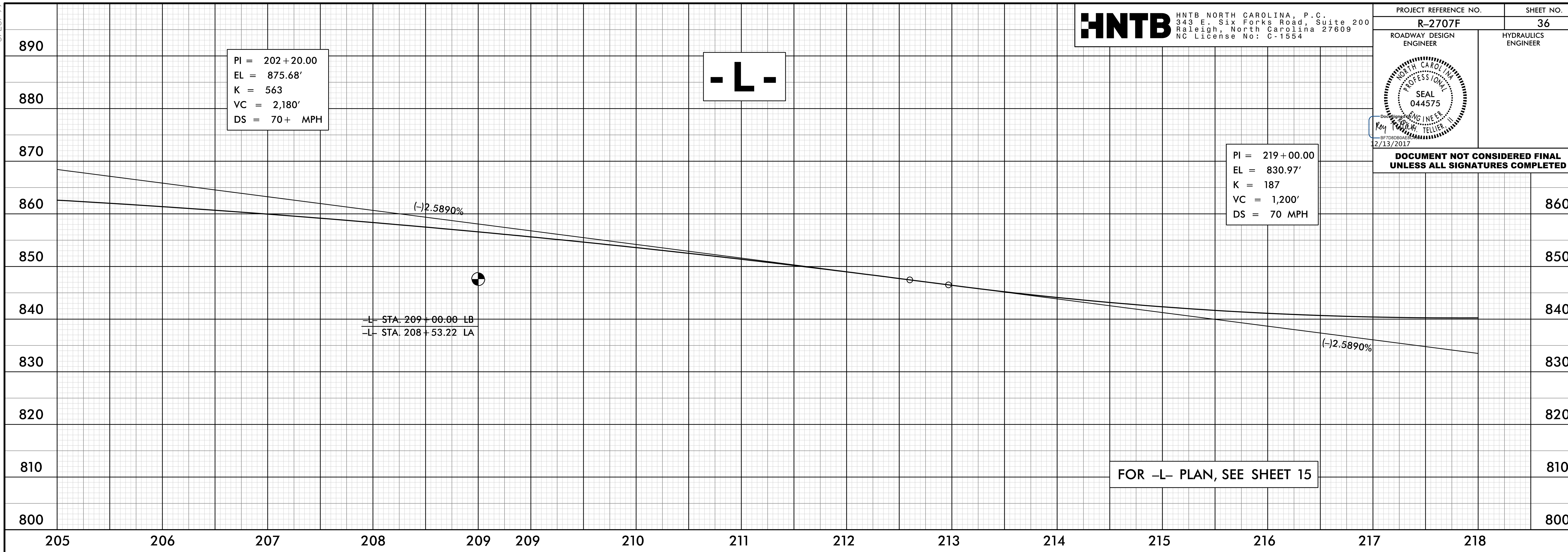

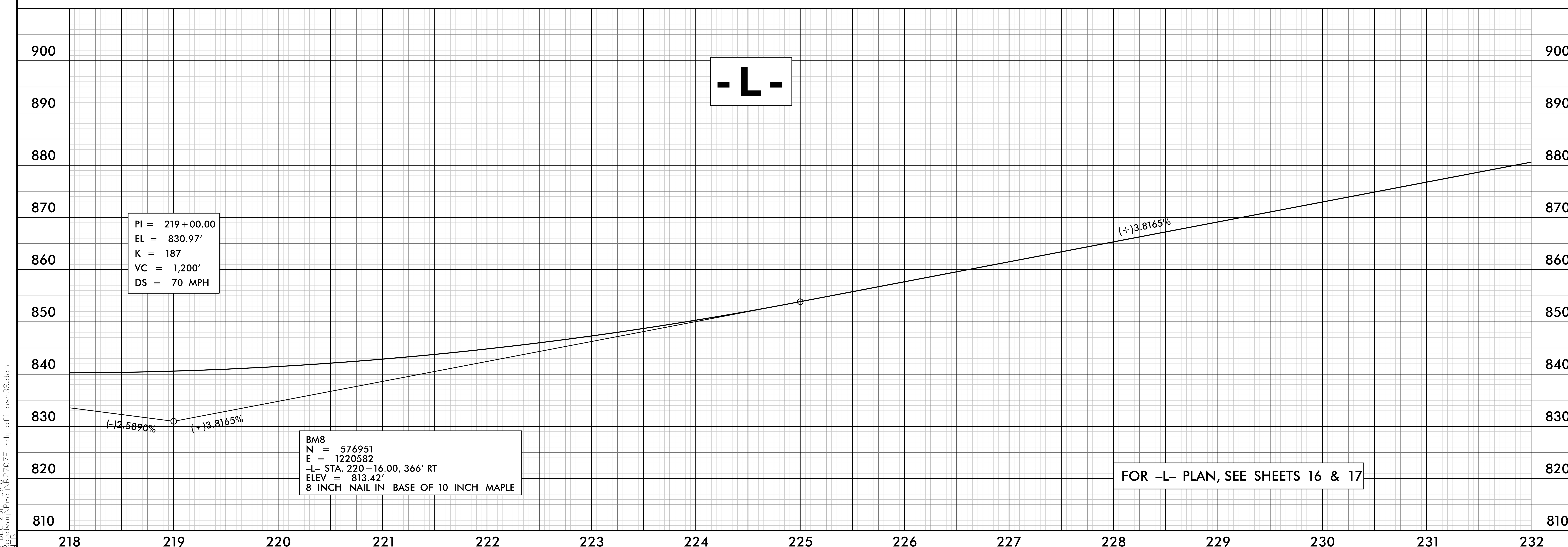

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 ROY TELLIER, II
12/13/2017

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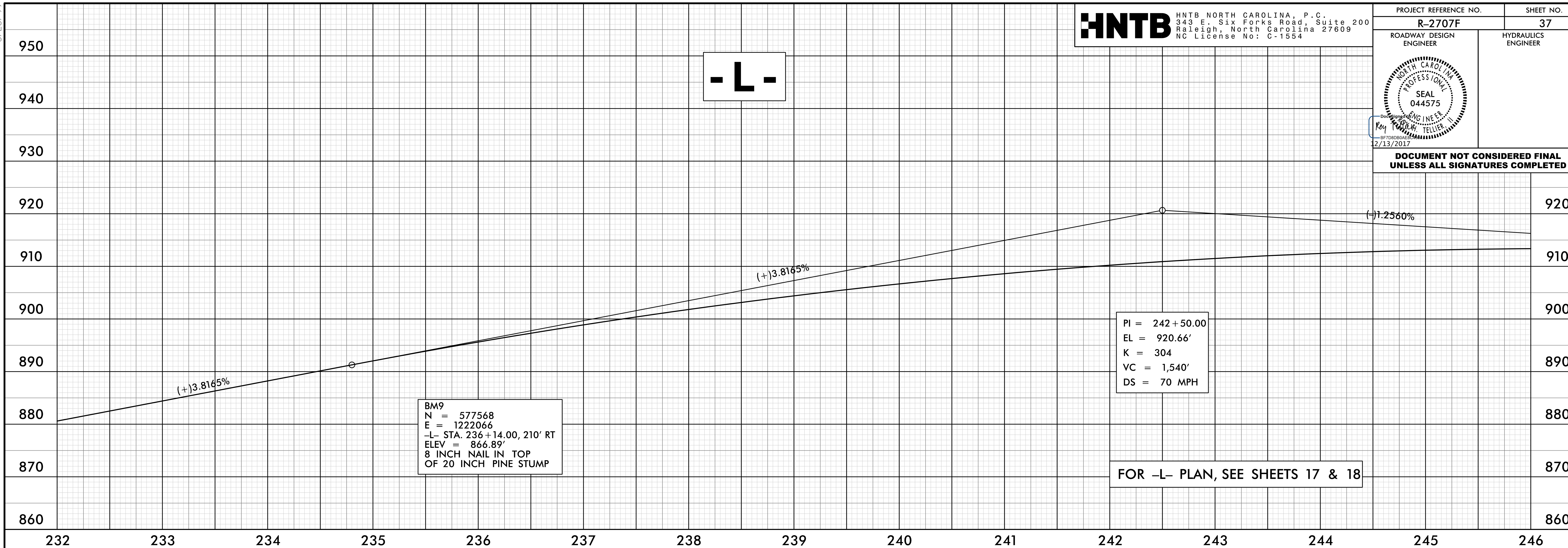
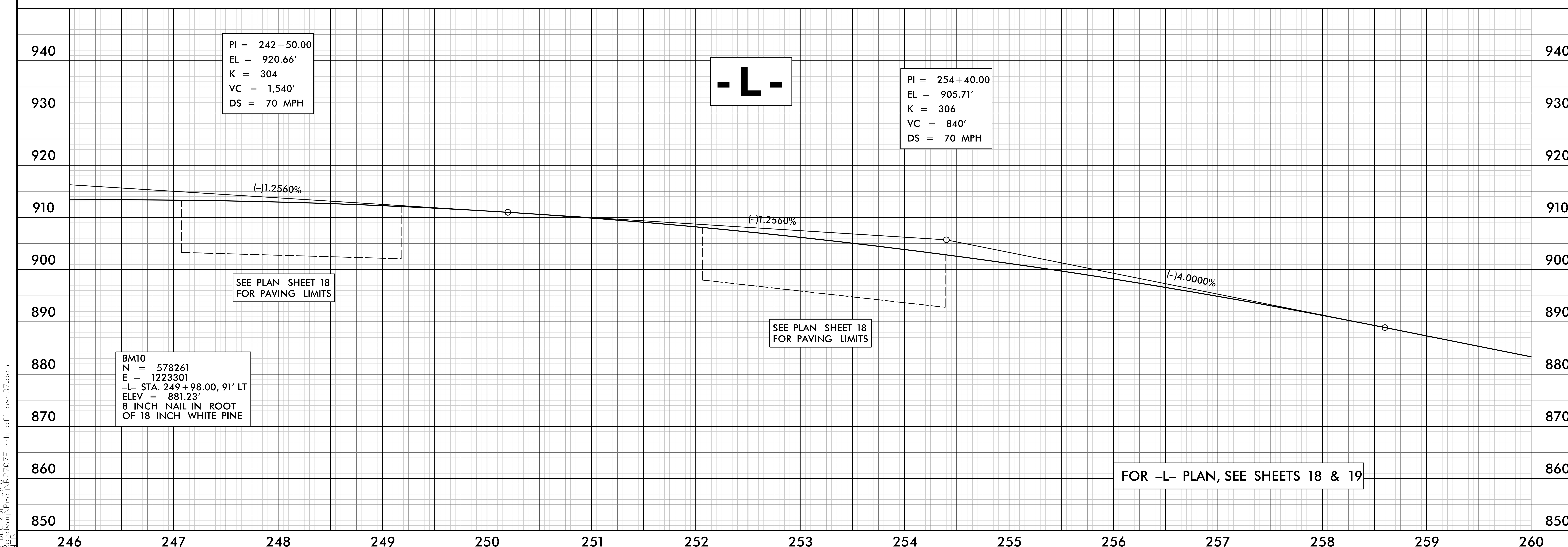


-L-
950
940
930
920
910
900
890
880
870
860
(+)3.8165%
(+)3.8165%
(–)1.2560%
PI = 242+50.00
EL = 920.66'
K = 304
VC = 1,540'
DS = 70 MPH
BM9
N = 577568
E = 1222066
–L– STA. 236+14.00, 210' RT
ELEV = 866.89'
8 INCH NAIL IN TOP
OF 20 INCH PINE STUMP
FOR –L– PLAN, SEE SHEETS 17 & 18
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246



-L-
940
930
920
910
900
890
880
870
860
850
PI = 242+50.00
EL = 920.66'
K = 304
VC = 1,540'
DS = 70 MPH
PI = 254+40.00
EL = 905.71'
K = 306
VC = 840'
DS = 70 MPH
(–)1.2560%
(–)1.2560%
(–)4.0000%
SEE PLAN SHEET 18
FOR PAVING LIMITS
SEE PLAN SHEET 18
FOR PAVING LIMITS
BM10
N = 578261
E = 1223301
–L– STA. 249+98.00, 91' LT
ELEV = 881.23'
8 INCH NAIL IN ROOT
OF 18 INCH WHITE PINE
FOR –L– PLAN, SEE SHEETS 18 & 19
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY H. TELLIER, II
12/13/2017

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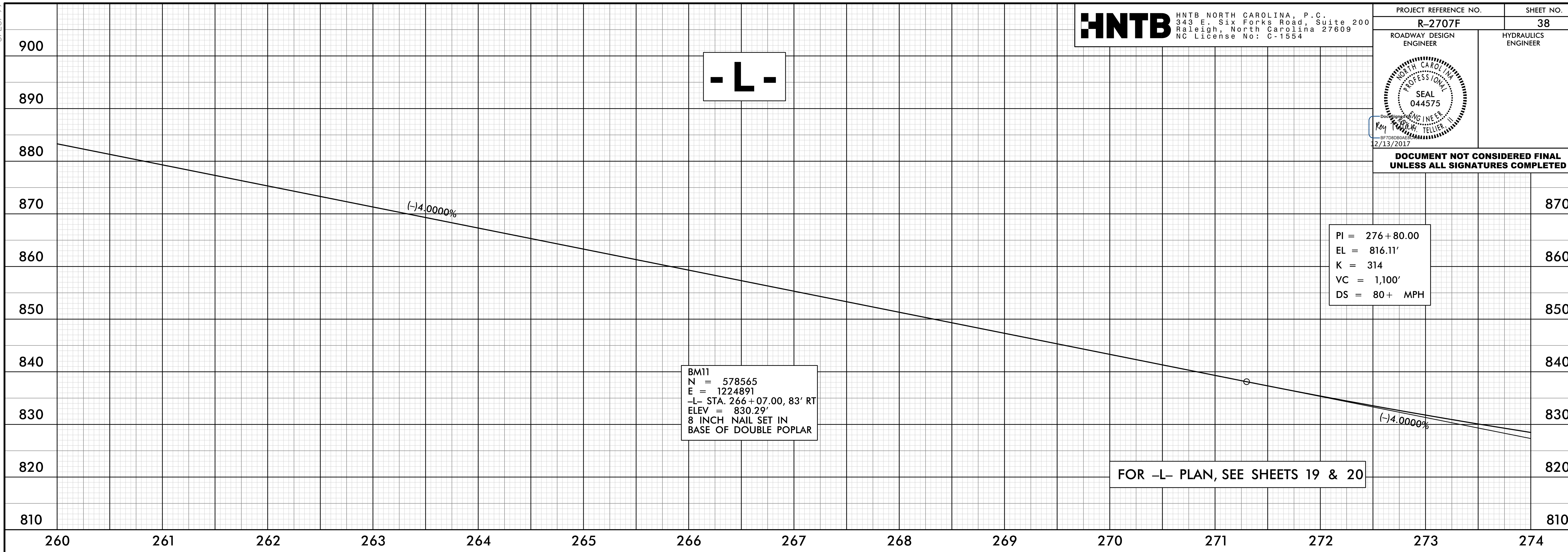

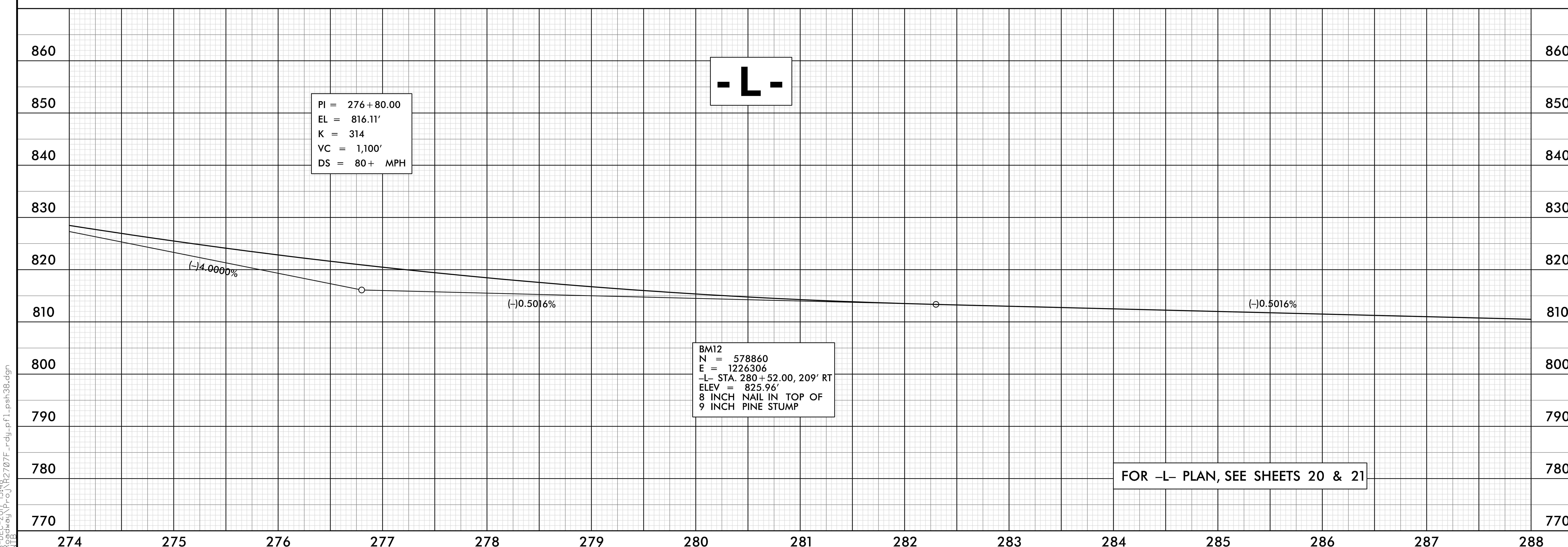

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER, II
12/13/2017

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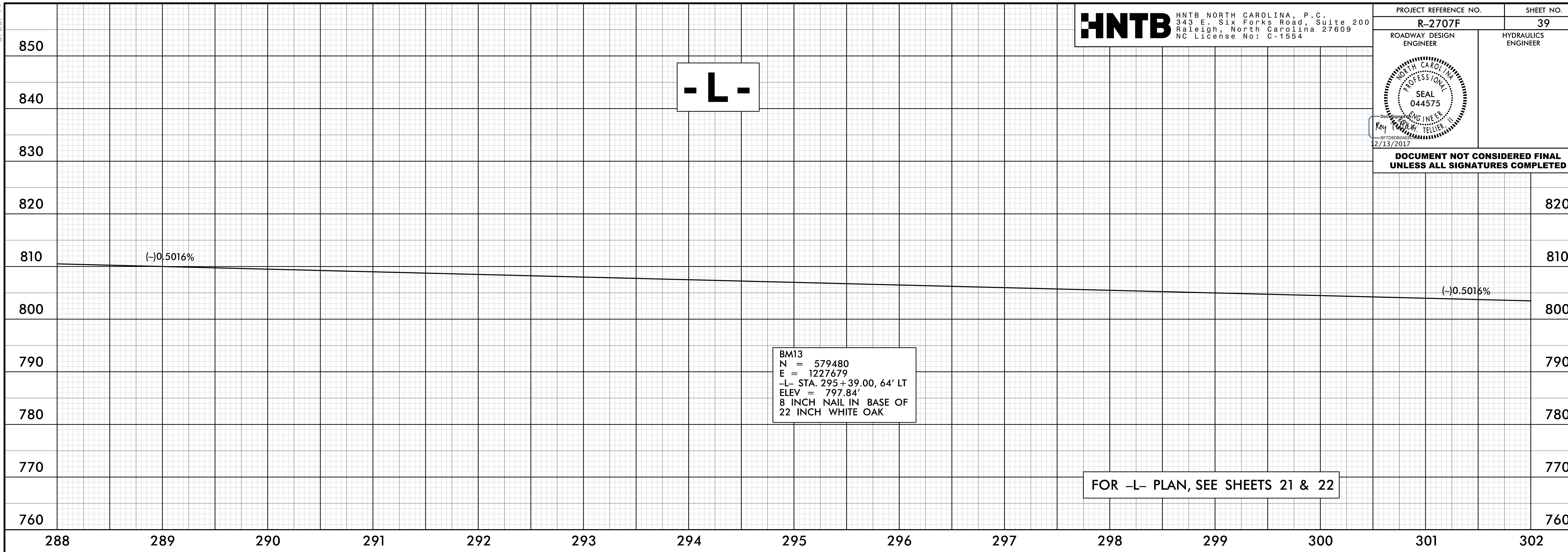

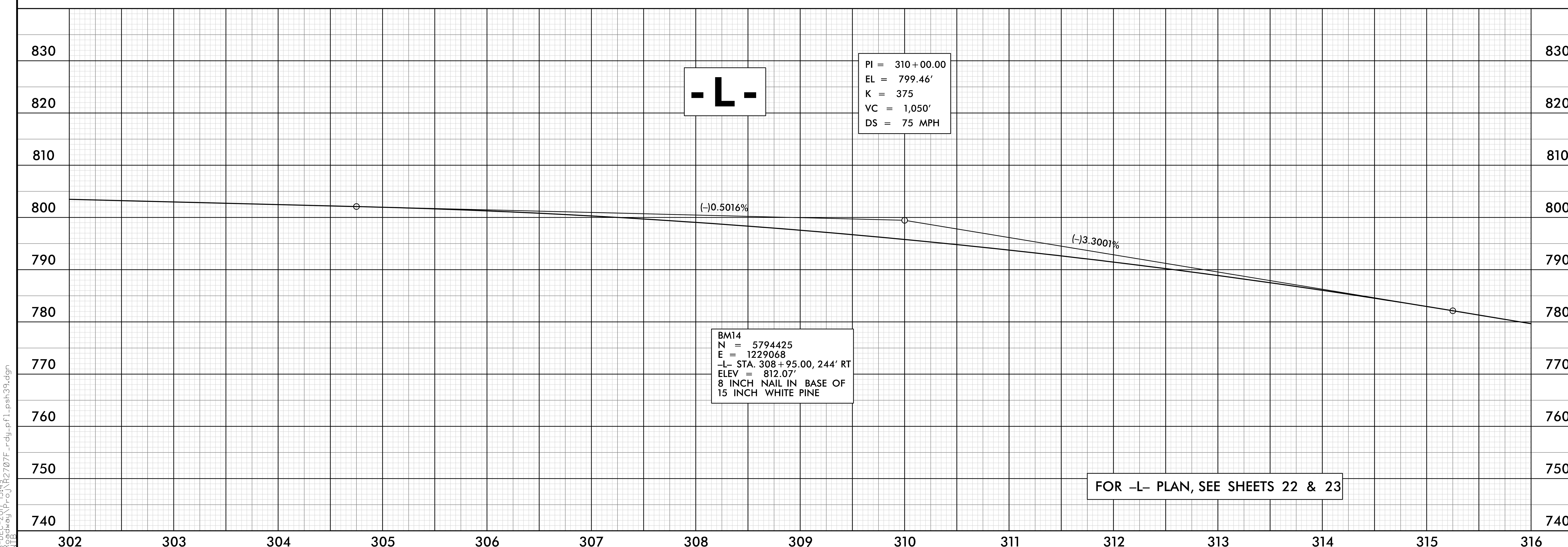

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044575 TELLIER II

12/13/2017

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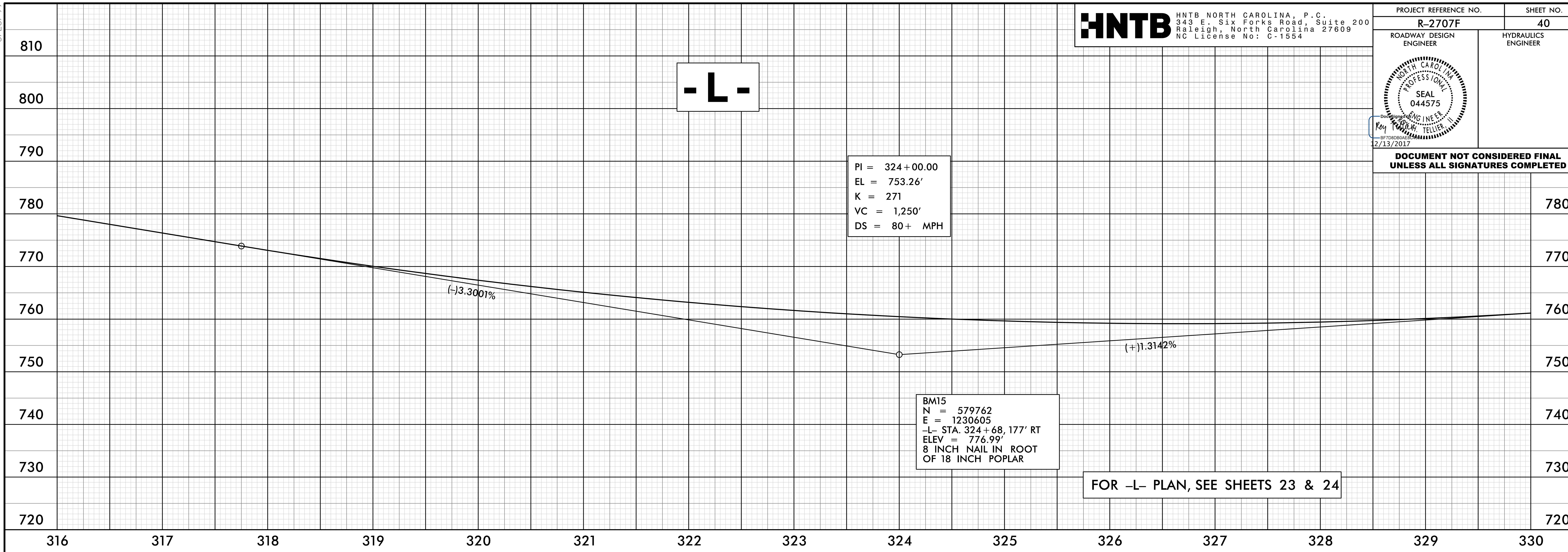

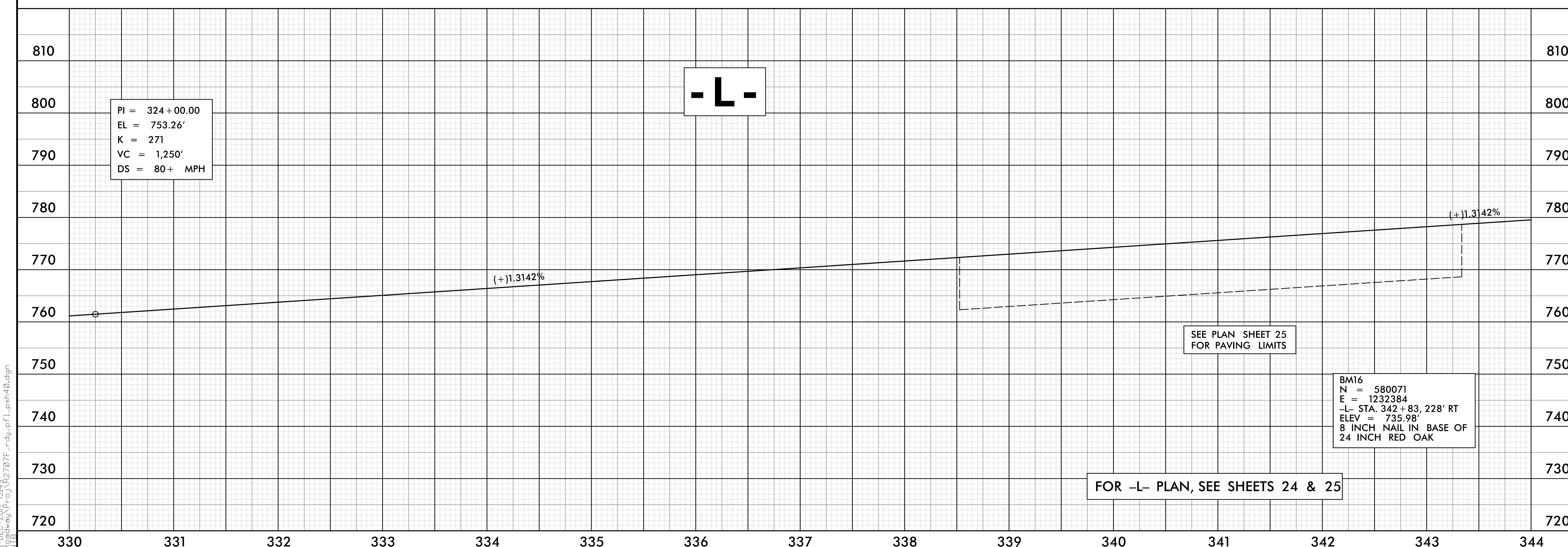

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER TELLIER
12/13/2017

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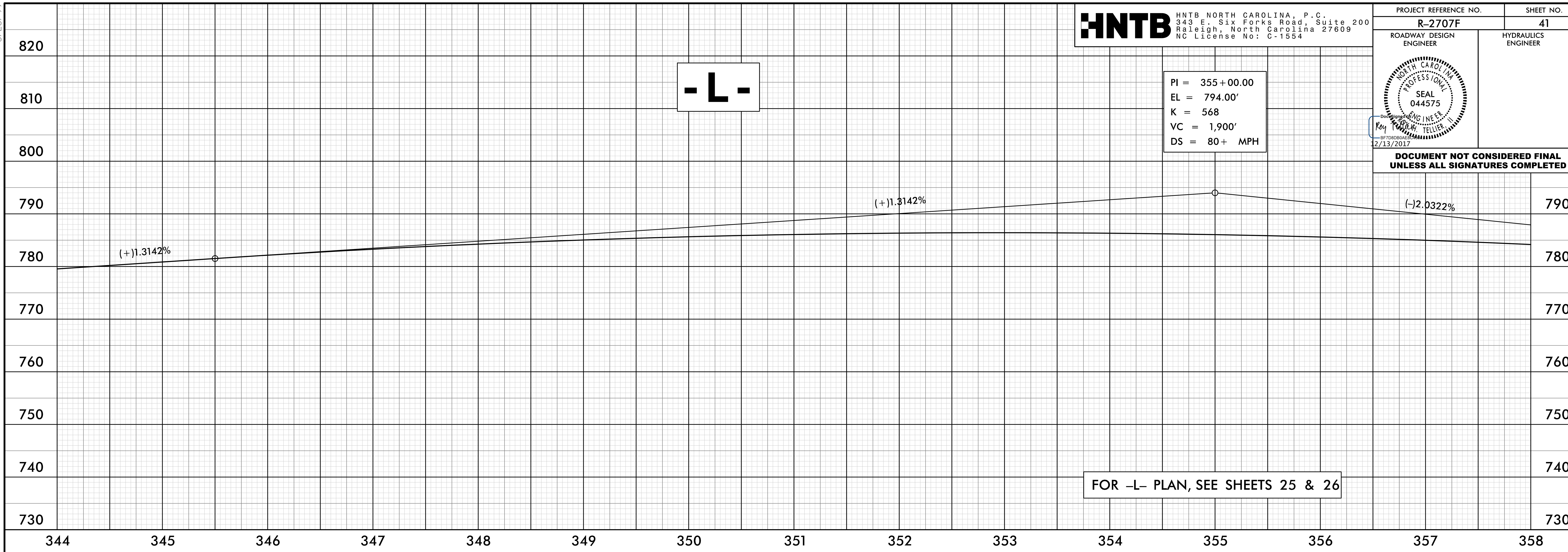

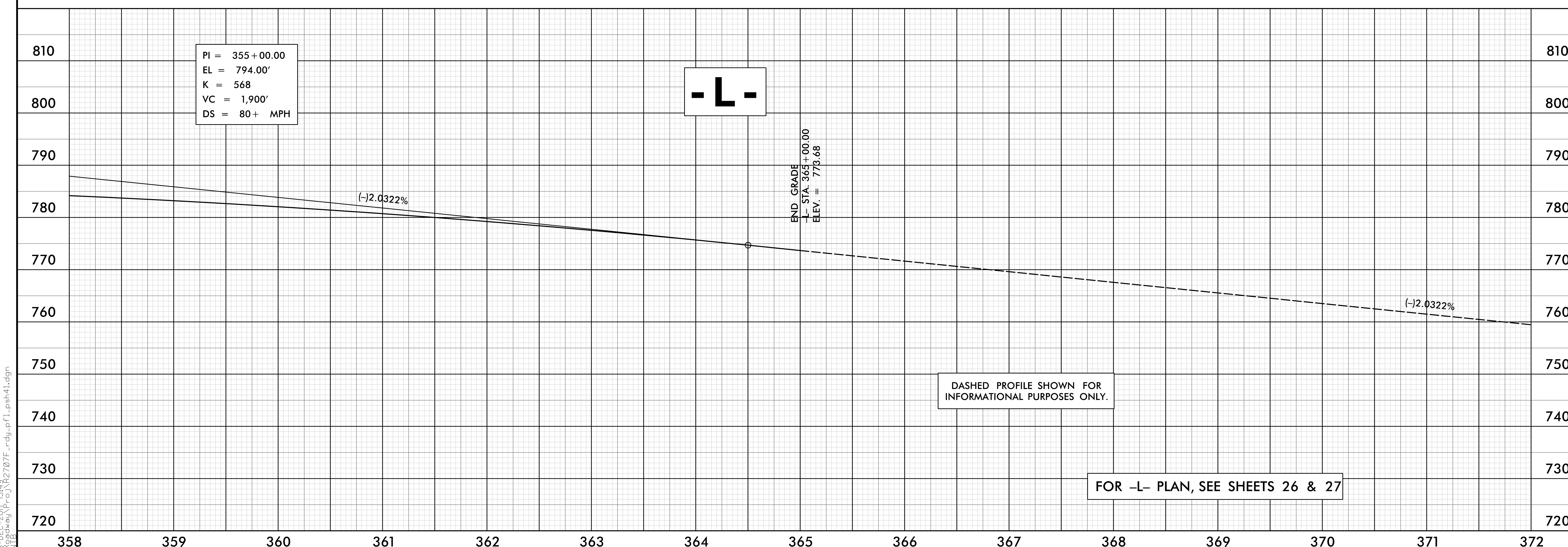

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER

12/13/2017

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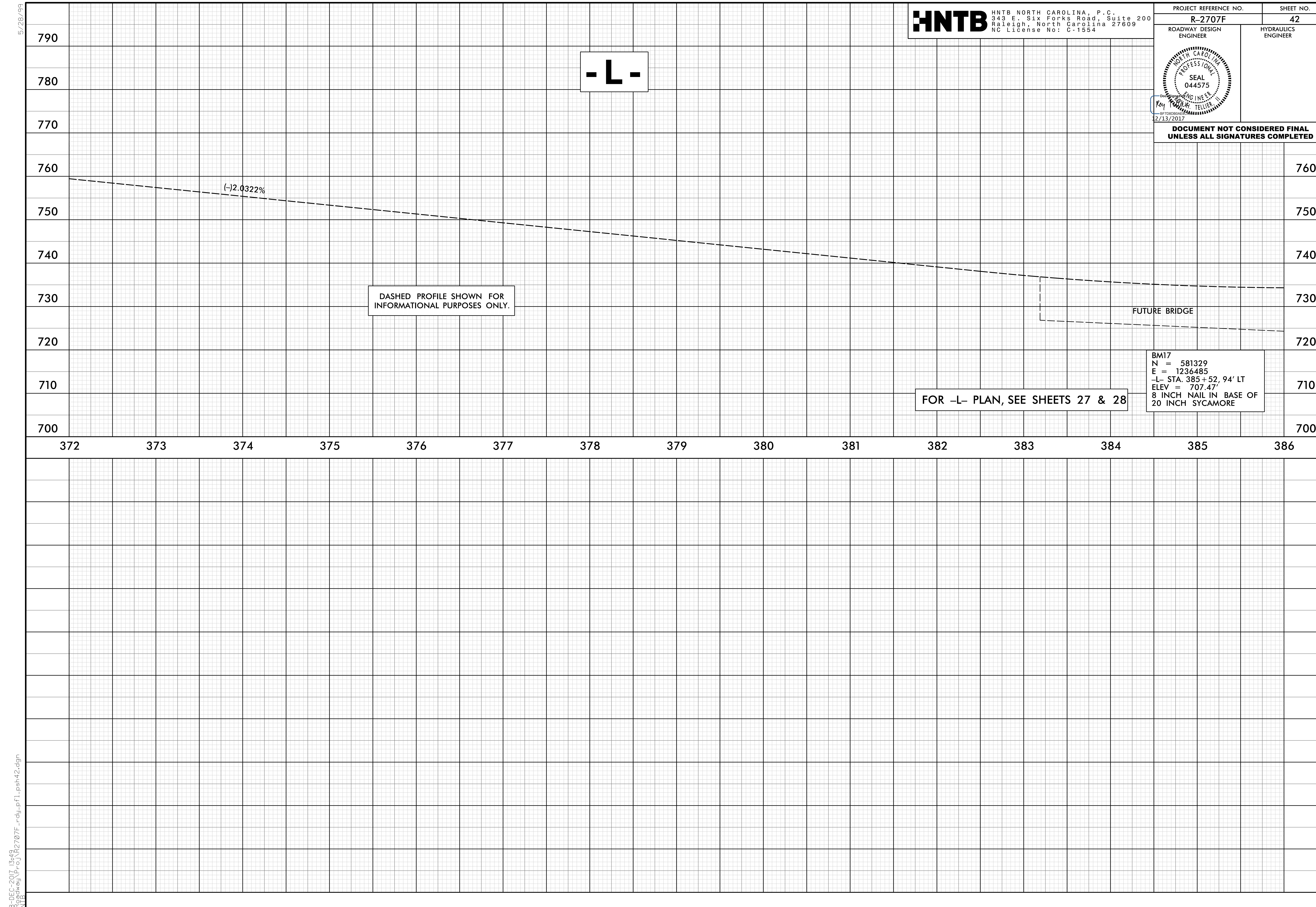

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY TELLIER, II
12/13/2017

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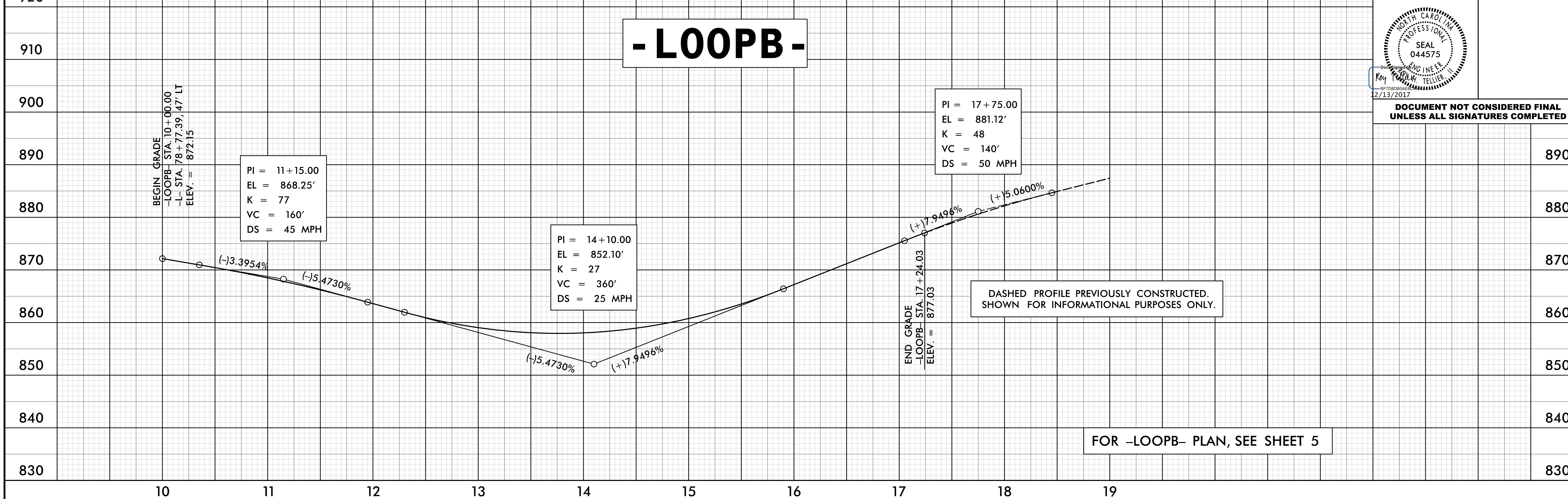
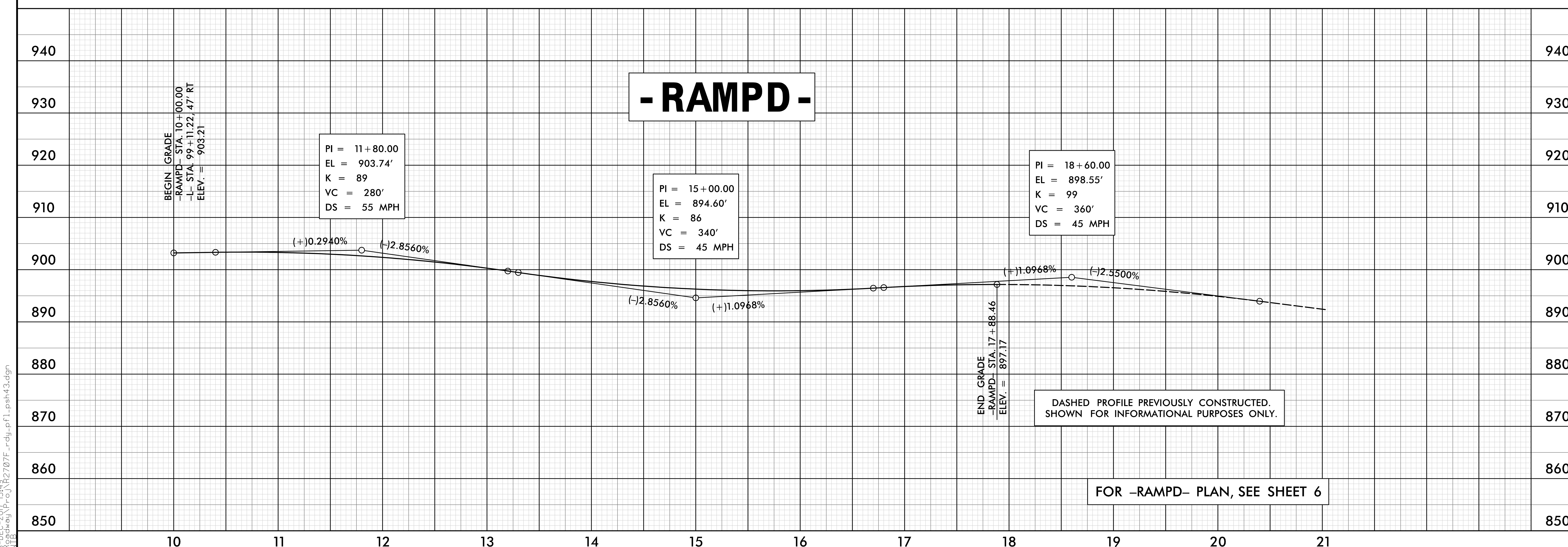

-LOOPB-
BEGIN GRADE
-LOOPB- STA. 10+00.00
-L- STA. 78+77.39, 47' LT
ELEV. = 872.15
PI = 11+15.00
EL = 868.25'
K = 77
VC = 160'
DS = 45 MPH
PI = 14+10.00
EL = 852.10'
K = 27
VC = 360'
DS = 25 MPH
PI = 17+75.00
EL = 881.12'
K = 48
VC = 140'
DS = 50 MPH
(-)3.3954%
(-)5.4730%
(-)5.4730%
(+)7.9496%
(+)7.9496%
(+)5.0600%
END GRADE
-LOOPB- STA. 17+24.03
ELEV. = 877.03
DASHED PROFILE PREVIOUSLY CONSTRUCTED.
SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FOR -LOOPB- PLAN, SEE SHEET 5
920
910
900
890
880
870
860
850
840
830
10
11
12
13
14
15
16
17
18
19


-RAMPD-
BEGIN GRADE
-RAMPD- STA. 10+00.00
-L- STA. 99+11.22, 47' RT
ELEV. = 903.21
PI = 11+80.00
EL = 903.74'
K = 89
VC = 280'
DS = 55 MPH
PI = 15+00.00
EL = 894.60'
K = 86
VC = 340'
DS = 45 MPH
PI = 18+60.00
EL = 898.55'
K = 99
VC = 360'
DS = 45 MPH
(+)0.2940%
(-)2.8560%
(-)2.8560%
(+)1.0968%
(+)1.0968%
(-)2.5500%
END GRADE
-RAMPD- STA. 17+88.46
ELEV. = 897.17
DASHED PROFILE PREVIOUSLY CONSTRUCTED.
SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FOR -RAMPD- PLAN, SEE SHEET 6
940
930
920
910
900
890
880
870
860
850
10
11
12
13
14
15
16
17
18
19
20
21

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER TELLIER
12/13/2017

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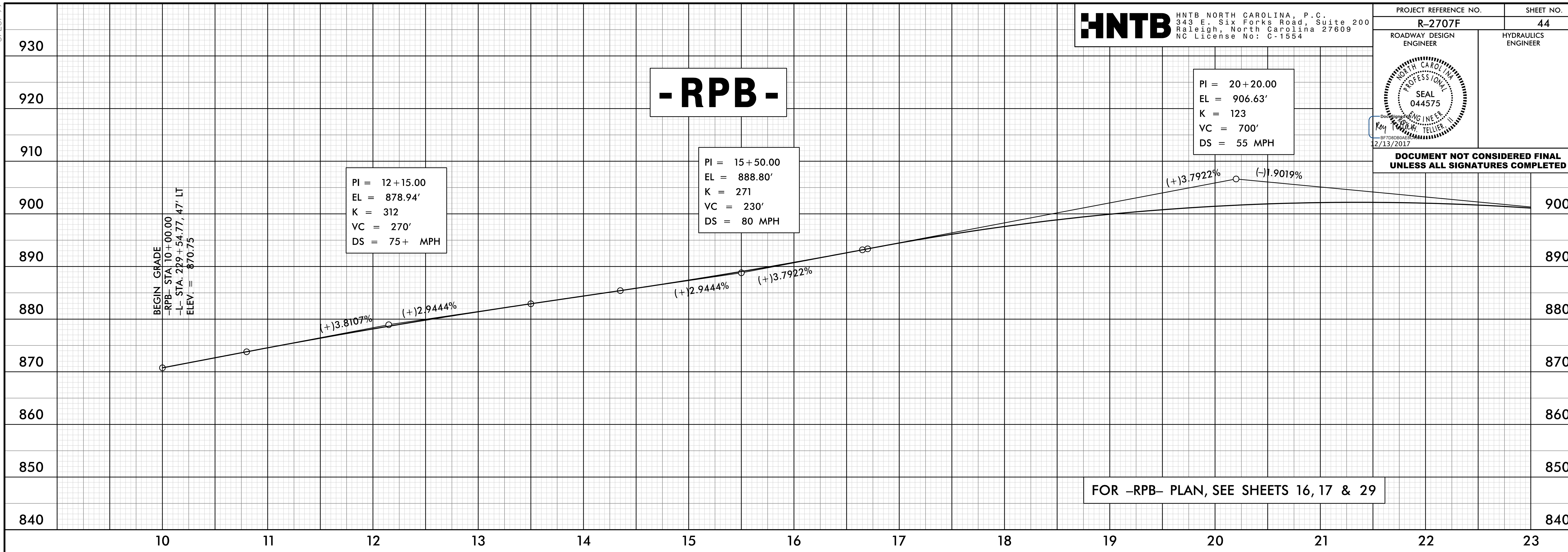
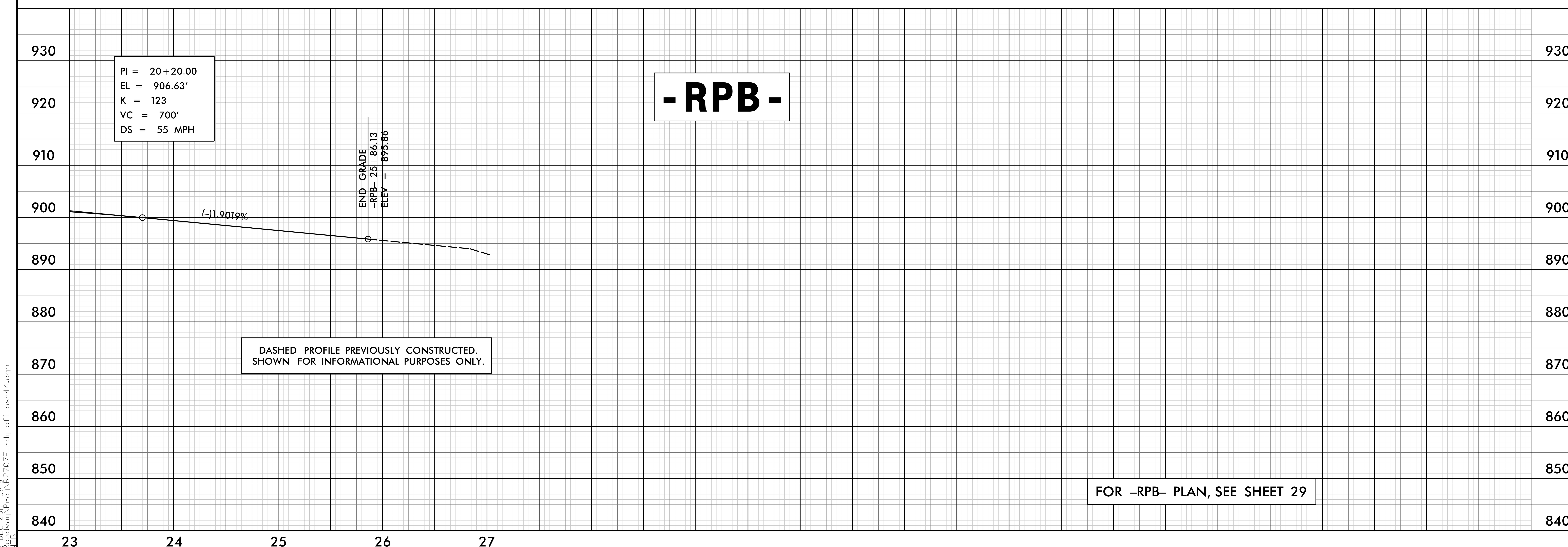
5/28/99





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NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2707F	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER, II
12/13/2017

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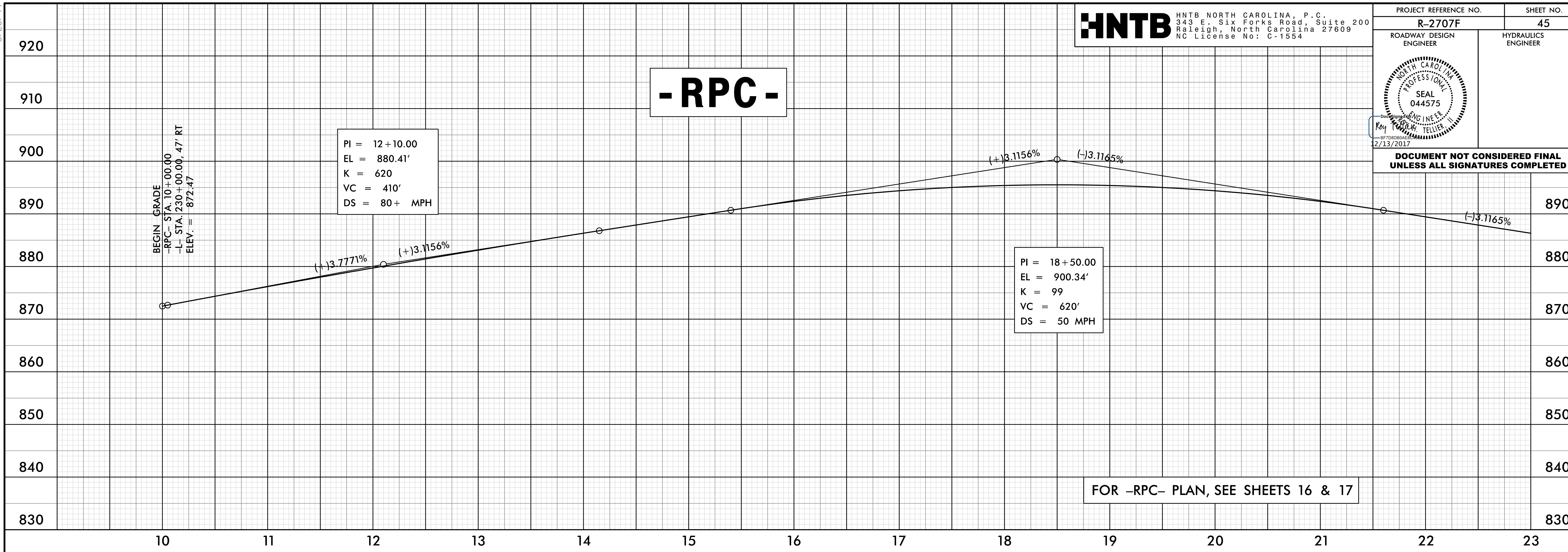

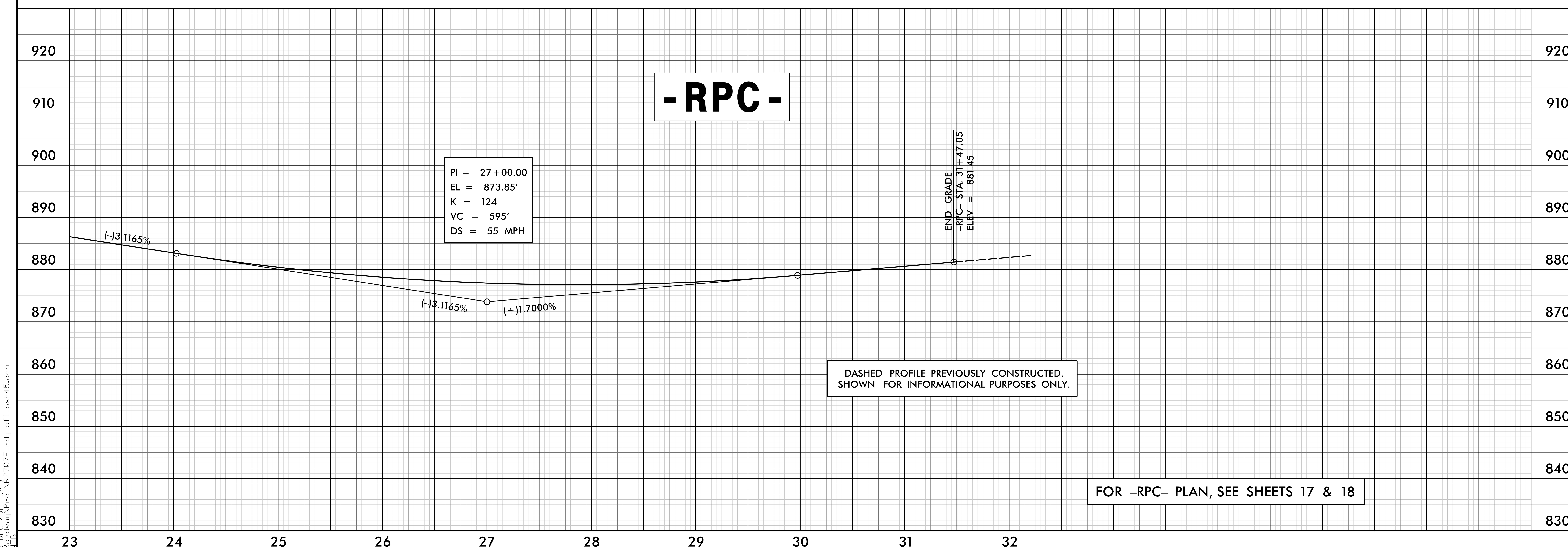

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER TELLIER
12/13/2017

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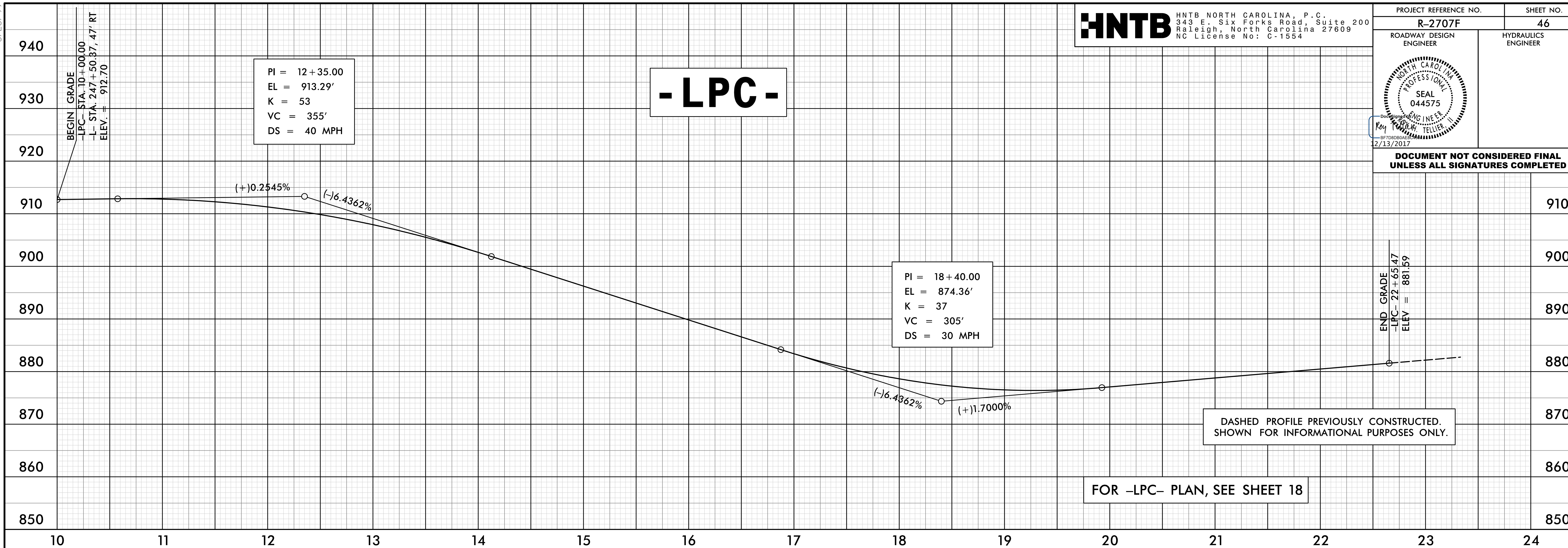
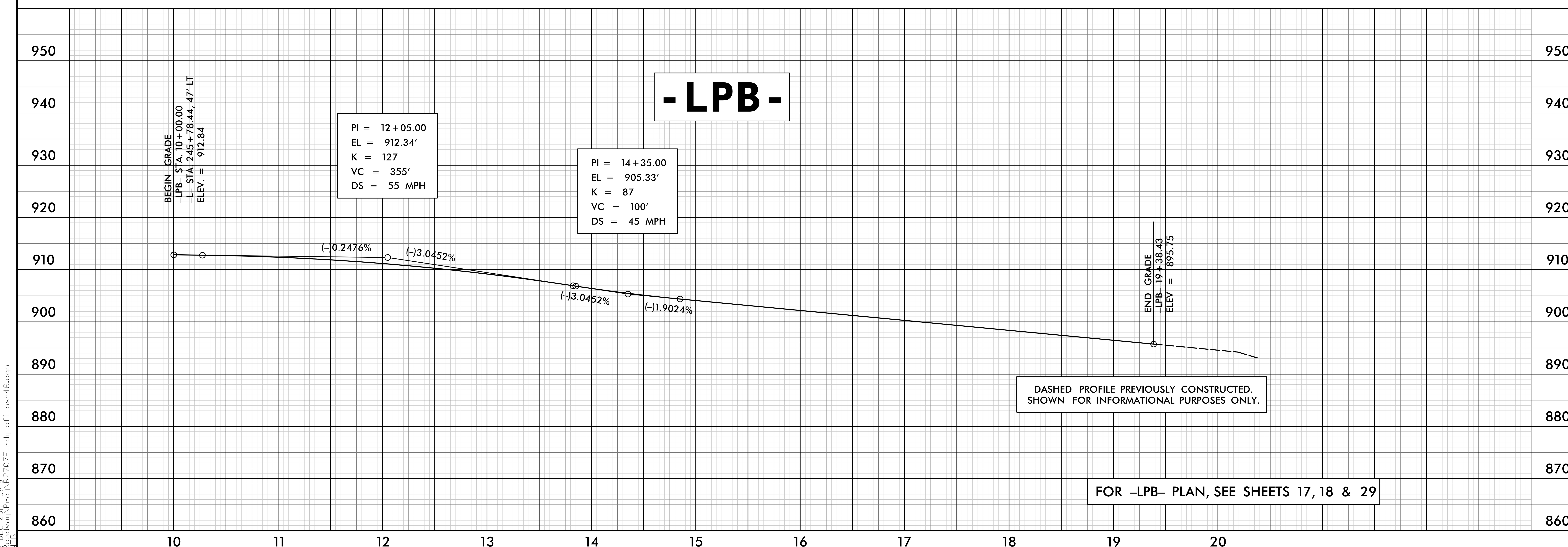

-LPC-
BEGIN GRADE
-LPC- STA. 10+00.00
-L- STA. 247+50.37, 47' RT
ELEV. = 912.70
PI = 12+35.00
EL = 913.29'
K = 53
VC = 355'
DS = 40 MPH
(+)0.2545%
(–)6.4362%
PI = 18+40.00
EL = 874.36'
K = 37
VC = 305'
DS = 30 MPH
(–)6.4362%
(+)1.7000%
END GRADE
-LPC- 22+65.47
ELEV = 881.59
DASHED PROFILE PREVIOUSLY CONSTRUCTED.
SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FOR –LPC– PLAN, SEE SHEET 18
940
930
920
910
900
890
880
870
860
850
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24


-LPB-
BEGIN GRADE
-LPB- STA. 10+00.00
-L- STA. 245+78.44, 47' LT
ELEV. = 912.84
PI = 12+05.00
EL = 912.34'
K = 127
VC = 355'
DS = 55 MPH
PI = 14+35.00
EL = 905.33'
K = 87
VC = 100'
DS = 45 MPH
(–)0.2476%
(–)3.0452%
(–)3.0452%
(–)1.9024%
END GRADE
-LPB- 19+38.43
ELEV = 895.75
DASHED PROFILE PREVIOUSLY CONSTRUCTED.
SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FOR –LPB– PLAN, SEE SHEETS 17, 18 & 29
950
940
930
920
910
900
890
880
870
860
10
11
12
13
14
15
16
17
18
19
20

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY TELLIER II

12/13/2017

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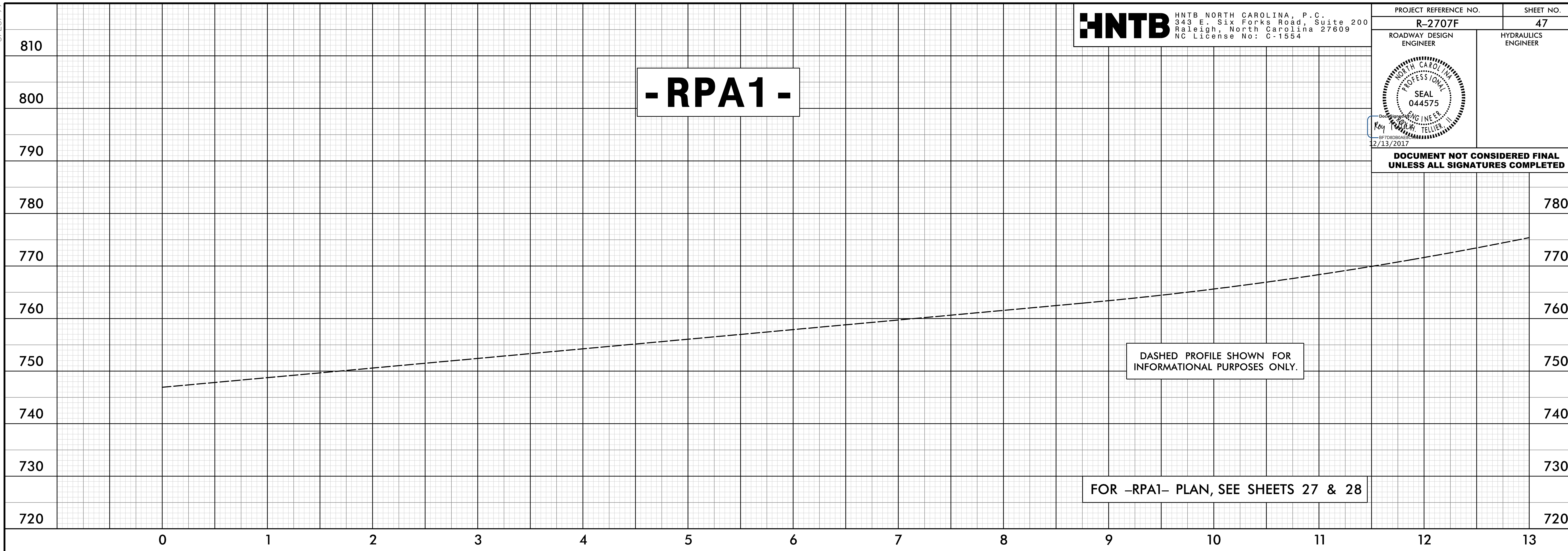

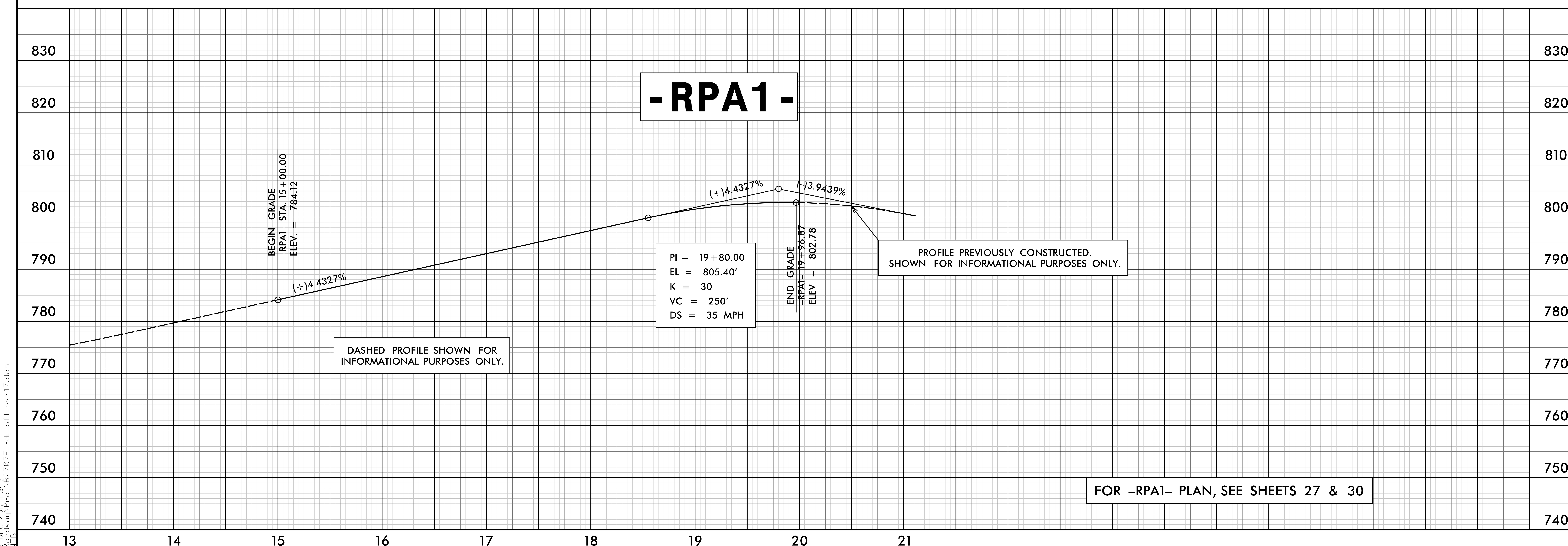

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ... TELLIER II
12/13/2017

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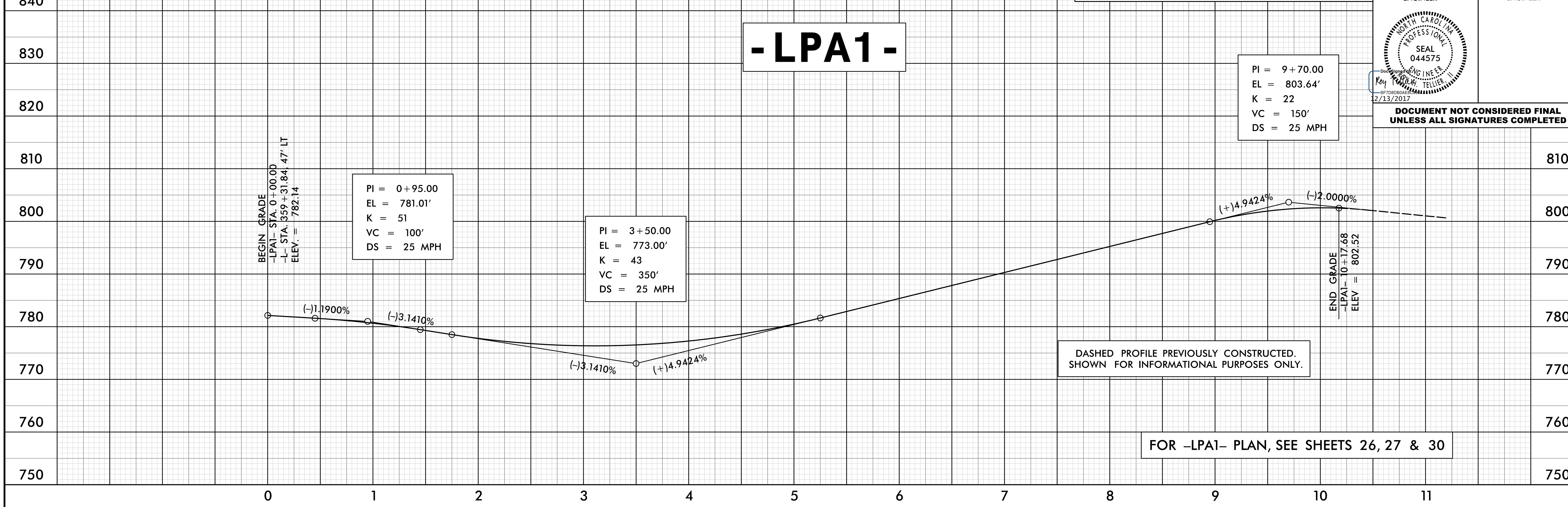
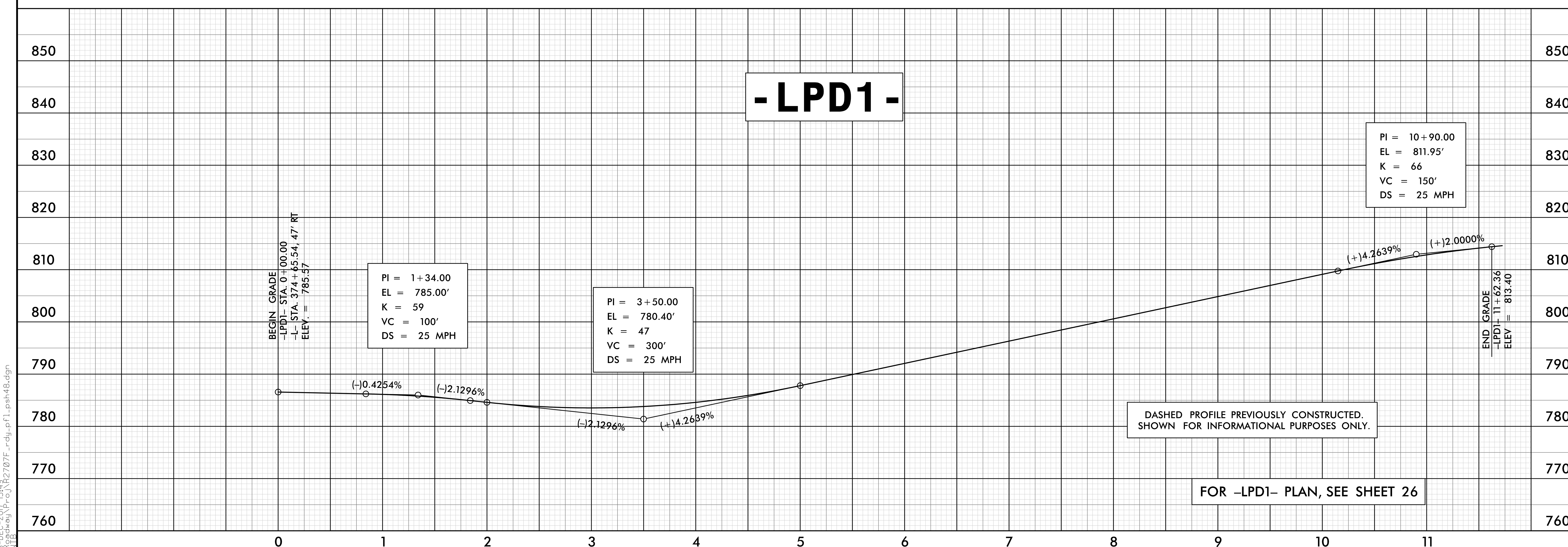
-LPA1-


840
830
820
810
800
790
780
770
760
750
BEGIN GRADE
-LPA1- STA. 0+00.00
-L- STA. 359+31.84 47' LT
ELEV. = 782.14
PI = 0+95.00
EL = 781.01'
K = 51
VC = 100'
DS = 25 MPH
PI = 3+50.00
EL = 773.00'
K = 43
VC = 350'
DS = 25 MPH
PI = 9+70.00
EL = 803.64'
K = 22
VC = 150'
DS = 25 MPH
(-)1.1900%
(-)3.1410%
(-)3.1410%
(+)4.9424%
(+)4.9424%
(-)2.0000%
END GRADE
-LPA1- 10+17.68
ELEV = 802.52
DASHED PROFILE PREVIOUSLY CONSTRUCTED.
SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FOR -LPA1- PLAN, SEE SHEETS 26, 27 & 30
0
1
2
3
4
5
6
7
8
9
10
11

-LPD1-


850
840
830
820
810
800
790
780
770
760
BEGIN GRADE
-LPD1- STA. 0+00.00
-L- STA. 374+65.54, 47' RT
ELEV. = 785.57
PI = 1+34.00
EL = 785.00'
K = 59
VC = 100'
DS = 25 MPH
PI = 3+50.00
EL = 780.40'
K = 47
VC = 300'
DS = 25 MPH
PI = 10+90.00
EL = 811.95'
K = 66
VC = 150'
DS = 25 MPH
(-)0.4254%
(-)2.1296%
(-)2.1296%
(+)4.2639%
(+)4.2639%
(+)2.0000%
END GRADE
-LPD1- 11+62.36
ELEV = 813.40
DASHED PROFILE PREVIOUSLY CONSTRUCTED.
SHOWN FOR INFORMATIONAL PURPOSES ONLY.
FOR -LPD1- PLAN, SEE SHEET 26
0
1
2
3
4
5
6
7
8
9
10
11

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY H. TELLIER, II
DocuSigned by: Roy Tellier
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12/13/2017

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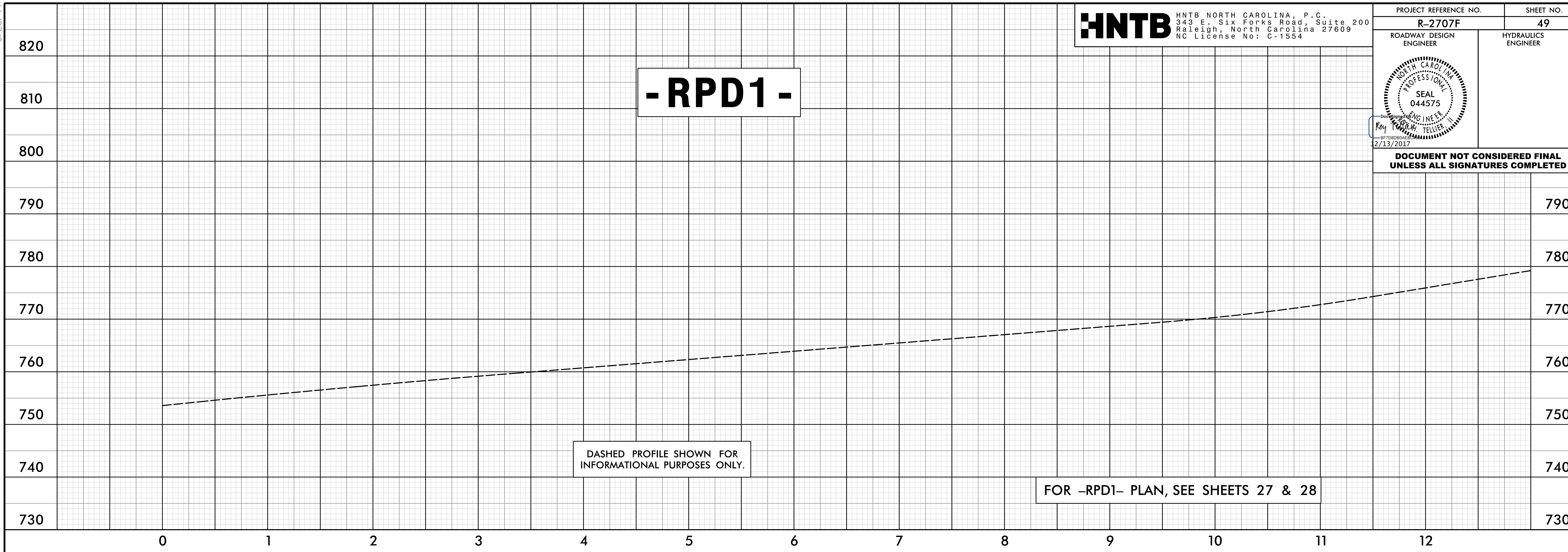

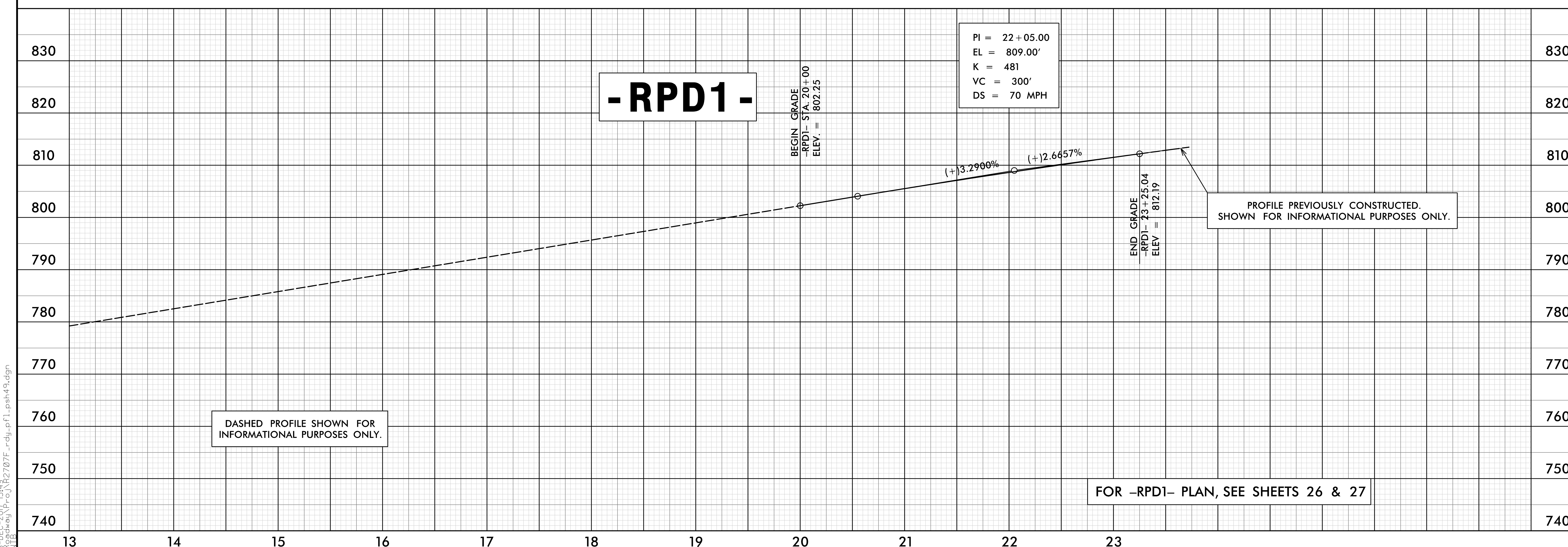

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY TELLIER, II
12/13/2017

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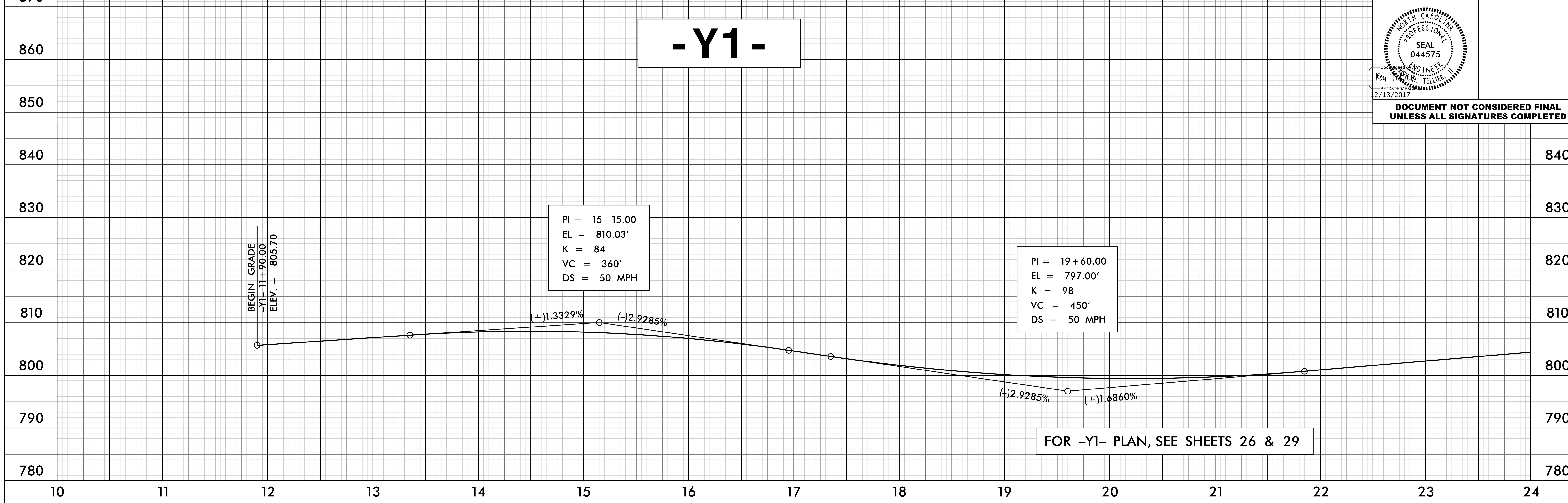

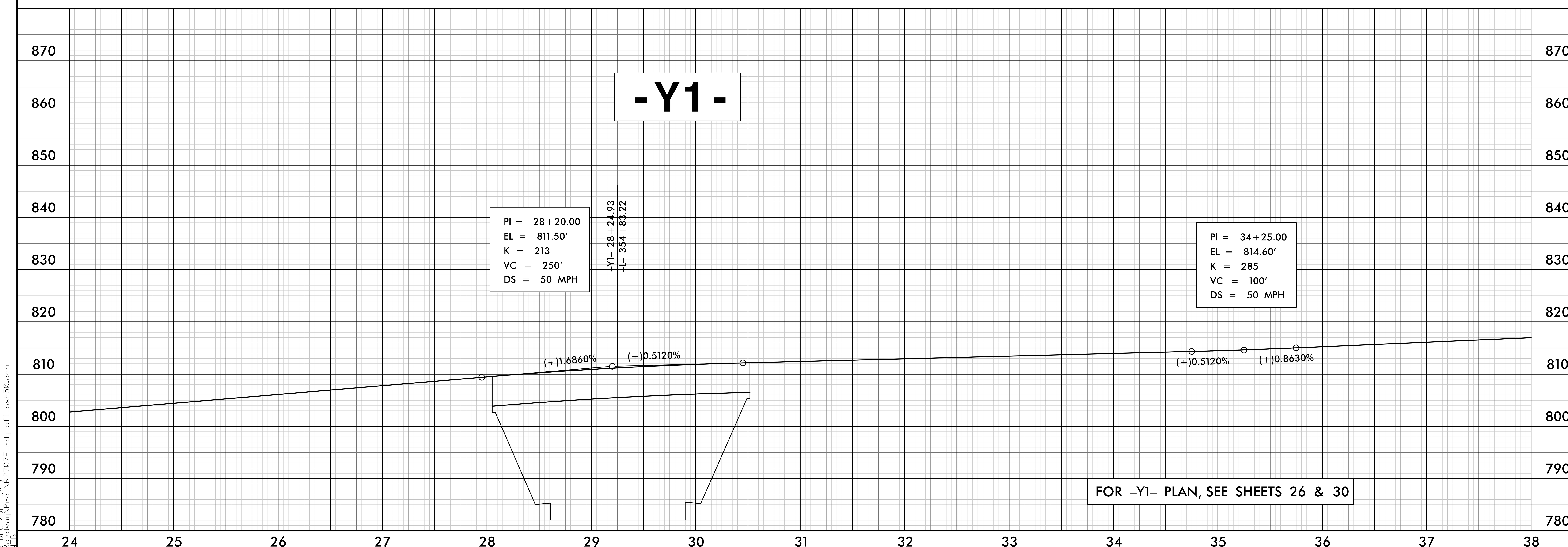

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PROJECT REFERENCE NO.	SHEET NO.
R-2707F	51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044575 ENGINEER ROY H. TELLIER, II

DocuSigned by: Roy Tellier
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12/13/2017

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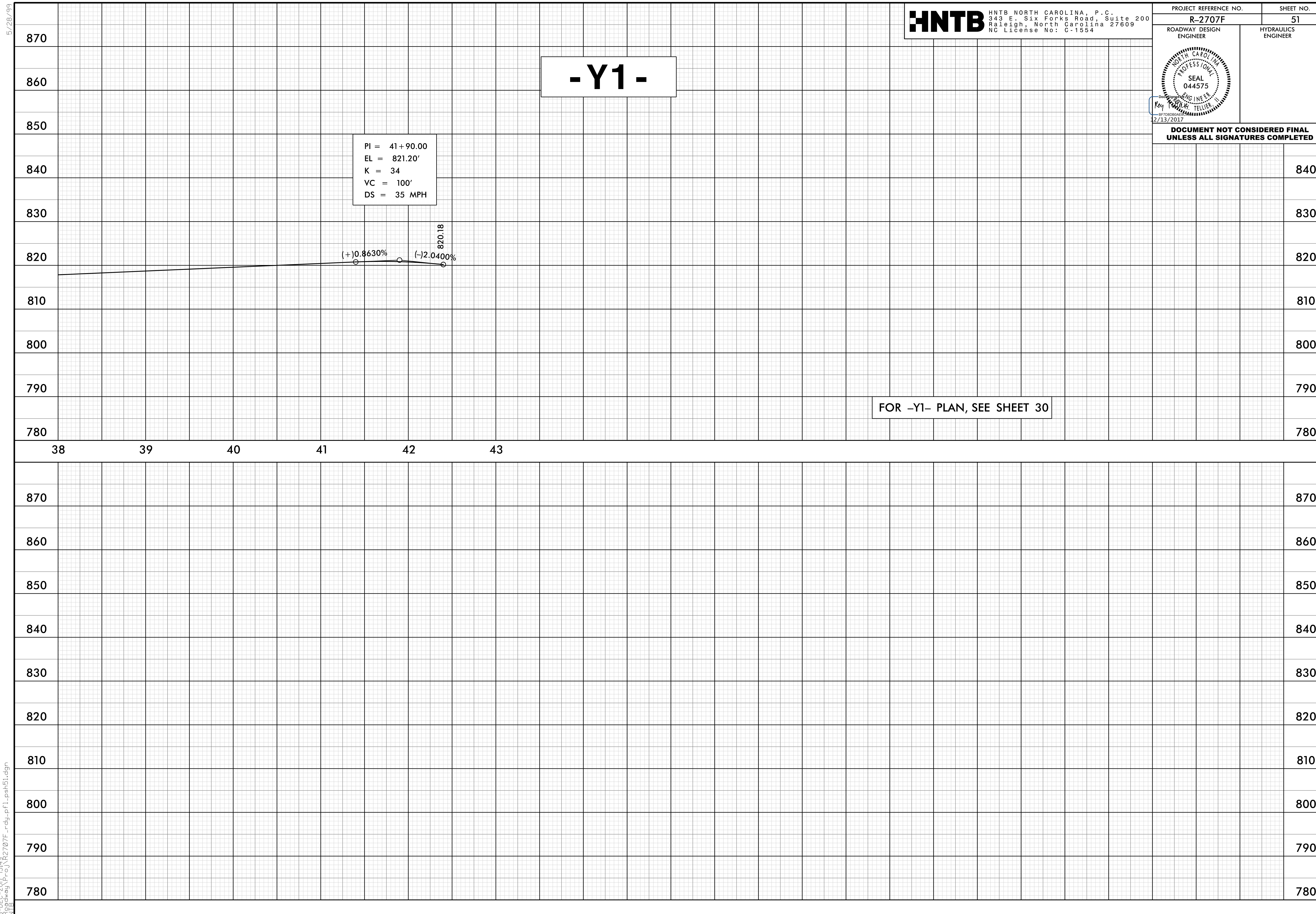
-Y1-



FOR -Y1- PLAN, SEE SHEET 30

5/28/99

08-DEC-2017 13:49
\Roadway\Proj\R2707F_rdy_pfl_psh51.dgn
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