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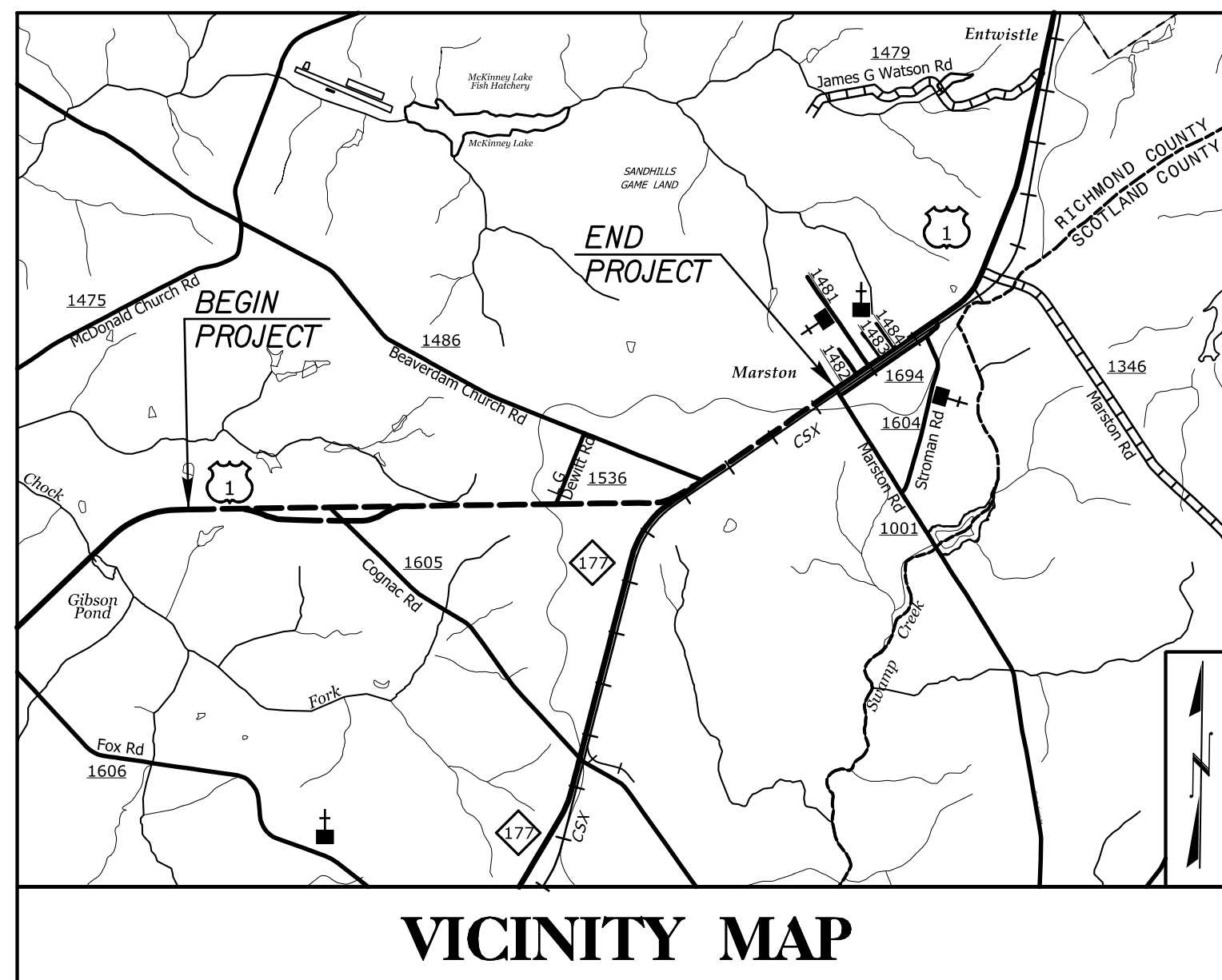
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09/08/19

See Sheet 1A For Index of Sheets

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2501C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34437.1.1	NHF-1 (1)	PE	
34437.2.FS1	HPP-0001(144)	ROW	
34437.2.FSU1	NHPP-0001(144)	UTIL	
34437.3.7		CONST.	

TIP PROJECT: R-2501C

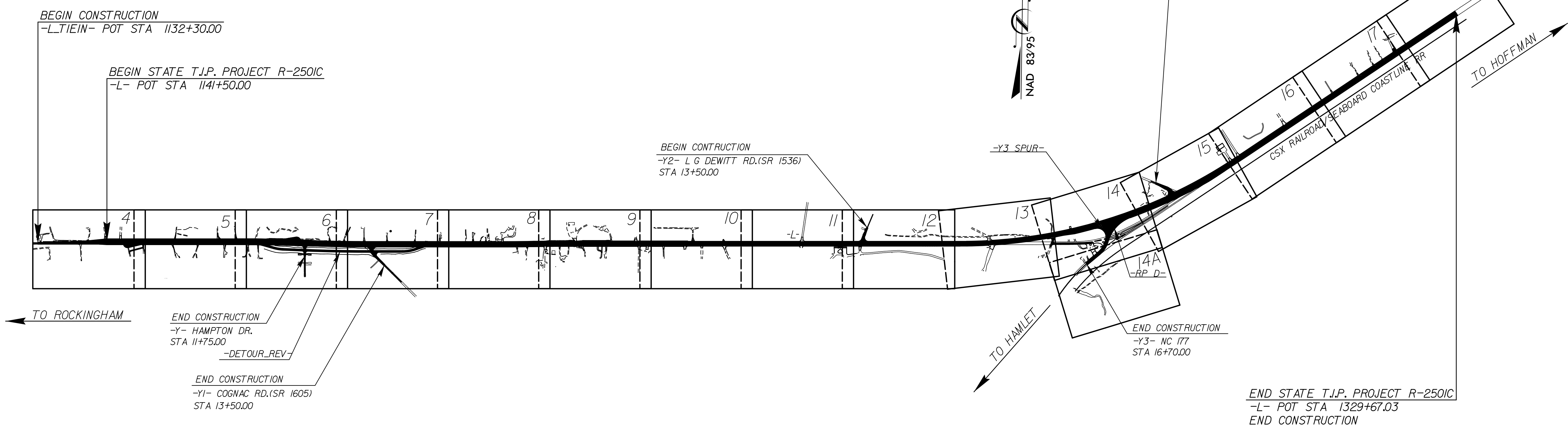


# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## RICHMOND COUNTY

**LOCATION: US 1 FROM NORTH OF SR 1606 (FOX ROAD) TO SOUTH OF SR 1001 (MARSTON ROAD)**

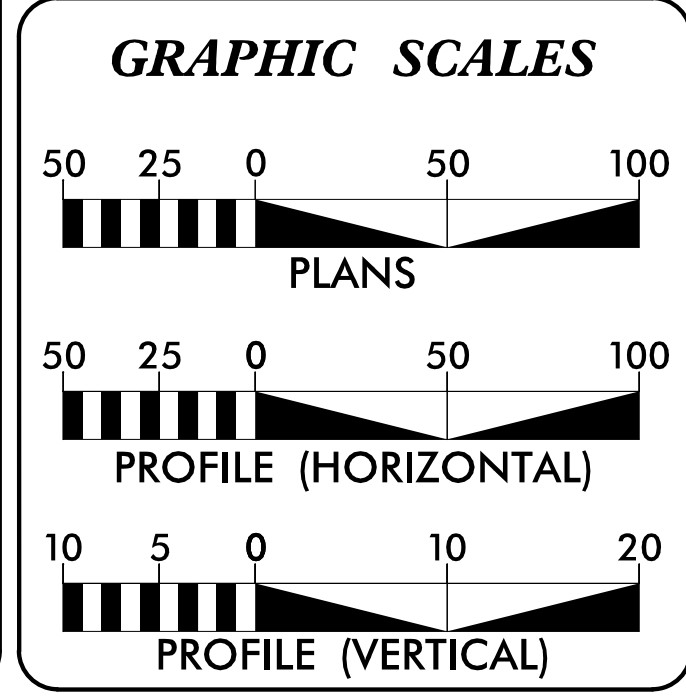
**TYPE OF WORK: GRADING, DRAINAGE, & PAVING**



**NOTE:**  
1. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT: C203615



**DESIGN DATA**

ADT 2018	=	10,280
ADT 2038	=	15,830
K	=	8 %
D	=	60 %
T	=	15 % *
V	=	55 MPH

FUNCTIONAL CLASSIFICATION: RURAL ARTERIAL  
TIER: STATEWIDE  
\* (TTST 10% DUAL 5%)

**PROJECT LENGTH**

LENGTH OF ROADWAY T.I.P. PROJECT R-2501C =	3.564 MI.
TOTAL LENGTH OF T.I.P. PROJECT R-2501C =	3.564 MI.

Prepared in the Office of:

**M A Engineering Consultants, Inc.**  
598 East Chatham Street, Suite 137, Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221

**HNTB** NORTH CAROLINA P.C.  
343 South Fork Road, Suite 200  
Raleigh, North Carolina 27604  
NC LICENSE #01 C-1954

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
JULY 19, 2013

**LETTING DATE:**  
APRIL 17, 2018

**ROY H. TELLIER, II, PE**  
PROJECT ENGINEER

**MONICA DUVAL**  
PROJECT DESIGN ENGINEER

**TATIA L. WHITE, PE, PLS**  
NCDOT CONTACT

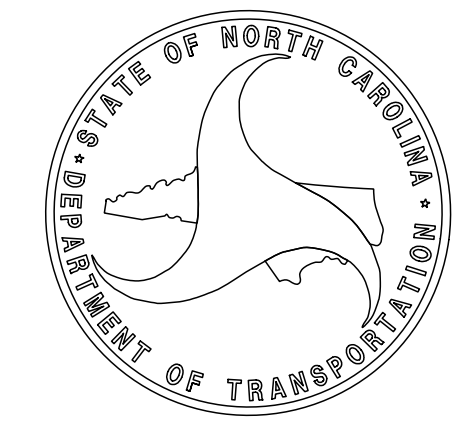
**HYDRAULICS ENGINEER**

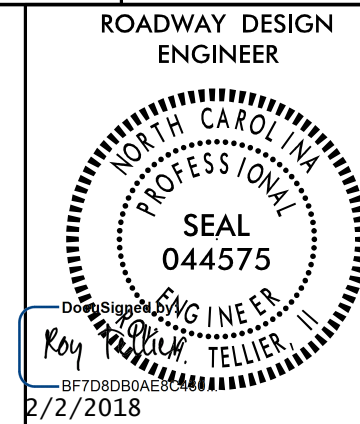
DocuSigned by:  
**Paul Cameron**  
2/5/2018  
SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
**Roy Tellier**  
2/5/2018  
SIGNATURE: \_\_\_\_\_ P.E.

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HNTB





**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-3	SURVEY CONTROL SHEETS
2A-1 THRU 2A-8	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	DETOUR DETAIL SHEETS
2H-1	STOCKPILE CONTAINMENT DETAIL
3B-1	SUMMARIES OF GUARDRAIL, SHOULDER BERM GUTTER, EXPRESSWAY GUTTER, AND PAVEMENT REMOVAL
3B-2	SUMMARY OF EARTHWORK
3D-1 THRU 3D-5	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 18	PLAN SHEETS
19 THRU 28	PROFILE SHEETS
TMP-1 THRU TMP-56	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-11	PAVEMENT MARKING PLANS
EC-1 THRU EC-37	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-11	SIGNING PLANS
UO-1 THRU UO-16	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION INDEX SHEET
X-1A THRU X-1D	EARTHWORK VOLUME SUMMARIES
X-1 THRU X-112	CROSS SECTIONS

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	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
225.05	Method of Obtaining Superlevation - Divided Highways
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
806.03	Concrete Control of Access Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
850.11	Guide for Berm Drainage Outlet - 24" and 30" Pipe
852.01	Concrete Islands
852.05	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
866.02	Woven Wire Fence - with Wood Post
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES: 2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

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

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

SUPERELEVATION:  
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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. 560.02

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

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

UNDERDRAINS:  
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:  
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

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

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

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

UTILITIES:  
UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, PEE DEE ELECTRIC, MCI, AT&T, MCNC, SPECTRUM, DIXIE PIPELINE, RICHMOND COUNTY ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
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	○
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	-----
False Sump	-----

## RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

Note: Not to Scale

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

## RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement 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 RW Marker	----- RW
New Control of Access Line with Concrete CA 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	⊕
Storm Sewer	----- S

## UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
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	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	○
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	⊕
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	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	○
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:

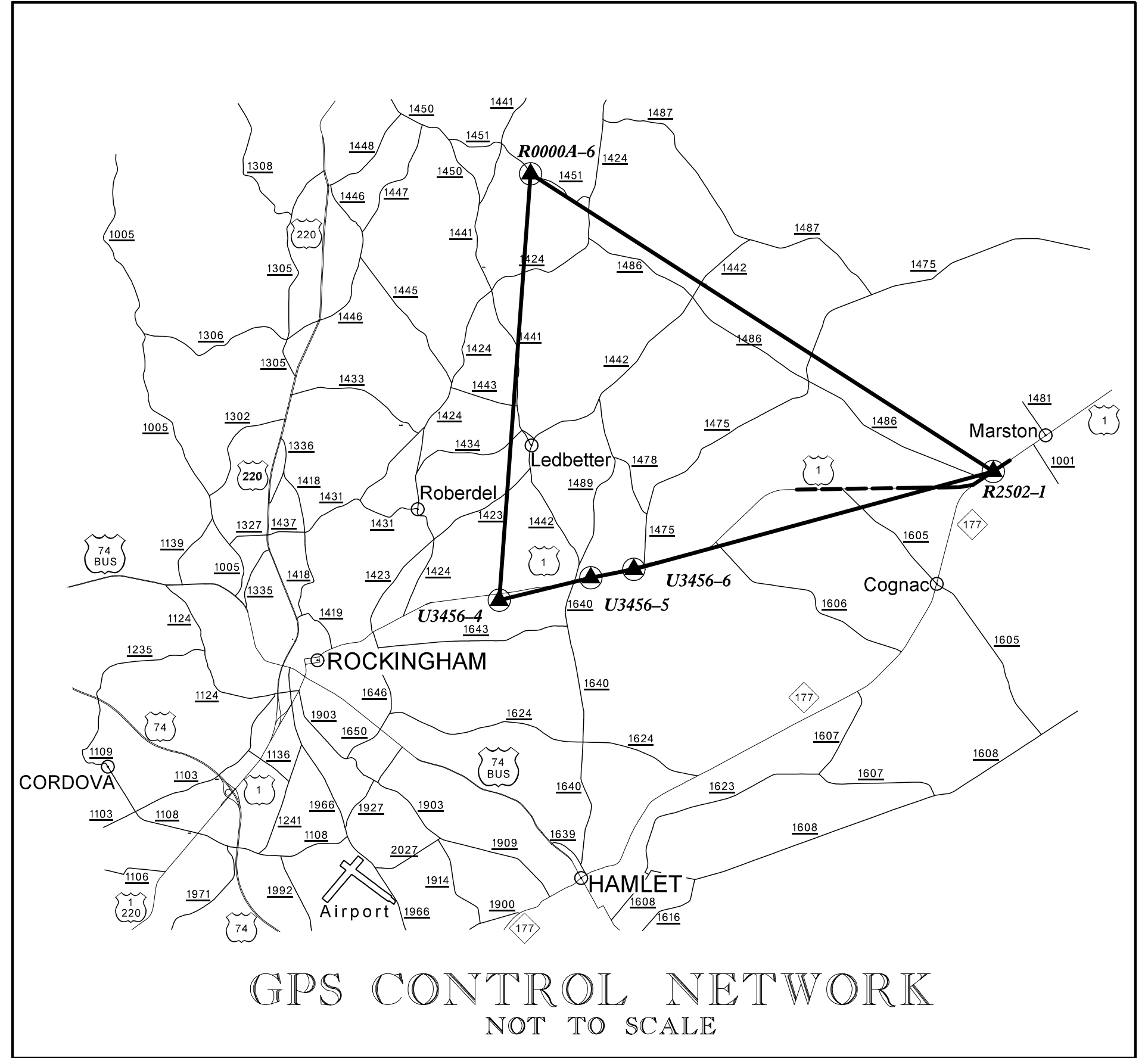
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
SS Forced Main Line LOS B (S.U.E.*)	----- FSS
SS Forced Main Line LOS C (S.U.E.*)	----- FSS
SS Forced Main Line LOS D (S.U.E.*)	----- FSS

## MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- 7UTL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊠
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.

PROJECT REFERENCE NO. R-2501C	SHEET NO. 1C-1
LOCATION AND SURVEYS	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

# SURVEY CONTROL SHEET



-L- STA. 1329+67.03 END STATE PROJECT 8.T580501  
LOCALIZED PROJECT COORDINATES  
N = 450250.89  
E = 1824475.82

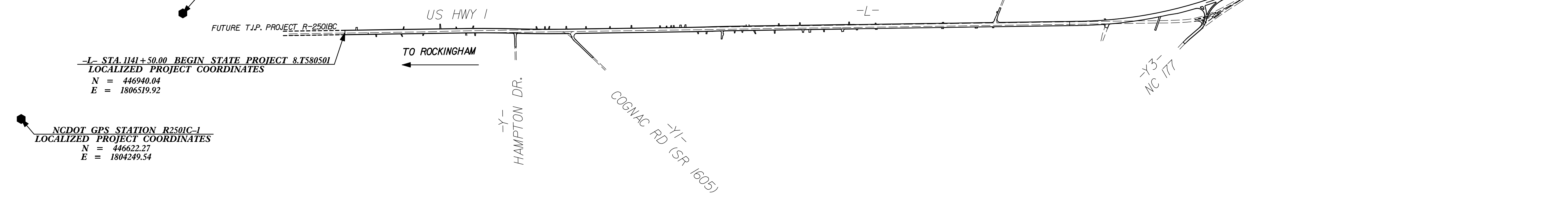
NCDOT GPS STATION R2502-1  
LOCALIZED PROJECT COORDINATES  
N = 448358.25  
E = 1821667.43

NCDOT GPS STATION R2502-2  
LOCALIZED PROJECT COORDINATES  
N = 450387.53  
E = 1824778.87

NCDOT GPS STATION R2501C-2  
LOCALIZED PROJECT COORDINATES  
N = 446933.66  
E = 1805239.05

-L- STA. 1141+50.00 BEGIN STATE PROJECT 8.T580501  
LOCALIZED PROJECT COORDINATES  
N = 446940.04  
E = 1806519.92

NCDOT GPS STATION R2501C-1  
LOCALIZED PROJECT COORDINATES  
N = 446622.27  
E = 1804249.54



## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "FRUITLAND" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 427332.498(ft) EASTING: 1804014.118(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986692 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "FRUITLAND" TO -L- STATION 1141+50.00 IS N 07°16'58.0" E 19767.01' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

- INDICATES CONTROL MONUMENTS SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
- PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
- NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION.
- SEE CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

## 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 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/](https://connect.ncdot.gov/resources/location/)
- THE FILES TO BE FOUND ARE AS FOLLOWS:  
r2501c\_ls\_gpscalib\_040129.html  
r2501c\_ls\_wgs84\_040129.txt  
r2501c\_ls\_local\_040129.txt  
r2501c\_ls\_control.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.

NOTE: DRAWING NOT TO SCALE

REVISIONS

8/17/99

02-FEB-2018 17:43  
S:\60000\Final\Surveys\R2501C-1C-1.dgn

PROJECT REFERENCE NO. R-2501C	SHEET NO. IC-2
LOCATION AND SURVEYS	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

# SURVEY CONTROL SHEET R-2501C

## GPS CALIBRATION REPORT

PROJECT : R2501C

TIP NUMBER R2501C  
 USER NAME MTWOODRUFF DATE & TIME 11:30:36 AM  
 1/29/2004  
 COORDINATE SYSTEM US STATE PLANE ZONE NORTH CAROLINA  
 1983(AT GROUND) 3200  
 HORIZONTAL DATUM NAD 1983 (CONUS)  
 VERTICAL DATUM NAVD88 GEOID MODEL GEOID99 (CONUS)  
 COORDINATE UNITS US SURVEY FEET  
 DISTANCE UNITS US SURVEY FEET  
 HEIGHT UNITS US SURVEY FEET

LOCAL SITE INFORMATION  
 LOCALIZED AROUND  
 LATITUDE 34°55'20.63321"N  
 LONGITUDE 79°39'13.80534"W  
 SITE SCALE FACTOR 1.0001330980  
 HEIGHT ?

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 448991.338SFT  
 EASTING COORDINATE OF  
 ROTATION CENTER 1799836.333SFT  
 ROTATION ABOUT THE CENTER  
 POINT 0°00'00"  
 TRANSLATION NORTH 0.014SFT  
 TRANSLATION EAST -0.030SFT  
 SCALE FACTOR 0.99999937

### VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN  
 POINT 438183.593SFT  
 EASTING COORDINATE OF ORIGIN  
 POINT 1780904.137SFT  
 VERTICAL SEPARATION AT ORIGIN 0.015SFT  
 SLOPE NORTH -0.867PPM  
 SLOPE EAST 3.125PPM

### GEOID MODEL DEFINITION

GEOID99 (CONUS)

### RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.030SFT	0.006	R2502-1 GPS
VERTICAL	0.065SFT	0.011	U3456-4
THREE-DIMENSIONAL	0.065SFT	0.012	U3456-4

### POINT RESIDUALS

WGS84 COORDINATES	CALCULATED POINT FOR DISPLAY ONLY	LOCAL COORDINATES
POINT U3456-4 LATITUDE 34°57'06.35998"N LONGITUDE 79°43'52.27111"W HEIGHT 216.653SFT	NORTHING 438183.593SFT EASTING 1780904.137SFT ELEVATION 319.366SFT HORZ ERROR ? VERT ERROR 0.065SFT 3D ERROR 0.065SFT	POINT U3456-4 NORTHING 438183.593SFT EASTING 1780904.137SFT ELEVATION 319.301SFT UTILIZED VERTICAL QUALITY CONTROL QUALITY
POINT R2502-1 GPS LATITUDE 34°58'49.68464"N LONGITUDE 79°35'43.33496"W HEIGHT 306.334SFT	NORTHING 448358.220SFT EASTING 1821667.435SFT ELEVATION 410.382SFT HORZ ERROR 0.030SFT VERT ERROR 0.032SFT 3D ERROR 0.043SFT	POINT R2502-1 NORTHING 448358.250SFT EASTING 1821667.433SFT ELEVATION 410.350SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT R0000A-6 GPS LATITUDE 35°02'36.24305"N LONGITUDE 79°42'58.12557"W HEIGHT 297.322SFT	NORTHING 471503.139SFT EASTING 1785651.972SFT ELEVATION 399.724SFT HORZ ERROR 0.029SFT VERT ERROR 0.001SFT 3D ERROR 0.029SFT	POINT R0000A-6 NORTHING 471503.144SFT EASTING 1785652.000SFT ELEVATION 399.724SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT U3456-5 GPS LATITUDE 34°57'25.08367"N LONGITUDE 79°42'00.85071"W HEIGHT 255.765SFT	NORTHING 440009.755SFT EASTING 1790192.456SFT ELEVATION 358.793SFT HORZ ERROR 0.018SFT VERT ERROR 0.038SFT 3D ERROR 0.042SFT	POINT U3456-5 NORTHING 440009.741SFT EASTING 1790192.444SFT ELEVATION 358.831SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT U3456-6 GPS LATITUDE 34°57'30.26754"N LONGITUDE 79°41'38.97067"W HEIGHT 251.125SFT	NORTHING 440521.072SFT EASTING 1792017.367SFT ELEVATION 354.210SFT HORZ ERROR 0.015SFT VERT ERROR 0.038SFT 3D ERROR 0.040SFT	POINT U3456-6 NORTHING 440521.058SFT EASTING 1792017.362SFT ELEVATION 354.248SFT UTILIZED HORZ AND VERT QUALITY CONTROL QUALITY
POINT R2501C-1 GPS LATITUDE 34°58'31.43193"N LONGITUDE 79°39'12.50279"W HEIGHT 219.268SFT	NORTHING 446622.279SFT EASTING 1804249.541SFT ELEVATION 322.711SFT HORZ ERROR 0.012SFT VERT ERROR 0.022SFT 3D ERROR 0.025SFT	POINT R2501C-1 NORTHING 446622.268SFT EASTING 1804249.536SFT ELEVATION 322.733SFT UTILIZED HORZ AND VERT QUALITY ADJUSTED QUALITY
POINT R2501C-2 GPS LATITUDE 34°58'34.57577"N LONGITUDE 79°39'00.63741"W HEIGHT 260.330SFT	NORTHING 446933.650SFT EASTING 1805239.051SFT ELEVATION 363.804SFT HORZ ERROR 0.008SFT VERT ERROR 0.000SFT 3D ERROR 0.008SFT	POINT R2501C-2 NORTHING 446933.656SFT EASTING 1805239.045SFT ELEVATION 363.805SFT UTILIZED HORZ AND VERT QUALITY ADJUSTED QUALITY

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT  
 IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY  
 NCGS FOR MONUMENT "FRUITLAND"  
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
 NORTHING: 427332.498(ft) EASTING: 1804014.118(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT  
 (GROUND TO GRID) IS: 0.99986692  
 THE N.C. LAMBERT GRID BEARING AND  
 LOCALIZED HORIZONTAL GROUND DISTANCE FROM  
 "FRUITLAND" TO -L- STATION 1141+50.00 IS  
 N 07°16'58.0" E 19767.0'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

## NOTES

- 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 MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING "PROJECT CONTROL DATA" AT:  
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION](https://connect.ncdot.gov/resources/location)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 r2501c\_ls\_gpscdlib\_040i29.html  
 r2501c\_ls\_wgs84\_040i29.txt  
 r2501c\_ls\_locol\_040i29.txt  
 r2501c\_ls\_control.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.

8/17/99

REVISIONS

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 JNTB

# SURVEY CONTROL SHEET R-2501C

PROJECT REFERENCE NO. <i>R-2501C</i>	SHEET NO. <i>1C-3</i>
LOCATION AND SURVEYS	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	446926.7460	1805656.1230	344.40	OUTSIDE PROJECT LIMITS	
102	BL-102	446946.5300	1806852.2920	325.12	1144+82.44	1.58 LT
103	BL-103	446922.2580	1808029.8670	328.20	1156+59.52	40.09 RT
104	BL-104	446936.0600	1809116.9240	334.91	1167+47.91	27.40 RT
105	BL-105	446993.6280	1809908.3840	366.46	1175+39.22	36.33 LT
106	BL-106	447007.7000	1810891.3810	367.03	1185+22.43	35.98 LT
107	BL-107	446983.5670	1812323.6210	357.47	1199+54.01	14.25 RT
108	BL-108	447003.1410	1813648.2480	372.77	1212+78.97	15.86 RT
109	BL-109	446996.1510	1814657.4210	408.84	1222+87.93	37.76 RT
110	BL-110	447080.4130	1815750.5190	439.63	1233+82.15	30.34 LT
111	BL-111	447032.4440	1816550.1590	440.95	1241+81.00	29.44 RT
112	BL-112	447056.5250	1817404.2600	441.33	1250+35.36	17.98 RT
113	BL-113	447071.9650	1818404.5020	409.21	1260+33.47	36.26 RT
114	BL-114	447105.2190	1819775.3720	399.40	1273+58.58	262.66 RT
115	BL-115	447752.1480	1820905.9590	407.91	1286+18.12	85.10 RT
51	R2502-1	448358.2500	1821667.4330	410.35	1295+80.60	34.71 LT
116	BL-116	449122.2650	1822896.8780	415.96	1310+26.48	33.63 RT
1	BL-1 (R2502)	449788.0570	1823781.1150	419.50	1321+32.37	12.99 LT

BY POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
BY104	BL-104	446936.0600	1809116.9240	334.91	10+25.60	42.85 RT
119	BY-119	446540.1090	1809152.5520	346.36	14+22.13	14.31 RT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
120	BY1-120	446449.0200	1810443.7210	374.20	OUTSIDE PROJECT LIMITS	
BY105	BL-105	446993.6280	1809908.3840	366.46	1175+39.22	36.33 LT

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
121	BY2-121	447477.7970	1816758.3250	435.65	OUTSIDE PROJECT LIMITS	
BY111	BL-111	447032.4440	1816550.1590	440.95	1241+81.00	29.44 RT

BY3 POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
BY114	BL-114	447105.2190	1819775.3720	399.40	13+31.56	62.97 RT
122	BY3-122	446678.6400	1819466.8350	396.55	OUTSIDE PROJECT LIMITS	

BY4 POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
123	BY4-123	447994.5520	1820369.1380	406.66	OUTSIDE PROJECT LIMITS	
BY115	BL-115	447752.1480	1820905.9590	407.91	1286+18.12	85.10 RT

.....

BM1 ELEVATION = 343.03  
N 446848 E 1805641  
L STATION 10+89.00  
S 86°36'42.36" W DIST 15291.49  
RR SPIKE IN BASE OF POWER POLE

.....

BM2 ELEVATION = 323.97  
N 446801 E 1806816  
L STATION 10+89.00  
S 86°08'16.80" W DIST 14121.83  
RR SPIKE IN BASE OF 20 INCH PINE

.....

BM3 ELEVATION = 325.69  
N 447093 E 1808037  
L STATION 10+89.00  
S 87°04'2.08" W DIST 12886.00  
RR SPIKE IN BASE OF 15 INCH PINE

.....

BM4 ELEVATION = 346.87  
N 446791 E 1809209  
Y STATION 11+72.00 47 LEFT  
RR SPIKE IN BASE OF 12 INCH PINE

.....

BM5 ELEVATION = 368.05  
N 446856 E 1810891  
L STATION 1185+20.00 116 RIGHT  
RR SPIKE IN BASE OF 18 INCH PINE

.....

BM6 ELEVATION = 359.38  
N 447121 E 1812330  
L STATION 1199+64.00 123 LEFT  
RR SPIKE IN BASE OF 20 INCH PINE

.....

BM7 ELEVATION = 376.57  
N 446865 E 1813654  
L STATION 1212+83.00 154 RIGHT  
RR SPIKE IN BASE OF POWER POLE

.....

BM8 ELEVATION = 438.68  
N 446874 E 1815728  
L STATION 1233+56.00 175 RIGHT  
RR SPIKE IN BASE OF POWER POLE

.....

BM9 ELEVATION = 441.41  
N 447226 E 1817409  
L STATION 1250+42.00 152 LEFT  
RR SPIKE IN BASE OF 18 INCH PINE

.....

BM10 ELEVATION = 394.22  
N 447009 E 1819901  
L STATION 1274+46.00 391 RIGHT  
RR SPIKE IN BASE OF POWER POLE

.....

BM11 ELEVATION = 407.10  
N 447691 E 1820920  
L STATION 1286+03.00 146 RIGHT  
RR SPIKE IN BASE OF POWER POLE

.....

BM12 ELEVATION = 414.33  
N 449060 E 1822913  
L STATION 1310+04.00 94 RIGHT  
RR SPIKE IN BASE OF POWER POLE

.....

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "FRUITLAND" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 427332.498(ft) EASTING: 1804014.118(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986692 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "FRUITLAND" TO L- STATION 1141+50.00 IS N 07°16'58.0" E 19,767.01' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

**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 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/](https://connect.ncdot.gov/resources/location/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
r2501c\_ls\_gpscalib\_040129.html  
r2501c\_ls\_wgs84\_040129.txt  
r2501c\_ls\_local\_040129.txt  
r2501c\_ls\_control.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.

REVISIONS  
 02-FEB-2018 17:43  
 56000 Final Sur-veg\N2501C\_1C-3.dgn  
 8/17/99

6/2/19

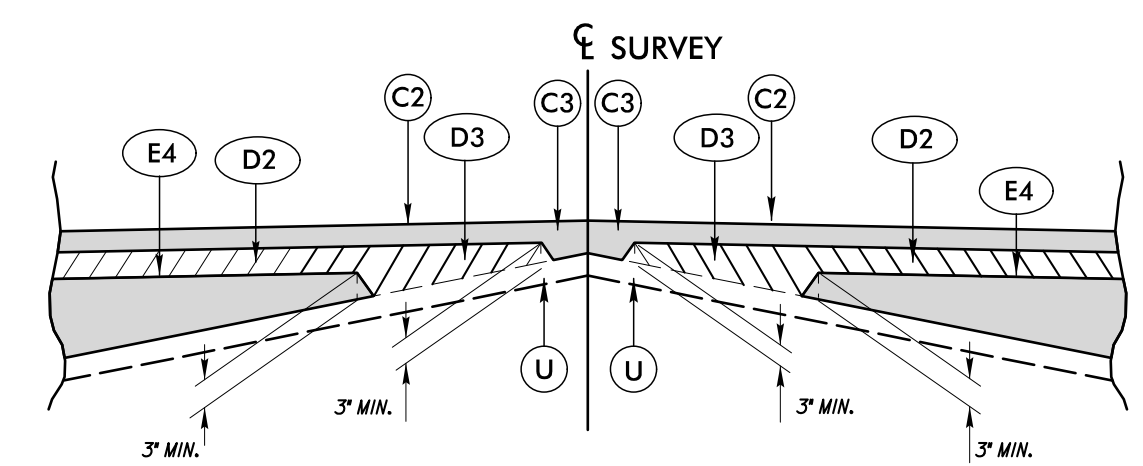
### FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.	R1	2'-6" CONCRETE CURB AND GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.	R2	5" MONOLITHIC CONCRETE ISLAND.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R3	CONCRETE EXPRESSWAY GUTTER.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	1'-6" CONCRETE CURB AND GUTTER.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R5	SHOULDER BERM GUTTER
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E2	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
J1	PROP. 8" AGGREGATE BASE COURSE	W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 3, SHEET 2A-1)
J2	PROP. 10" AGGREGATE BASE COURSE		

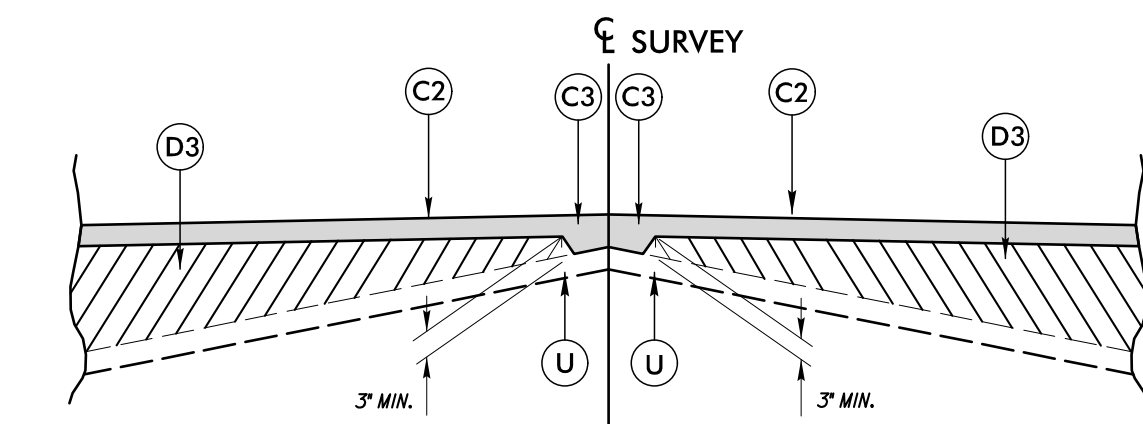
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1524

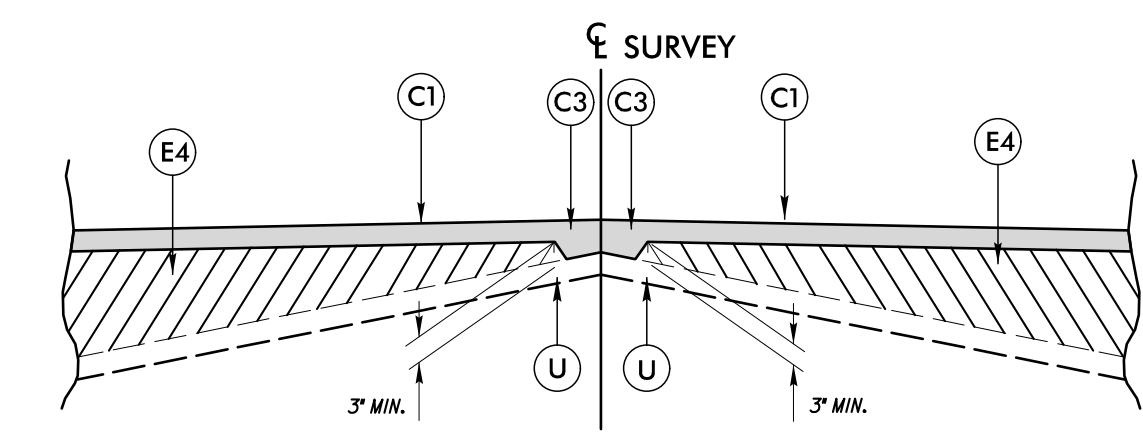
PROJECT REFERENCE NO. <i>R-2501C</i>	SHEET NO. <i>2A-1</i>
ROADWAY DESIGN ENGINEER <i>SEAL 044575</i>	PAVEMENT DESIGN ENGINEER <i>SEAL 022896</i>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



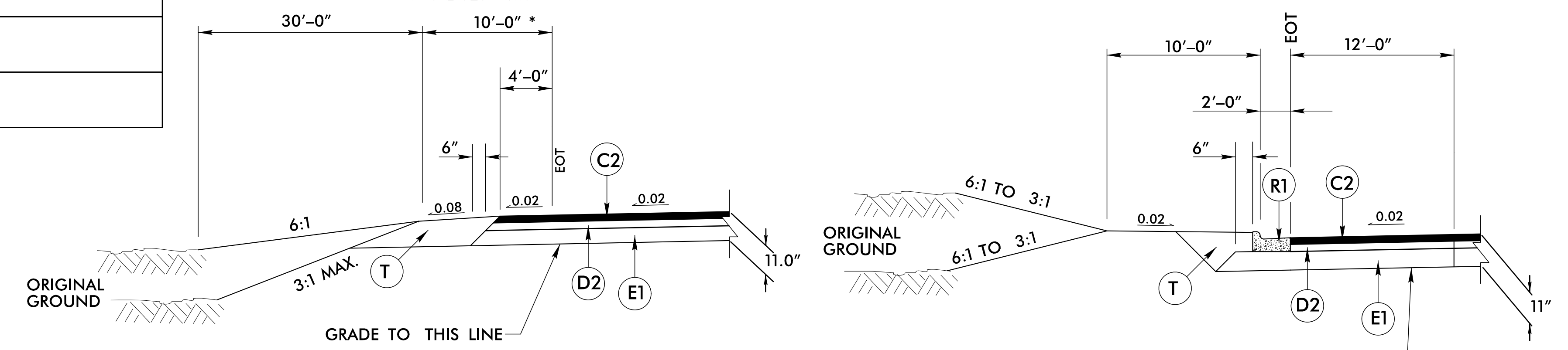
DETAIL SHOWING METHOD OF WEDGING - W1  
SEE TYPICAL SECTIONS



DETAIL SHOWING METHOD OF WEDGING - W2  
SEE TYPICAL SECTIONS



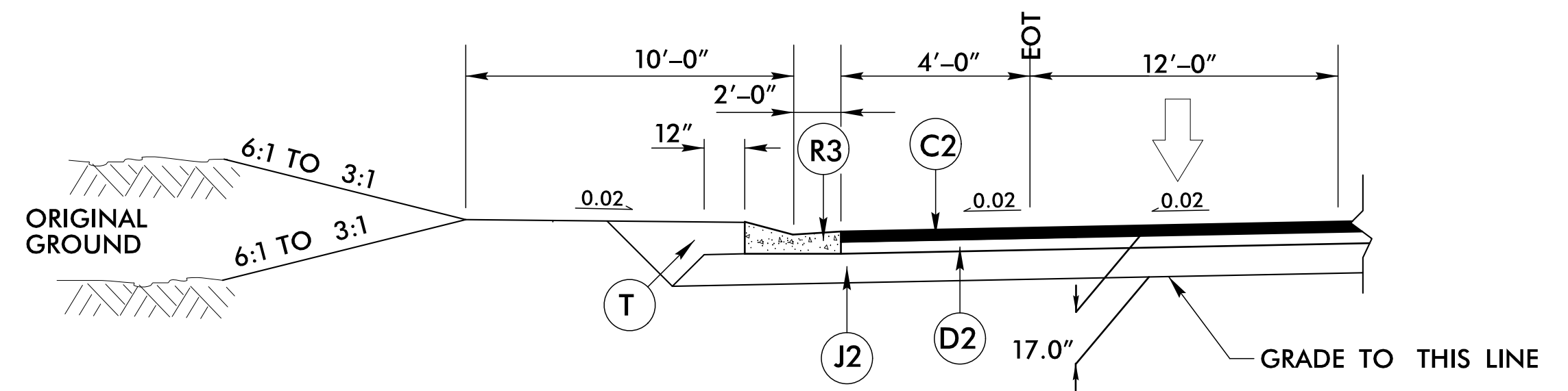
DETAIL SHOWING METHOD OF WEDGING - W3  
SEE TYPICAL SECTIONS



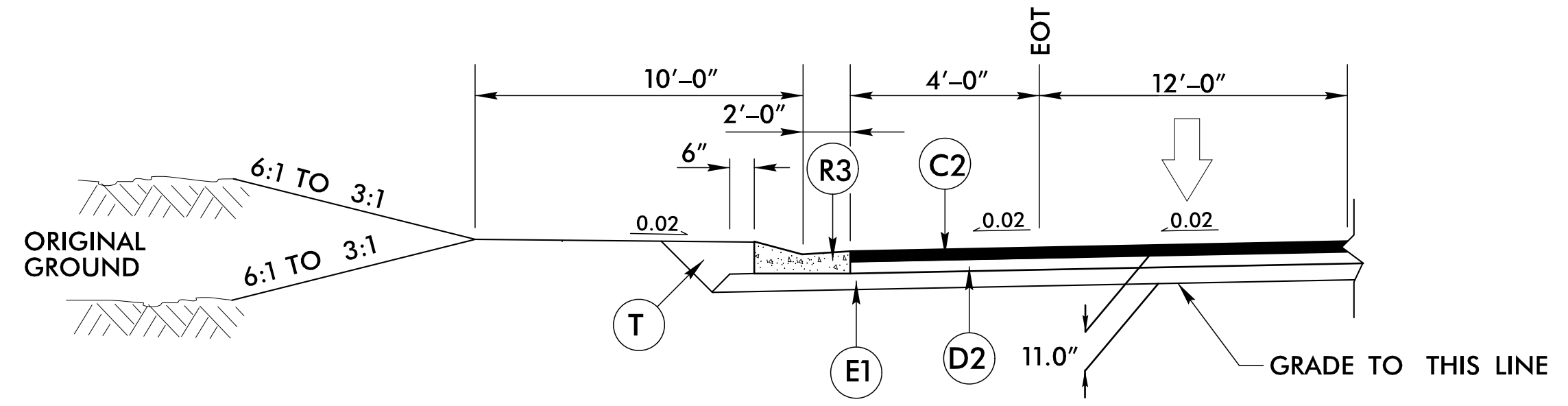
INSET A  
ALTERNATE MAINLINE PAVEMENT DESIGN

INSET B  
ALTERNATE MAINLINE PAVEMENT DESIGN

USE DETAIL A:  
USE DETAIL A IN CONJUNCTION WITH  
TYPICAL SECTION 3 & 4 AT THE FOLLOWING LOCATIONS:  
-L- STA 1170+80.00 TO -L- STA 1184+00.00 LEFT SIDE

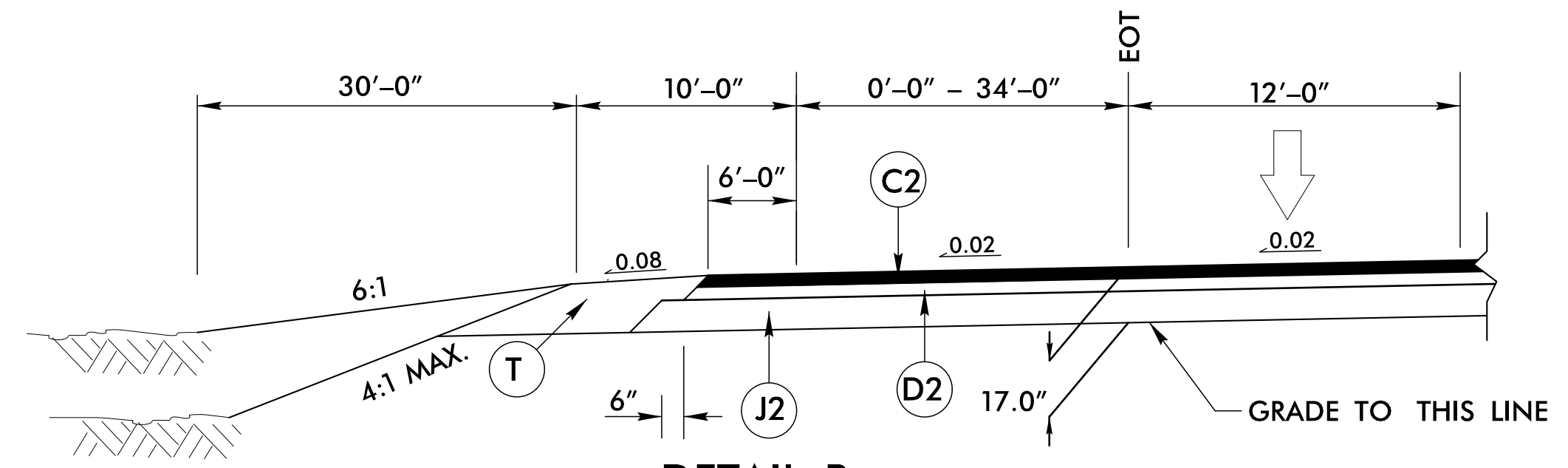


DETAIL A  
EXPRESSWAY GUTTER

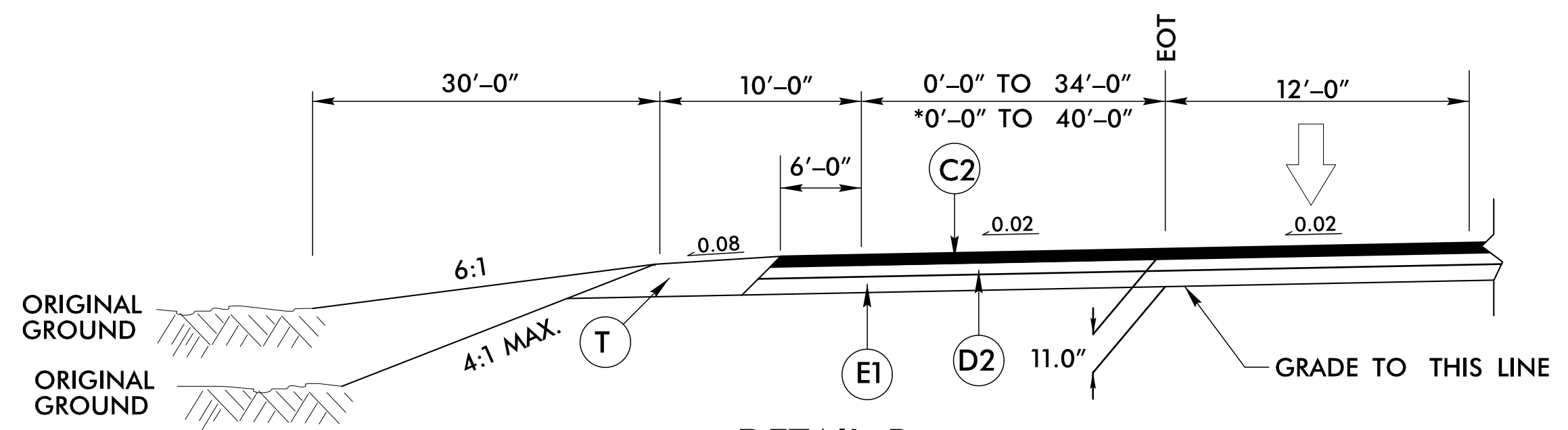


DETAIL A  
EXPRESSWAY GUTTER - ALTERNATE PAVEMENT DESIGN

USE DETAIL B:  
USE DETAIL B IN CONJUNCTION WITH  
TYPICAL SECTION 2 AT THE FOLLOWING LOCATIONS:  
-L- STA 1165+02.71 TO 1167+26.82 LEFT SIDE (BULBOUT LOCATION)  
\*L- STA 1143+74.40 TO -L- STA 1146+05.00 RIGHT SIDE (REVERSE BULBOUT LOCATION)



DETAIL B



DETAIL B  
ALTERNATE PAVEMENT DESIGN

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HNTB

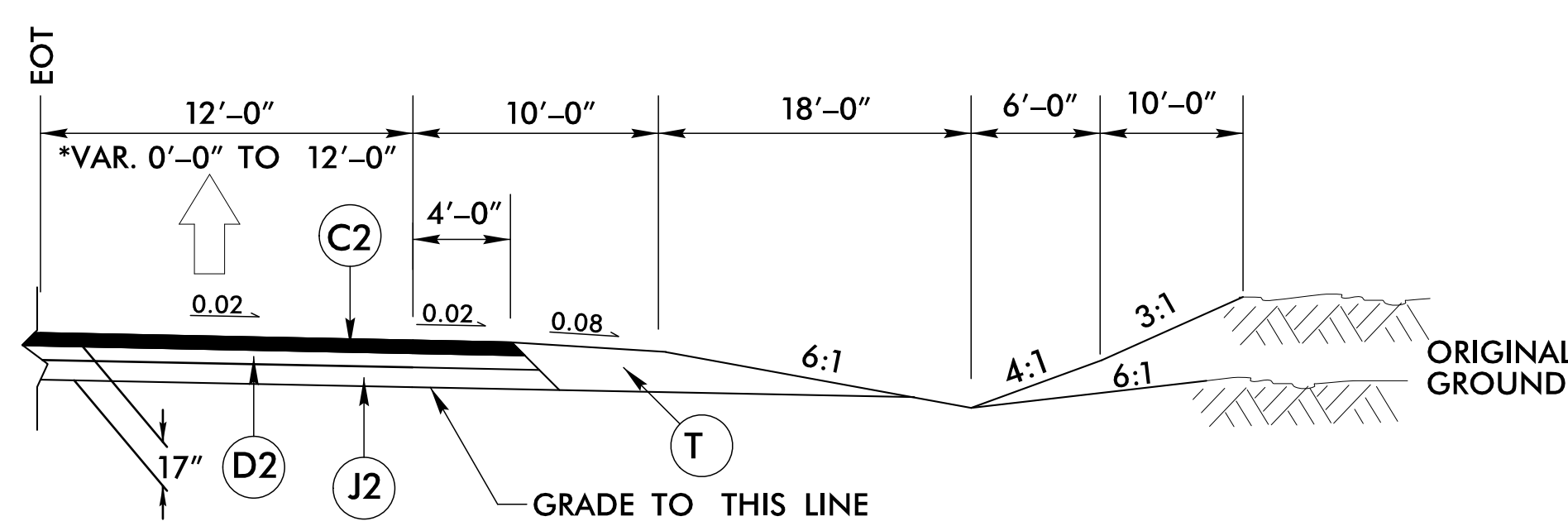


6/2/19

**FINAL PAVEMENT SCHEDULE**

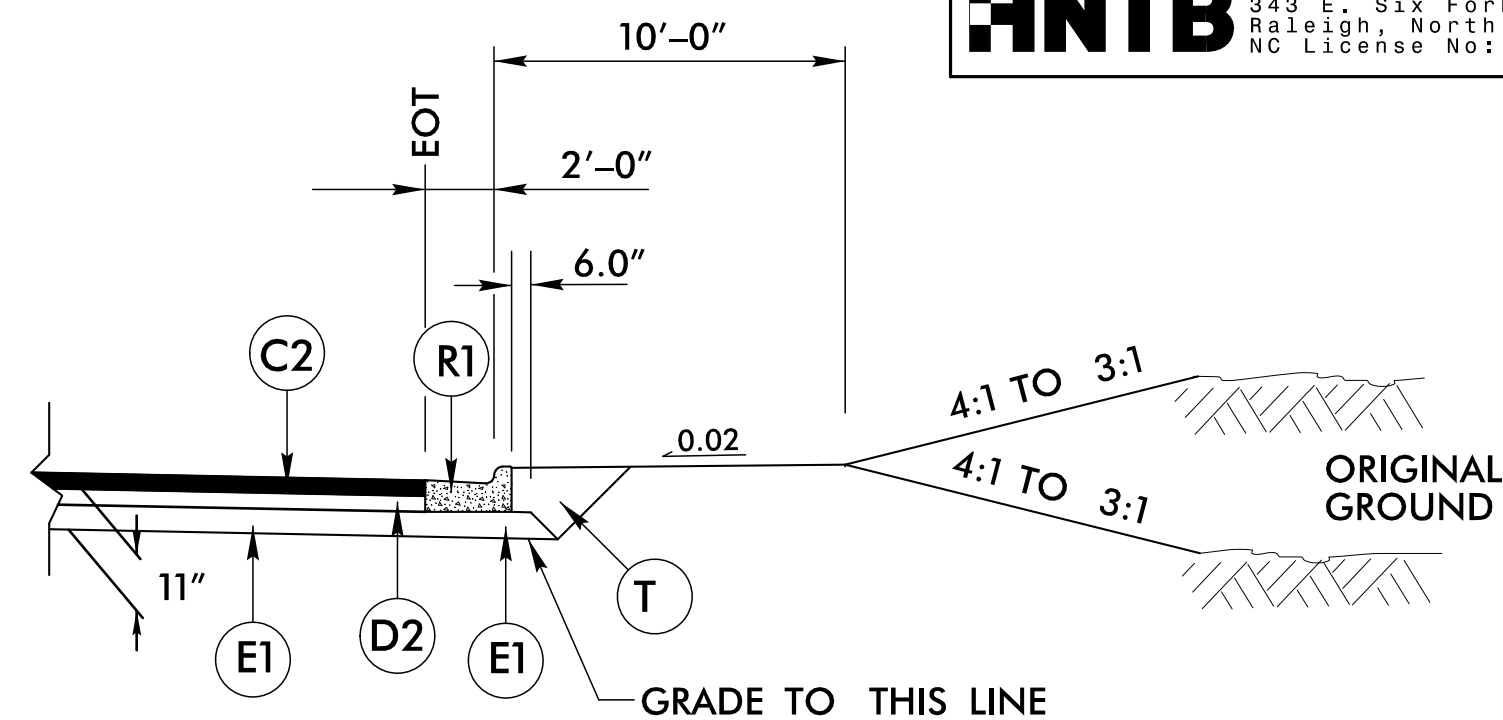
C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

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



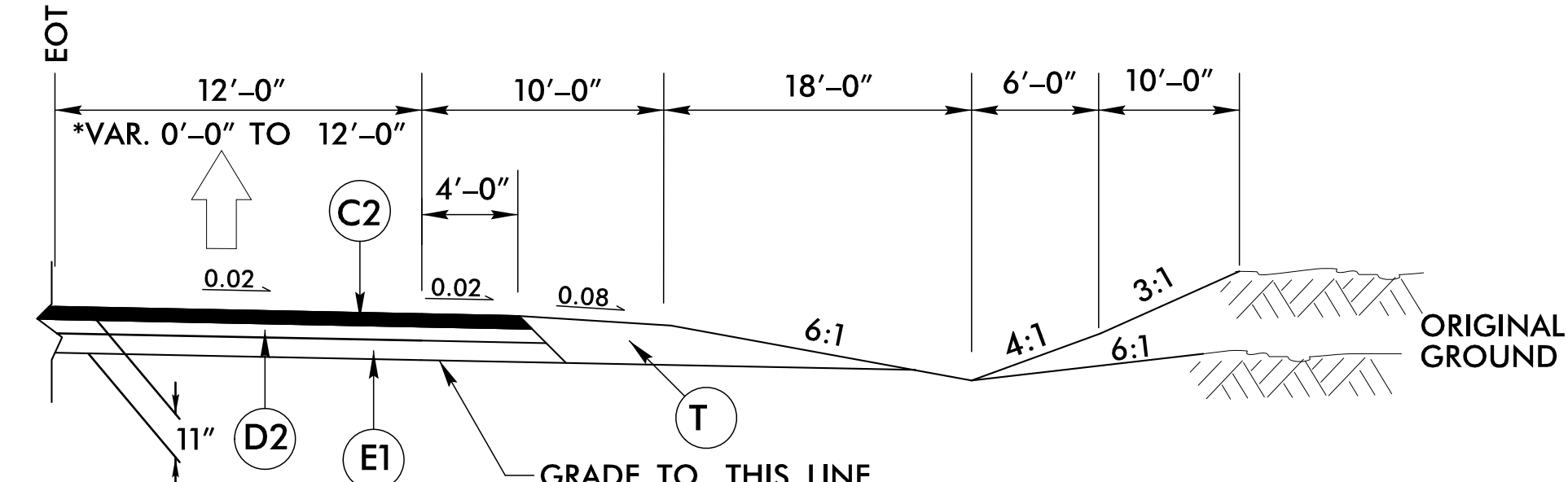
**DETAIL C**

USE DETAIL C IN CONJUNCTION WITH TYPICAL SECTION 3 & 8 AT THE FOLLOWING LOCATIONS:  
 -L- STA 1278+38.90 TO -L- STA 1289+78.90 RIGHT SIDE  
 \* -L- STA 1289+78.90 TO -L- STA 1292+78.90 RIGHT SIDE (TAPER LOCATION)



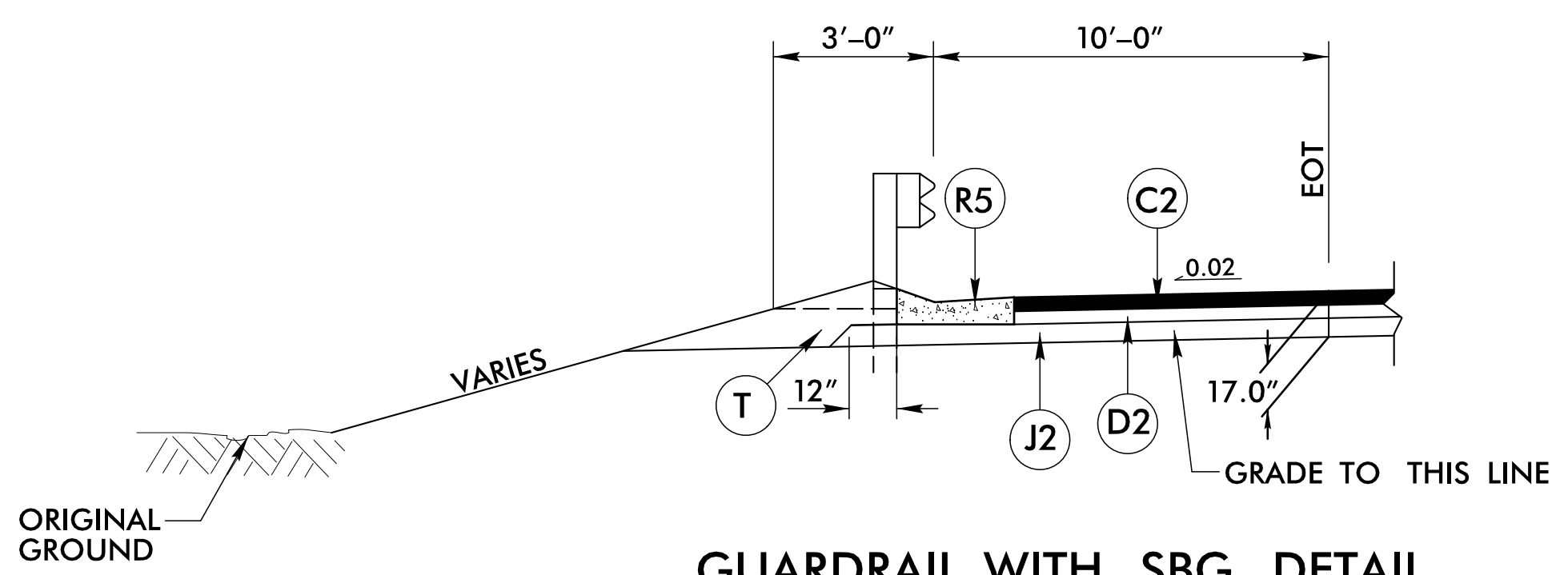
**DETAIL D**

USE DETAIL D IN CONJUNCTION WITH TYPICAL SECTION 11 & 12 AT THE FOLLOWING LOCATIONS:  
 -Y3- STA 10+44.00 TO -Y3- STA 11+77± LEFT SIDE  
 -Y3- STA 10+44.00 TO -Y3- STA 10+95± RIGHT SIDE  
 -Y4- STA 11+54.89 TO RIGHT SIDE



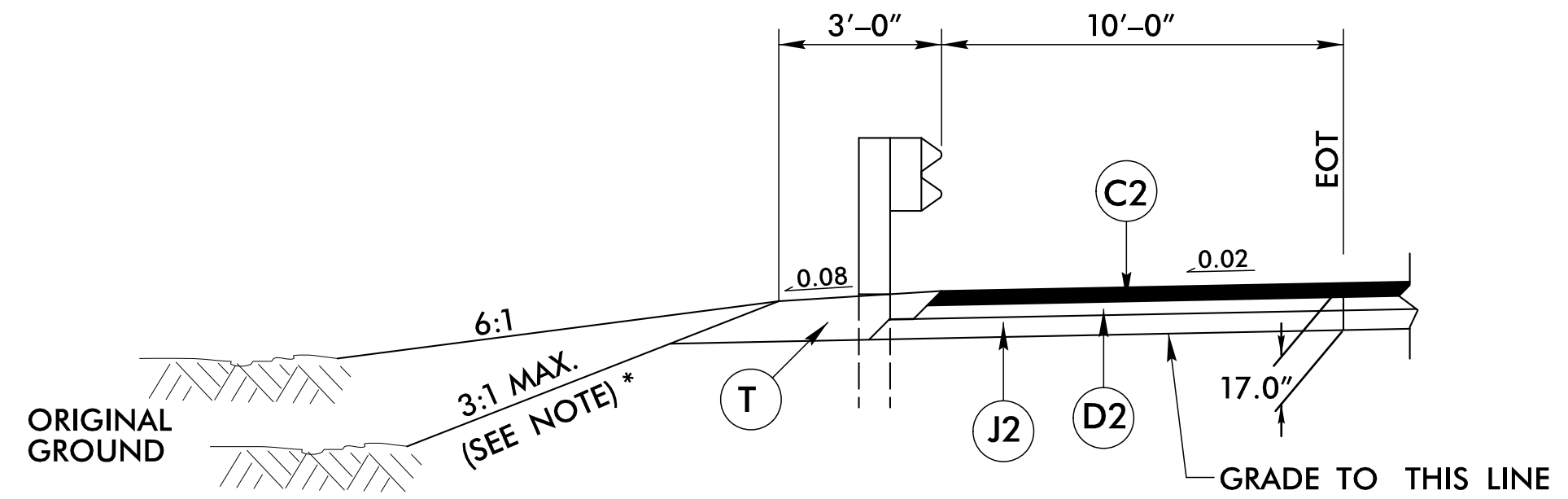
**DETAIL C**

ALTERNATE PAVEMENT DESIGN



**GUARDRAIL WITH SBG DETAIL**

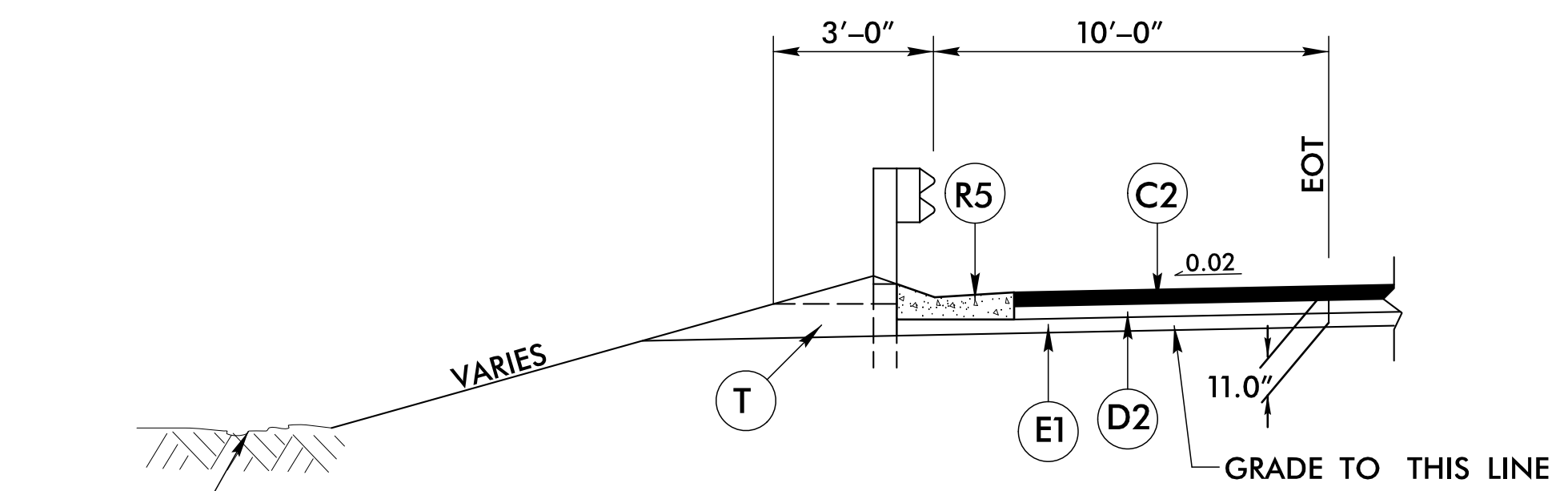
-L- STA. 1200+50.30 TO STA 1202+89.00 LT.



**GUARDRAIL DETAIL**

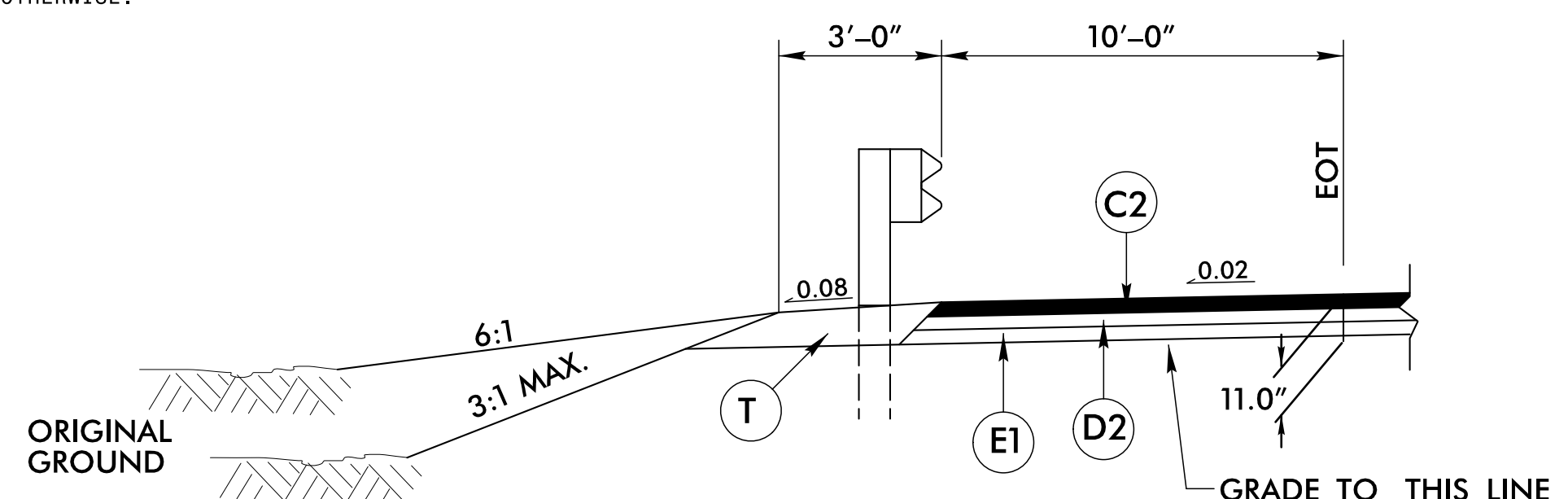
-L- STA. 1163+13.38 TO STA 1165+00.00 LT.  
 -L- STA. 1200+50.00 TO STA 1200+59.30 LT.  
 -L- STA. 1202+89.00 TO STA 1203+62.50 LT.  
 -L- STA. 1205+00.00 TO STA 1208+62.50 LT.\*

\* NOTE: USE 2.5:1 SLOPES FROM STA. 1207+25.00 TO 1208+62.50



**GUARDRAIL WITH SBG DETAIL**

ALTERNATE PAVEMENT DESIGN



**GUARDRAIL DETAIL**

ALTERNATE PAVEMENT DESIGN

NOTE: \* 1) 13'-0" WHERE GUARDRAIL IS WARRANTED  
 2) SEE PLANS FOR SUPERELEVATION, TURN LANES, AUXILIARY LANES, MONOLITHIC ISLAND, EXPRESSWAY GUTTER, CURB & GUTTER, & LANE TAPER LOCATIONS

**HNTB**  
 HNTB NORTH CAROLINA, P.C.  
 343 E. Six Forks Road, Suite 200  
 Raleigh, North Carolina 27609  
 NC License No: C-1524

PROJECT REFERENCE NO. <i>R-250/C</i>	SHEET NO. <i>2A-2</i>
ROADWAY DESIGN ENGINEER  SEAL 044575 ROY T. TELLER, P.E. 2/27/2018	PAVEMENT DESIGN ENGINEER  SEAL 022896 CLARK S. MORRISON, P.E. 2/27/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

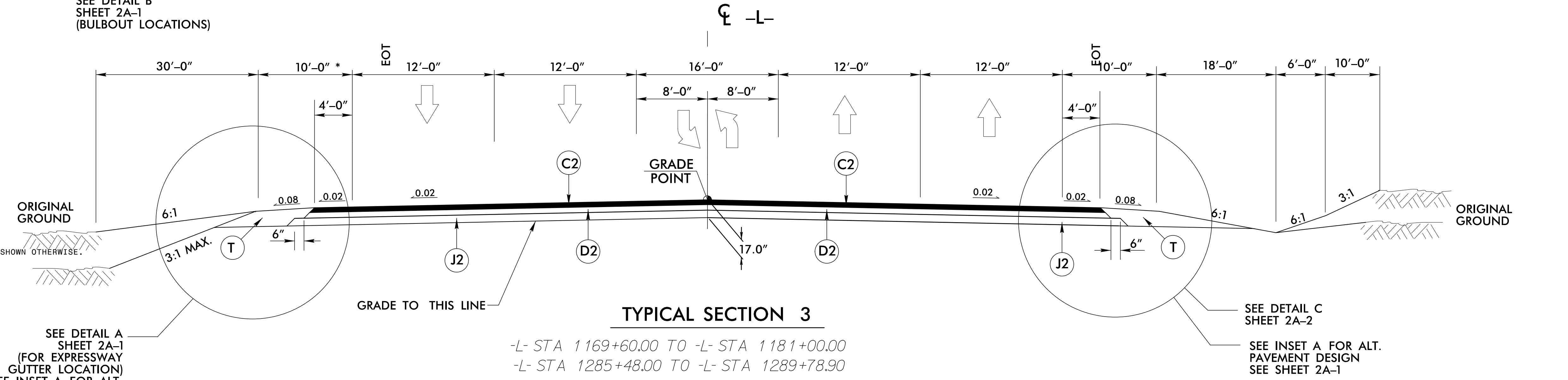
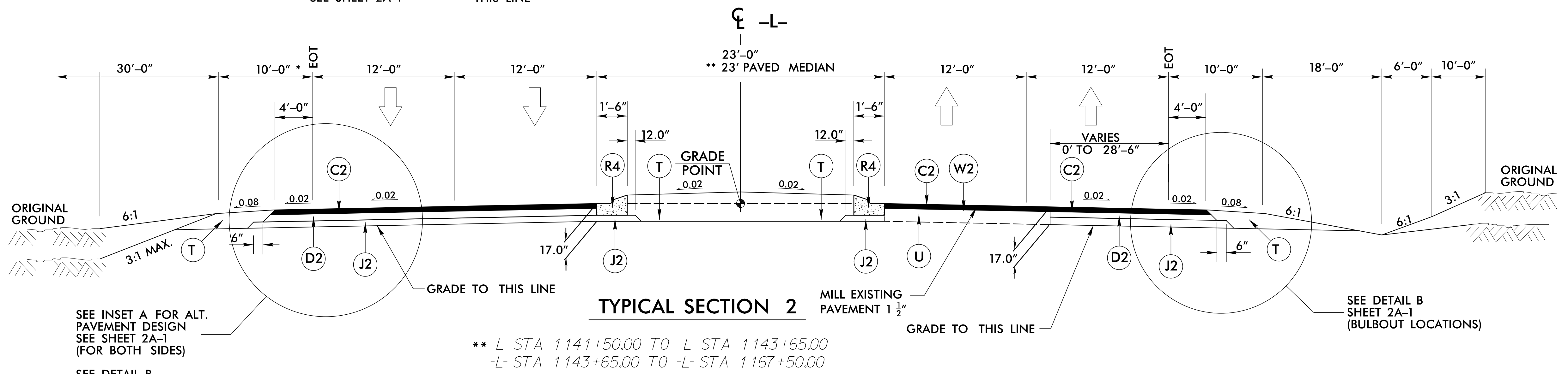
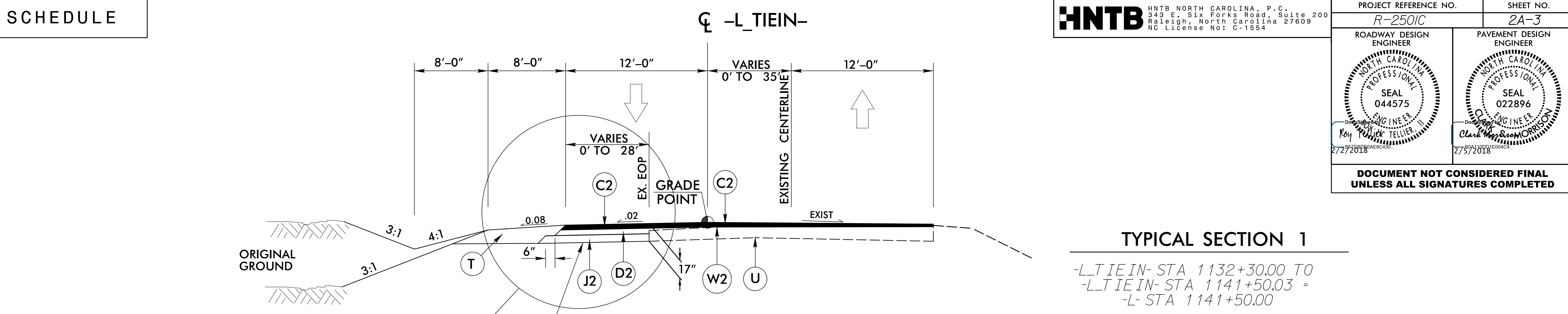
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6/2/19

# FINAL PAVEMENT SCHEDULE

C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

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



TRANSITION FROM 23' MEDIAN TO 16' MEDIAN:  
 -L- STA 1167+50.00 TO -L- STA 1169+60.00

TRANSITION FROM TYPICAL SECTION 3 TO TYPICAL SECTION 5:  
 -L- STA 1289+78.90 TO -L- STA 1292+78.90

NOTE: \* 1) 13'-0" WHERE GUARDRAIL IS WARRANTED  
 2) SEE PLANS FOR SUPERELEVATION, TURN LANES, AUXILIARY LANES, MONOLITHIC ISLAND, EXPRESSWAY GUTTER, CURB & GUTTER, & LANE TAPER LOCATIONS

**HNTB** HNTB NORTH CAROLINA, P.C.  
 343 E. Six Forks Road, Suite 200  
 Raleigh, North Carolina 27609  
 NC License No: C-1524

PROJECT REFERENCE NO. R-2501C	SHEET NO. 2A-3
ROADWAY DESIGN ENGINEER SEAL 044575 KAY TULLY TELLIER, III	PAVEMENT DESIGN ENGINEER SEAL 022896 CLEMENS SCHEMORRSON
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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6/2/19

# FINAL PAVEMENT SCHEDULE

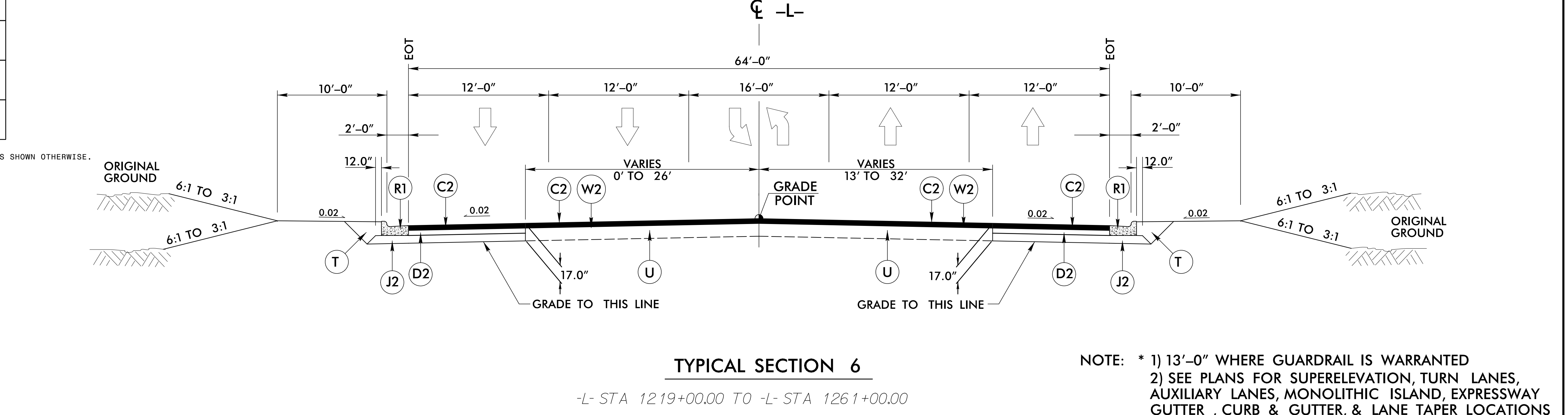
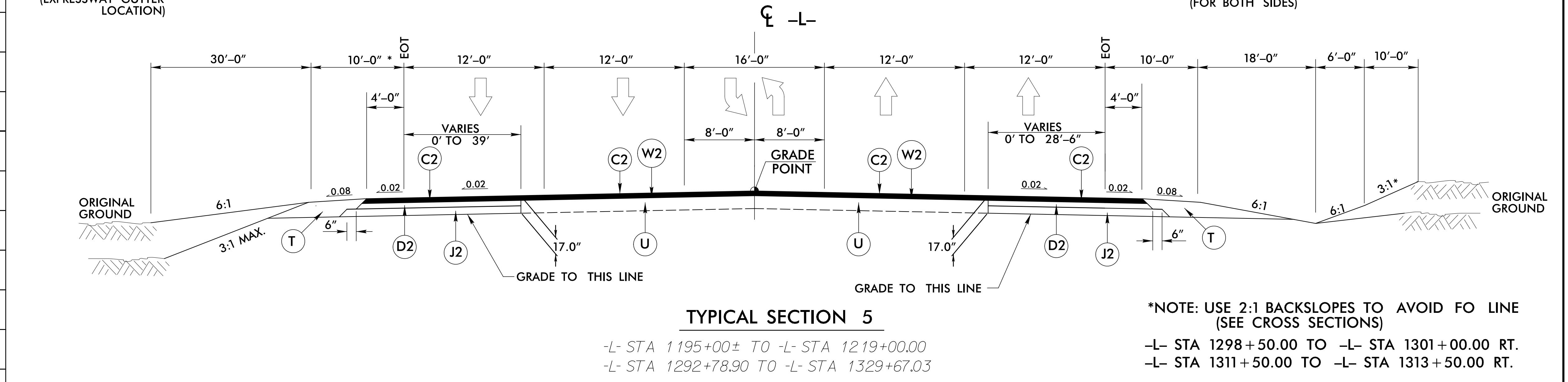
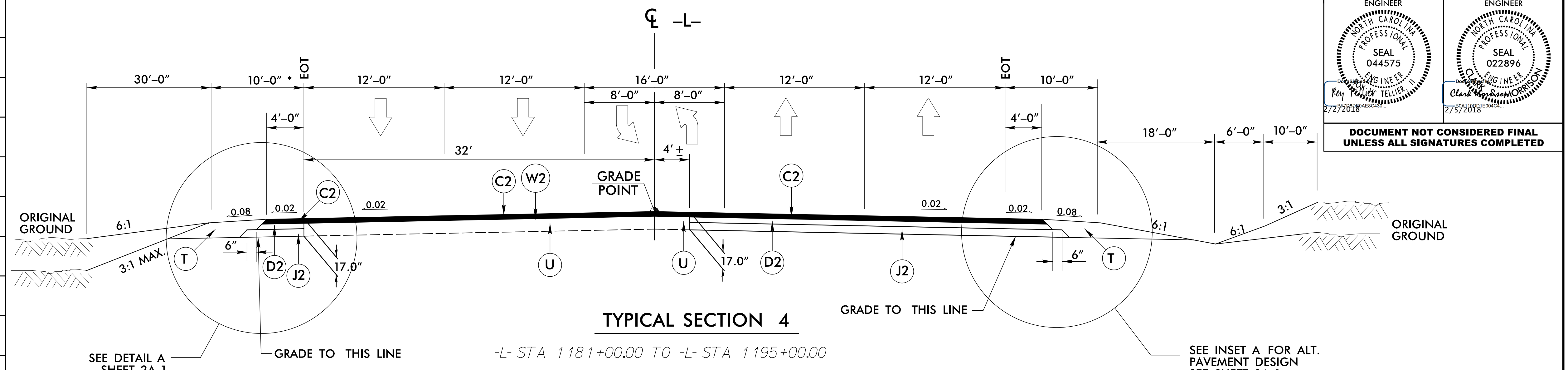
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1524

PROJECT REFERENCE NO. <i>R-250/C</i>	SHEET NO. <i>2A-4</i>
ROADWAY DESIGN ENGINEER <i>Key</i>	PAVEMENT DESIGN ENGINEER <i>Clark</i>
SEAL 044575 2/27/2018	SEAL 022896 2/27/2018

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

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



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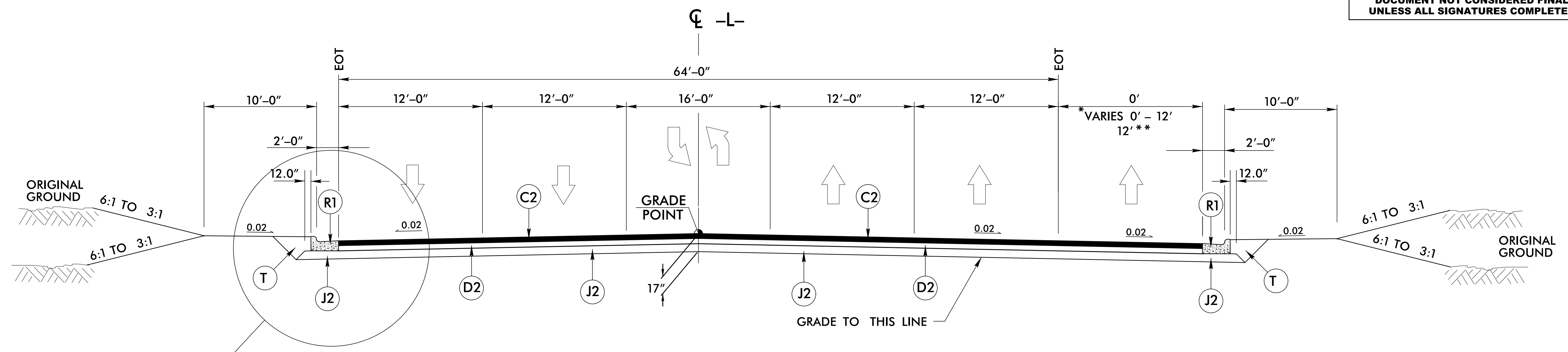
**FINAL PAVEMENT SCHEDULE**

C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

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

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343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1524

PROJECT REFERENCE NO. <i>R-2501C</i>	SHEET NO. <b>2A-5</b>
ROADWAY DESIGN ENGINEER SEAL 044575 <i>Roy T. TELLIER, II</i>	PAVEMENT DESIGN ENGINEER SEAL 022896 <i>Clark S. MORRISON</i>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



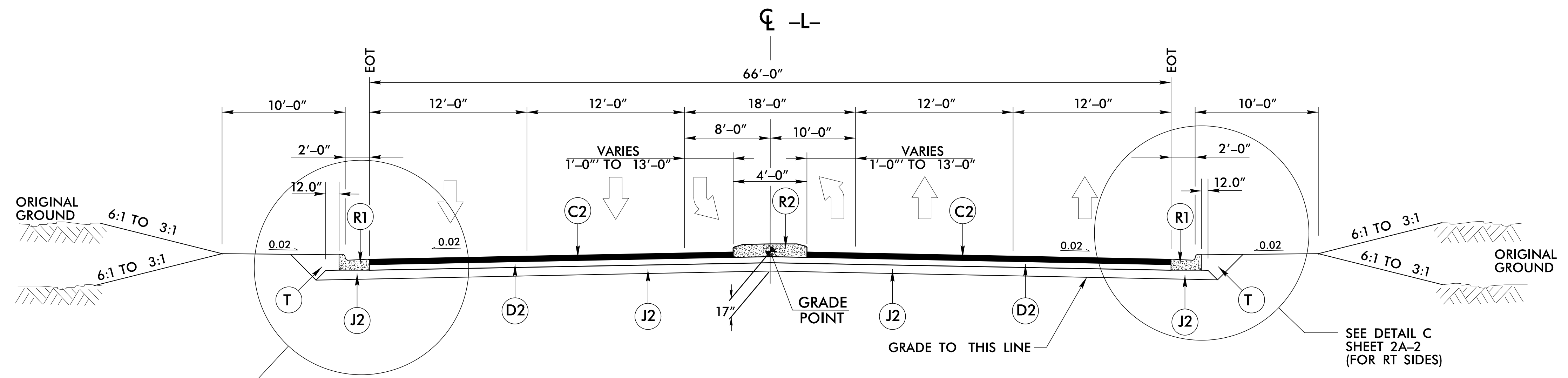
**TYPICAL SECTION 7**

-L- STA 1261+00.00 TO -L- STA 1274+15.00

USE TYPICAL SECTION NO.7 (TAPER LOCATIONS):  
\* -L- STA 1269+15.60 TO -L- STA 1270+65.60

USE TYPICAL SECTION NO.7 (ADDITIONAL LANE LOCATIONS):  
\*\* -L- STA 1270+65.60 TO -L- STA 1274+15.00

TRANSITION FROM TYPICAL SECTION 7 TO TYPICAL SECTION 8:  
-L- STA 1274+15.00 TO -L- STA 1275+35.00



**TYPICAL SECTION 8**

-L- STA 1275+35.00 TO -L- STA 1284+28.00

TRANSITION FROM TYPICAL SECTION 8 TO TYPICAL SECTION 3:  
-L- STA 1284+28.00 TO -L- STA 1285+48.00

NOTE: 1) SEE PLANS FOR SUPERELEVATION, TURN LANES, AUXILIARY LANES, MONOLITHIC ISLAND, EXPRESSWAY GUTTER, CURB & GUTTER, & LANE TAPER LOCATIONS

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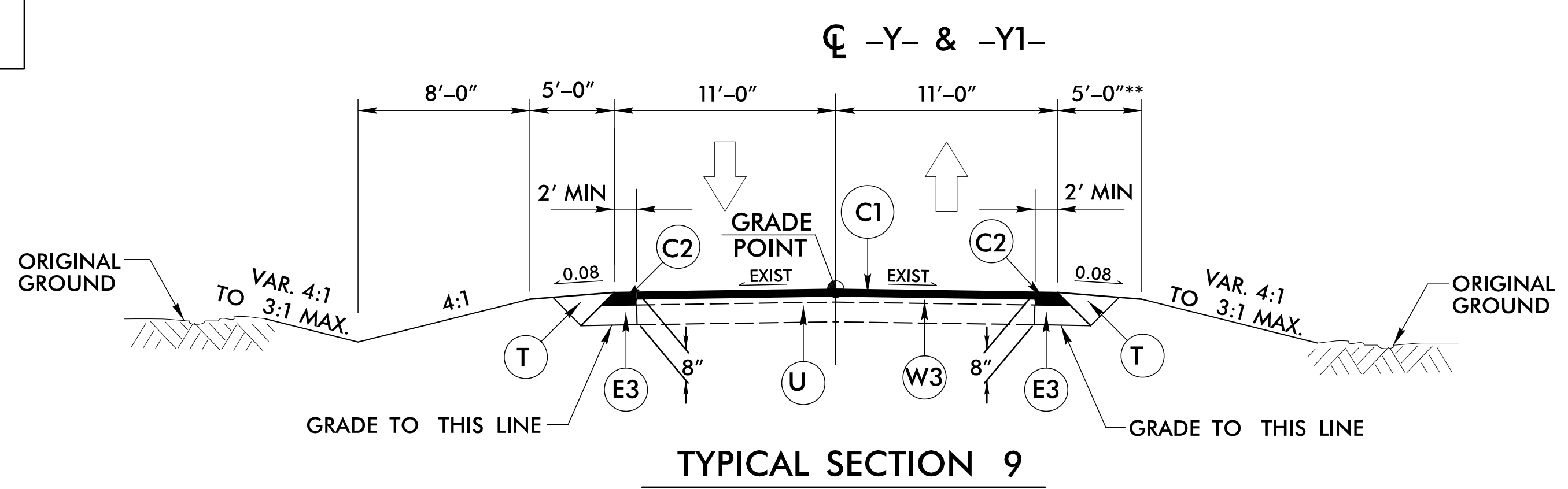
# FINAL PAVEMENT SCHEDULE

C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

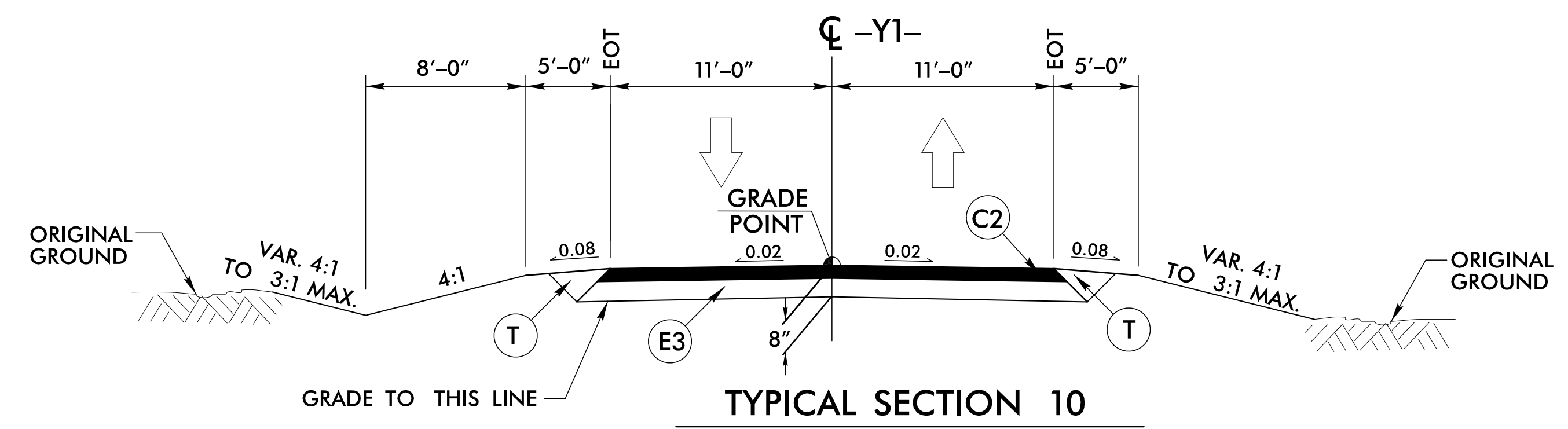
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



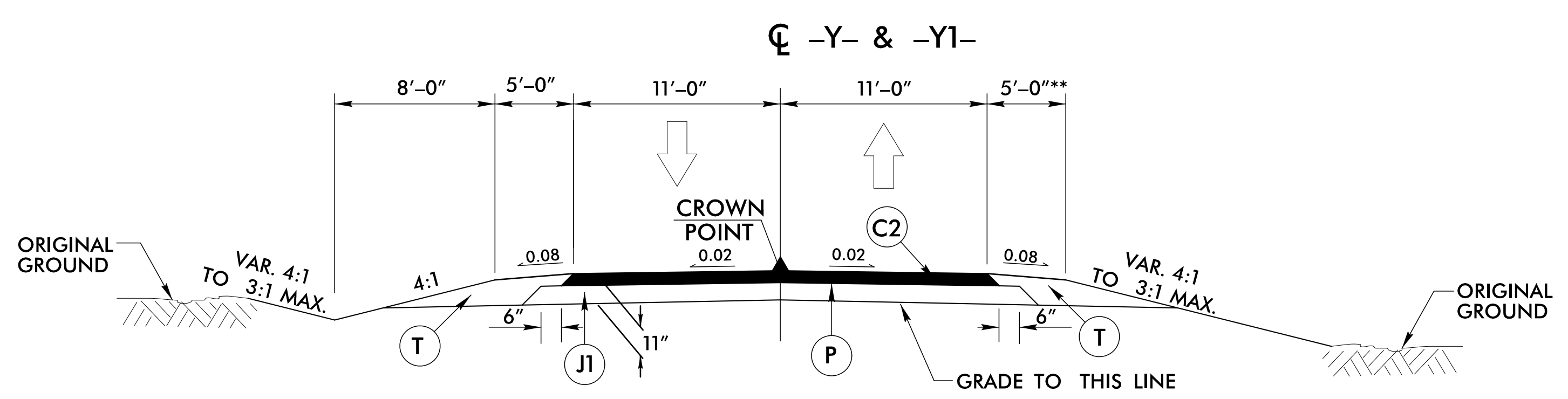
PROJECT REFERENCE NO. <i>R-250/C</i>	SHEET NO. <i>2A-6</i>
ROADWAY DESIGN ENGINEER SEAL 044575 <i>Key T. TELLIER, III</i>	PAVEMENT DESIGN ENGINEER SEAL 022896 <i>Clark S. MORRISON</i>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



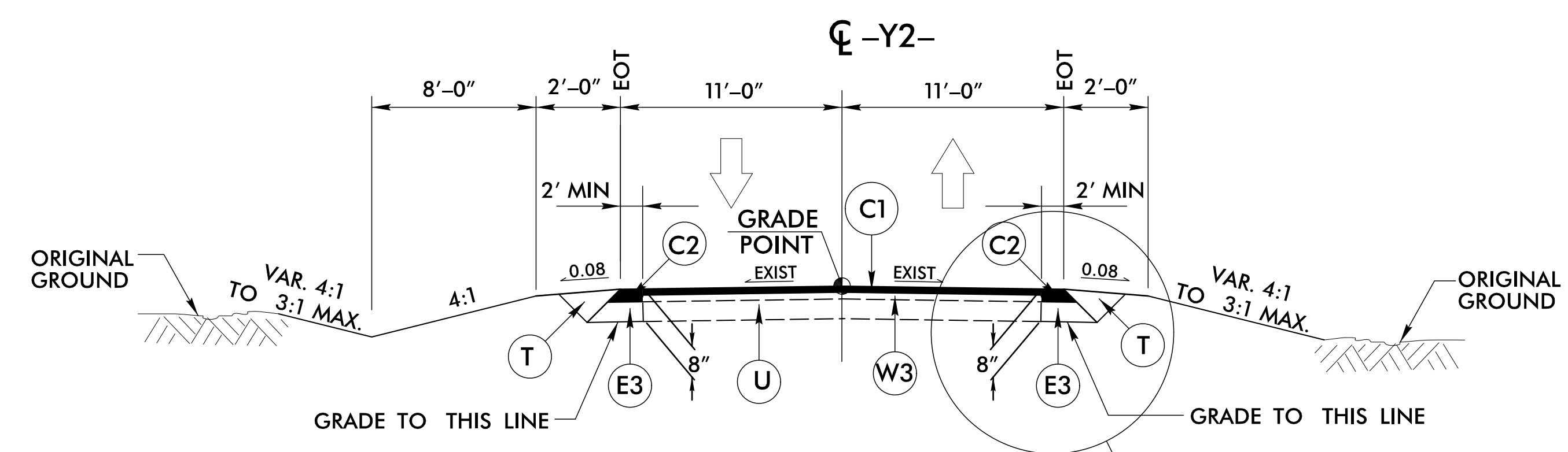
**TYPICAL SECTION 9**  
 -Y- STA 10+35.50 TO -Y- STA 11+75.00  
 -Y1- STA 10+95.00 TO -Y1- STA 13+50.00



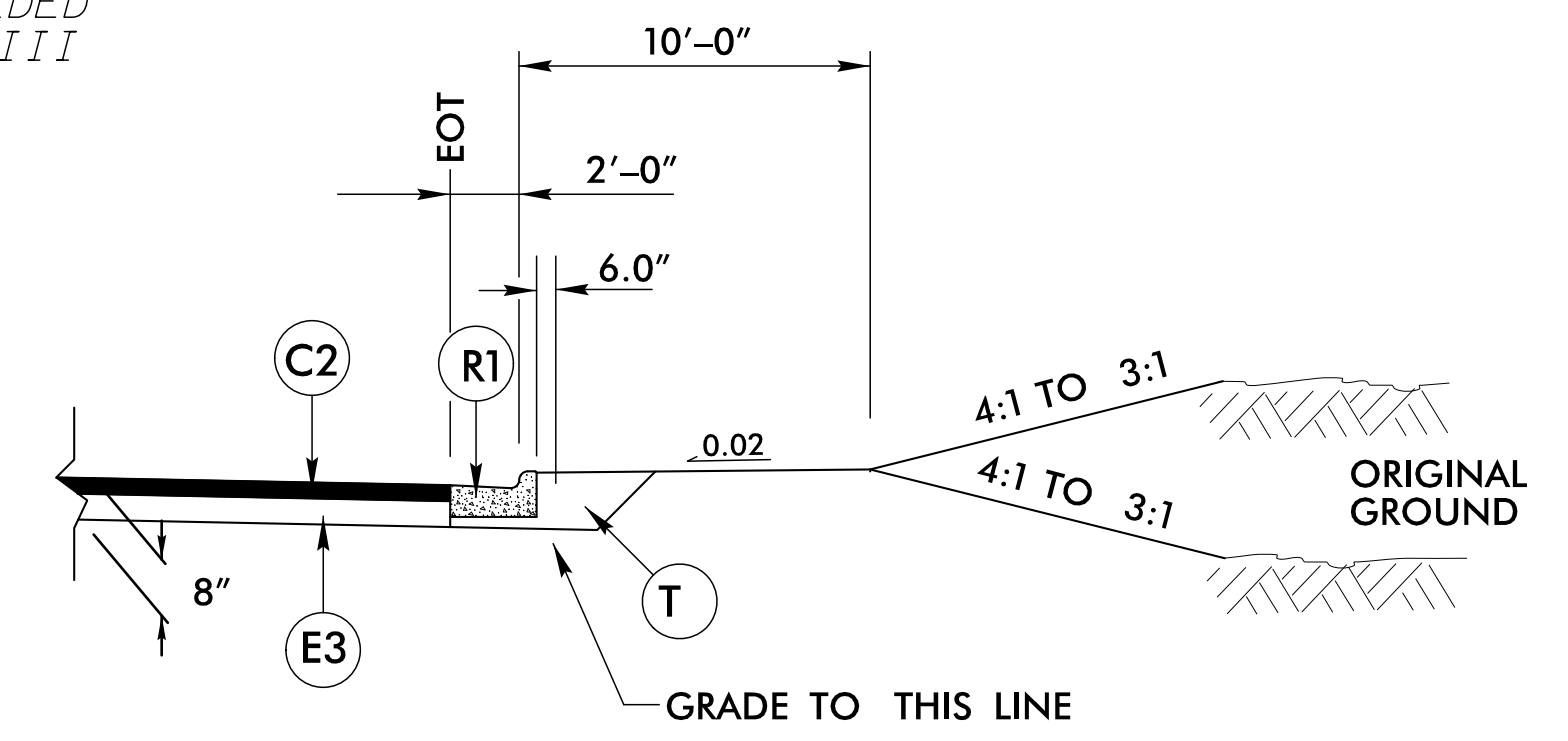
**TYPICAL SECTION 10**  
 -Y1- STA 10+35.40 TO -Y1- STA 10+95.00



**TYPICAL SECTION 11**  
 -Y- STA 10+00.00 TO -Y- STA 10+84.05  
 -Y1- STA 10+00.00 TO -Y1- STA 10+85.10  
 NOTE: USE TYPICAL SECTION 11 FOR TEMPORARY PAVEMENT NEEDED FOR ACCESS TO -L- IN PHASE III



**TYPICAL SECTION 12**  
 -Y2- STA 10+32.00 TO -Y2- STA 12+25.00  
 SEE DETAIL 12A THIS SHEET



**DETAIL 12A**  
 USE DETAIL 12A IN CONJUNCTION WITH TYPICAL SECTION 11 AT THE FOLLOWING LOCATIONS:  
 -Y2- STA 10+32.00 TO -Y2- STA 11+22.72 BOTH SIDES

NOTE: 1) SEE PLANS FOR SUPERELEVATION, TURN LANES, AUXILIARY LANES, MONOLITHIC ISLAND, EXPRESSWAY GUTTER, CURB & GUTTER, & LANE TAPER LOCATIONS

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# FINAL PAVEMENT SCHEDULE

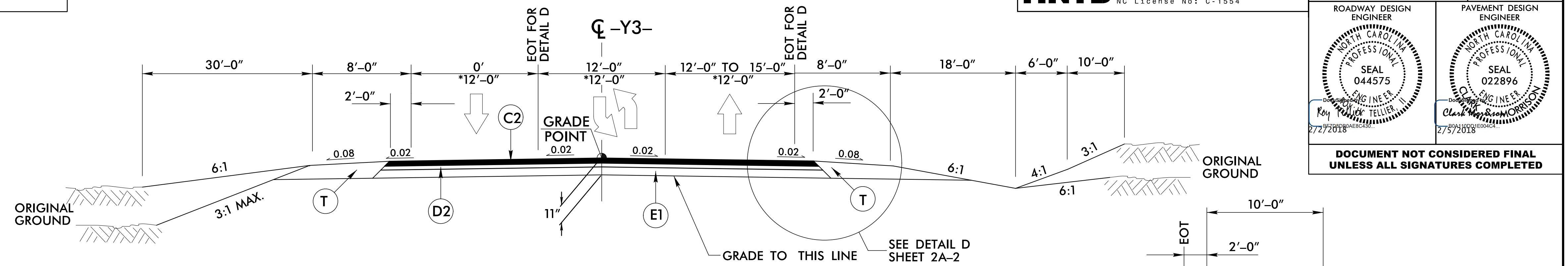
C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

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



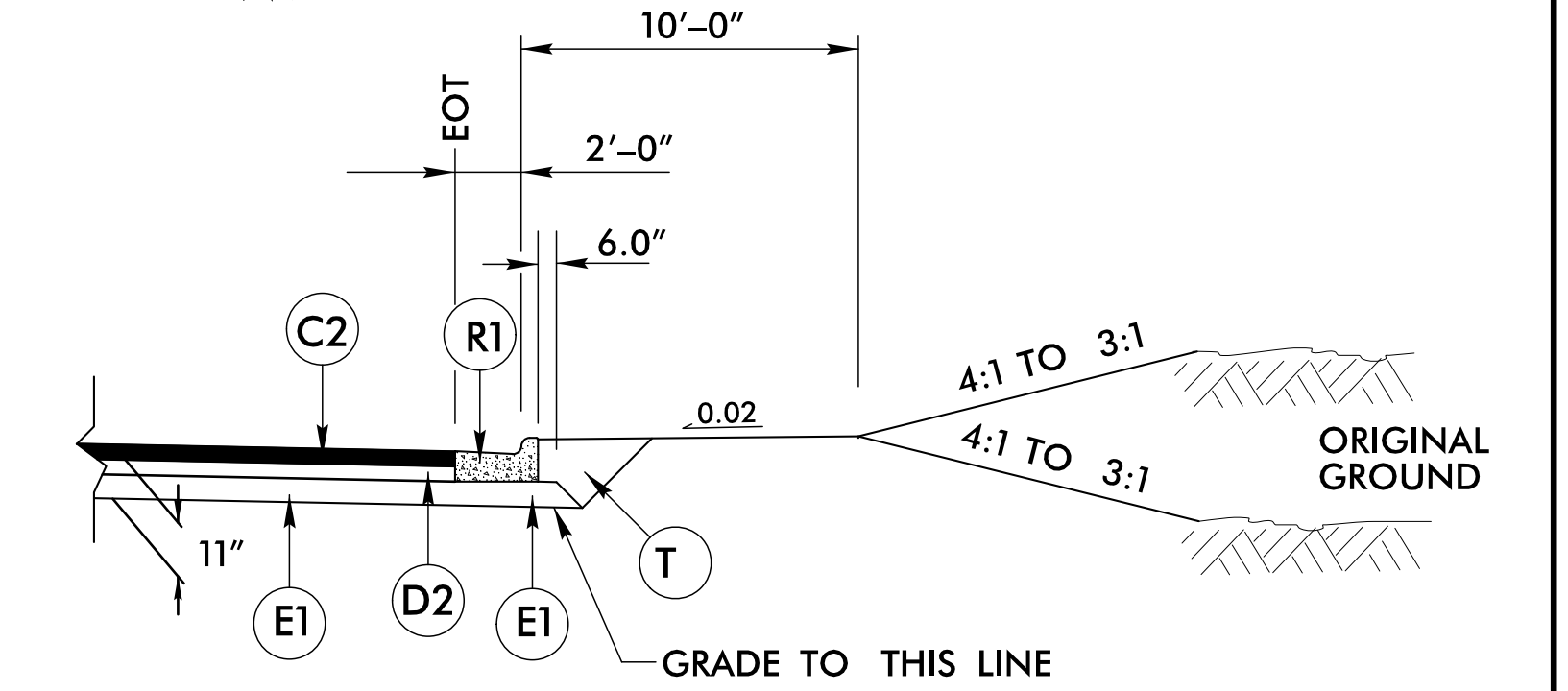
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ROADWAY DESIGN ENGINEER <i>SEAL 044575</i>	PAVEMENT DESIGN ENGINEER <i>SEAL 022896</i>

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



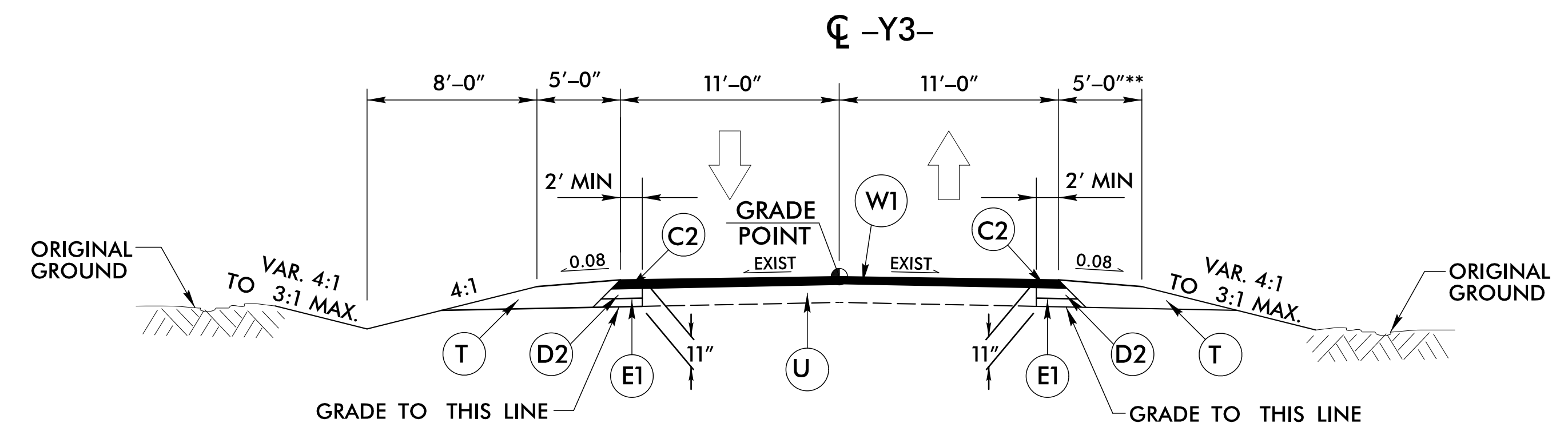
TYPICAL SECTION 13

-Y3- STA 10+33.29 TO -Y3- STA 12+61.85  
\*Y3- STA 12+61.85 TO -Y3- STA 14+55.62



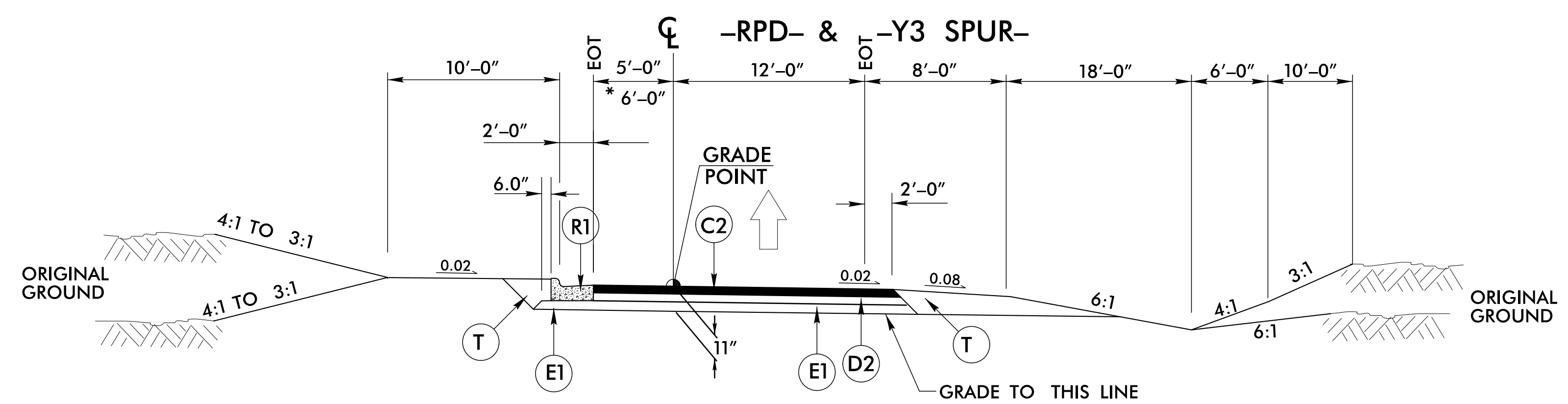
DETAIL 13A

USE DETAIL 12A IN CONJUNCTION WITH TYPICAL SECTION 12 AT THE FOLLOWING LOCATIONS:  
-Y3- STA 10+44.00 TO -Y3- STA 11+77± LEFT SIDE  
-Y3- STA 10+44.00 TO -Y3- STA 10+95± RIGHT SIDE



TYPICAL SECTION 14

-Y3- STA 14+55.62 TO -Y3- STA 16+50.00



TYPICAL SECTION 15

-RPD- STA 10+00.00 TO -RPD- STA 14+73.97  
\*Y3 SPUR- STA 5+00.00 TO -Y3 SPUR- STA 7+39.73

NOTE: 1) SEE PLANS FOR SUPERELEVATION, TURN LANES, AUXILIARY LANES, MONOLITHIC ISLAND, EXPRESSWAY GUTTER, CURB & GUTTER, & LANE TAPER LOCATIONS

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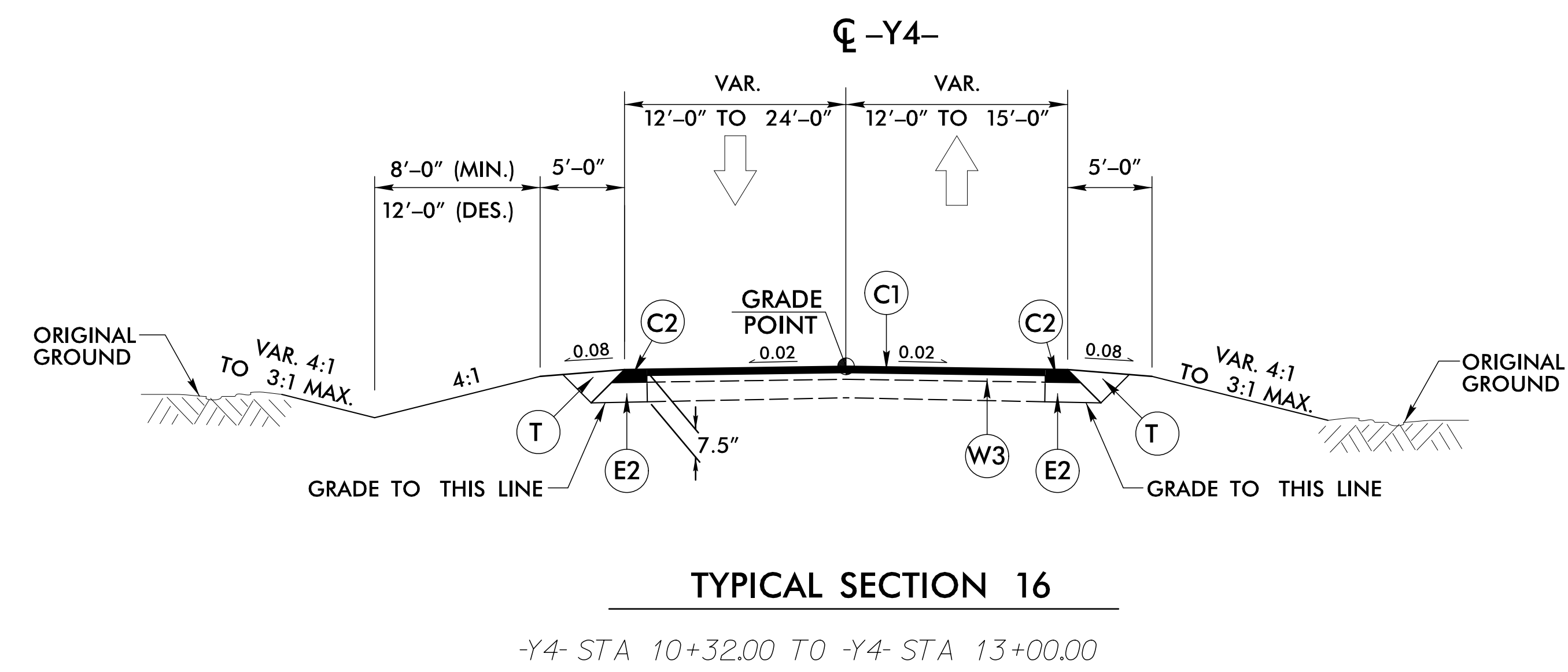
# FINAL PAVEMENT SCHEDULE

C1	1½" S9.5C
C2	3" S9.5C
C3	VAR. S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	4½" TYPE B25.0C
E3	5" B25.0C
E4	VAR. B25.0C
J1	8" ABC
J2	10" ABC
P	.35 PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE EXPRESSWAY GUTTER.
R4	1'-6" C & G
R5	SHOULDER BERM GUTTER
U	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1, SHEET 2A-1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2, SHEET 2A-1)

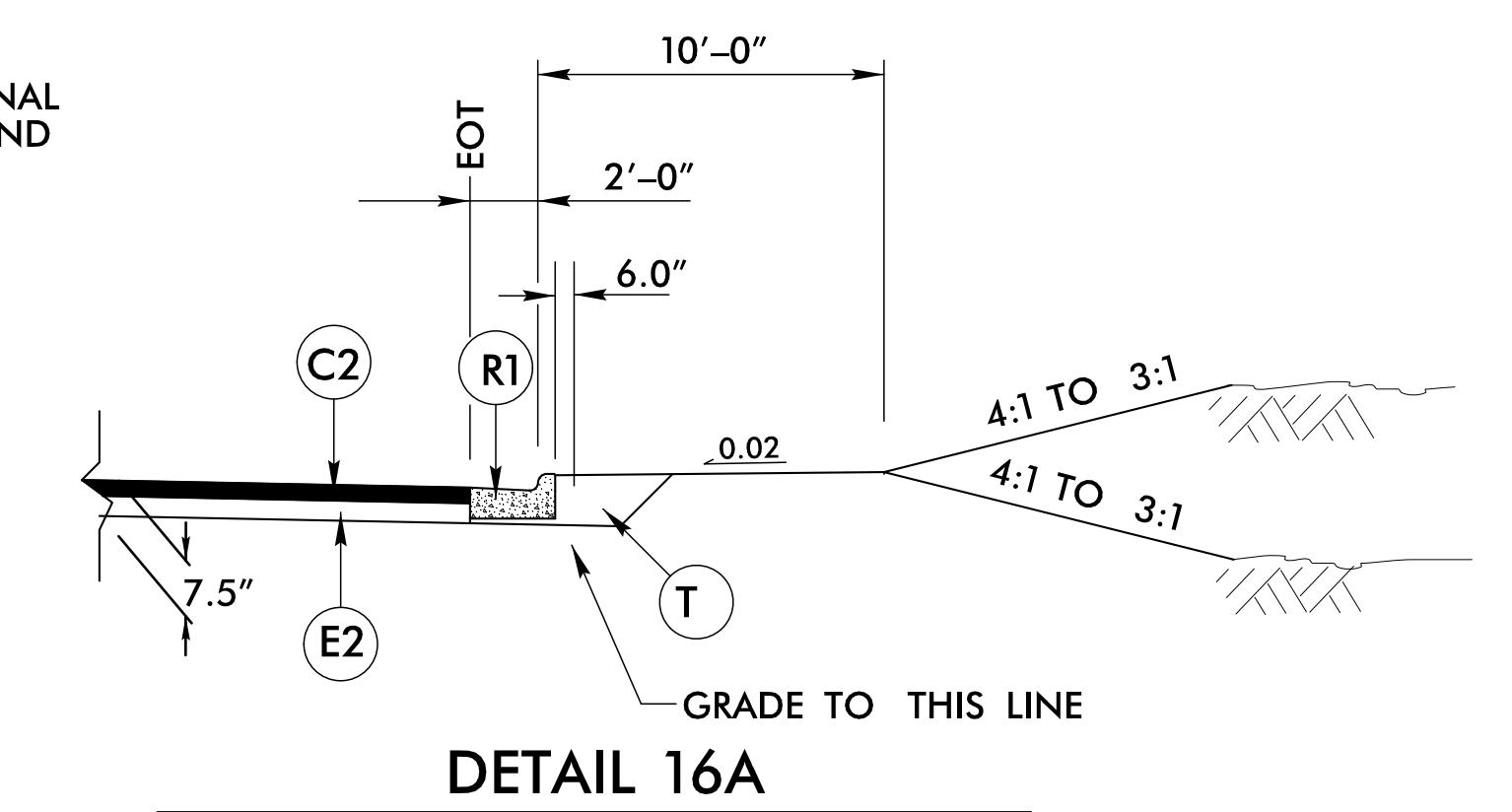
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



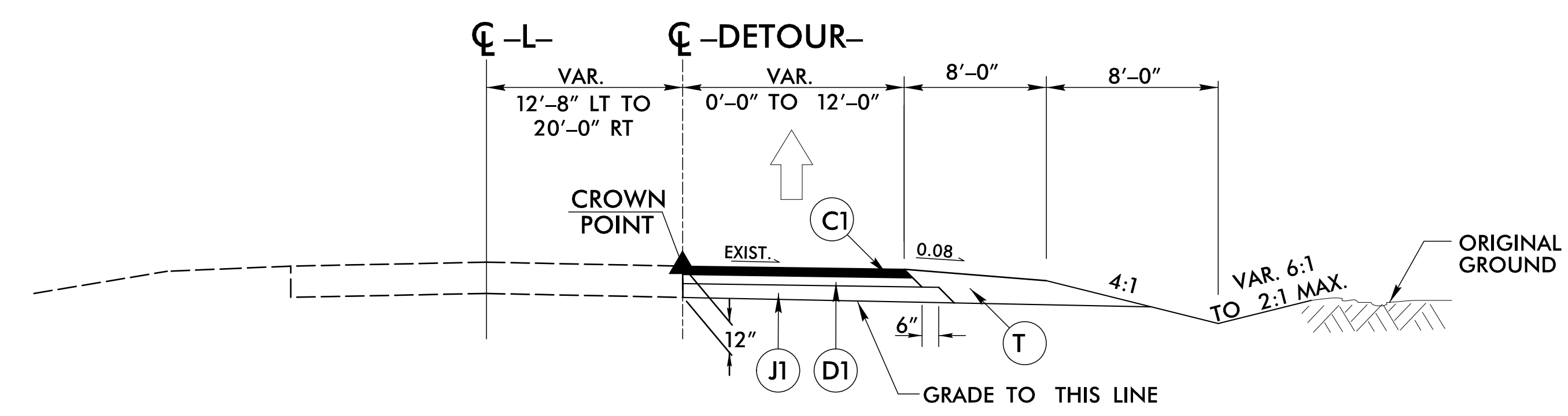
PROJECT REFERENCE NO. <i>R-250/C</i>	SHEET NO. <i>2A-8</i>
ROADWAY DESIGN ENGINEER SEAL 044575 <i>Key</i>	PAVEMENT DESIGN ENGINEER SEAL 022896 <i>Clark</i>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



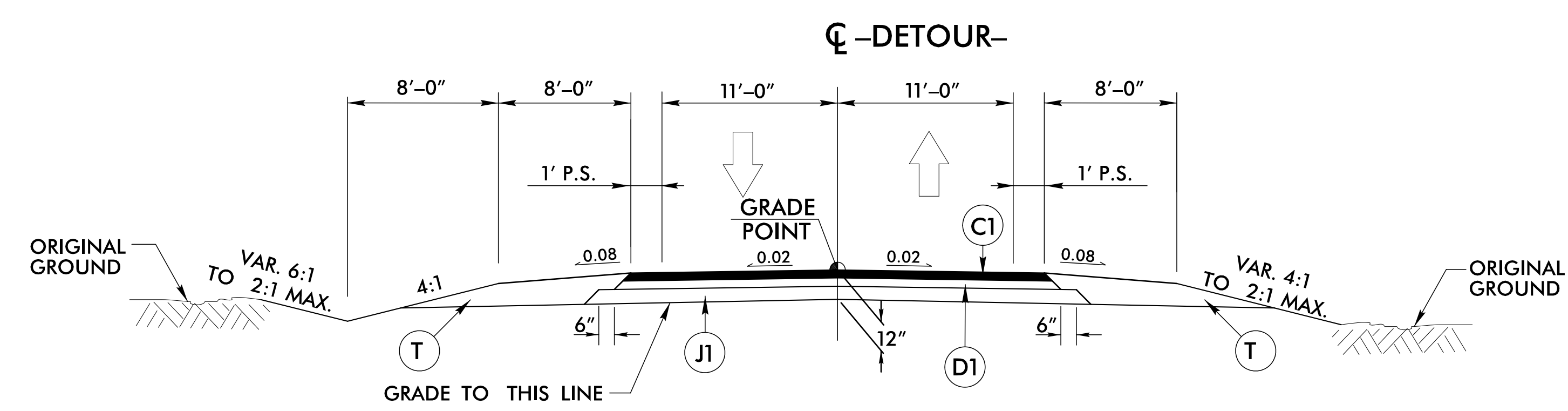
**TYPICAL SECTION 16**  
-Y4- STA 10+32.00 TO -Y4- STA 13+00.00



**DETAIL 16A**  
USE DETAIL 15A IN CONJUNCTION WITH  
TYPICAL SECTION 15 AT THE FOLLOWING LOCATIONS:  
-Y4- STA 10+30.63 TO 11+54.89 LEFT SIDE



**TYPICAL SECTION 17**  
-DETOUR- STA 10+00.00 TO -DETOUR- STA 11+50  
-DETOUR- STA 33+50.00 TO -DETOUR- STA 35+15.70



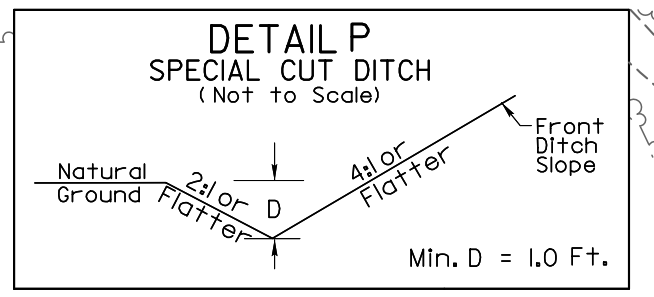
**TYPICAL SECTION 18**  
-DETOUR- STA 11+50 TO -DETOUR- STA 33+50

NOTE: 1) SEE PLANS FOR SUPERELEVATION, TURN LANES, AUXILIARY LANES, MONOLITHIC ISLAND, EXPRESSWAY GUTTER, CURB & GUTTER, & LANE TAPER LOCATIONS

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-L- POC Sta. 1160+89.76 =  
-DETOUR- PC Sta. 10+00.00  
(19.86' RT.)

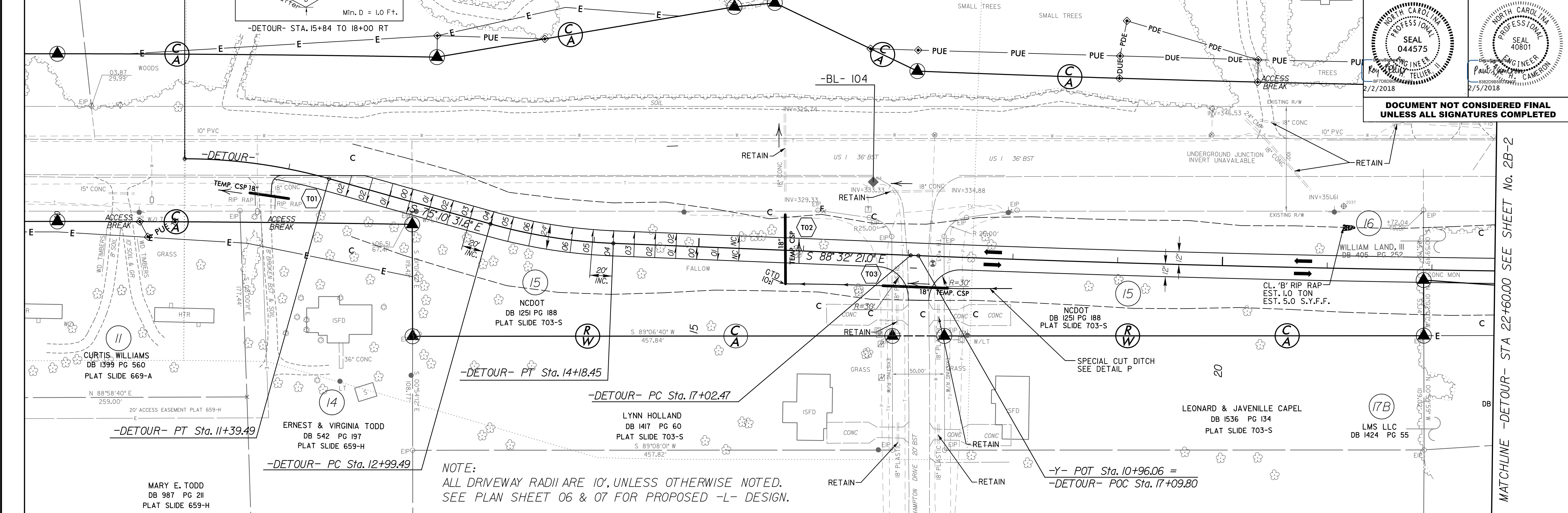


# DETOUR

**M A Engineering Consultants, Inc.**  
998 East Chatham Street Suite 137 Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221

**HNTB**  
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1924

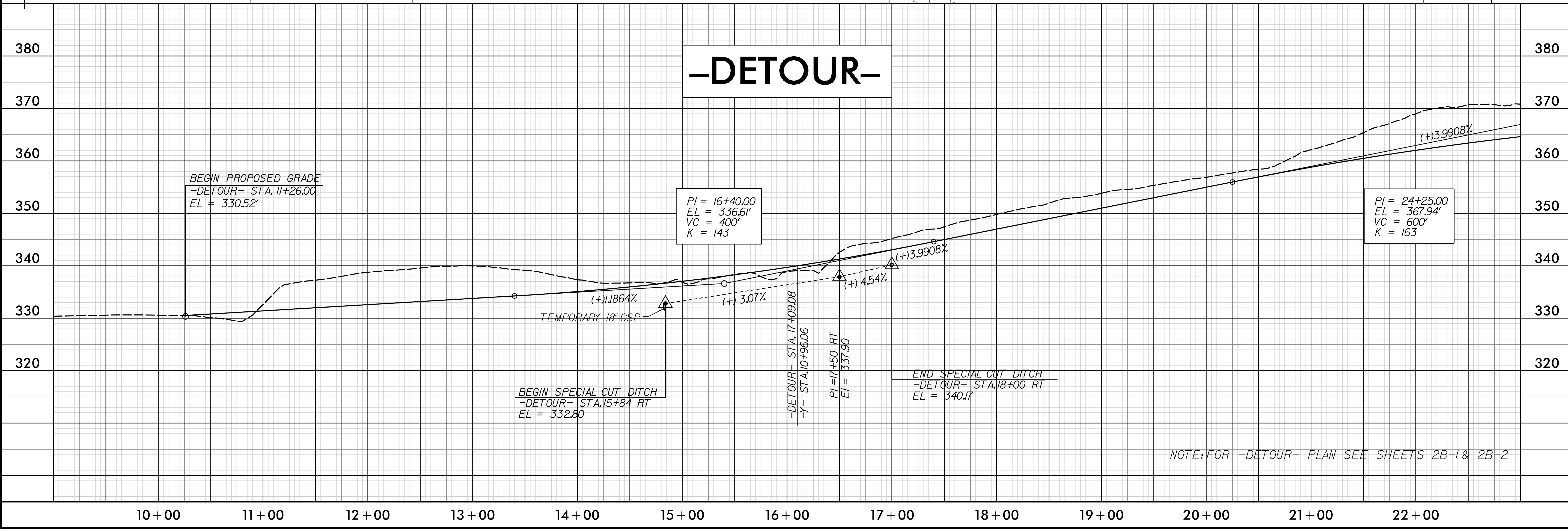
PROJECT REFERENCE NO. <b>R-2501C</b>	SHEET NO. <b>2B-1</b>
ROADWAY DESIGN ENGINEER <b>SEAL 044575</b> Ray Foster	HYDRAULICS ENGINEER <b>SEAL 40801</b> Paul K... 2/5/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



**NOTE:**  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
SEE PLAN SHEET 06 & 07 FOR PROPOSED -L- DESIGN.

MATCHLINE -DETOUR- STA 22+6000 SEE SHEET No. 2B-2

REVISIONS



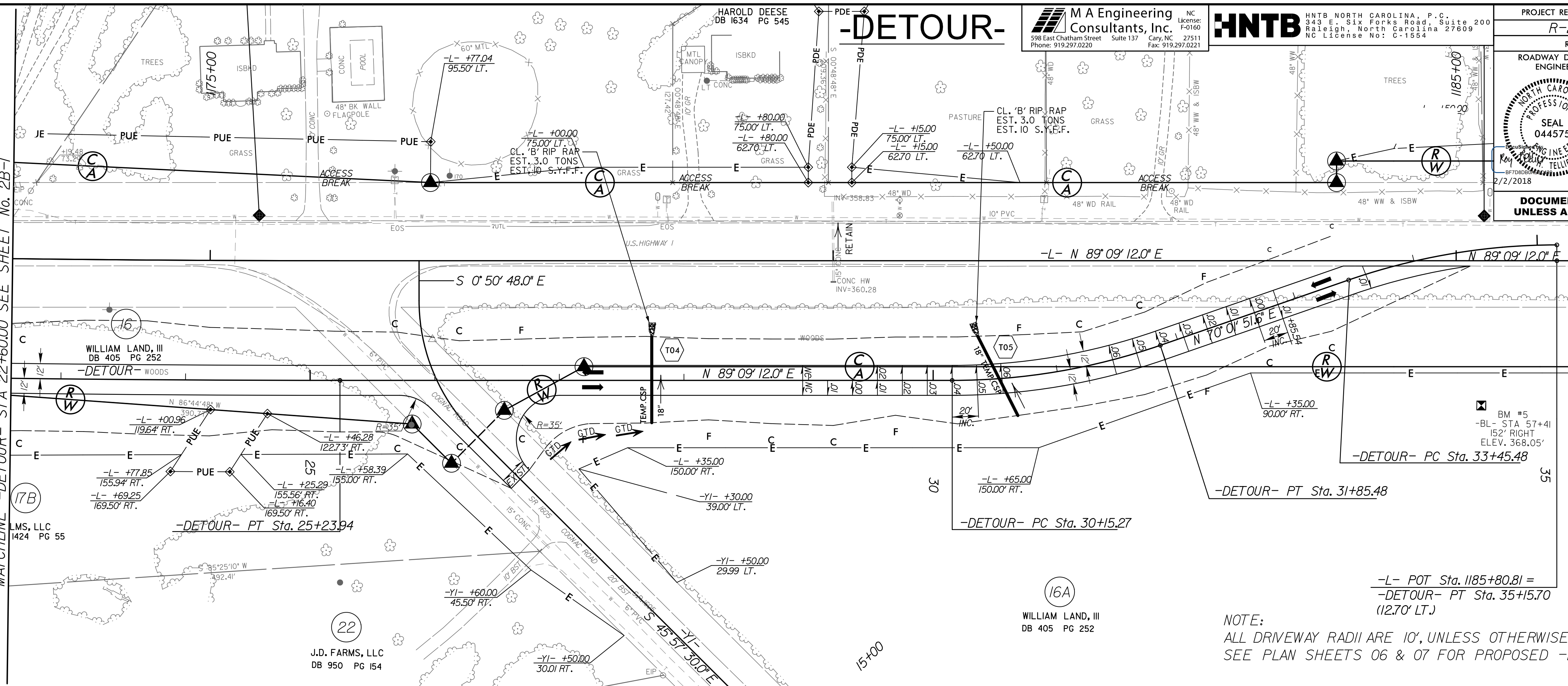
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REVISIONS

MATCHLINE -DETOUR- STA 22+60.00 SEE SHEET No. 2B-1

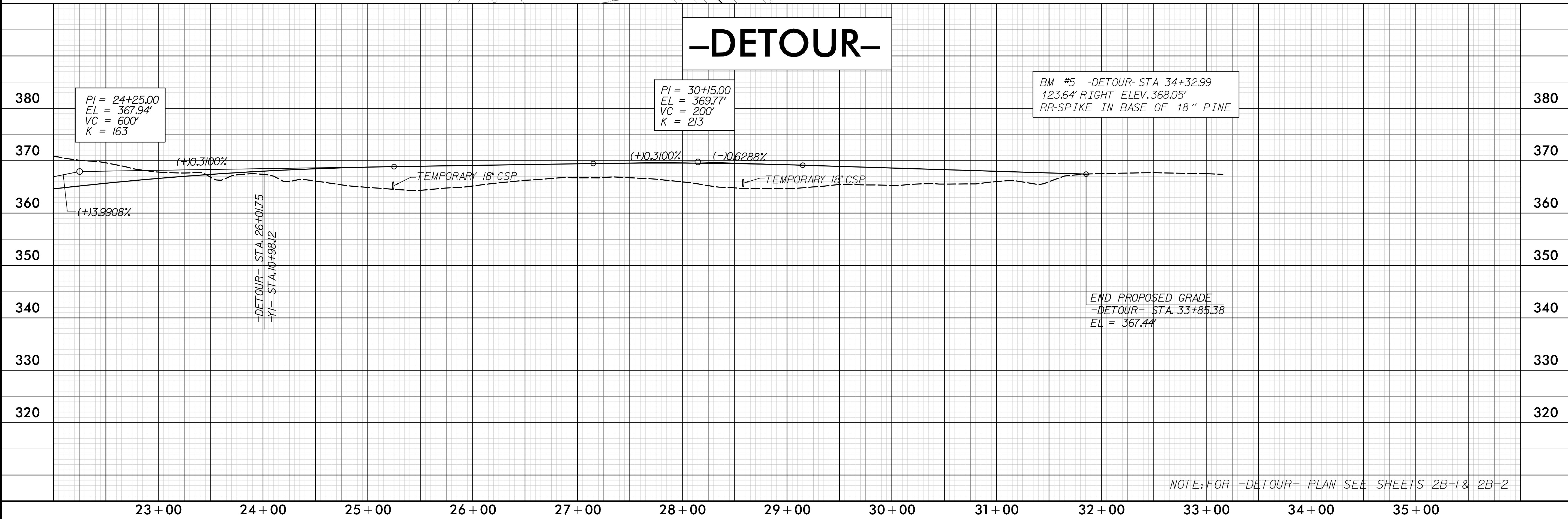


**M A Engineering Consultants, Inc.**  
 998 East Chatham Street Suite 137 Cary, NC 27511  
 Phone: 919.297.0220 Fax: 919.297.0221

**HNTB**  
 HNTB NORTH CAROLINA, P.C.  
 343 E. Six Forks Road, Suite 200  
 Raleigh, North Carolina 27609  
 NC License No: C-1954

PROJECT REFERENCE NO. <b>R-2501C</b>	SHEET NO. <b>2B-2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <b>Key Bell</b>	HYDRAULICS ENGINEER <b>Paul K...</b>
PROFESSIONAL SEAL 044575 2/7/2018	PROFESSIONAL SEAL 40801 2/5/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**-DETOUR-**



PI = 24+25.00  
 EL = 367.94'  
 VC = 600'  
 K = 163

PI = 30+15.00  
 EL = 369.77'  
 VC = 200'  
 K = 213

BM #5 -DETOUR- STA 34+32.99  
 123.64' RIGHT ELEV. 368.05'  
 RR-SPIKE IN BASE OF 18" PINE

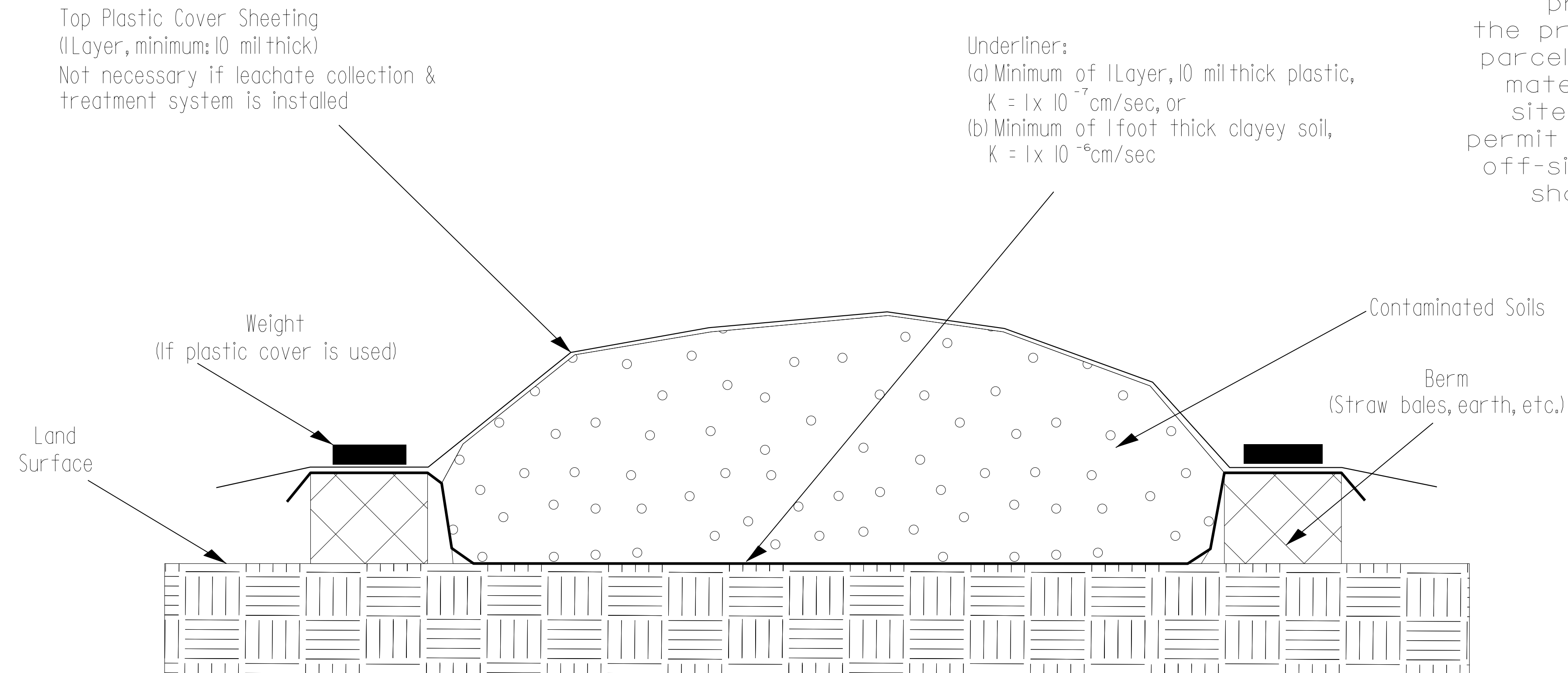
END PROPOSED GRADE  
 -DETOUR- STA. 33+85.38  
 EL = 367.44'

NOTE: FOR -DETOUR- PLAN SEE SHEETS 2B-1 & 2B-2

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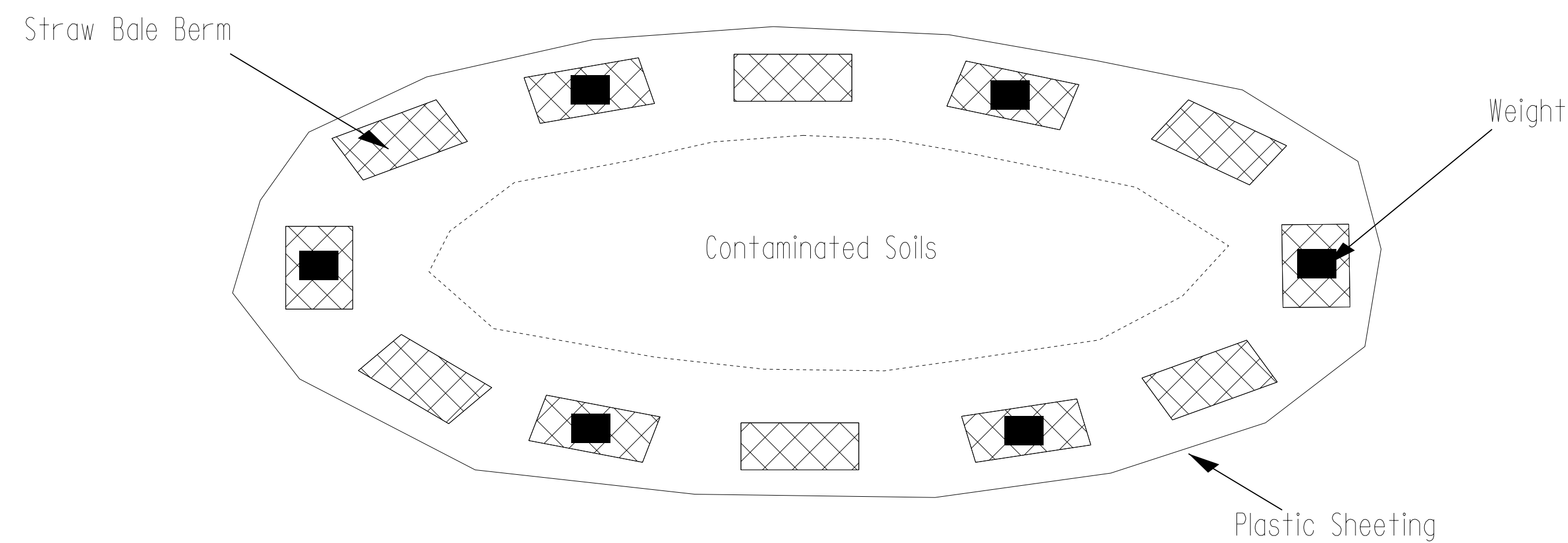
## Detail for Temporary Containment of Contaminated Soil

### Cross-Section View



**NOTE:**  
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDEQ UST Section for off-site temporary storage. Stockpile shall be removed within 45 days.

### Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

**GEOTECHNICAL ENGINEERING UNIT**

EASTERN REGIONAL OFFICE  
 WESTERN REGIONAL OFFICE  
 CONTRACT OFFICE

**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**RALEIGH**

### STOCKPILE CONTAINMENT DETAIL

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

6/16/99  
COMPUTED BY: RHT DATE: 11/2/17  
CHECKED BY: CRG DATE: 11/30/17

PROJECT REFERENCE NO. SHEET NO.  
R-2501C 3B-1

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**GUARDRAIL SUMMARY**

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-3	CAT-1	NO.	G	NG						
-L-	1163+13.38	1165+00.88	LT.	187.50			1164+99.96	1163+13.38	10.0	13.0	50	-	1	-	1	1									
-L-	1200+50.0	1203+62.5	LT.	312.5			1203+62.5	1200+50.0	10.0	13.0	50	-	1	-	1	1									
-L-	1205+00.0	1208+62.5	LT.	362.5			1208+62.5	1205+00.0	10.0	13.0	50	-	1	-	1	1									
LESS ANCHOR DEDUCTIONS																									
	GREU, TL-3	3 @ 50.0	=	(-) 150.0																					
	CAT-1	3 @ 6.25	=	(-) 18.75																					
			TOTAL	693.75												3	3								
			SAY	700												3	3								
(5 ADDITIONAL GUARDRAIL POST)																									

**SHOULDER BERM GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
-L-	1200+59.00	1202+89.00	230'
TOTAL:			230'
SAY:			230'

**SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>2</sup>
-L-	1167+50	1181+00	CL	5977.56
-L-	1261+00	1267+30	RT	2662.05
-L-	1267+82	1273+95	RT	1540.70
-L-	1274+82	1292+80	RT/CL	11643.38
-Y4-	10+00	13+00	CL	1203.86
-Y-	10+21	11+38	CL	364.06
-Y1-	10+47	12+03	CL	393.75
-L DETOUR-	10+00	35+16	CL	5691.00
TOTAL:				29476.36
SAY:				29,500

**SUMMARY OF EXISTING CONCRETE PAVEMENT REMOVAL**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>2</sup>
-Y-	11+41.08	11+63.99	LT	1273.08
-Y-	11+42.73	11+62.67	RT	1234.98
TOTAL:				2508.06
SAY:				2550

**EXPRESSWAY GUTTER SUMMARY**

SURVEY LINE	STATION	STATION	LENGTH
-L-	1170+80.00	1171+15.00	35.00'
-L-	1171+32.00	1173+04.50	172.50'
-L-	1173+20.85	1175+72.72	251.87'
-L-	1175+93.94	1178+80.41	286.47'
-L-	1178+97.94	1182+50.75	352.81'
-L-	1182+66.87	1184+00.00	133.13'
TOTAL:			1231.78'
SAY:			1,300'

NOTE: Approximate quantities only. Unclassified Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Removal of Existing Asphalt Pavement, and Removal of Existing Concrete Pavement will be paid for at the contract lump sum price for "Grading."

# SUMMARY OF EARTHWORK

## IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
<b>PHASE 1</b>					
FROM -LTIEIN- 1132+30 TO -LTIEIN- 1141+50	1,267		48		1,219
FROM -L- 1141+50 LT TO -L- 1160+00 LT	7,716		3,373		4,343
FROM -L- 1184+00 LT TO -L- 1214+00 LT	4,113		3,934		179
FROM -L- 1214+00 LT TO -L- 1244+00 LT	3,016		3,150	134	
FROM -L- 1244+00 LT TO -L- 1274+00 LT	7,991		2,760		5,231
FROM -L- 1274+00 LT TO -L- 1284+33 LT	14,441		175		14,266
FROM -L- 1286+50 LT TO -L- 1304+00 LT	10,463		7		10,456
FROM -L- 1304+00 LT TO -L- 1329+67.03 LT	6,302		1,896		4,406
FROM -L- 1185+00 RT TO -L- 1215+00 RT	19,935		1,866		18,069
FROM -L- 1215+00 RT TO -L- 1245+00 RT	2,069		2,626	557	
FROM -L- 1245+00 RT TO -L- 1259+00 RT	316		3,636	3,320	
FROM -L- 1289+00 RT TO -L- 1319+00 RT	11,516		1,136		10,380
FROM -L- 1319+00 RT TO -L- 1329+67.03 RT	3,270		74		3,196
FROM -DETOUR- 10+00.00 TO -DETOUR- 35+15.70	17,002		3,984		13,018
FROM -RAMPD- 11+45 TO -RAMPD- 12+50	109		547	438	
FROM -Y2- 10+00 TO -Y2- 13+00	133		268	135	
FROM -Y3- 10+00 TO -Y3- 11+00	283		226		57
<b>SUBTOTAL</b>	<b>109,942</b>		<b>29,706</b>	<b>4,583</b>	<b>84,819</b>
<b>PHASE 2</b>					
FROM -L- 1141+50 RT TO 1145+50 RT	123		356	233	
FROM -L- 1160+00 LT TO 1184+00 LT	6,421		12,726	6,305	
<b>SUBTOTAL</b>	<b>6,544</b>		<b>13,082</b>	<b>6,538</b>	
<b>PHASE 3 (INCLUDES DETOUR REMOVAL)</b>					
FROM -L- 1143+50 RT TO -L 1173+50 RT	10,867		11,348	481	
FROM -L- 1173+50 RT TO -L 1185+50 RT	9,032		3,425		5,607
FROM -L- 1284+33 LT TO -L- 1286+50 LT	3,322		0		3,322
FROM -Y- 10+00 TO -Y2- 11+75	164		52		112
FROM -Y1 10+00 TO -Y1- 13+50	711		4		707
FROM -Y4- 10+00 TO -Y4- 12+50	1,874		0		1,874
<b>SUBTOTAL</b>	<b>25,970</b>		<b>14,828</b>	<b>481</b>	<b>11,623</b>
<b>PHASE 4</b>					
FROM -L- 1144+50 (MED) TO -L- 1166+50 (MED)	243		2,104	1,861	
FROM -L- 1259+00 RT TO -L- 1266+00 RT	369		1,094	725	
FROM -L- 1280+00 RT TO -L- 1289+00 RT	12,941		7		12,934
FROM -Y3- 11+75 TO -Y3- 16+00 **	2,142		116		2,026
<b>SUBTOTAL</b>	<b>15,695</b>		<b>3,321</b>	<b>2,586</b>	<b>14,959</b>
<b>TOTAL</b>	<b>158,151</b>		<b>60,937</b>	<b>14,188</b>	<b>111,401</b>
LOSS DUE TO CLEAR & GRUB.	-4,033				-4,033
WASTE IN LIEU OF BORROW				-14,188	-14,188
<b>GRAND TOTAL</b>	<b>154,118</b>		<b>60,937</b>	<b>0</b>	<b>93,180</b>
SAY	160,000				
-L- PAVEMENT STRUCTURE VOLUME = 22,100 CY					
NOTE: VOLUMES REFLECT ABC PAVEMENT DESIGN.					
EST. DDE 3500 CY					
EST. SHOULDER BORROW 8,400 CY					
EST. UNDERCUT 4250 CY (PER GEOTECH)					
EST. SHALLOW UNDERCUT 333 CY (PER GEOTECH)					
EST. CLASS IV SUBGRADE STABILIZATION 632 TONS (PER GEOTECH)					
EST. SELECT GRANULAR MATERIAL 6250 CY (PER GEOTECH)					
** EARTHWORK RUN FROM -Y3- 11+75 TO -Y3- 16+00 INCLUDES -RAMPD- STA. 10+00 TO -RAMPD- 11+45					

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
SUMMARY TOTALS	158,151		60,937	14,188	111,401
ADJ. FOR ALT PAVEMENT DESIGN	-14,218		-286	3,932	-9,999
ADJUSTED TOTALS	143,933		60,651	18,120	101,402
LOSS DUE TO CLEAR & GRUB.	-4,033				-4,033
WASTE IN LIEU OF BORROW				-18,120	-18,120
<b>GRAND TOTAL</b>	<b>139,900</b>		<b>60,651</b>	<b>0</b>	<b>79,249</b>
SAY	145,000				
-L- PAVEMENT STRUCTURE VOLUME = 13,500 CY					
EST. SHOULDER BORROW 7,000 CY					

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

**NOTE:** Note: Approximate quantities only. Unclassified Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Removal of Existing Asphalt Pavement, and Removal of Existing Concrete Pavement will be paid for at the contract lump sum price for "Grading."

5/7/17/06  
 22-MAR-2018 11:11 R2501C.RDY\_SUM.dgn













**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				UD	500
				TOTAL LF:	500
				SAY	500

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

**SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION**

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		333	632	1000	1000	
TOTAL CY/TONS/SY:					333	632	1000*	1000	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.

**STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS**

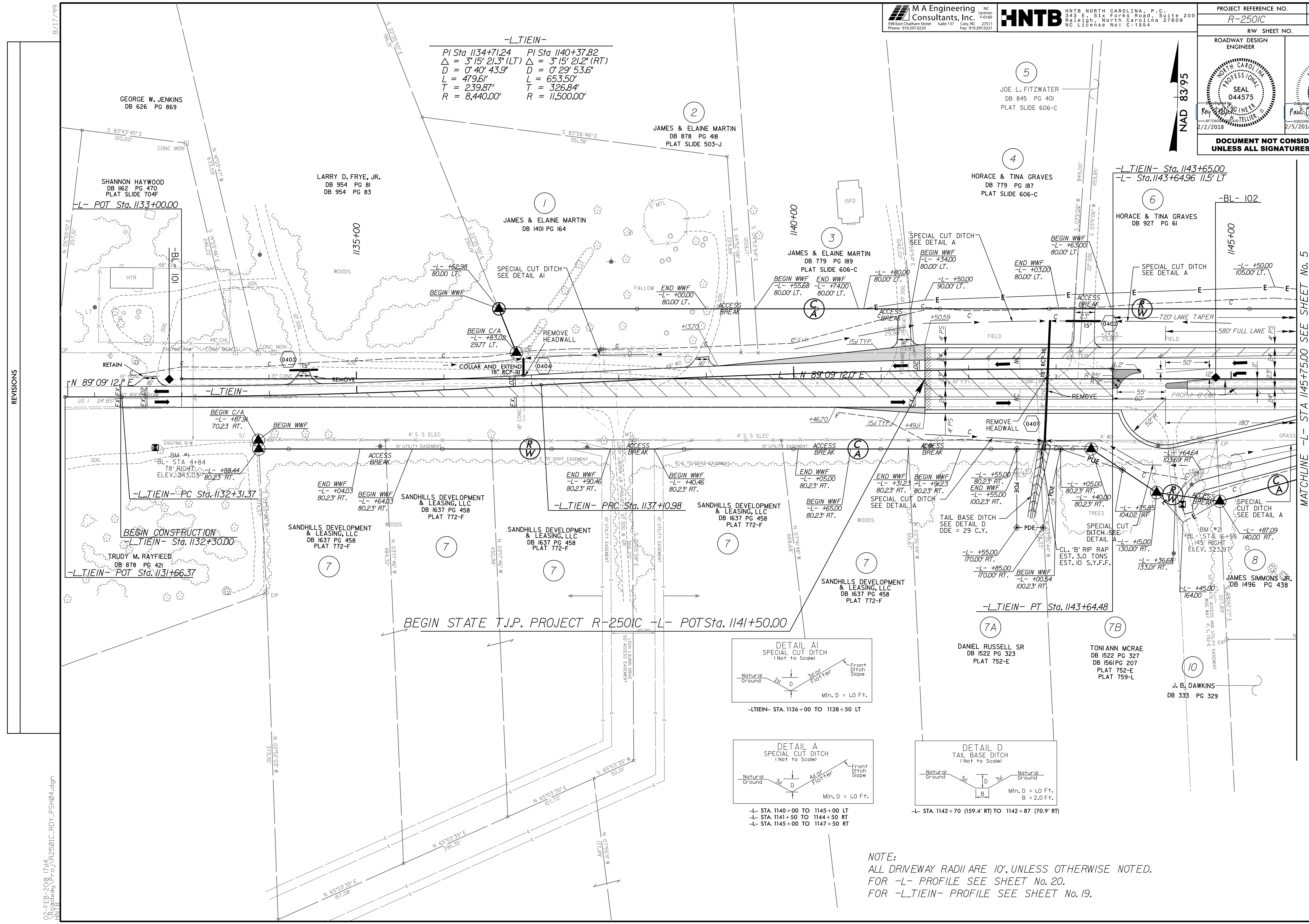
**PARCEL INDEX SHEET**

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	JAMES AND ELAINE MARTIN
2	4	JAMES AND ELAINE MARTIN
3	4	JAMES AND ELAINE MARTIN
4	4	HORACE AND TINA GRAVES
5	4	JOE L. FITZWATER
6	4 & 5	HORACE AND TINA GRAVES
7	4	SANDHILLS DEVELOPMENT AND LEASING, LLC
7A	4	DANIEL RUSSEL SR
7B	4	TONI ANN MCRAE
8	4 & 5	JAMES SIMMONS JR
9	5 & 6	HERBERT ZEROFF
10	4 & 5	J.B. DAWKINS
11	5 & 6	CURTIS WILLIAMS
12	6	LEE P. DEESE
13	6 & 7	HAROLD DEESE JR. & CHERIE DEESE
14	6	ERNEST AND VIRGINA TODD
15	6	NCDOT
16	6 & 7	WILLIAM LAND, III
16A	7 & 8	WILLIAM LAND, III
17	10	LMS LLC
17A	10	LMS LLC
17B	6 & 7	LMS LLC
18	7	HAROLD AND PATSY DEESE
19	7	HAROLD DEESE
20	7	LINDA KING
21	7 & 8	MARTHA ROSS
22	7	J.D. FARMS, LLC
23	8	DAVID HOPKINS
24	8	NANCY L. HONEYCUTT
25	8	ROBERT C. BULLARD
26	8	VANCE LAND
27	8	CHARLES SUTTON
28	8 & 9	LUIS L. CRIBB
29	8	ROBERT HARDEN JR.
30	8	SCOTT AND MAXINE THOMAS
30A	8	TAMMY OGLESBY
31	8 & 9	G.C. CADDELL, JR. AND PEGGY CADDELL
32	9	RAM K. AGARWAL
33	9	FAST TRACK PROPERTIES, INC.
34	9	SUZETTE Y. SMITH
35	9 & 10	TED KELLY
36	9	CARL WARNER
37	9	THE CHARLES AND HSIU WILLIAMS JOINT LIVING TRUST
38	9	DANNY AND PATSY GRAHAM
39	9	TALBERT MCCORMICK
40	9	CADDELL AND SPARKS ENTERPRISES, LLC
40A	9	JAMES P. MARKLAND
41	9	RAM AND SANTOSH AGARWAL
42	9 & 10	BRADLEY AND DORIS MCINNIS.
43	10, 11,	VANCE LAND
43A	12, 13 & 14	VANCE LAND
44	10	TALBERT MCCORMICK
45	10	THE HOUSE OF PRAYER CHURCH OF DELIVERANCE
46	10, 11, 12, 13 & 14	ROCKINGHAM RACEWAY PARK, LLC
47	11 & 12	NATIONAL DRAGWAY CORPORATION
48	14	KHAMMAY DOUANGDARA
49	14 & 15	MARTHA ROBBINS
50	14 & 15	JERRY STROMAN, SR.
51	15 & 16	WILLIAM LATHAN, HUBERT LATHAN JR. & KENNY LATHAN
51A	15 & 16	HOFFMAN FIRE DEPARTMENT AND RESCUE SQUAD, INC.
52	16	BARNHILL CONTRACTING COMPANY
53		PARCEL NUMBER NOT USED
54	16 & 17	JERRY R. BROWN, JR.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
55	17	RICHARD AND ALETHIA LANIER
56	17	ALETHA LANIER
57	17	JEFFREY MOSS, JR.
58	17	TERRACE RIDGE FARM, LLC
59	17 & 18	CLAUDE F. SMITH FAMILY LIMITED PARTNERSHIP #8
60	14 thru 18	CSX RAILWAY
61		PARCEL NUMBER NOT USED
62		PARCEL NUMBER NOT USED
63	14	WILLIAM BARNHARDT
64	14A	WILLIAM R. LAND III & WANDA LAND

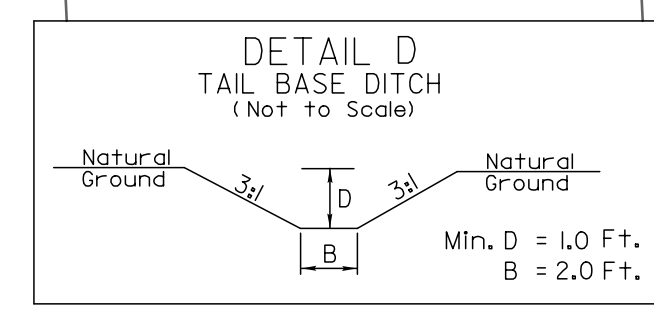
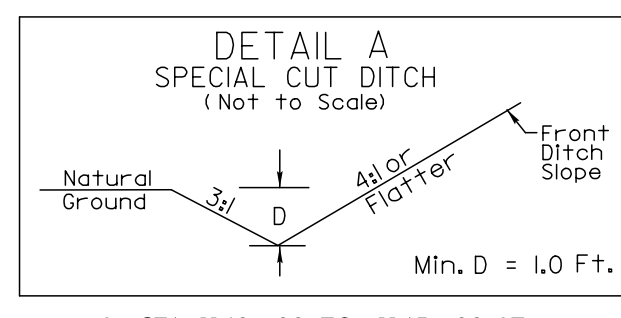
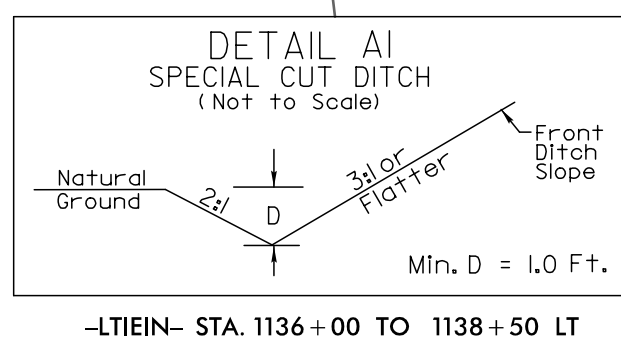
PROJECT REFERENCE NO. R-250IC SHEET NO. 4. ROADWAY DESIGN ENGINEER: JOE L. FITZWATER, DB 845 PG 401, PLAT SLIDE 606-C. HYDRAULICS ENGINEER: HORACE & TINA GRAVES, DB 779 PG 187, PLAT SLIDE 606-C. PROFESSIONAL ENGINEER SEALS for Joe L. Fitzwater and Horace & Tina Graves. DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED.

-LTIEIN- PI Sta 1134+71.24 PI Sta 1140+37.82. Delta = 3' 15" 21.3" (LT) Delta = 3' 15" 21.2" (RT). D = 0' 40" 43.9" D = 0' 29" 53.6". L = 479.61' L = 653.50'. T = 239.87' T = 326.84'. R = 8,440.00' R = 11,500.00'



REVISIONS

MATCHLINE -L- STA 1145+75.00 SEE SHEET No. 5



NOTE: ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED. FOR -L- PROFILE SEE SHEET No. 20. FOR -LTIEIN- PROFILE SEE SHEET No. 19.

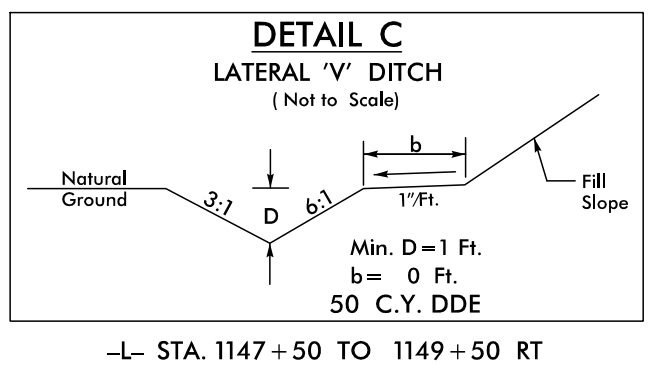
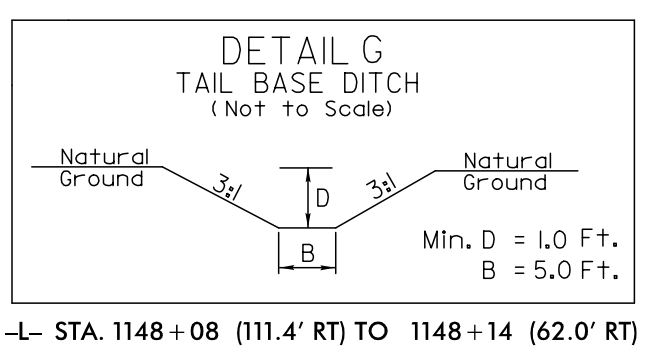
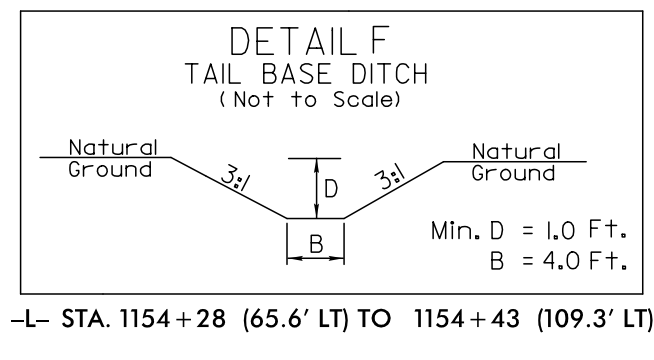
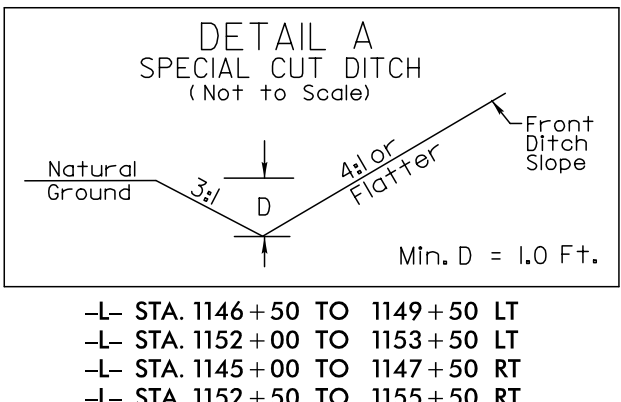
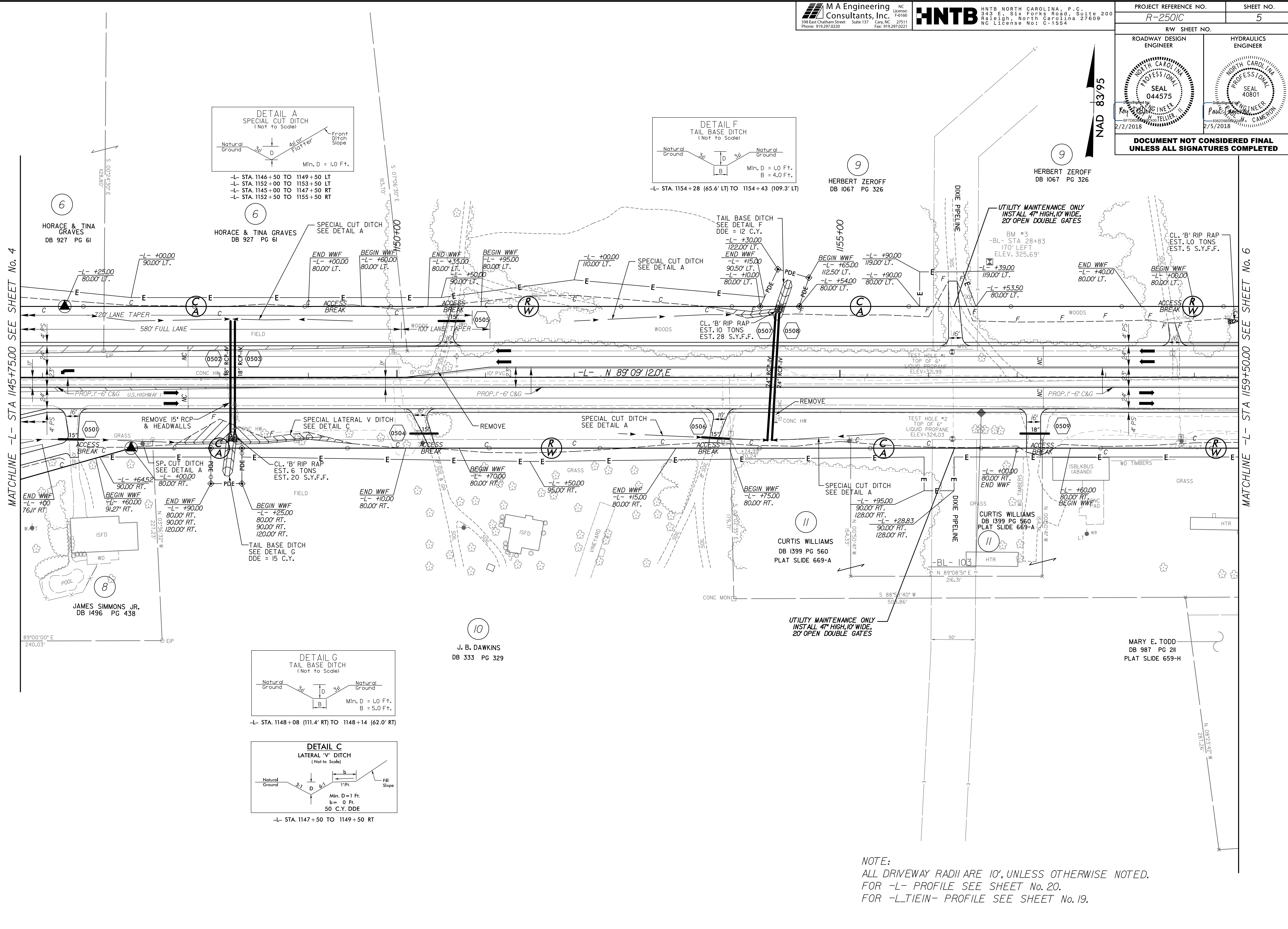
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PROJECT REFERENCE NO. R-2501C	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCHLINE -L- STA 1145+75.00 SEE SHEET No. 4

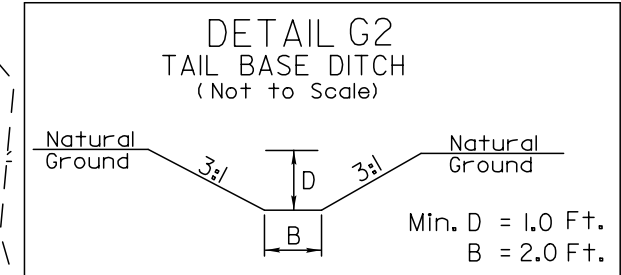
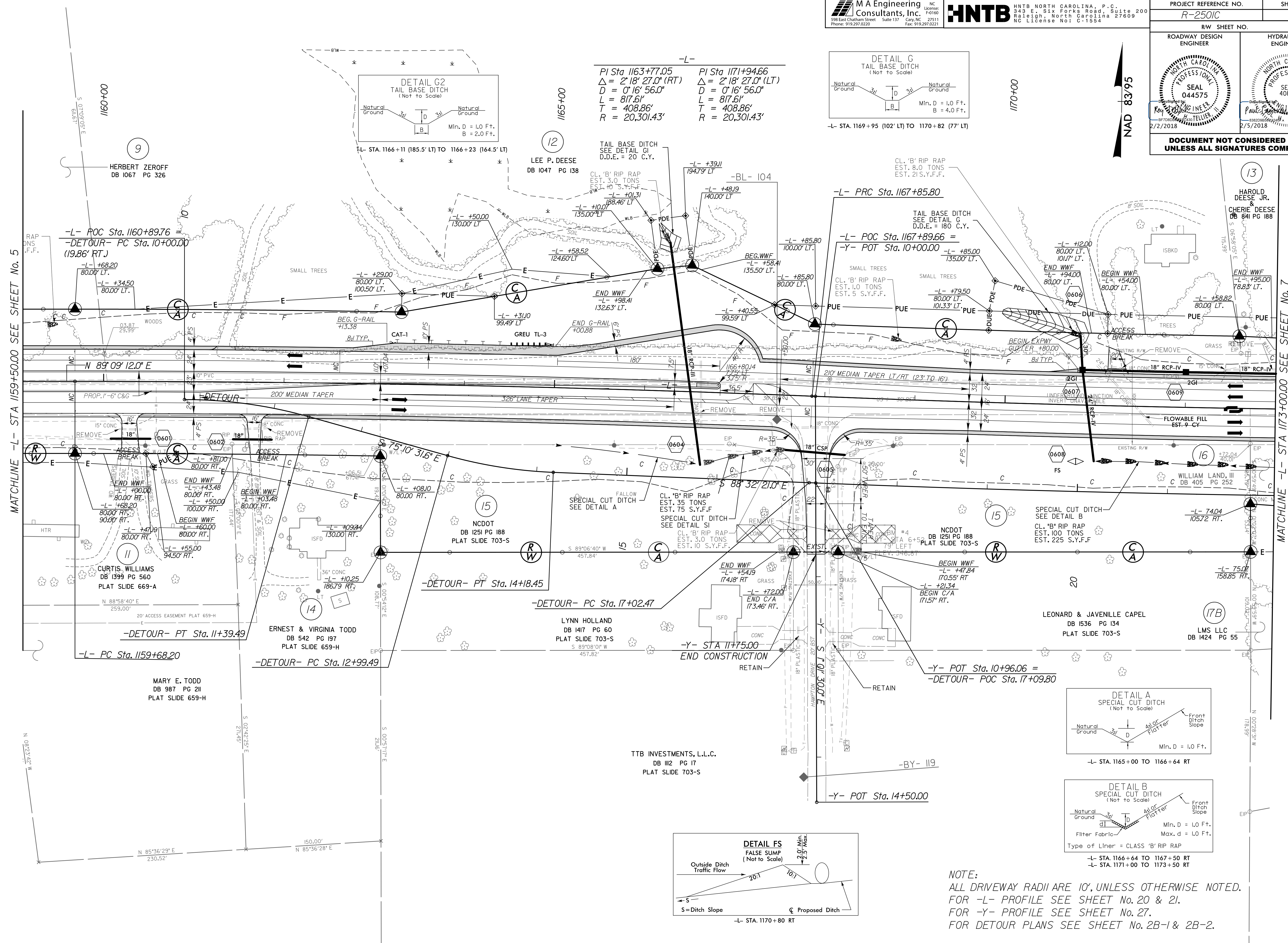
MATCHLINE -L- STA 1159+50.00 SEE SHEET No. 6

REVISIONS



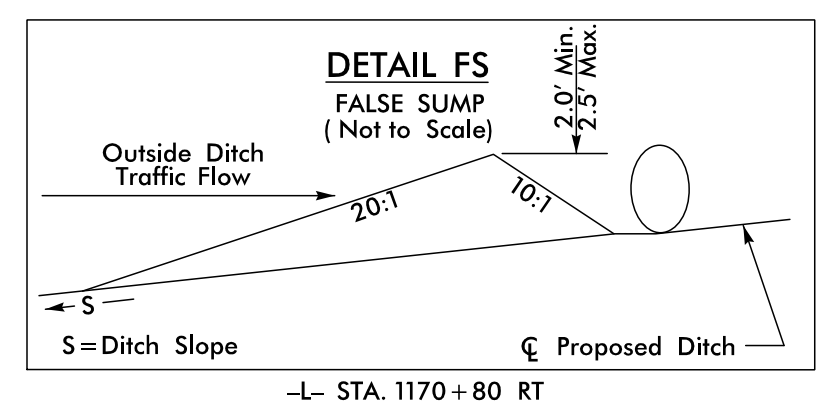
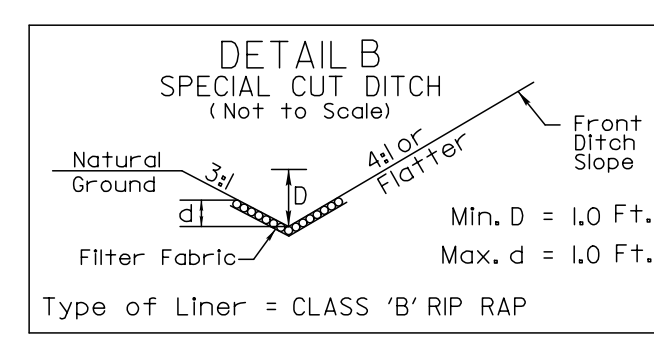
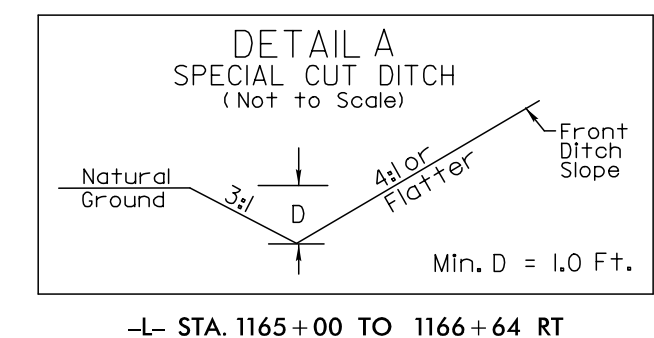
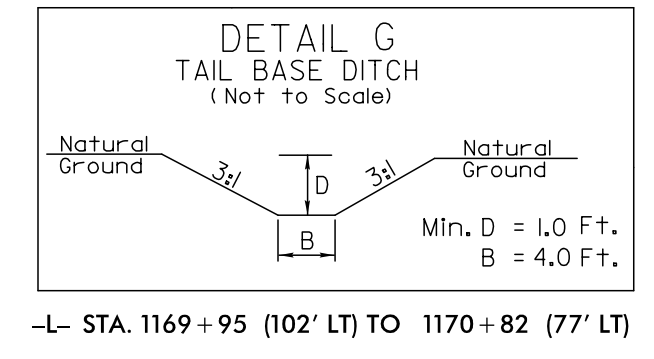
NOTE:  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHEET No. 20.  
FOR -L-TIE-IN- PROFILE SEE SHEET No. 19.

PROJECT REFERENCE NO. R-2501C	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PI Sta 1163+77.05  $\Delta = 2' 18" 27.0" (RT)$   
 $D = 0' 16" 56.0"$   
 $L = 817.6'$   
 $T = 408.86'$   
 $R = 20,301.43'$

PI Sta 1171+94.66  $\Delta = 2' 18" 27.0" (LT)$   
 $D = 0' 16" 56.0"$   
 $L = 817.6'$   
 $T = 408.86'$   
 $R = 20,301.43'$



NOTE:  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHEET No. 20 & 21.  
FOR -Y- PROFILE SEE SHEET No. 27.  
FOR DETOUR PLANS SEE SHEET No. 2B-1 & 2B-2.

REVISIONS

MATCHLINE -L- STA 1159+50.00 SEE SHEET No. 5

MATCHLINE -L- STA 1173+00.00 SEE SHEET No. 7

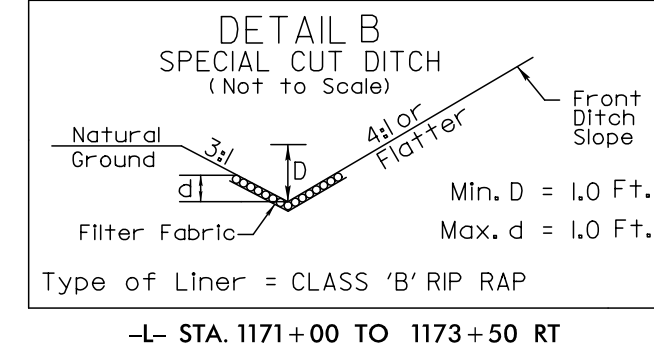
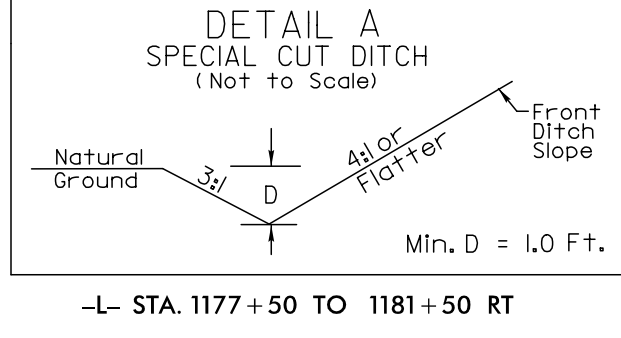
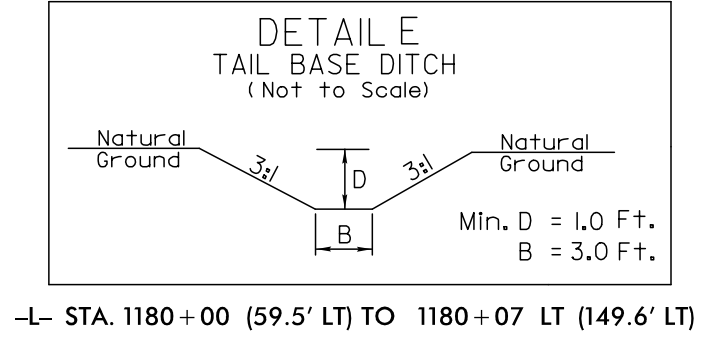
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HNTB

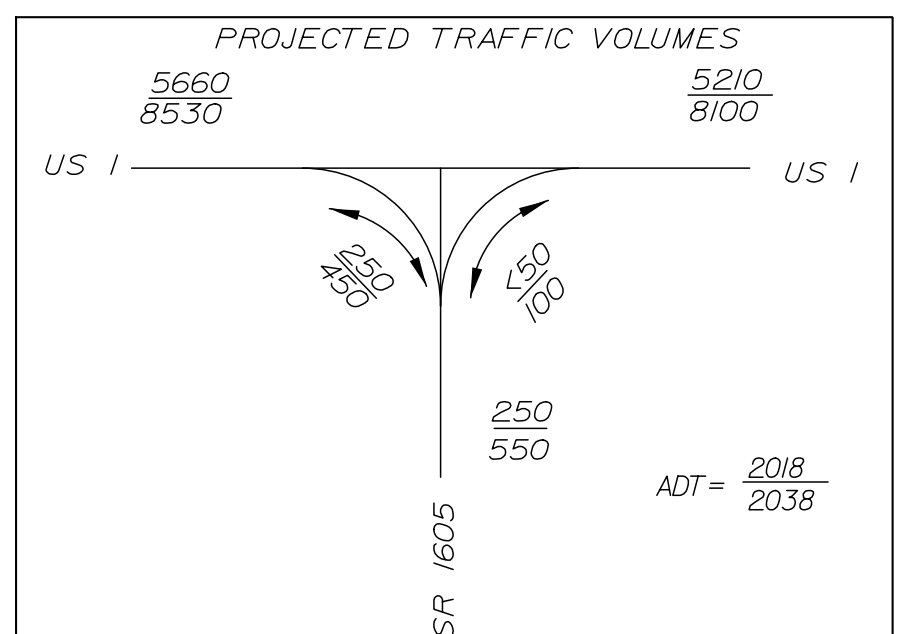
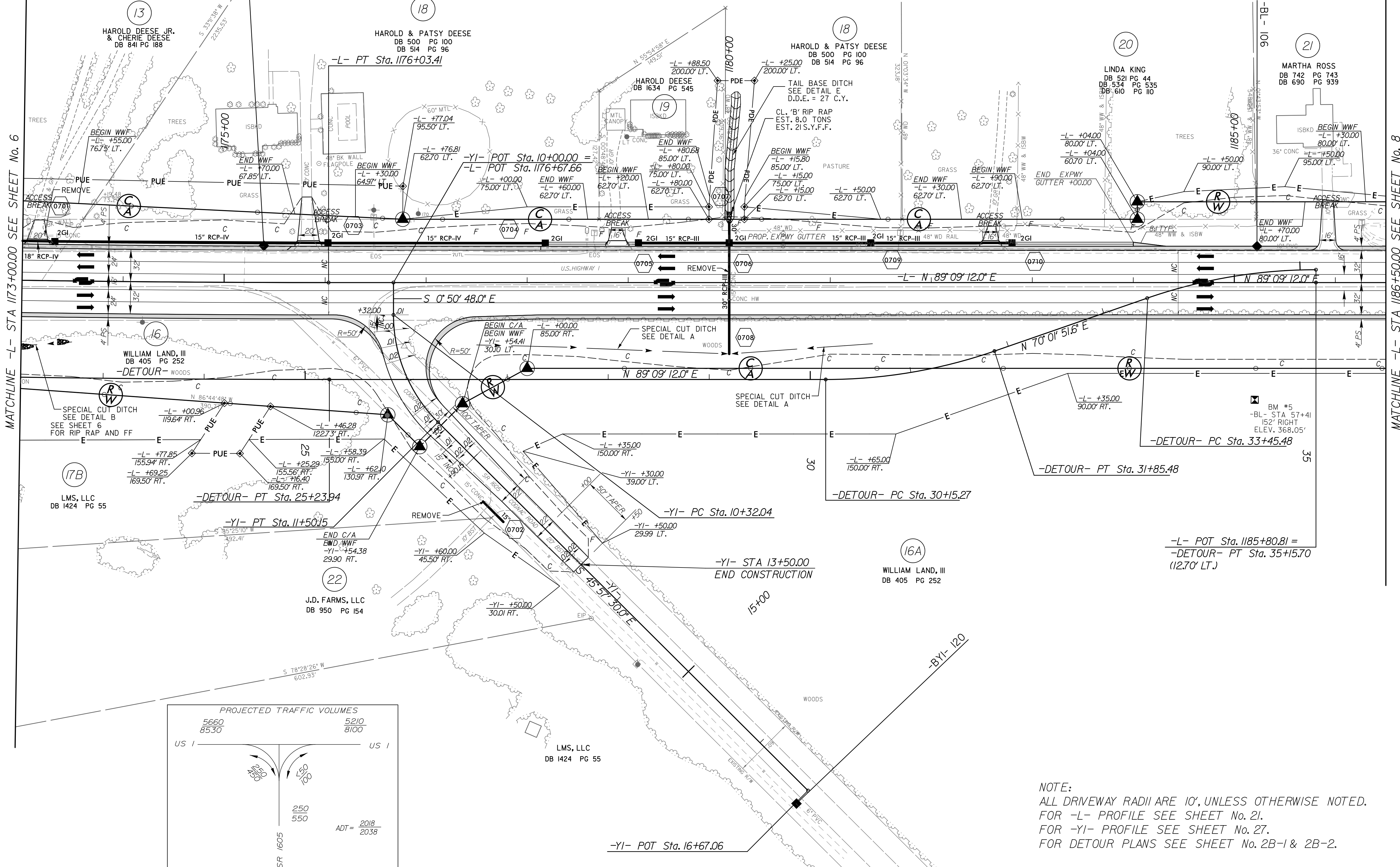
PROJECT REFERENCE NO. R-2501C	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**-L-**  
 PI Sta 1171+94.66  
 $\Delta = 2^{\circ}18'27.0''$  (LT)  
 $D = 0^{\circ}16'56.0''$   
 $L = 817.61'$   
 $T = 408.86'$   
 $R = 20,301.43'$

**-YI-**  
 PI Sta 10+94.35  
 $\Delta = 45^{\circ}06'42.0''$  (LT)  
 $D = 38^{\circ}11'49.9''$   
 $L = 118.10'$   
 $T = 62.30'$   
 $R = 150.00'$   
 $e = .020$



NAD 83/95



NOTE:  
 ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
 FOR -L- PROFILE SEE SHEET No. 21.  
 FOR -YI- PROFILE SEE SHEET No. 27.  
 FOR DETOUR PLANS SEE SHEET No. 2B-1 & 2B-2.

REVISIONS

MATCHLINE -L- STA 1173+00.00 SEE SHEET No. 6

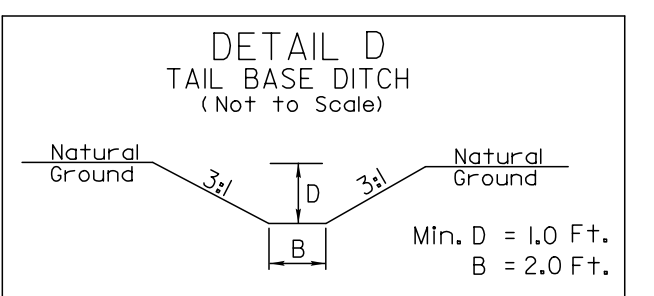
MATCHLINE -L- STA 1186+50.00 SEE SHEET No. 8

02-FEB-2018, 17:14, N:\oadway\p-r-o\1r2501C.RDY\_PSH07.dgn

8/17/99

PROJECT REFERENCE NO. R-2501C	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

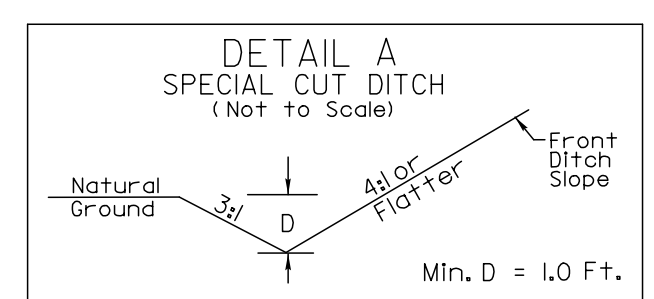
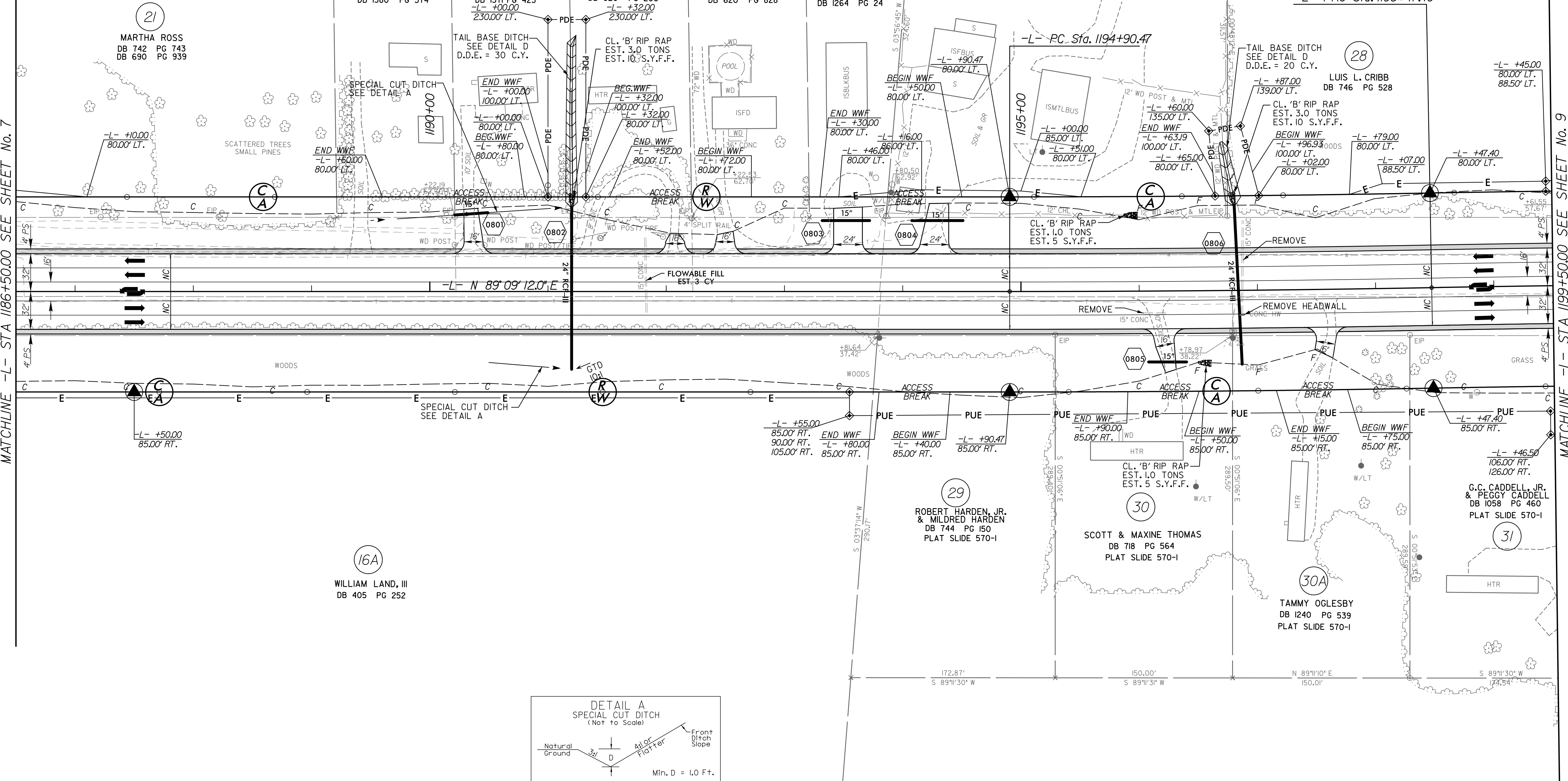
-L-  
 PI Sta 1196+68.94    PI Sta 1200+25.87  
 $\Delta = 1'03''00.0''$  (LT)     $\Delta = 1'03''00.0''$  (RT)  
 D = 0'17'39.0"    D = 0'17'39.0"  
 L = 356.93'    L = 356.93'  
 T = 178.47'    T = 178.47'  
 R = 19,476.88'    R = 19,476.88'



-L- STA. 1191+20 (71.5' LT) TO 1191+24 (216.7' LT)  
 -L- STA. 1196+81 (71.57' LT) TO 1196+70 (126' LT)

MATCHLINE -L- STA 1186+50.00 SEE SHEET No. 7

MATCHLINE -L- STA 1199+50.00 SEE SHEET No. 9



-L- STA. 1189+50 TO 1191+20 LT  
 -L- STA. 1190+50 TO 1191+20 RT

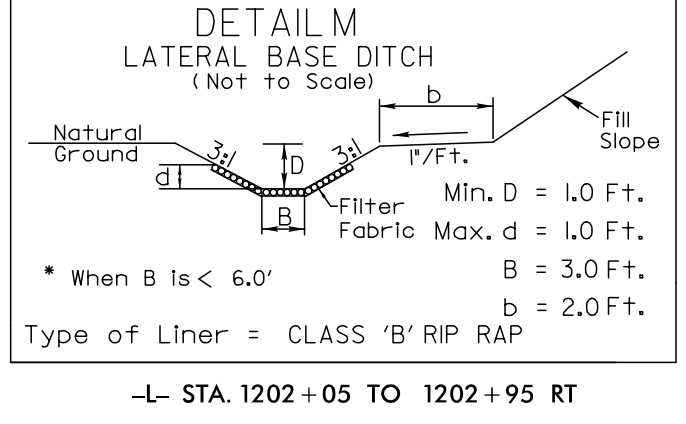
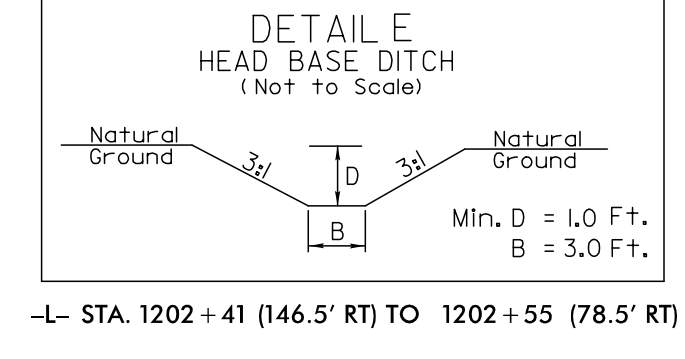
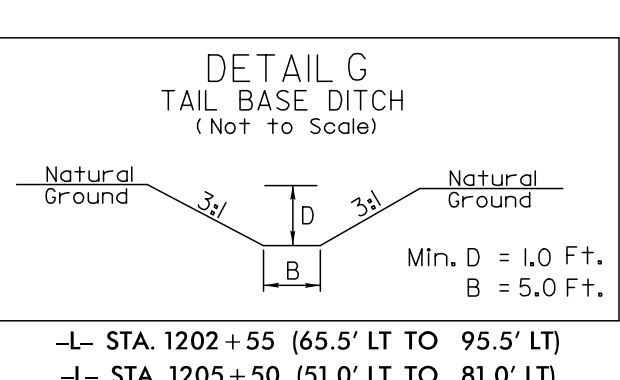
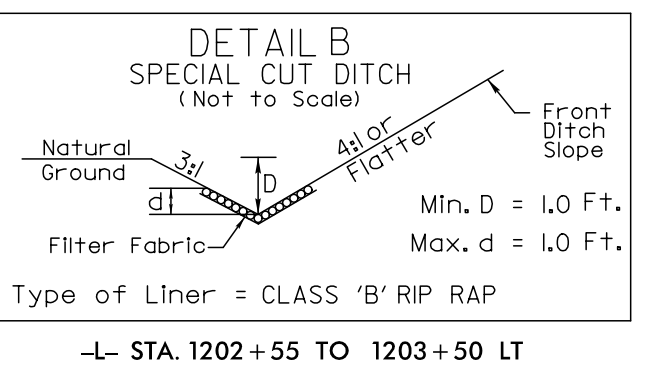
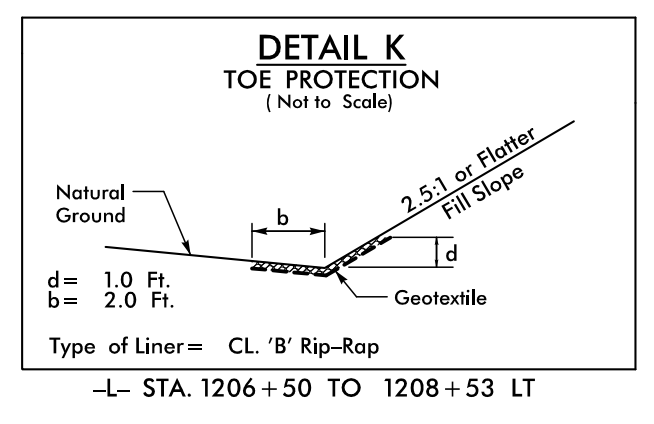
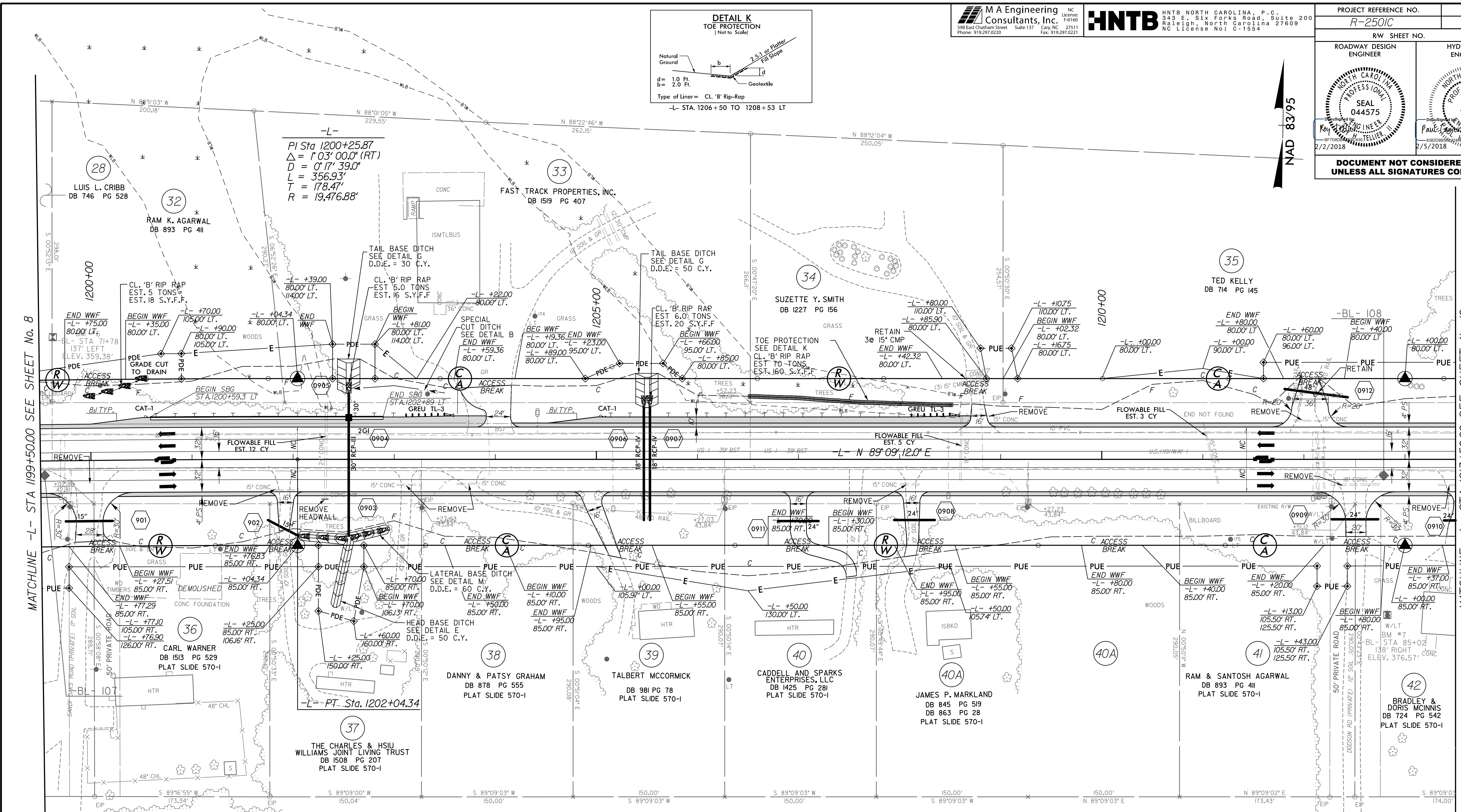
REVISIONS

02-FEB-2018 17:44: N:\oadway\p-r-o\1192501C.RDY\_PSH08.dgn

NOTE:  
 ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
 FOR -L- PROFILE SEE SHEET No. 21 & 22.



PROJECT REFERENCE NO. R-2501C	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTE:  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHEET No. 22.

REVISIONS

MATCHLINE -L- STA 199+50.00 SEE SHEET No. 8

MATCHLINE -L- STA 123+50.00 SEE SHEET No. 10

8/17/99

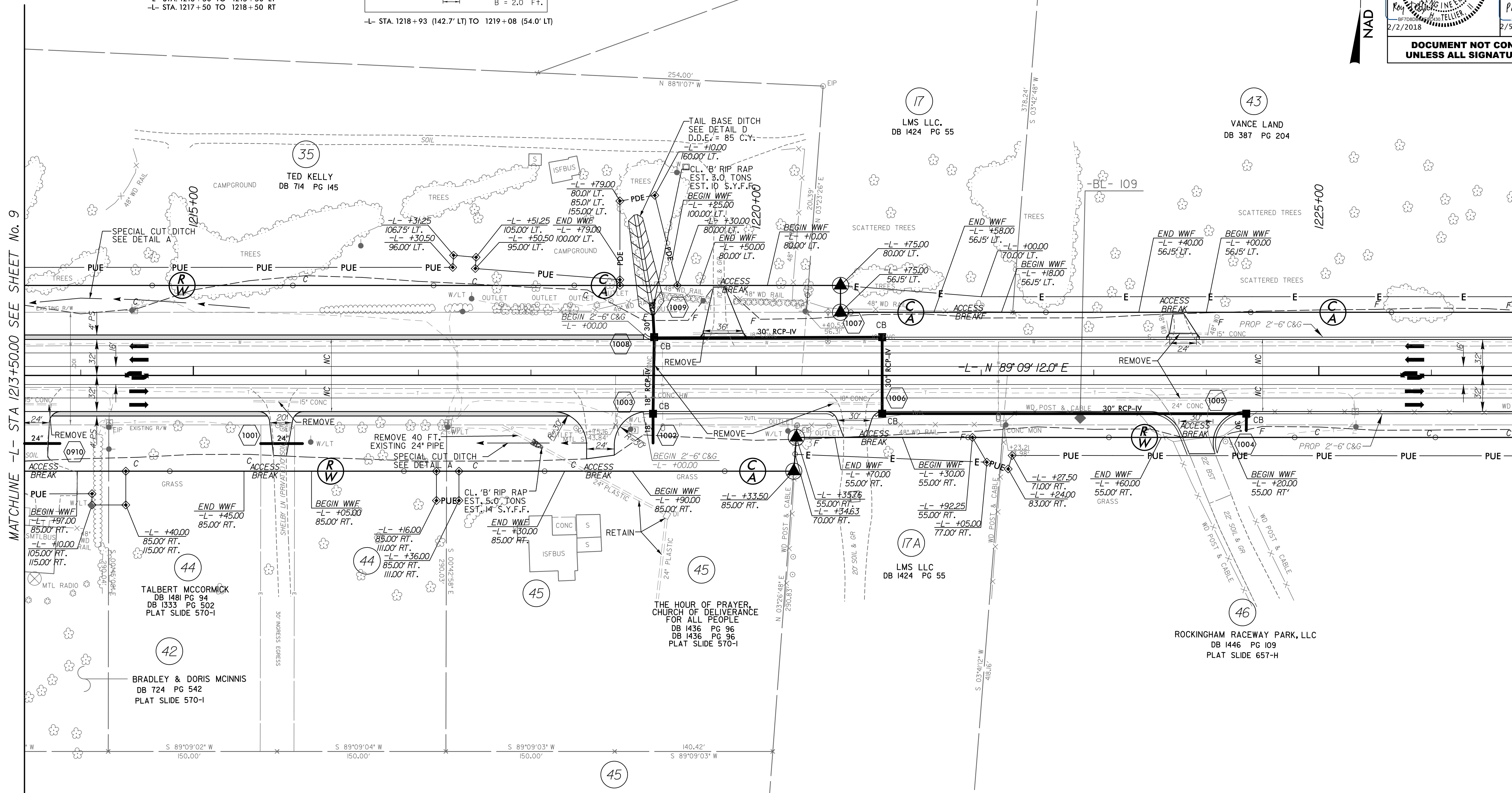
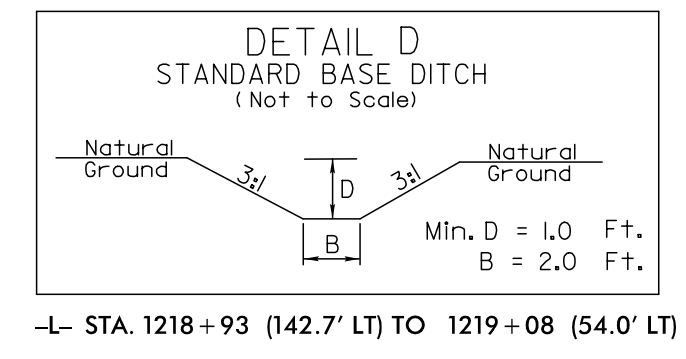
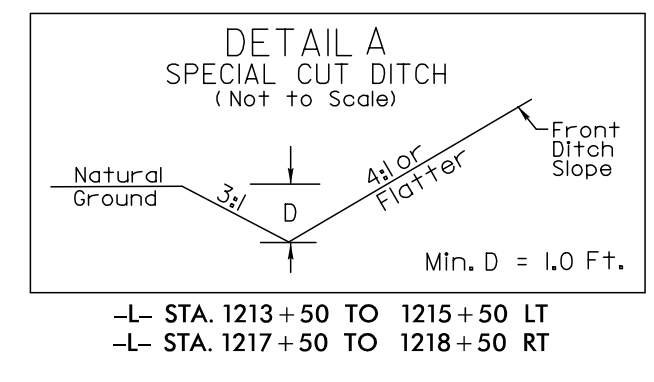
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N:\Roadway\Projects\2501C\_RDY\_PSH09.dgn  
M.L.B.

8/17/99

MA Engineering Consultants, Inc. NC License F-0160 Cary, NC 27511 Phone: 919.297.0220

HNTB HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1524

PROJECT REFERENCE NO. R-2501C	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NAD 83/95

REVISIONS

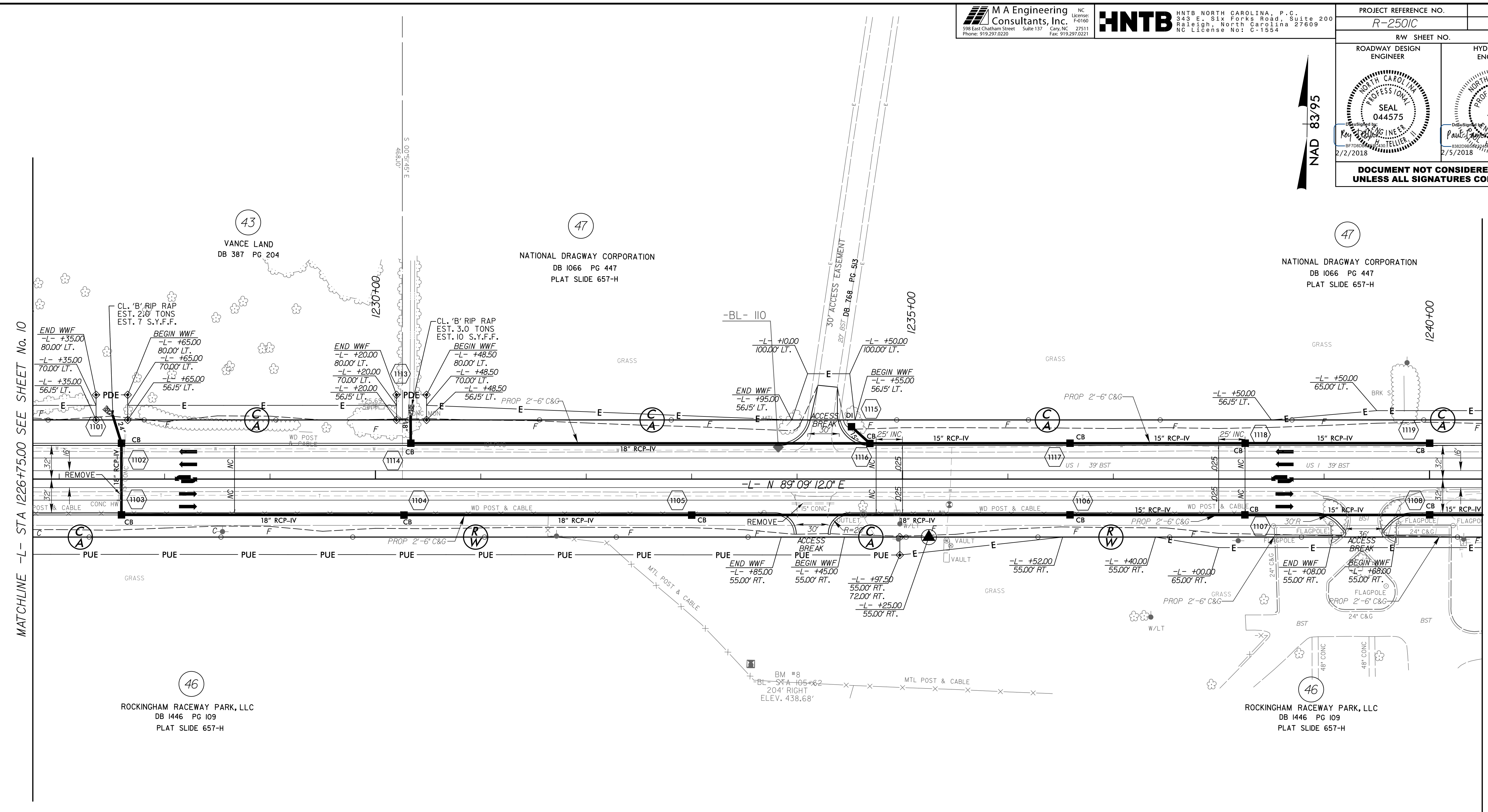
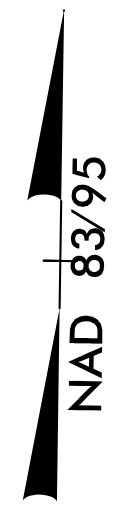
MATCHLINE -L- STA 1213+50.00 SEE SHEET No. 9

MATCHLINE -L- STA 1226+75.00 SEE SHEET No. 11

NOTE:  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHEET No. 22 & 23.

02-FEB-2018 17:44  
N:\Roadway\Projects\2501C.RD\Y\_PSH10.dgn  
HNTB

PROJECT REFERENCE NO. R-2501C	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

MATCHLINE -L- STA 1226+75.00 SEE SHEET No. 10

MATCHLINE -L- STA 1240+50.00 SEE SHEET No. 12

43 VANCE LAND DB 387 PG 204

47 NATIONAL DRAGWAY CORPORATION DB 1066 PG 447 PLAT SLIDE 657-H

47 NATIONAL DRAGWAY CORPORATION DB 1066 PG 447 PLAT SLIDE 657-H

46 ROCKINGHAM RACEWAY PARK, LLC DB 1446 PG 109 PLAT SLIDE 657-H

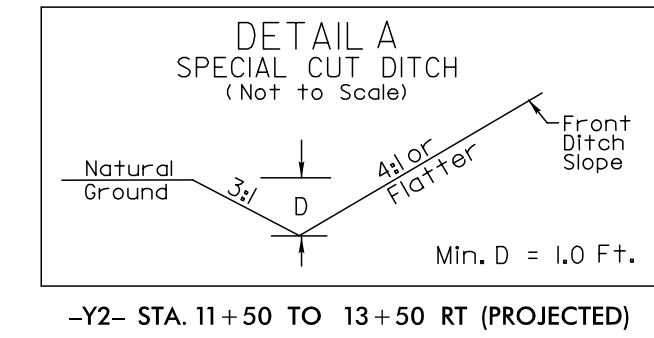
46 ROCKINGHAM RACEWAY PARK, LLC DB 1446 PG 109 PLAT SLIDE 657-H

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

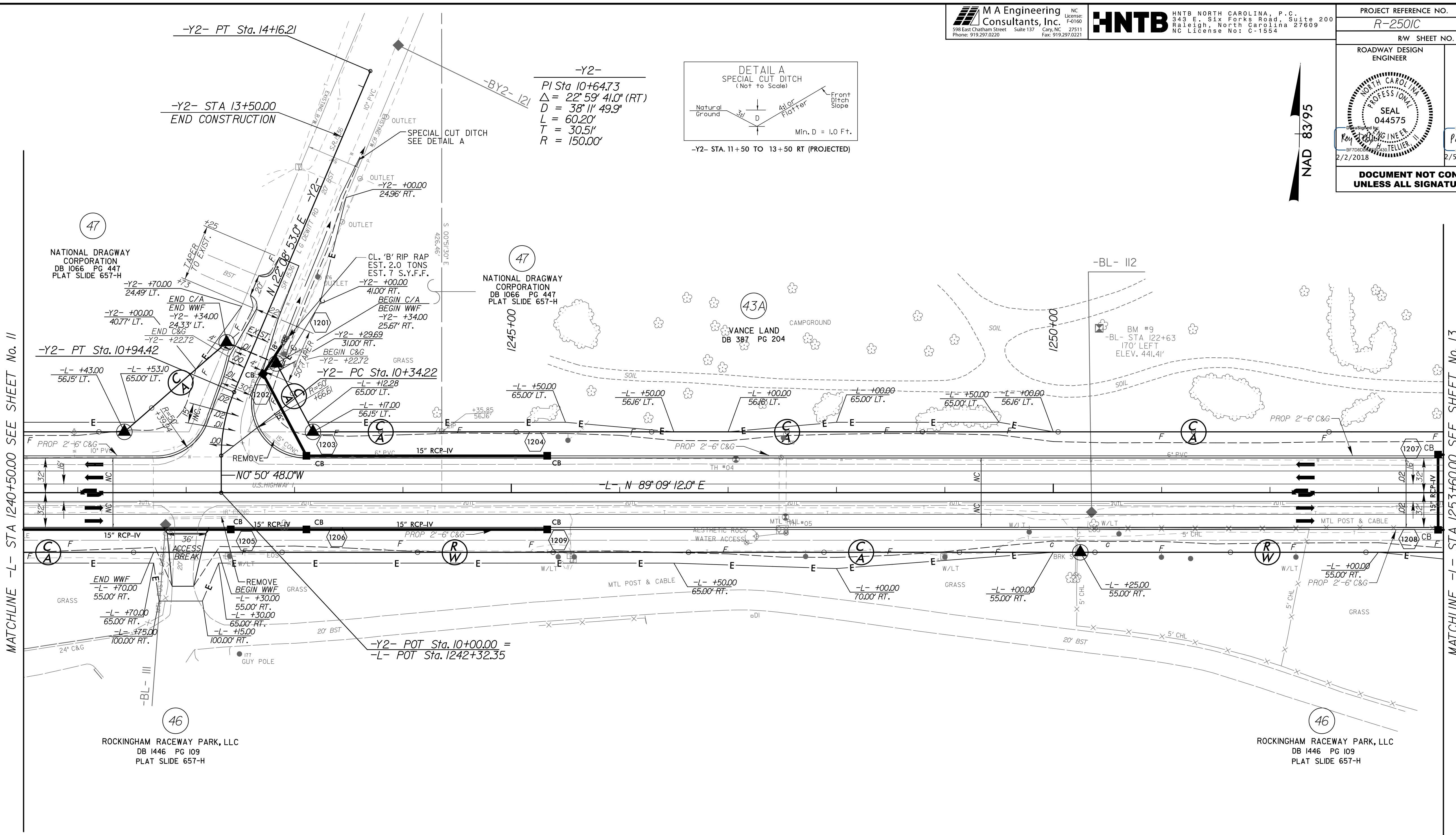
8/17/99

PROJECT REFERENCE NO. R-2501C	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83/95



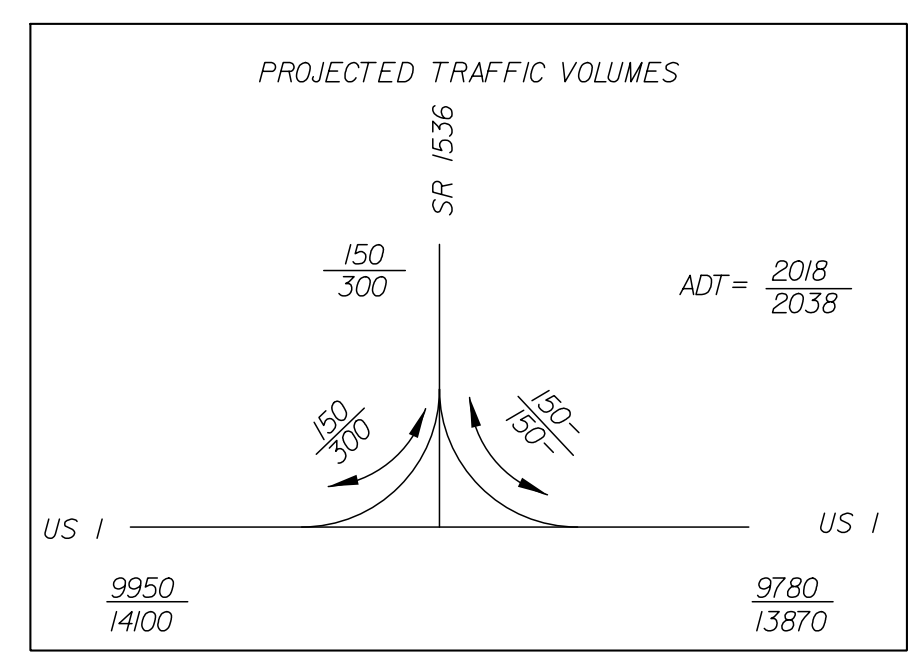
-Y2-  
 PI Sta 10+64.73  
 $\Delta = 22^\circ 59' 41.0''$  (RT)  
 $D = 38^\circ 11' 49.9''$   
 $L = 60.20'$   
 $T = 30.51'$   
 $R = 150.00'$



MATCHLINE -L- STA 1240+50.00 SEE SHEET No. 11

MATCHLINE -L- STA 1253+60.00 SEE SHEET No. 13

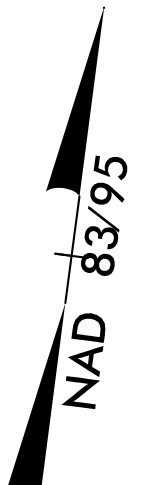
REVISIONS



NOTE:  
 FOR -L- PROFILE SEE SHEET No. 23 & 24.  
 FOR -Y2- PROFILE SEE SHEET No. 27.

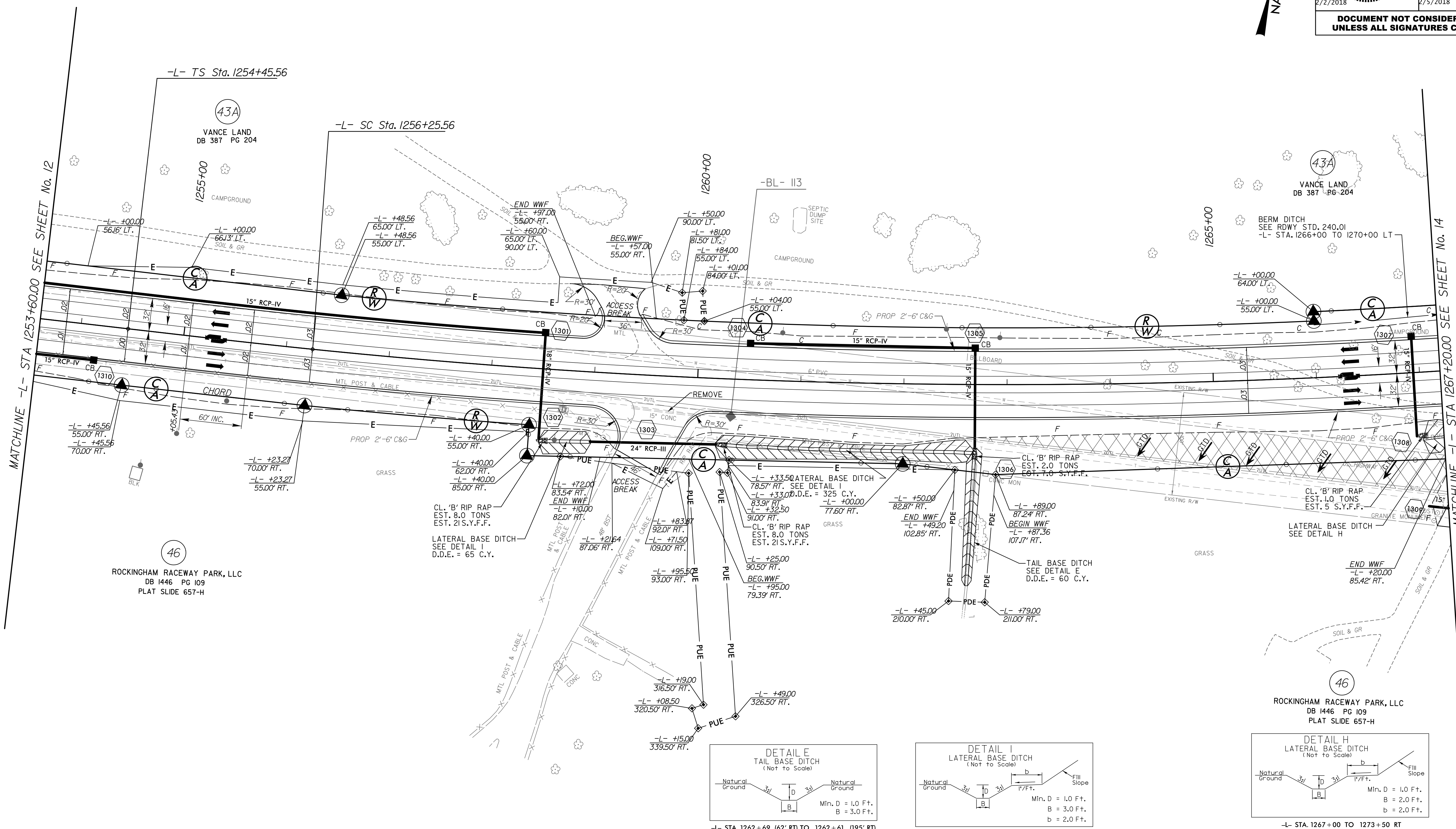
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 HNTB

PROJECT REFERENCE NO. R-2501C	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-L-

PI Sta 1255+65.56	PI Sta 1275+42.89
$\Theta_s = 0^\circ 46' 31.6''$	$\Delta = 32^\circ 10' 00.0''$ (LT)
$L_s = 180.00'$	$D = 0^\circ 51' 41.7''$
$LT = 120.00'$	$L = 3,733.40'$
$ST = 60.00'$	$T = 1,917.33'$
	$R = 6,650.00'$



MATCHLINE -L- STA 1253+60.00 SEE SHEET No. 12

MATCHLINE -L- STA 1267+20.00 SEE SHEET No. 14

-L- TS Sta. 1254+45.56

-L- SC Sta. 1256+25.56

-BL- 113

-L- +45.56  
55.00' RT.  
-L- +45.56  
70.00' RT.

-L- +23.27  
70.00' RT.  
-L- +23.27  
55.00' RT.

-L- +40.00  
62.00' RT.  
-L- +40.00  
85.00' RT.

-L- +72.00  
83.54' RT.  
-L- +10.00  
82.01' RT.

-L- +83.87  
92.01' RT.  
-L- +71.50  
109.00' RT.

-L- +25.00  
90.50' RT.  
-L- +95.00  
93.00' RT.

-L- +50.00  
82.87' RT.  
-L- +49.20  
102.85' RT.

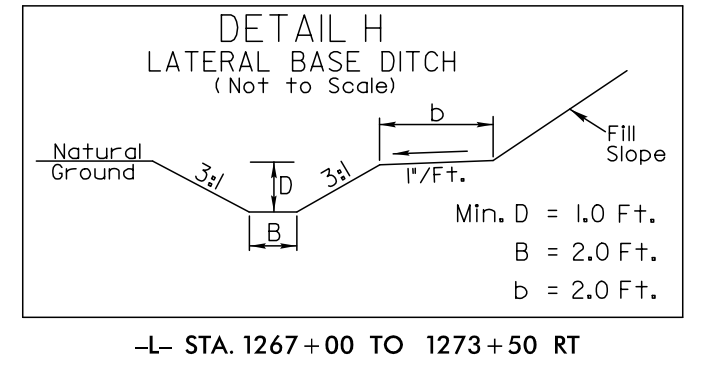
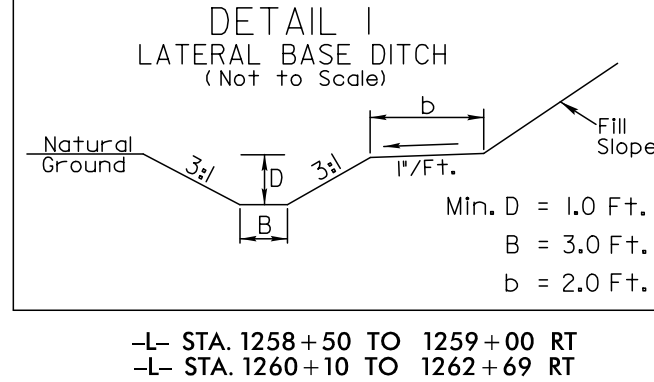
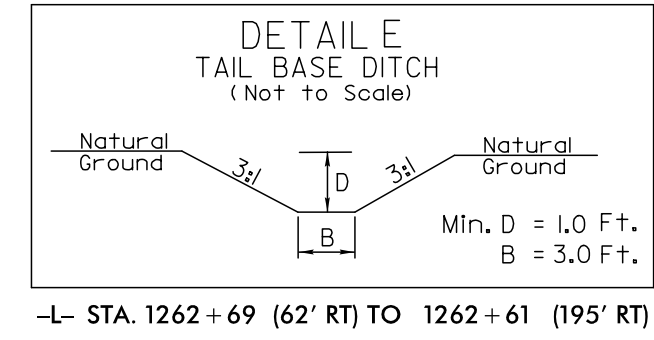
-L- +89.00  
87.24' RT.  
-L- +87.36  
107.17' RT.

-L- +100.00  
64.00' LT.  
-L- +100.00  
55.00' LT.

-L- +100.00  
64.00' LT.  
-L- +100.00  
55.00' LT.

ROCKINGHAM RACEWAY PARK, LLC  
DB 1446 PG 109  
PLAT SLIDE 657-H

ROCKINGHAM RACEWAY PARK, LLC  
DB 1446 PG 109  
PLAT SLIDE 657-H



NOTE:  
FOR -L- PROFILE SEE SHEET No. 24.

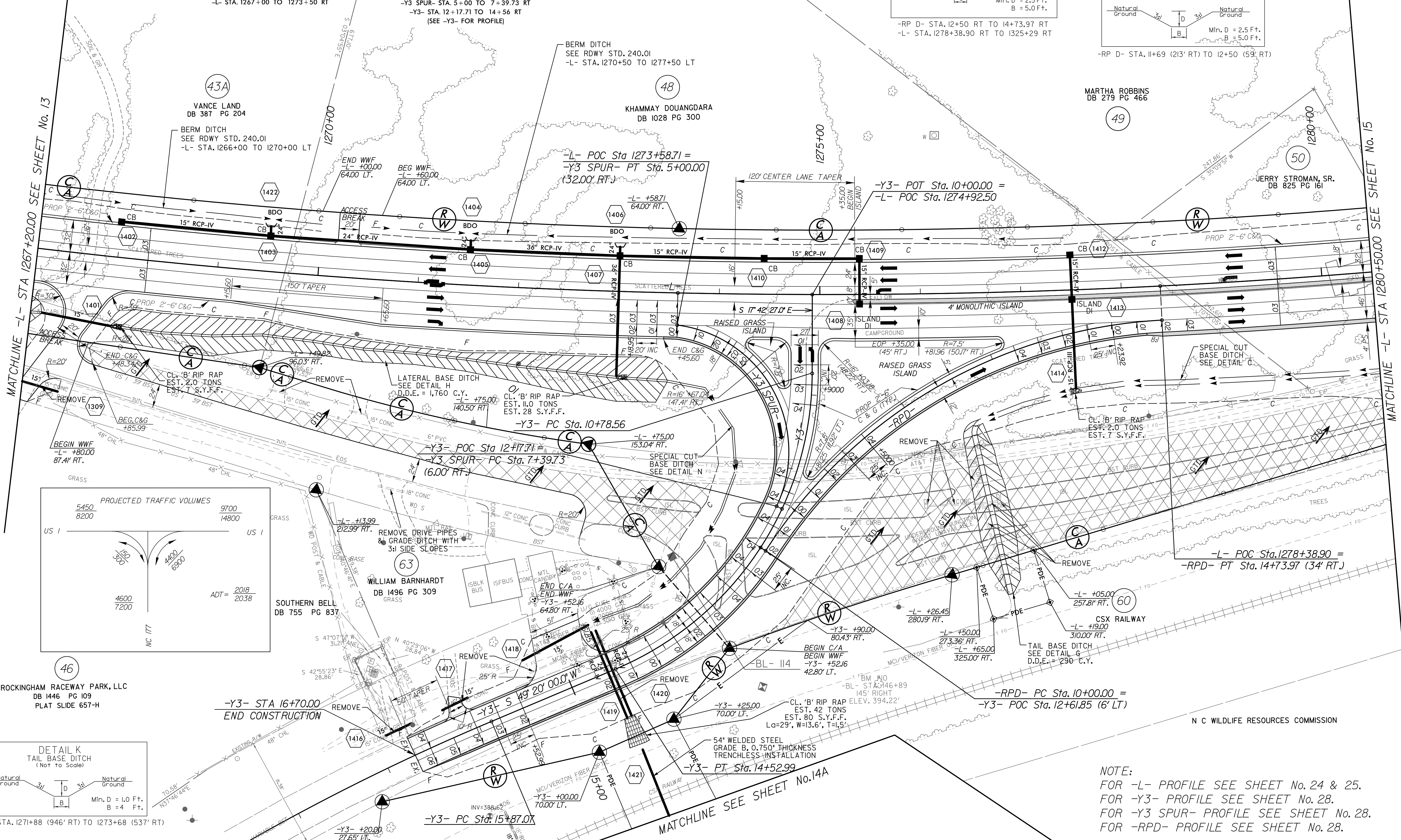
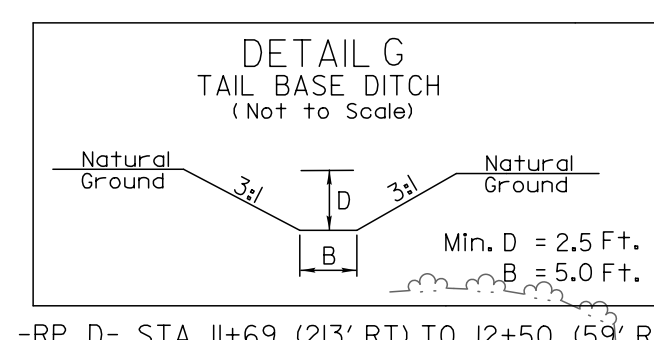
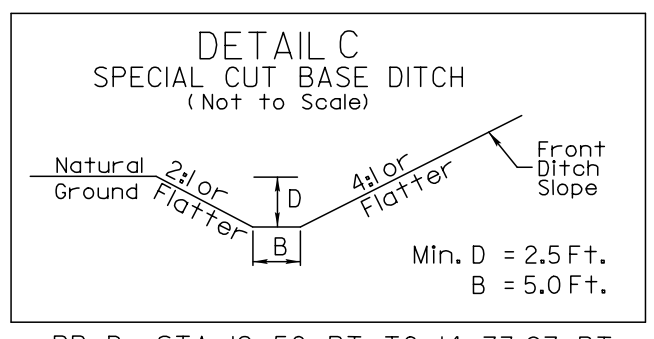
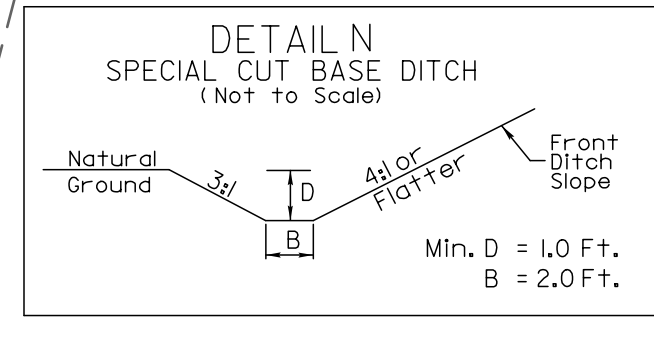
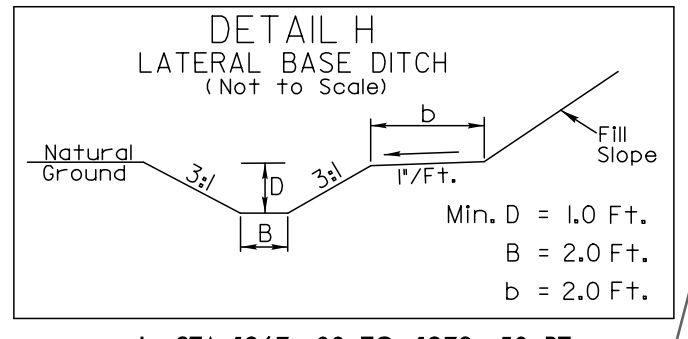
REVISIONS

02-FEB-2018 17:44  
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HNTB

PROJECT REFERENCE NO. R-2501C	SHEET NO. 14
ROADWAY DESIGN ENGINEER Key...	HYDRAULICS ENGINEER Paul...
Professional Engineer Seal SEAL 044575 2/7/2018	Professional Engineer Seal SEAL 40801 2/5/2018

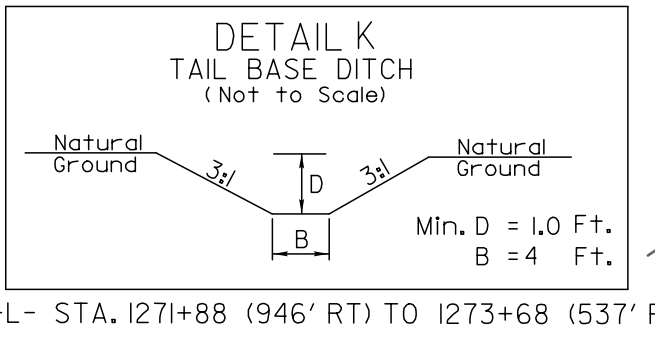
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L- PI Sta 1275+42.89 Δ = 32' 10" 00.0' (LT) D = 0' 51' 41.7" L = 3,733.40 T = 1,917.33' R = 6,650.00'	-Y3- PI Sta 12+90.53 Δ = 67' 02' 27.0' (RT) D = 17' 54' 17.8" L = 374.43' T = 211.97' R = 320.00'	-Y3- PI Sta 19+14.34 Δ = 16' 16' 00.0' (LT) D = 2' 30' 07.2" L = 650.15' T = 327.27' R = 2,290.00'	-RP D- PI Sta 12+56.49 Δ = 54' 18' 46.9' (RT) D = 11' 27' 33.0" L = 473.97' T = 256.49' R = 500.00'
--	---	--	---



PROJECTED TRAFFIC VOLUMES

5450 8200	9700 14800
4600 7200	ADT = 2018 2038



NOTE:  
 FOR -L- PROFILE SEE SHEET No. 24 & 25.  
 FOR -Y3- PROFILE SEE SHEET No. 28.  
 FOR -Y3 SPUR- PROFILE SEE SHEET No. 28.  
 FOR -RPD- PROFILE SEE SHEET No. 28.

REVISIONS

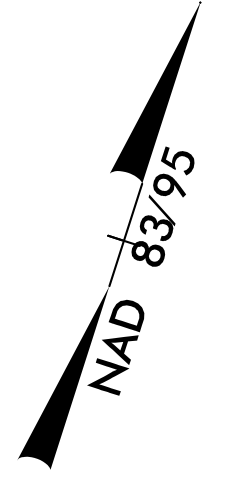
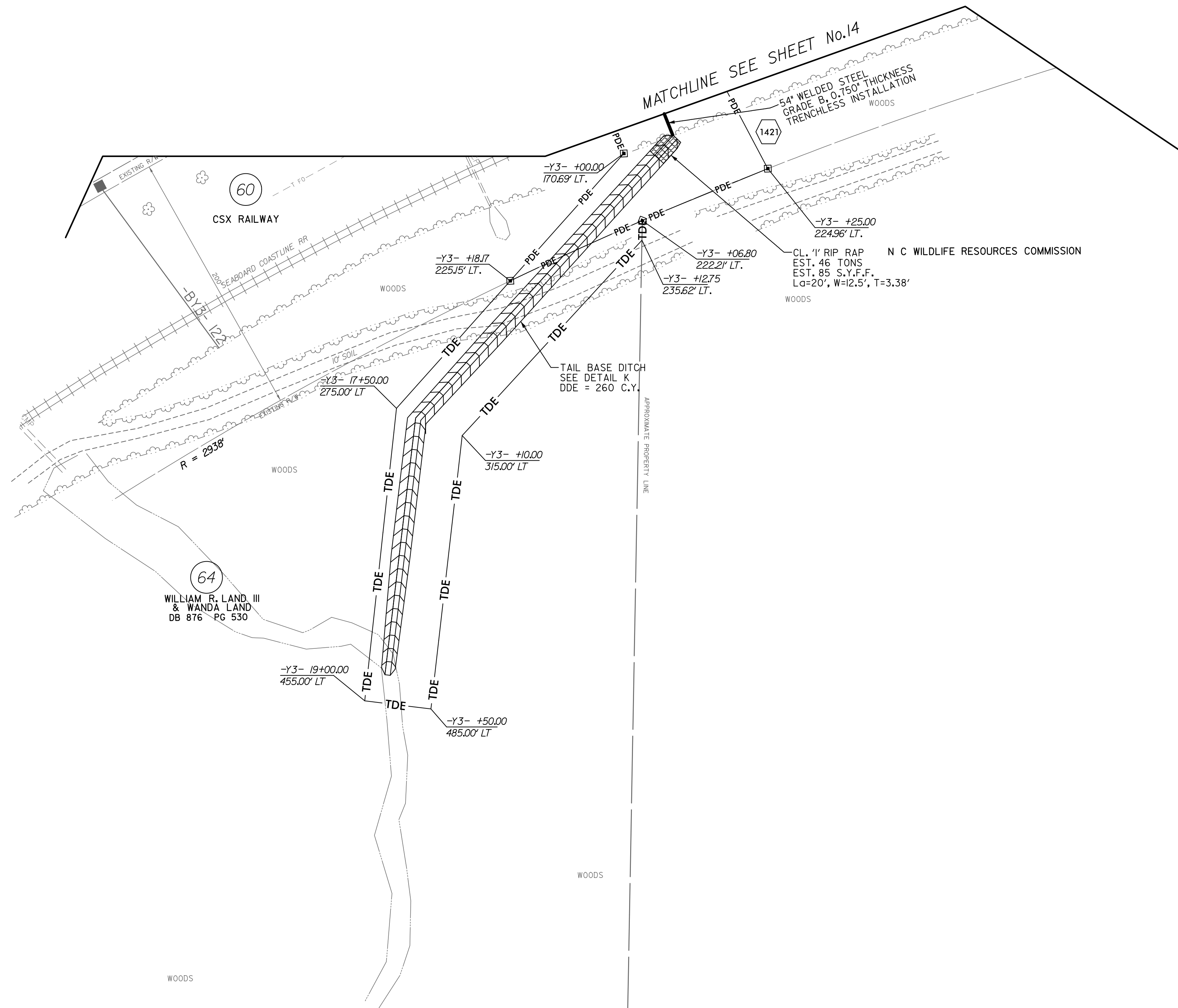
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MAB

8/17/99

RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

REVISIONS



02-FEB-2018 17:44  
N:\Roadway\Projects\142501C.RDY\_PSH14A.dgn  
HNTB

NOTE:  
FOR DITCH PROFILE SEE SHEET No. 28.

8/17/99

MA Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220

HNTB HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1954

PROJECT REFERENCE NO. R-2501C	SHEET NO. 15
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	PAUL J. TELLER, II Professional Engineer No. 40801 8/8/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

51A  
HOFFMAN FIRE DEPARTMENT AND RESCUE SQUAD, INC.  
DB 427 PG 429 (TL)  
FIRE STATION

FLAG POLE

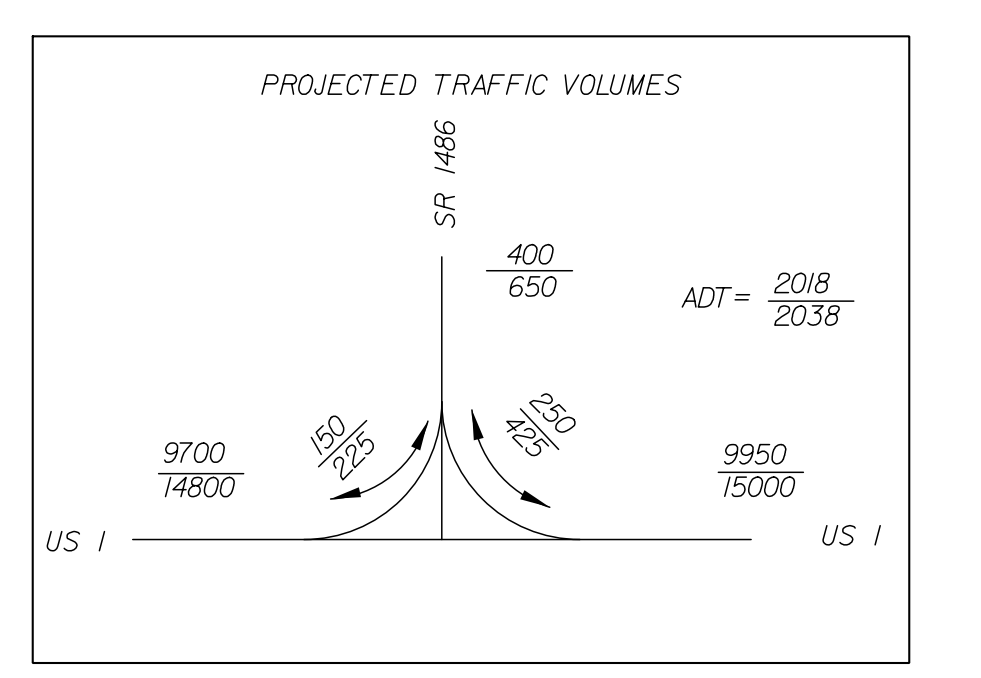
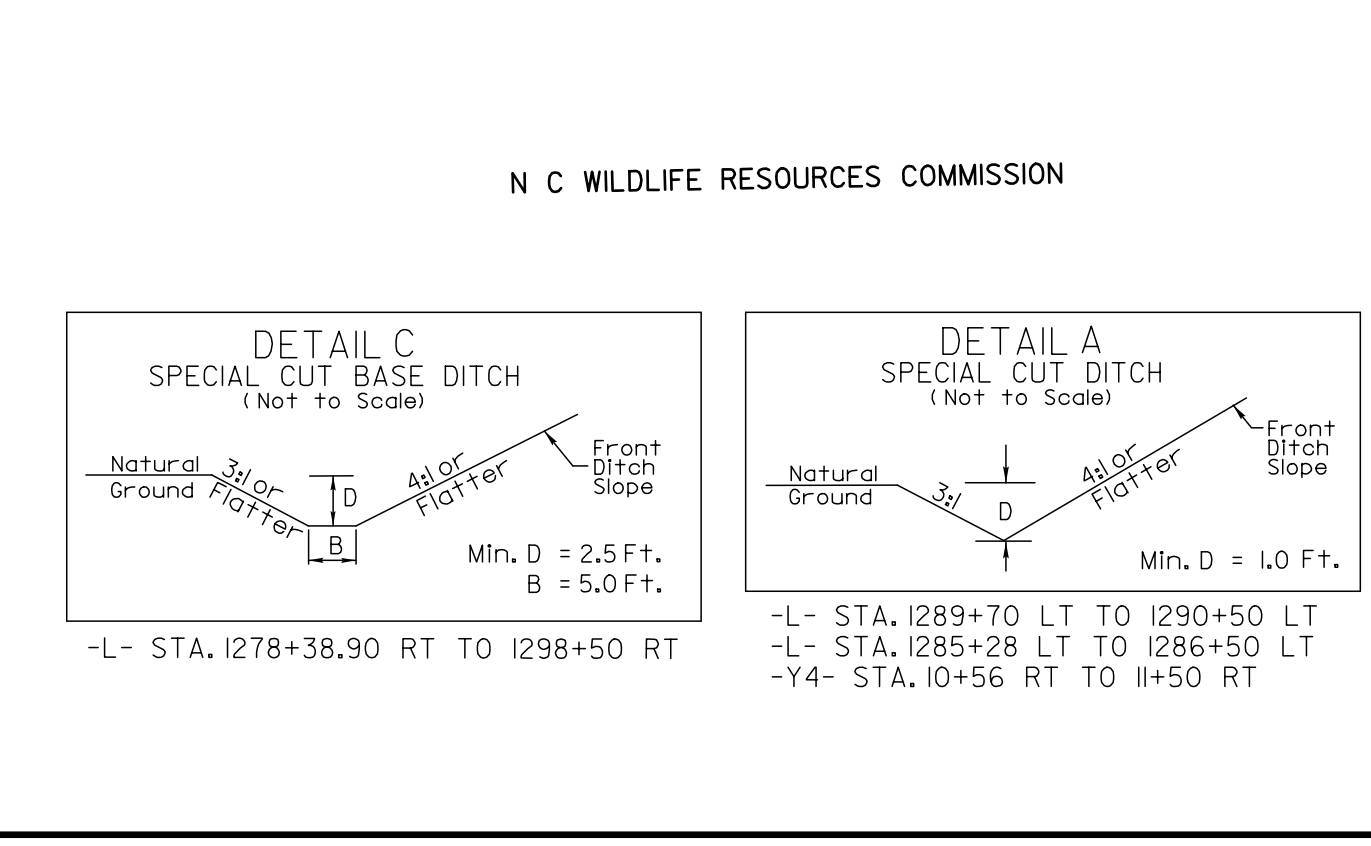
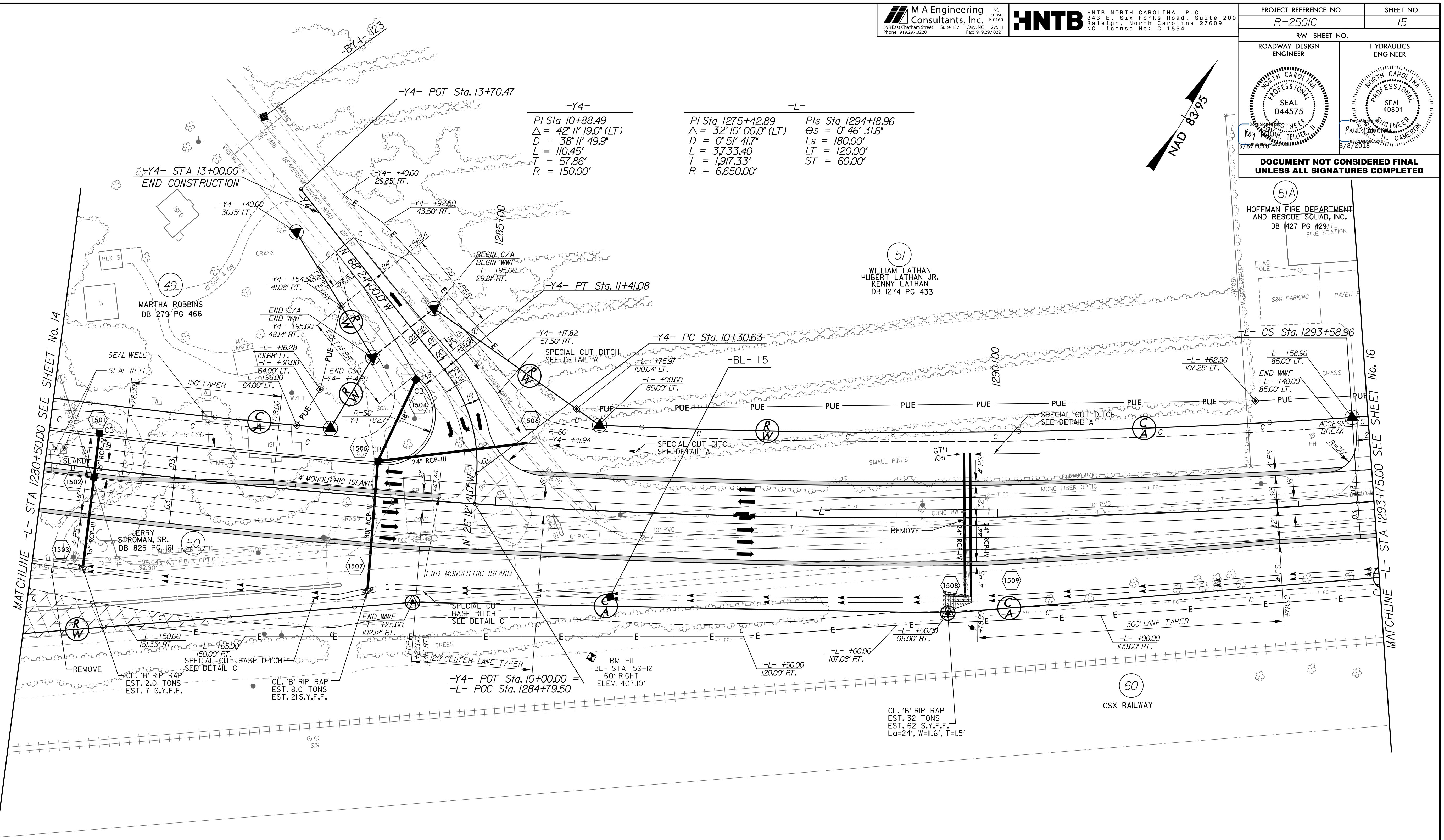
S&G PARKING

PAVED

51  
WILLIAM LATHAN  
HUBERT LATHAN JR.  
KENNY LATHAN  
DB 1274 PG 433

50  
JERRY STROMAN, SR.  
DB 825 PG 161

50  
CSX RAILWAY



N C WILDLIFE RESOURCES COMMISSION

NOTE:  
FOR -L- PROFILE SEE SHEET No. 25.  
FOR -Y4- PROFILE SEE SHEET No. 28.

REVISIONS

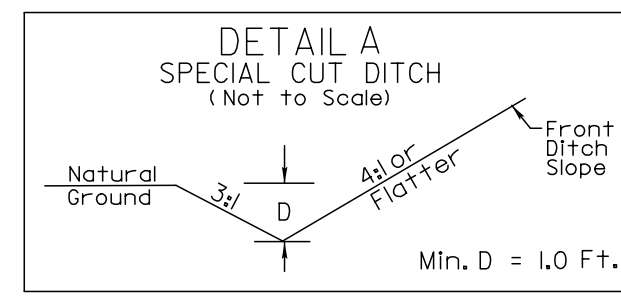
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MHTB



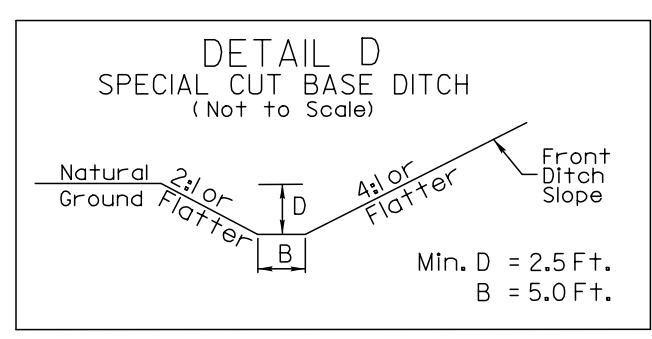
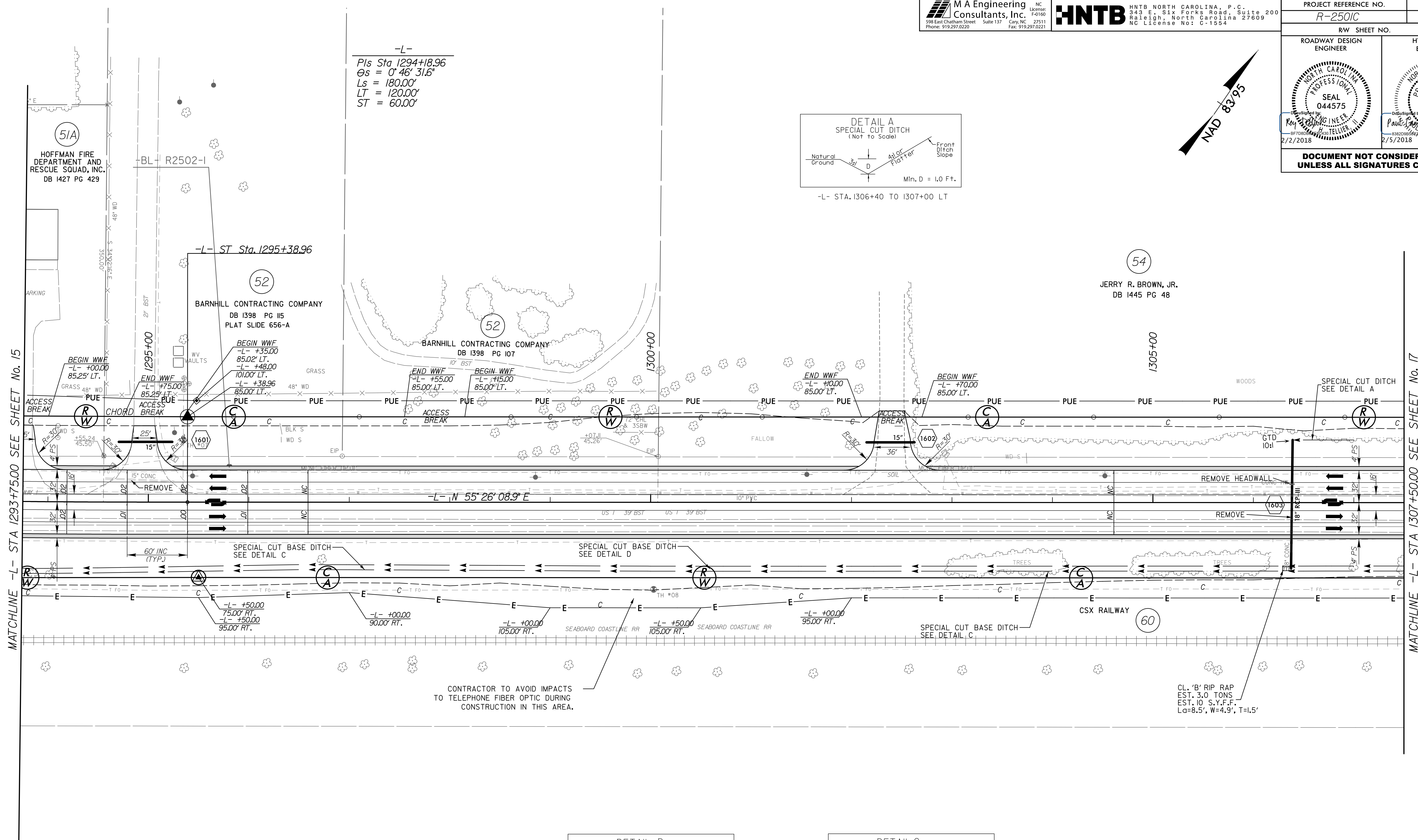
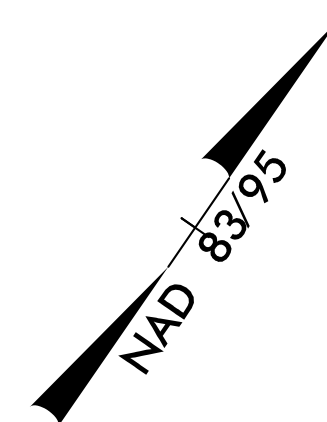
8/17/99

PROJECT REFERENCE NO. R-2501C	SHEET NO. 16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

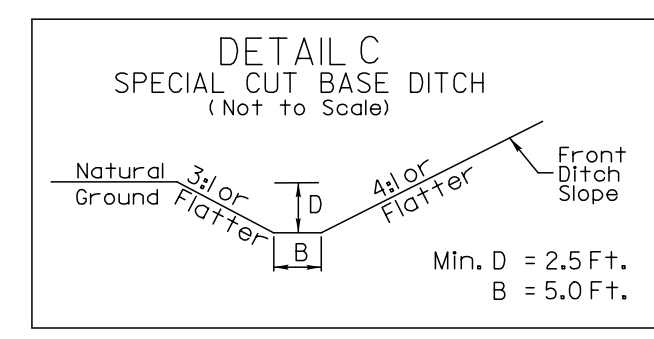
-L-  
 Pls Sta 1294+18.96  
 $\theta_s = 0^\circ 46' 31.6''$   
 $L_s = 180.00'$   
 $LT = 120.00'$   
 $ST = 60.00'$



-L- STA. 1306+40 TO 1307+00 LT



-L- STA. 1298+50 RT TO 1301+00 RT



-L- STA. 1301+00 RT TO 1311+50 RT

N C WILDLIFE RESOURCES COMMISSION

N C WILDLIFE RESOURCES COMMISSION

CONTRACTOR TO AVOID IMPACTS TO TELEPHONE FIBER OPTIC DURING CONSTRUCTION IN THIS AREA.

CL. 'B' RIP RAP EST. 3.0 TONS EST. 10 S.Y.F.F. L<sub>s</sub>=8.5', W=4.9', T=1.5'

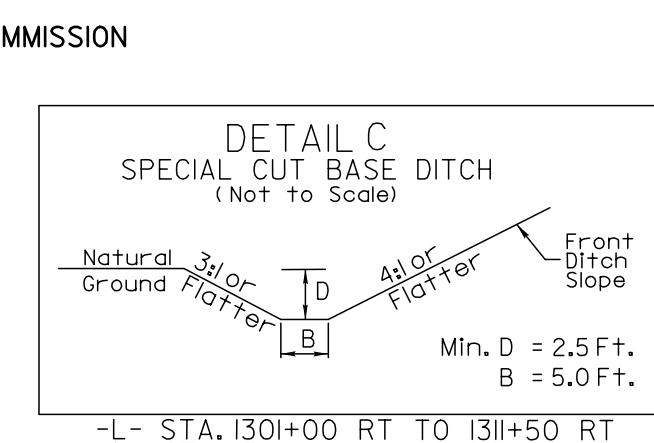
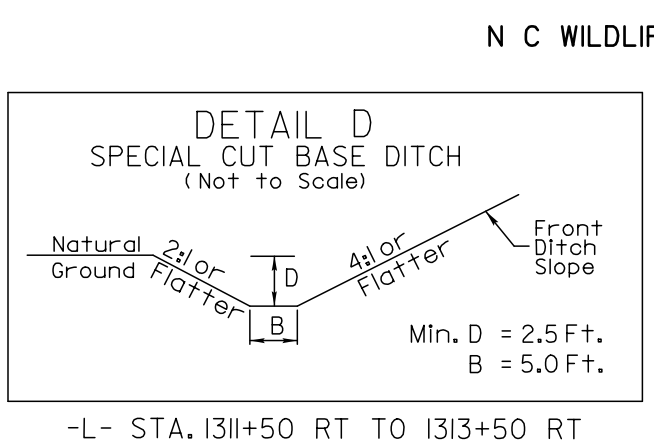
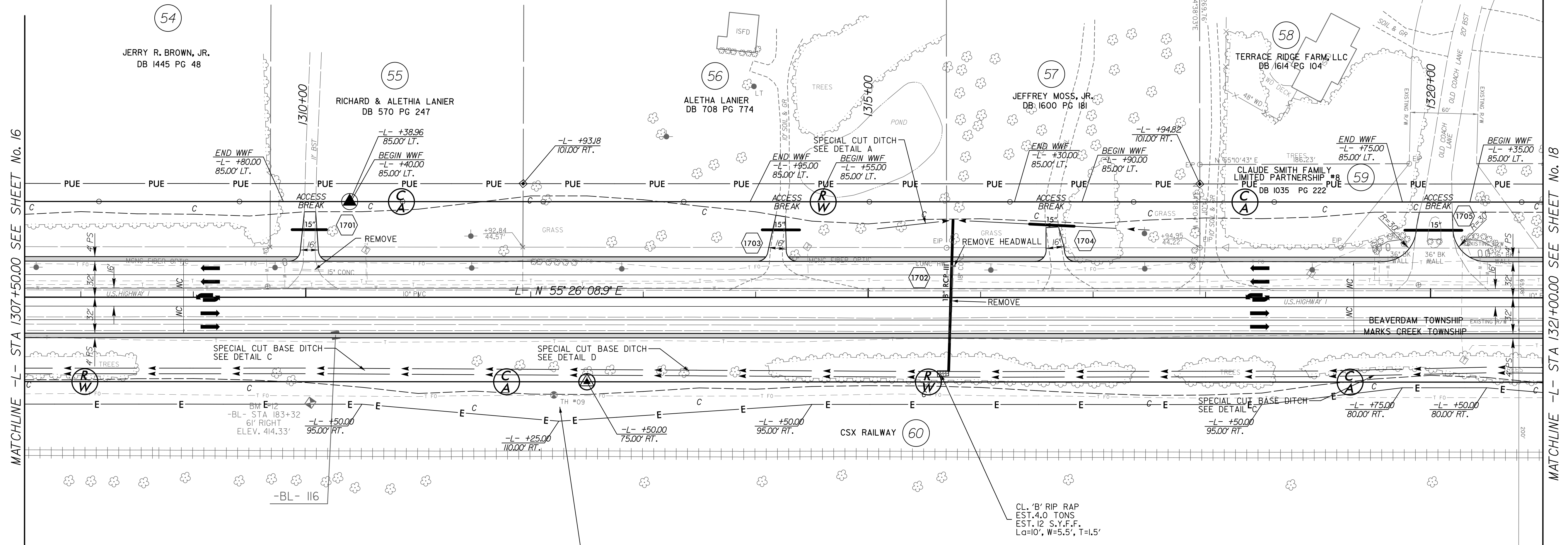
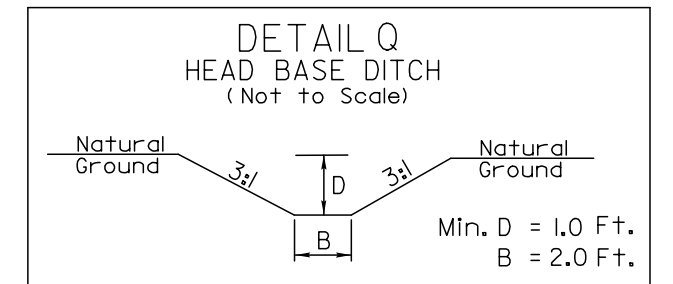
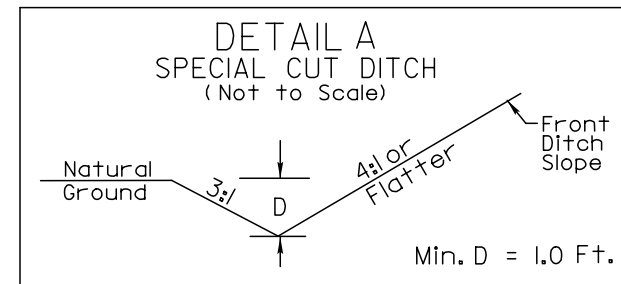
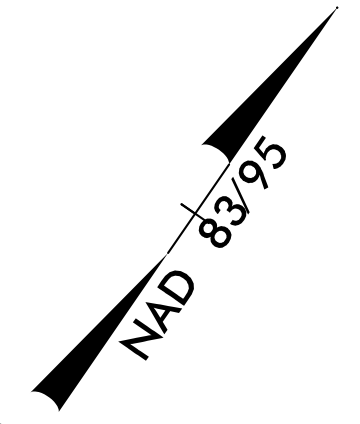
NOTE:  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHEET No. 25.

REVISIONS

02-FEB-2018 17:44  
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HNTB

8/17/99

PROJECT REFERENCE NO. R-2501C	SHEET NO. 17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTE: FROM 1319+00 TO 1320+75 THE 2.5' MINIMUM DITCH DEPTH REQUIREMENT CANNOT BE ATTAINED THEREFORE THE PROPOSED DITCH GRADES ON THE PROFILE SHOULD BE MAINTAINED. ANY DITCH OVERFLOW WILL HAVE NO ADVERSE IMPACT TO THE ROADWAY OR THE RAILROAD PROPERTY.

NOTE:  
ALL DRIVEWAY RADII ARE 10', UNLESS OTHERWISE NOTED.  
FOR -L- PROFILE SEE SHEET No. 25 & 26.

REVISIONS

02-FEB-2018 17:44  
N:\Roadway\Projects\172501C.RDY\_PSH17.dgn  
MFB

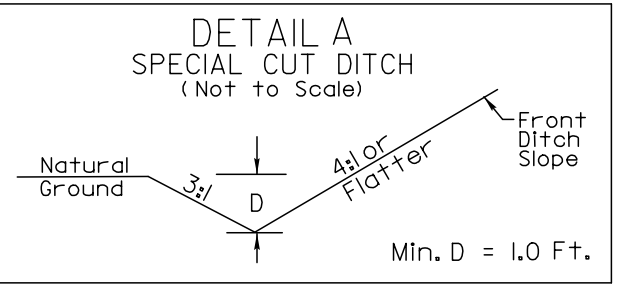
PROJECT REFERENCE NO. R-2501C	SHEET NO. 18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CLAUDE F. SMITH FAMILY LIMITED PARTNERSHIP #8

CLAUDE F. SMITH JR. DB 592 PG 540

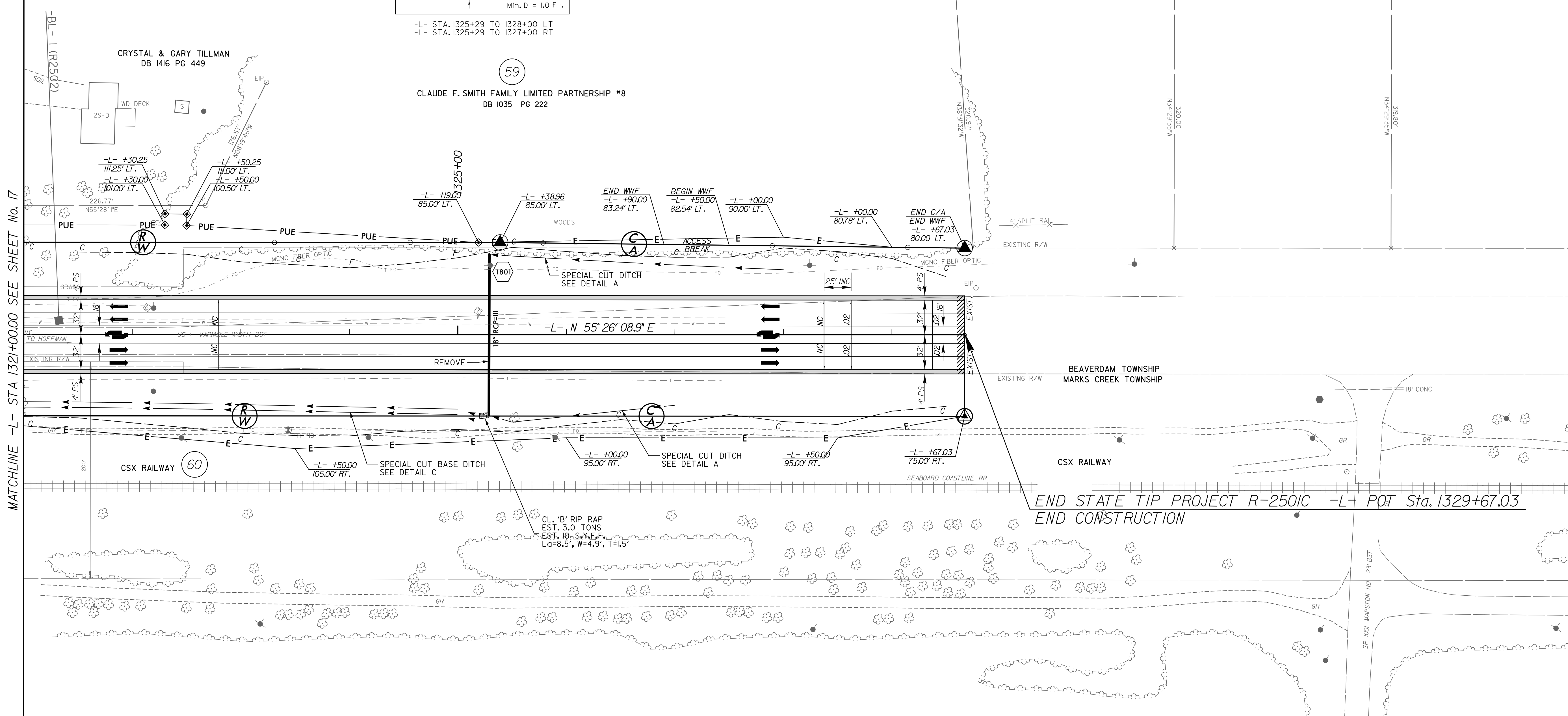
LMS LLC DB 1424 PG 55



-L- STA. 1325+29 TO 1328+00 LT  
-L- STA. 1325+29 TO 1327+00 RT

59

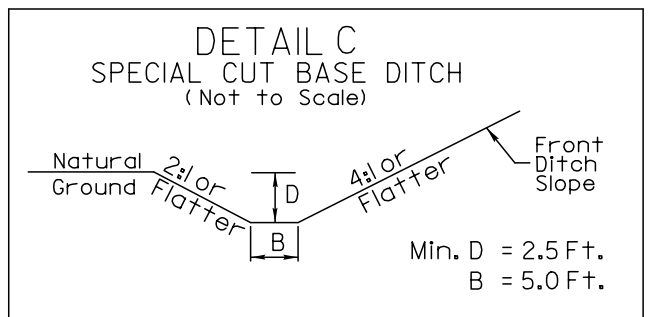
CLAUDE F. SMITH FAMILY LIMITED PARTNERSHIP #8  
DB 1035 PG 222



MATCHLINE -L- STA 1321+00.00 SEE SHEET No. 17

END STATE TIP PROJECT R-2501C -L- POT Sta. 1329+67.03  
END CONSTRUCTION

AMERICAN TIMBERLAND ILLC  
DB 1060 PG 422



-L- STA. 1278+38.90 RT TO 1325+29 RT

NOTE:  
FOR -L- PROFILE SEE SHEET No. 26.

REVISIONS

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5/28/19

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Cary, NC 27511  
Phone: 919.297.0220

NC License: F-0160  
27511  
919.297.0221

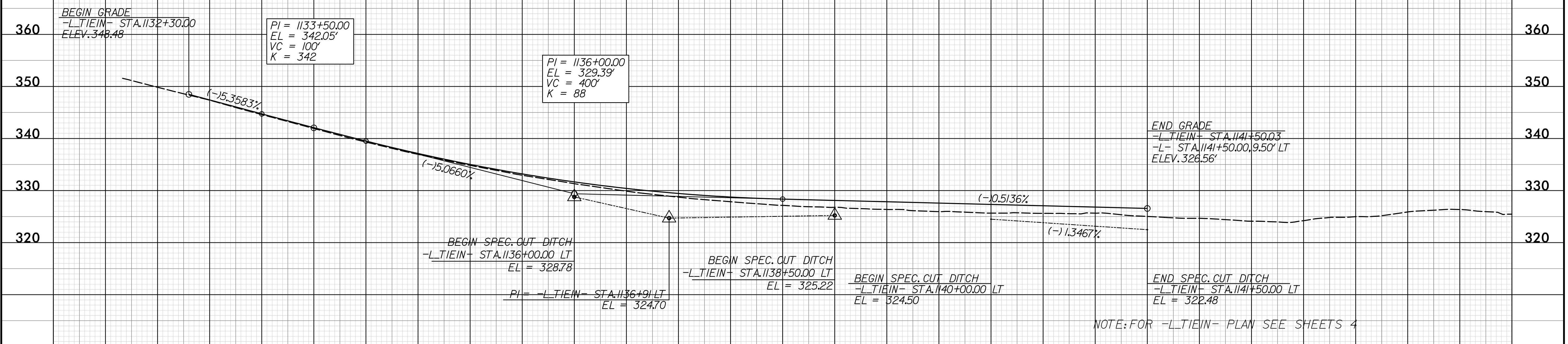
HNTB  
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No. C-1524

PROJECT REFERENCE NO. R-250/C SHEET NO. 19

ROADWAY DESIGN ENGINEER  
HYDRAULICS ENGINEER  
Professional Engineer Seal 044575  
Professional Engineer Seal 40801  
2/2/2018  
2/5/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

# -L\_TIEIN-

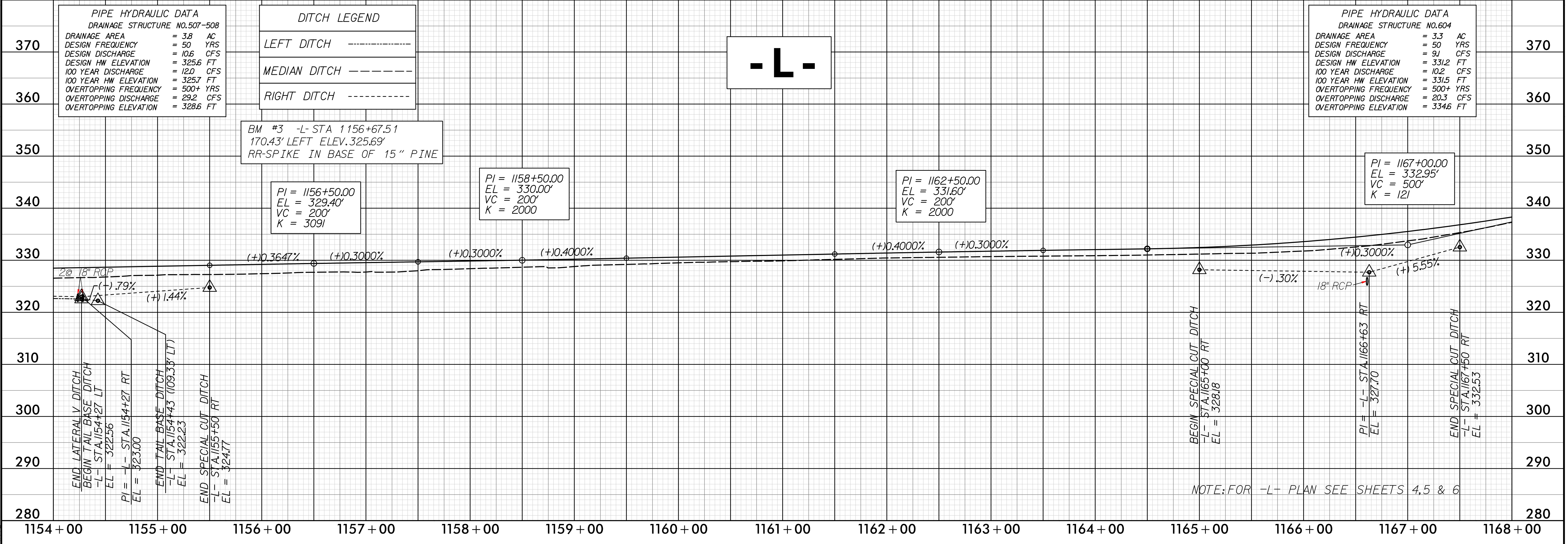
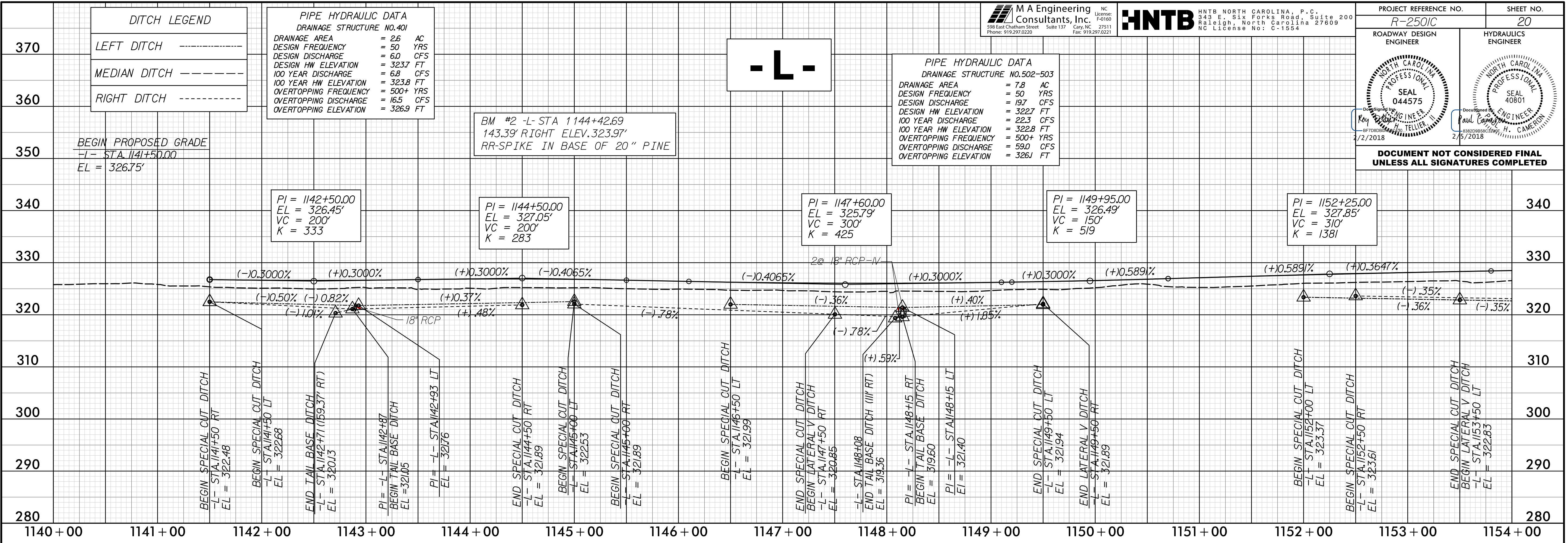


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PROJECT REFERENCE NO. R-2501C SHEET NO. 20 ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

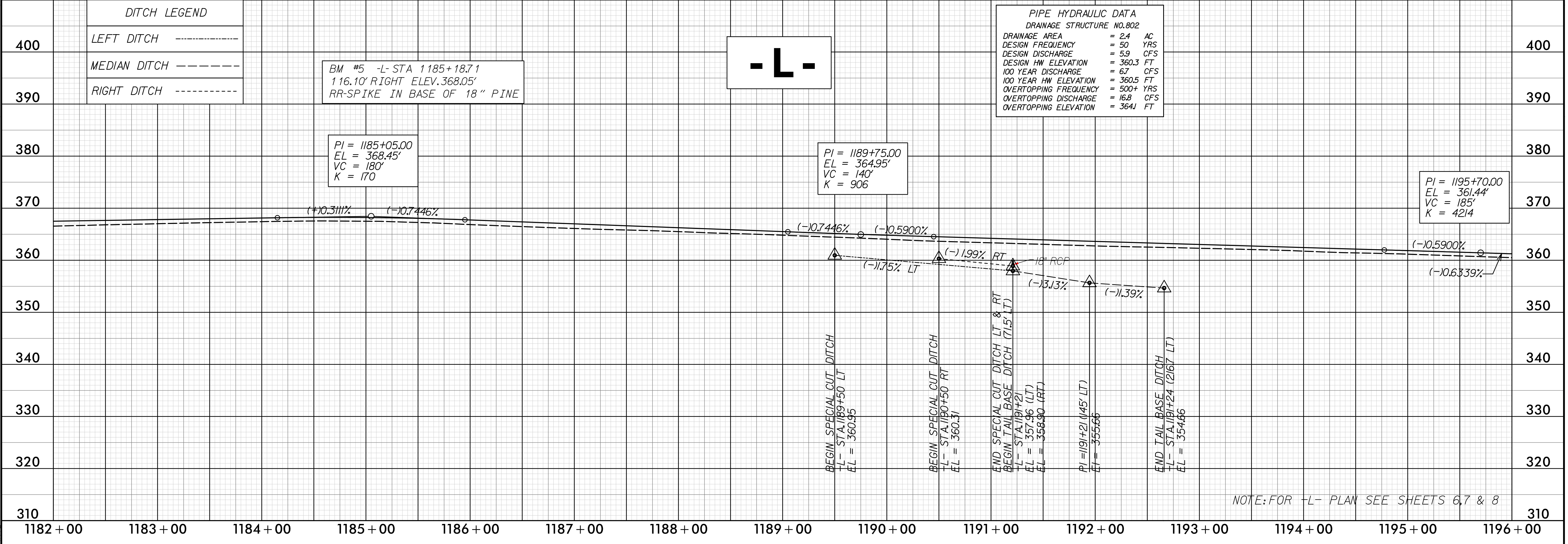
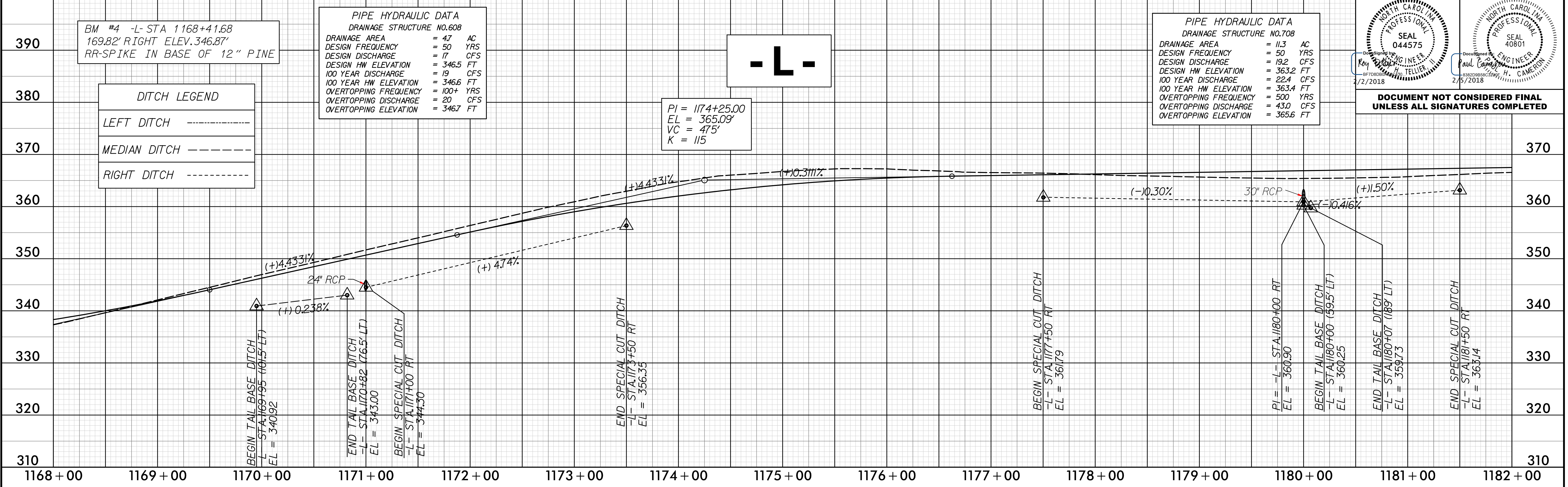


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5/28/19

Professional Engineer seals for ROADWAY DESIGN ENGINEER and HYDRAULICS ENGINEER.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTE: FOR -L- PLAN SEE SHEETS 6, 7 & 8

02-FEB-2018 17:44:19 (Roadway) (P-o) R2501C\_RDY\_PFL\_21.dgn

5/28/19

PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO.806	
DRAINAGE AREA	= 3.5 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 9.0 CFS
DESIGN HW ELEVATION	= 357.7 FT
100 YEAR DISCHARGE	= 10.2 CFS
100 YEAR HW ELEVATION	= 357.9 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 19.5 CFS
OVERTOPPING ELEVATION	= 360.7 FT

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

PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO.903	
DRAINAGE AREA	= 13.7 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 25.9 CFS
DESIGN HW ELEVATION	= 349.7 FT
100 YEAR DISCHARGE	= 30.1 CFS
100 YEAR HW ELEVATION	= 350.0 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 76.5 CFS
OVERTOPPING ELEVATION	= 356.7 FT

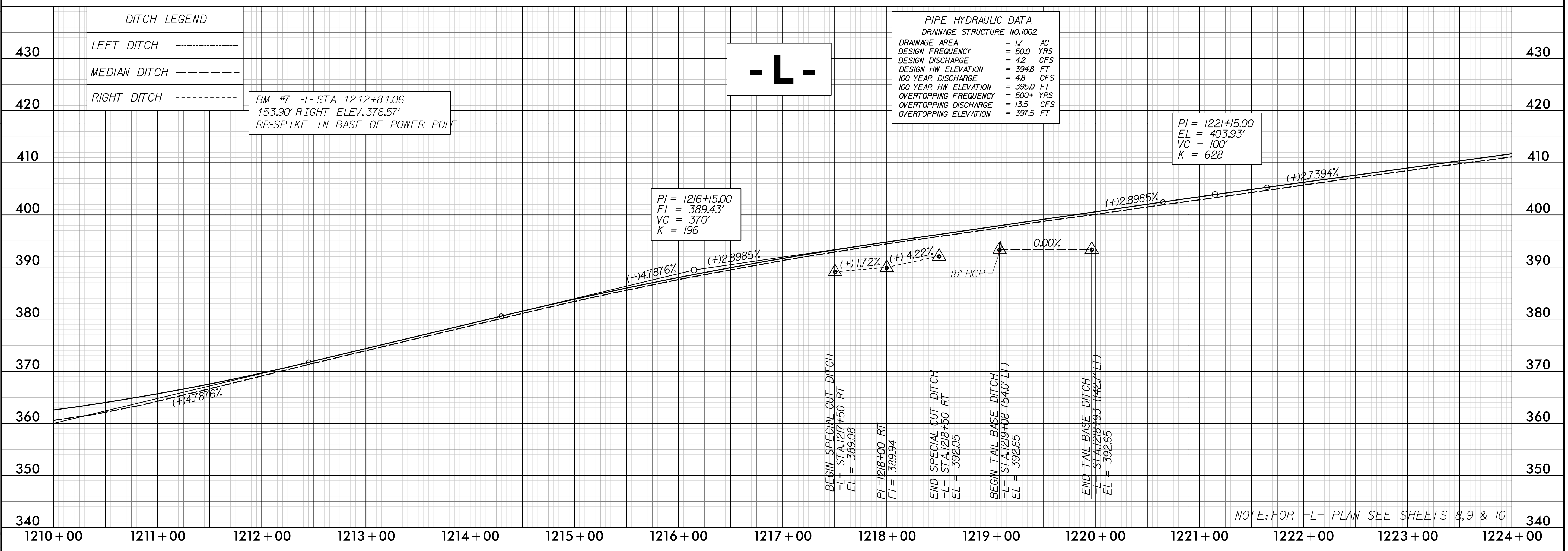
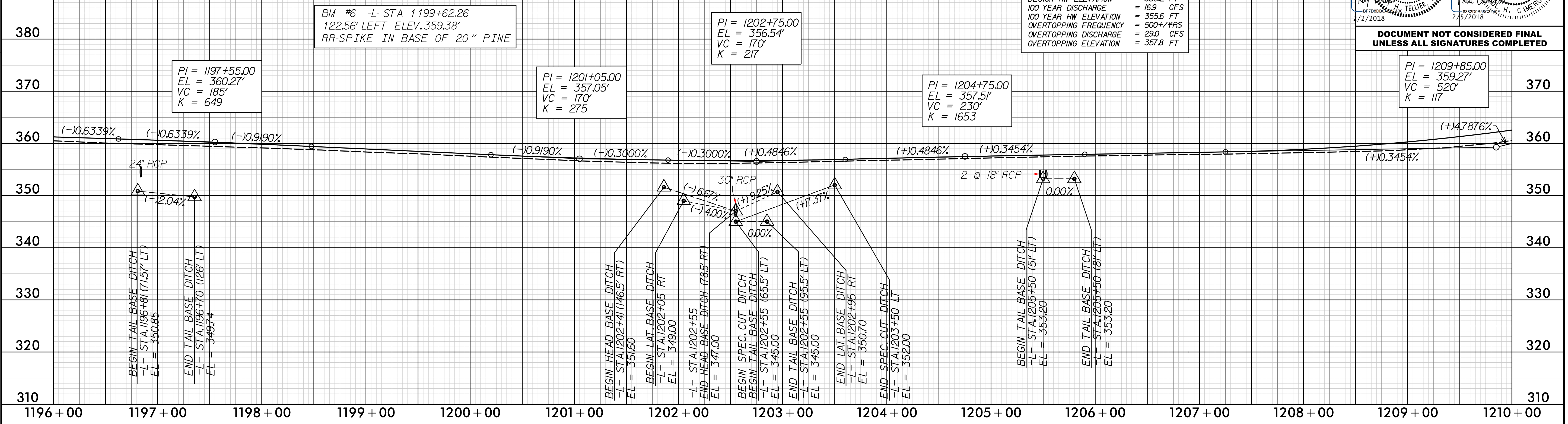
**MA Engineering**  
 Consultants, Inc.  
 598 East Clatham Street Suite 137 Cary, NC 27511  
 Phone: 919.297.0220 Fax: 919.297.0221

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 Raleigh, North Carolina 27609  
 NC License No. C-1524

PROJECT REFERENCE NO. <b>R-2501C</b>	SHEET NO. <b>22</b>
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>

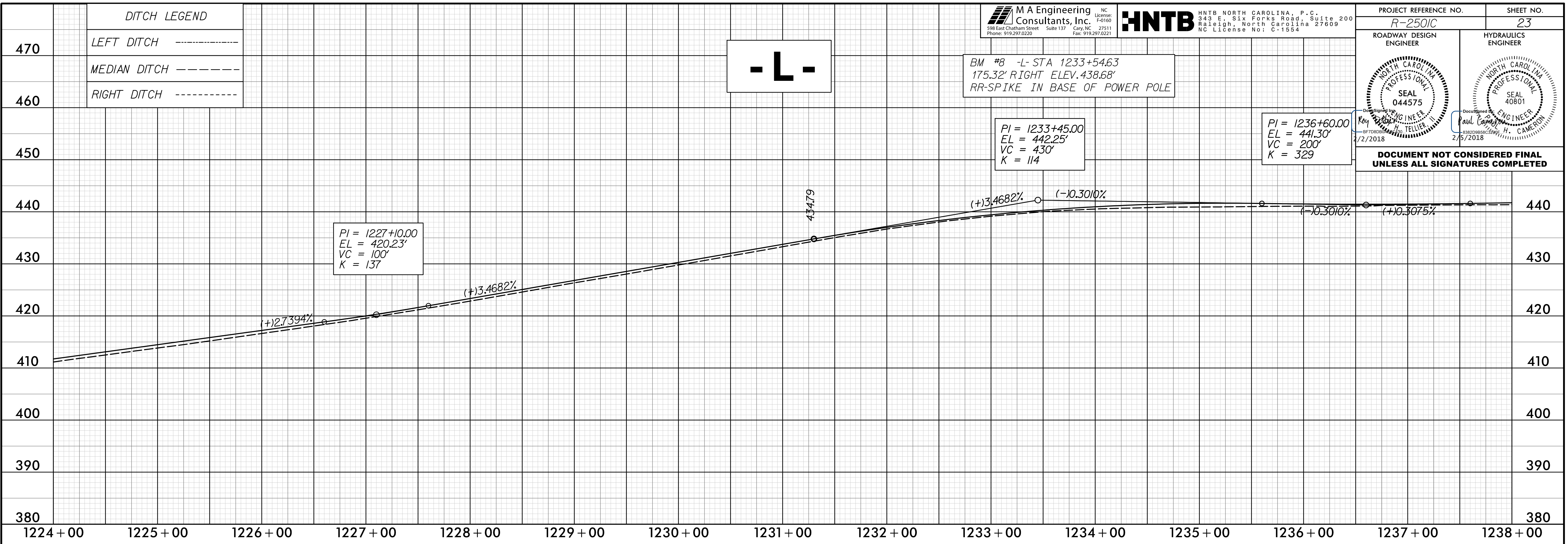
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NOTE: FOR -L- PLAN SEE SHEETS 8, 9 & 10

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DITCH LEGEND

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

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PROJECT REFERENCE NO. <i>R-2501C</i>	SHEET NO. <i>23</i>
ROADWAY DESIGN ENGINEER <i>Ryan H. Teller</i>	HYDRAULICS ENGINEER <i>Paul Cameron</i>

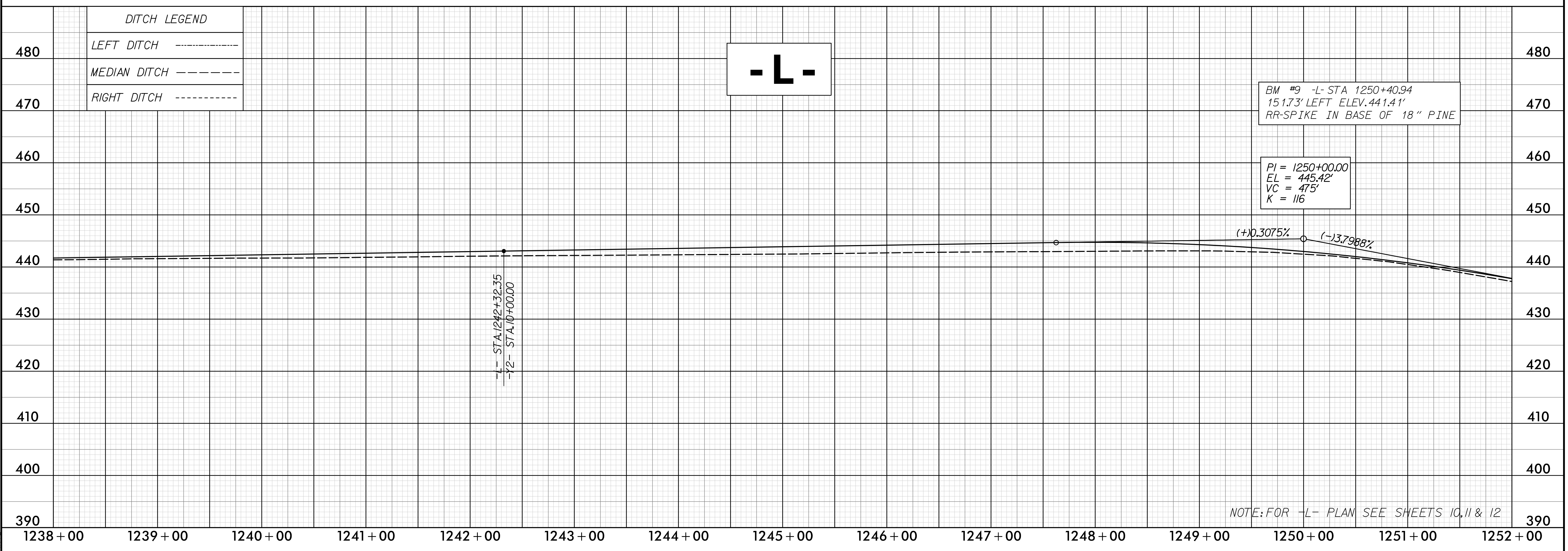
BM #8 -L- STA 1233+54.63  
 175.32' RIGHT ELEV. 438.68'  
 RR-SPIKE IN BASE OF POWER POLE

PI = 1233+45.00  
 EL = 442.25'  
 VC = 430'  
 K = 114

PI = 1236+60.00  
 EL = 441.30'  
 VC = 200'  
 K = 329

PI = 1227+00.00  
 EL = 420.23'  
 VC = 100'  
 K = 137

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DITCH LEGEND

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

BM #9 -L- STA 1250+40.94  
 151.73' LEFT ELEV. 441.41'  
 RR-SPIKE IN BASE OF 18" PINE

PI = 1250+00.00  
 EL = 445.42'  
 VC = 475'  
 K = 116

-L- STA 1242+32.35  
 -12- STA 10+00.00

NOTE: FOR -L- PLAN SEE SHEETS 10, 11 & 12

02-FEB-2018 17:14  
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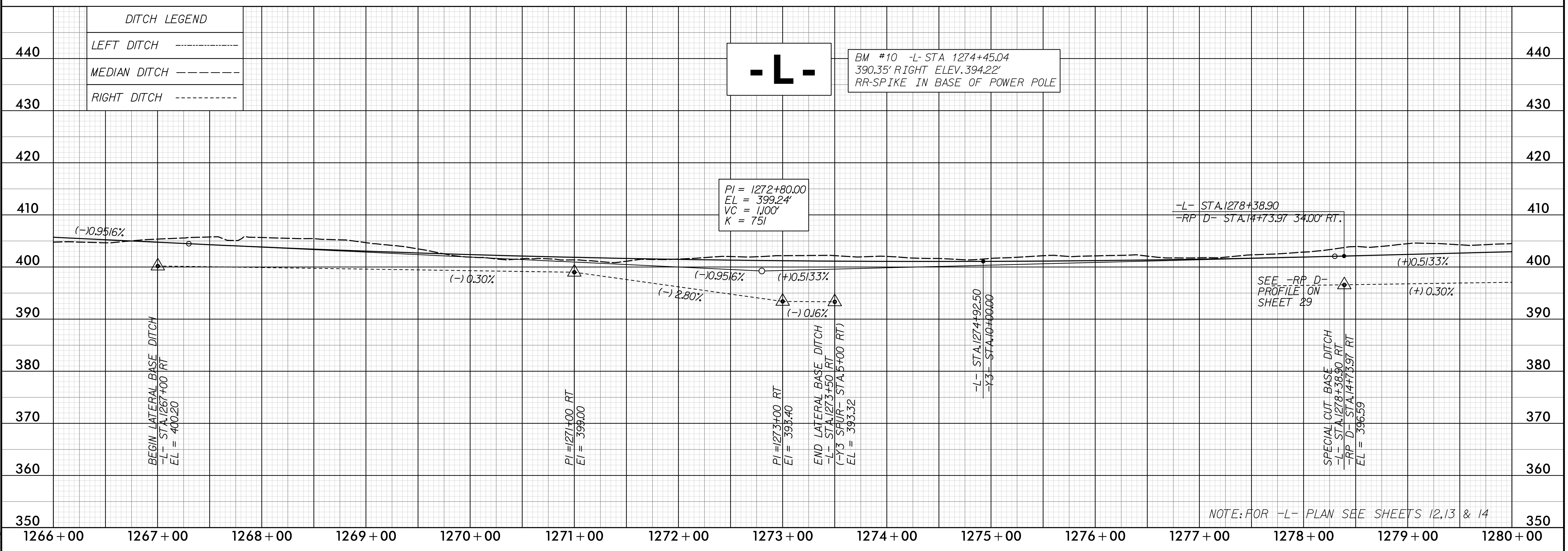
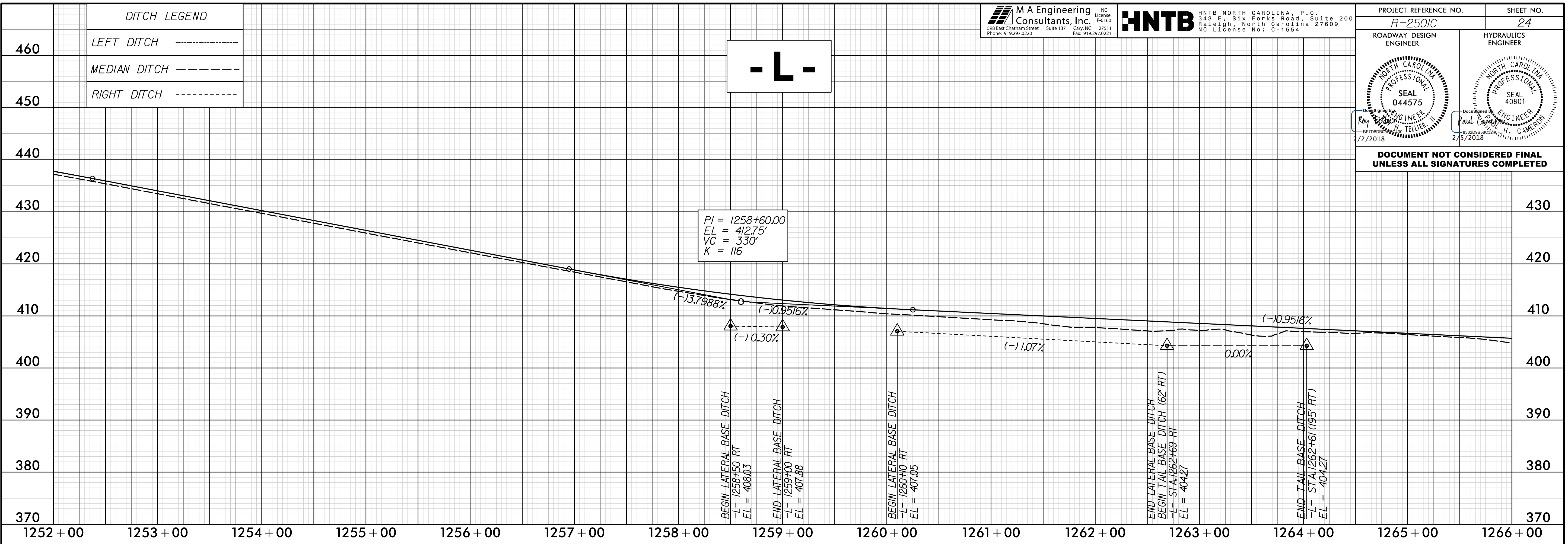
PROJECT REFERENCE NO.  
**R-2501C**

SHEET NO.  
**24**

ROADWAY DESIGN  
ENGINEER  
**Ron Teller**  
Professional Engineer  
Seal 044575  
2/2/2018

HYDRAULICS  
ENGINEER  
**Paul Cameron**  
Professional Engineer  
Seal 40801  
2/5/2018

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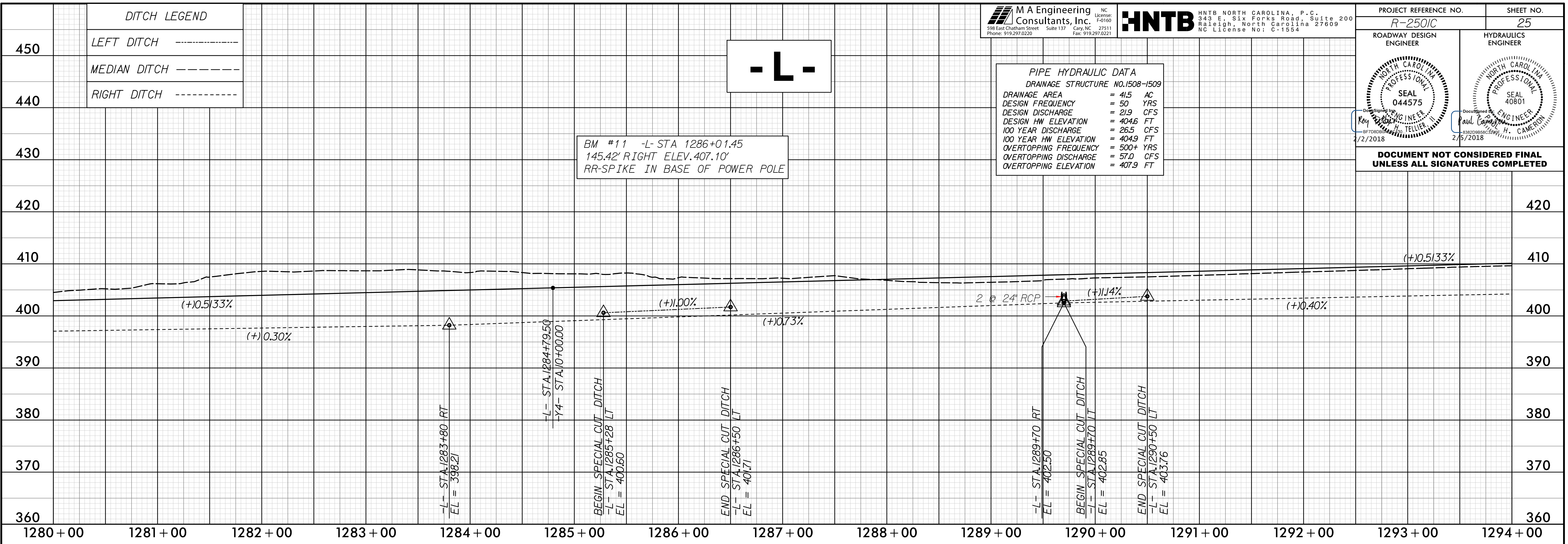
PROJECT REFERENCE NO. **R-2501C**  
SHEET NO. **25**

ROADWAY DESIGN ENGINEER  
HYDRAULICS ENGINEER  
Professional Engineer Seal: 044575  
Professional Engineer Seal: 40801

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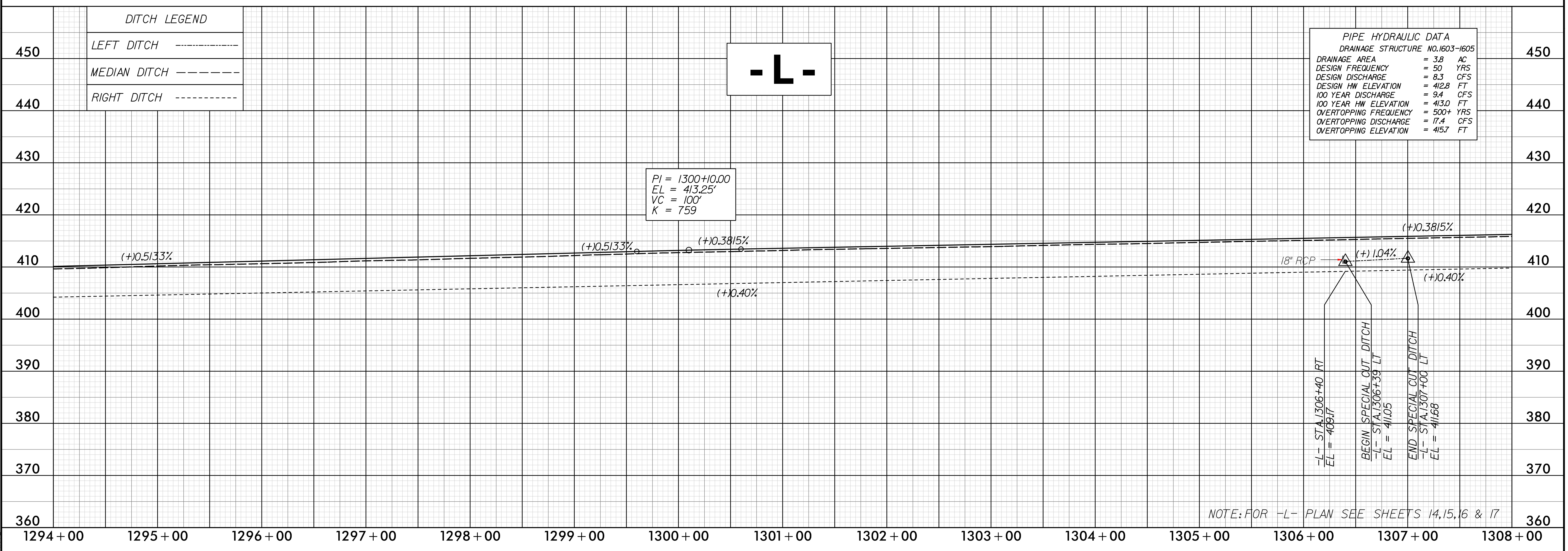
**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.1508-1509

DRAINAGE AREA	= 41.5 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 21.9 CFS
DESIGN HW ELEVATION	= 404.6 FT
100 YEAR DISCHARGE	= 26.5 CFS
100 YEAR HW ELEVATION	= 404.9 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 57.0 CFS
OVERTOPPING ELEVATION	= 407.9 FT



**PIPE HYDRAULIC DATA**  
DRAINAGE STRUCTURE NO.1603-1605

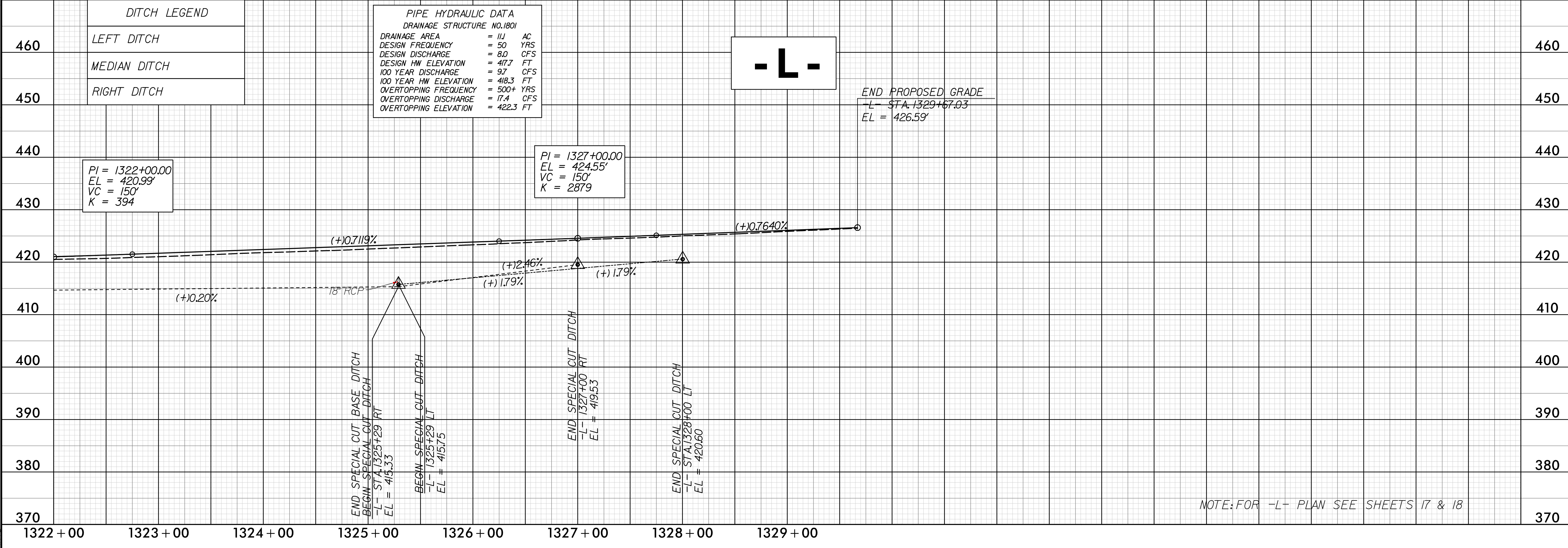
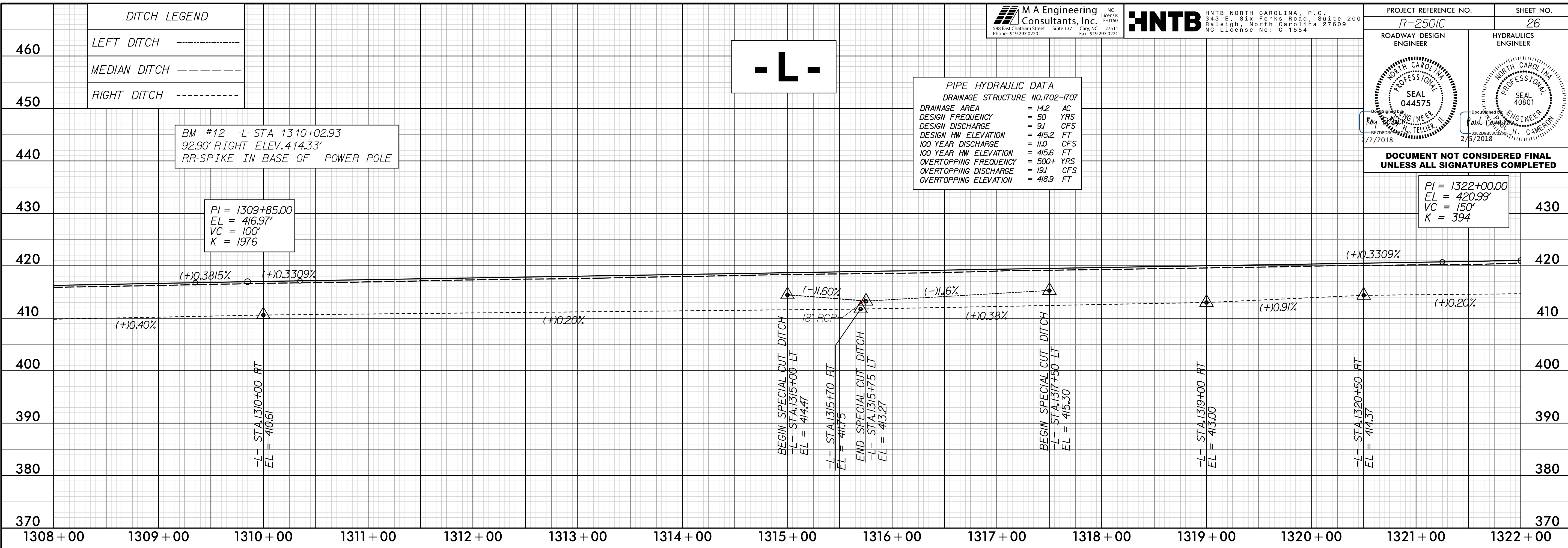
DRAINAGE AREA	= 3.8 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 8.3 CFS
DESIGN HW ELEVATION	= 412.8 FT
100 YEAR DISCHARGE	= 9.4 CFS
100 YEAR HW ELEVATION	= 413.0 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 17.4 CFS
OVERTOPPING ELEVATION	= 415.7 FT



NOTE: FOR -L- PLAN SEE SHEETS 14, 15, 16 & 17

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JH/TE

5/28/19



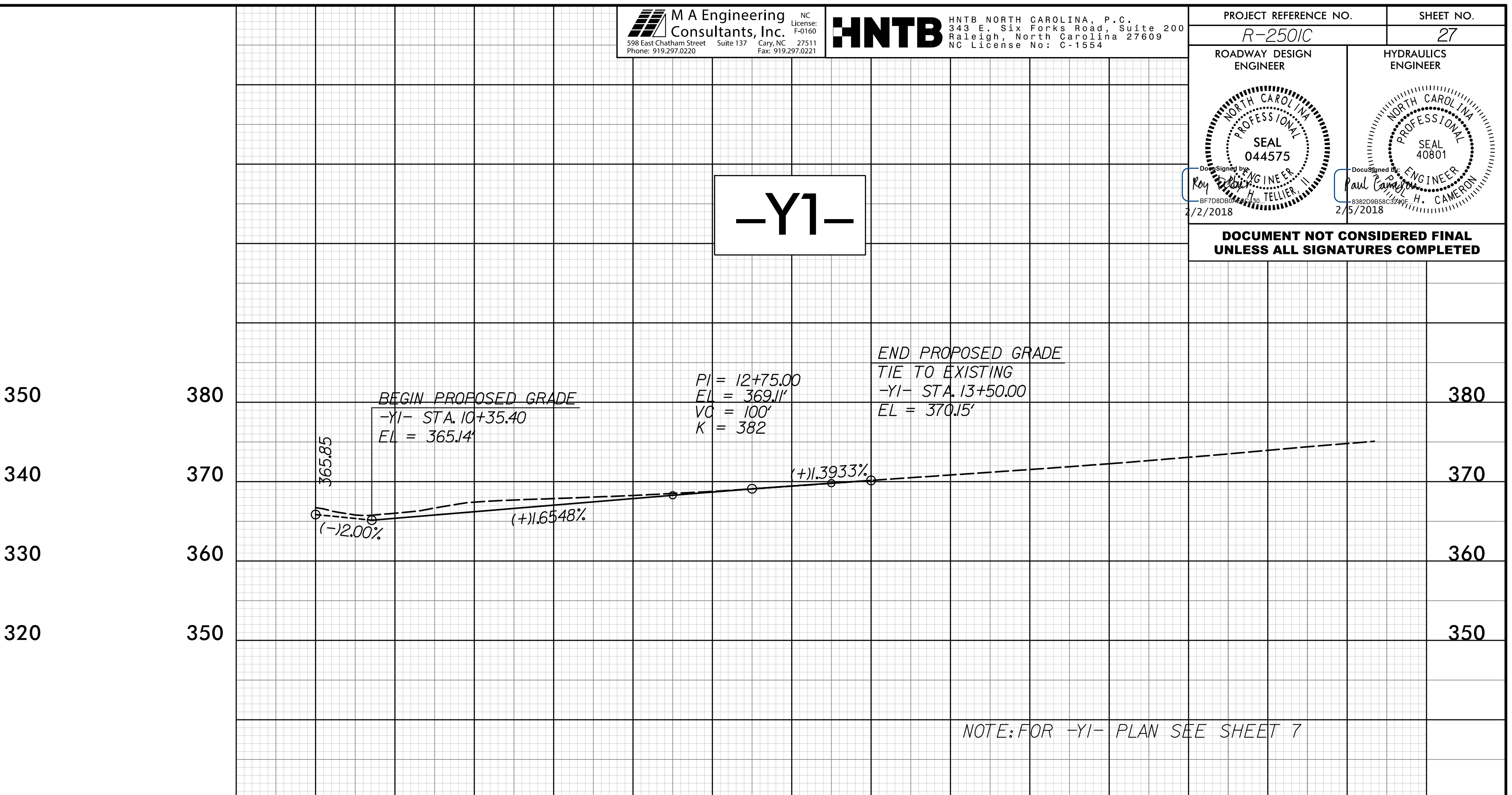
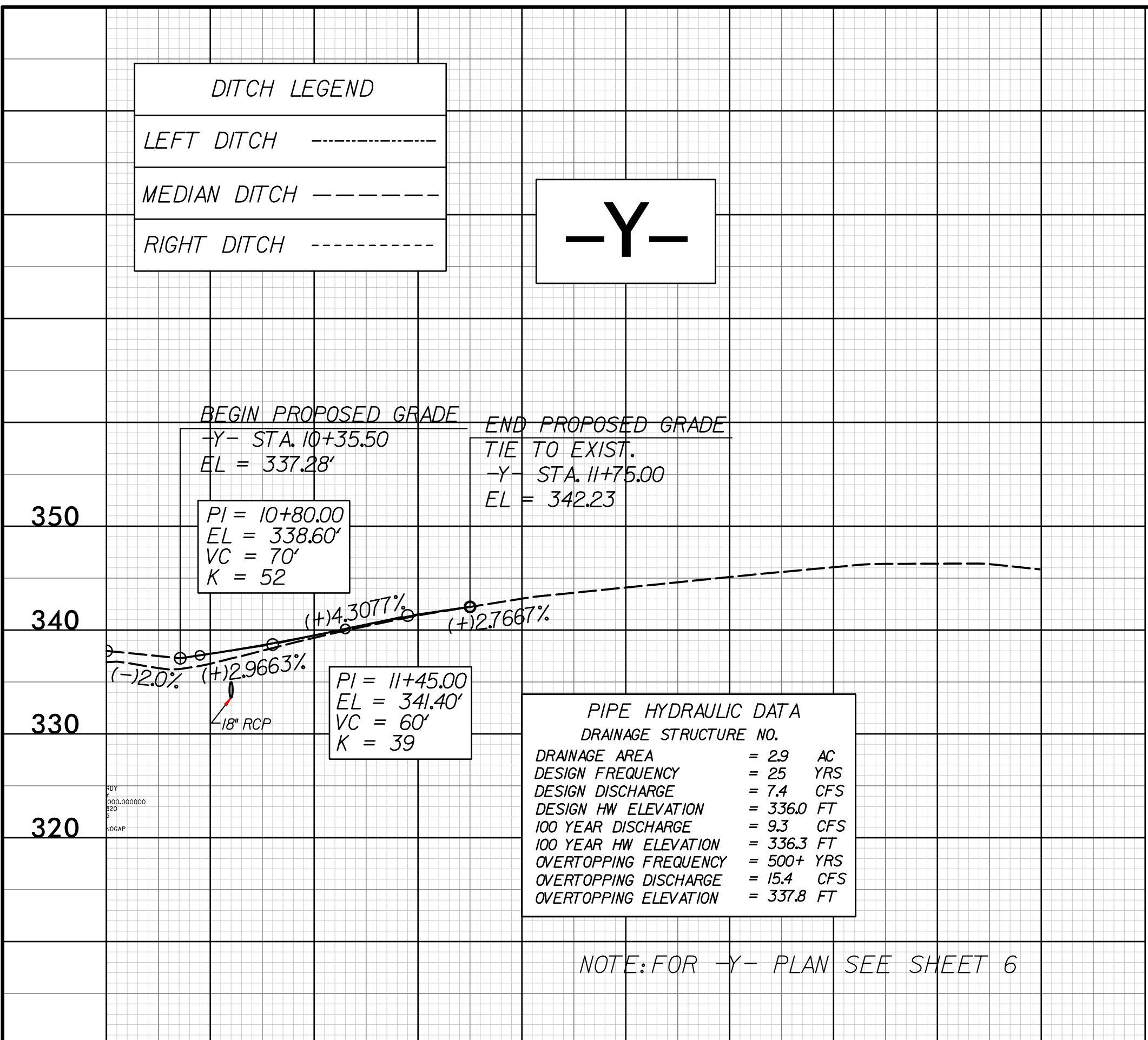
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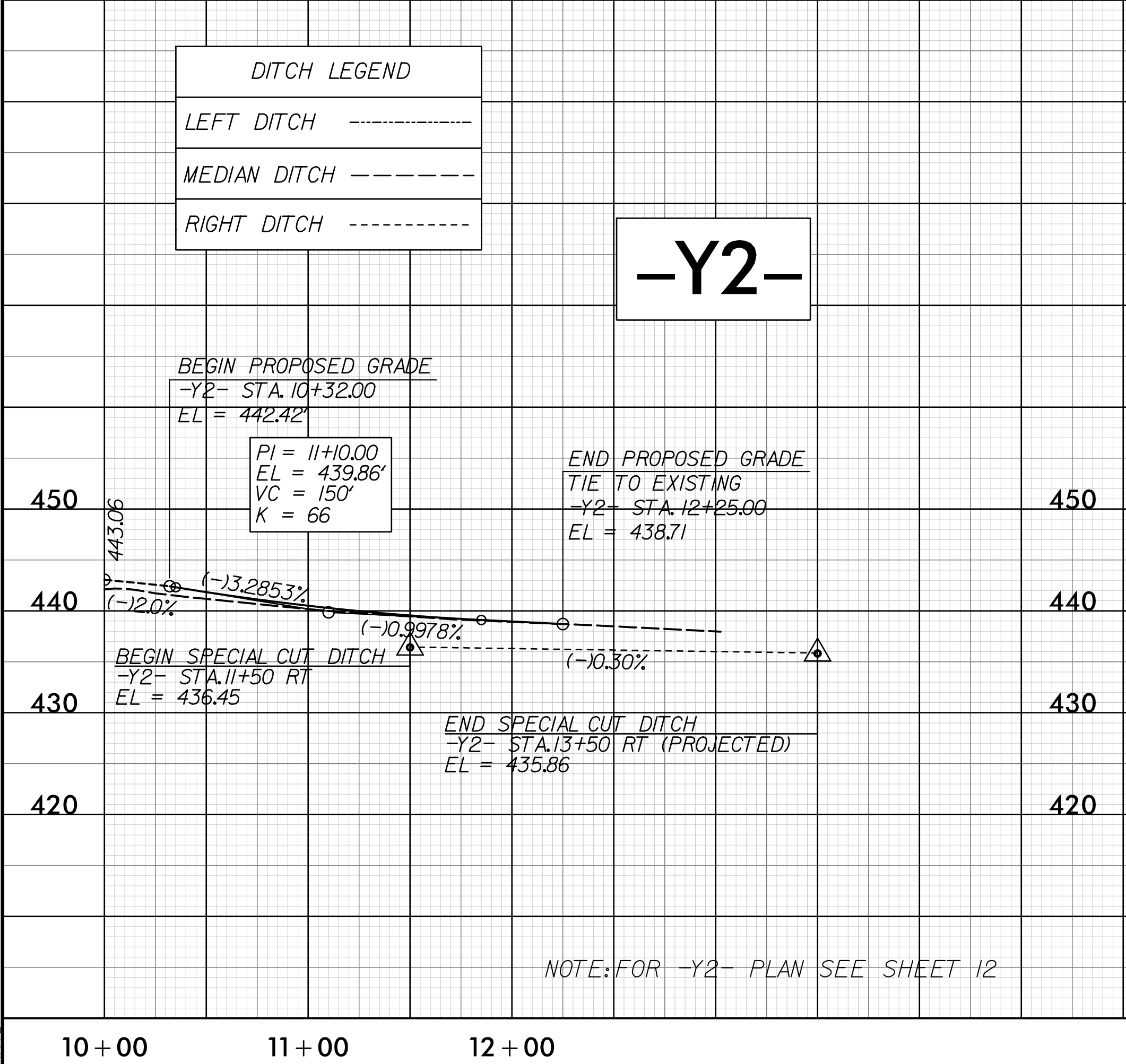
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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10+00 11+00 12+00

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PROJECT REFERENCE NO. R-2501C  
SHEET NO. 28

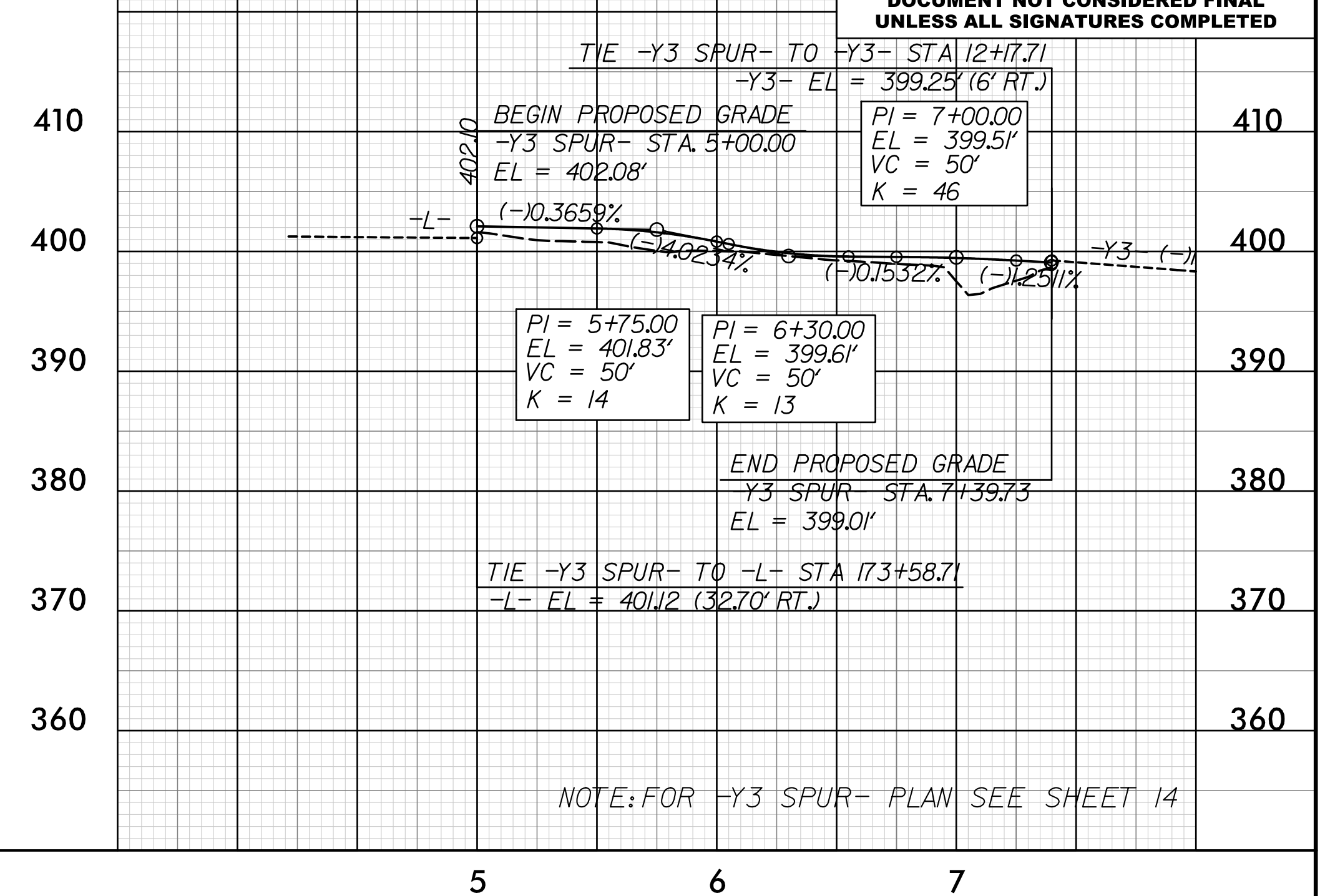
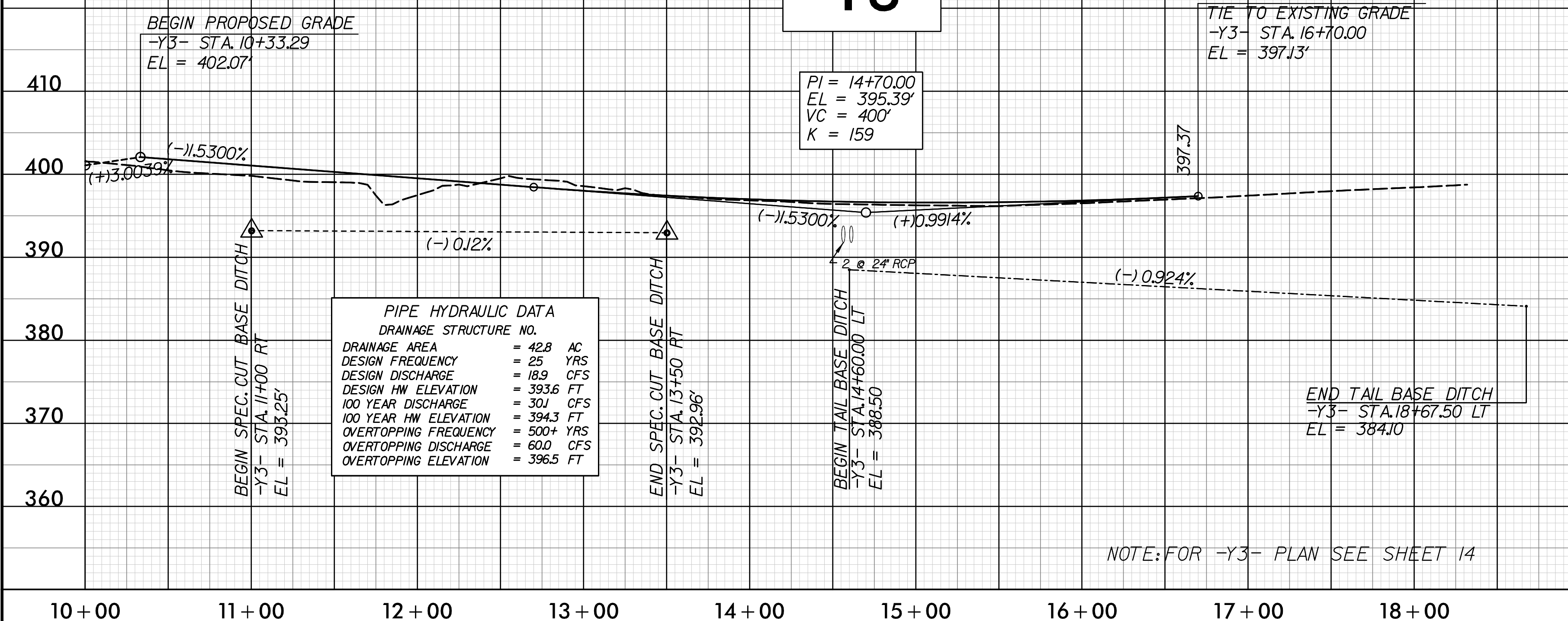
ROADWAY DESIGN ENGINEER  
HYDRAULICS ENGINEER  
Professional Engineer Seal 044575  
Professional Engineer Seal 40801

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DITCH LEGEND  
LEFT DITCH  
MEDIAN DITCH  
RIGHT DITCH

# -Y3-

# -Y3 SPUR-

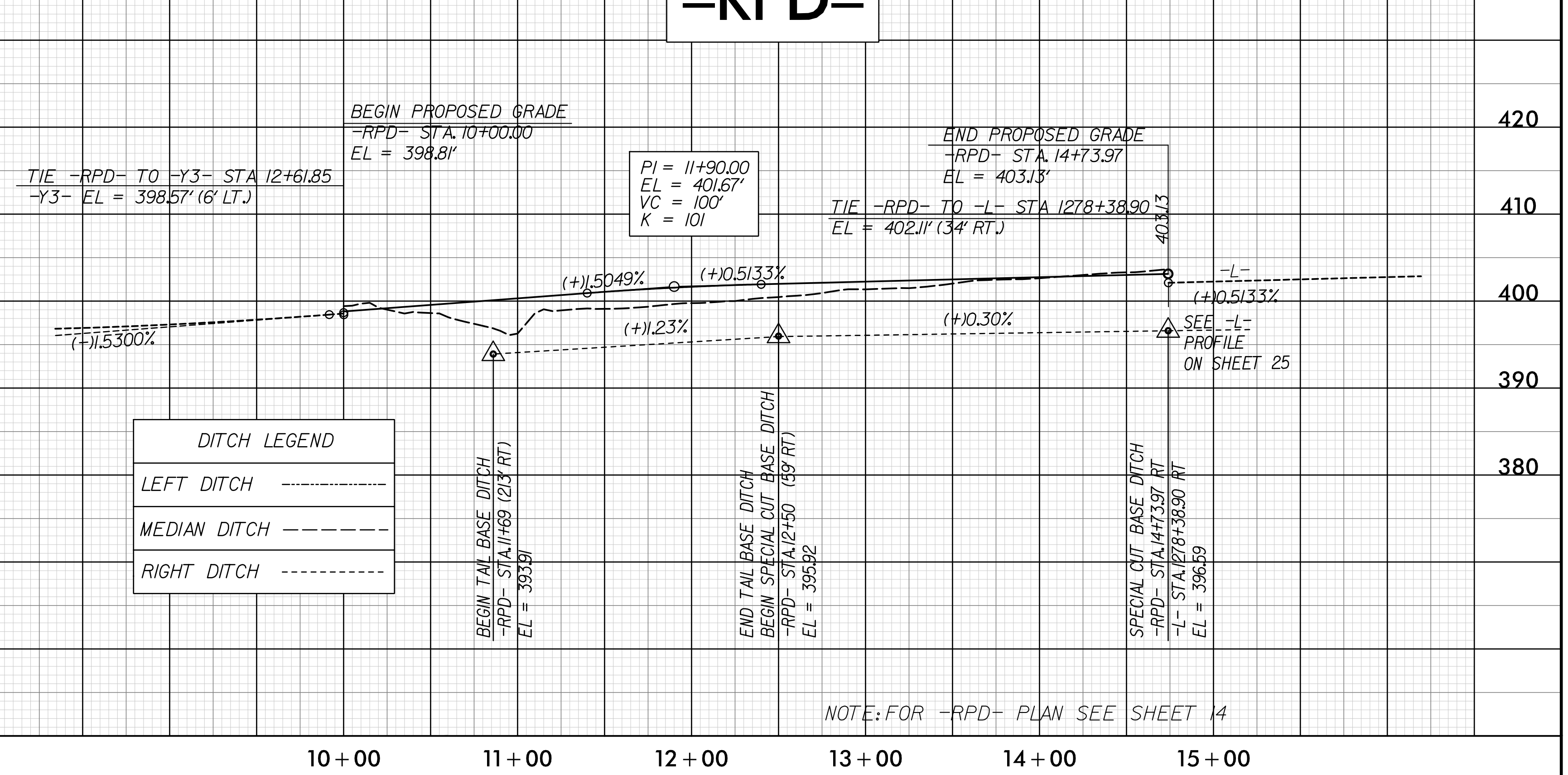
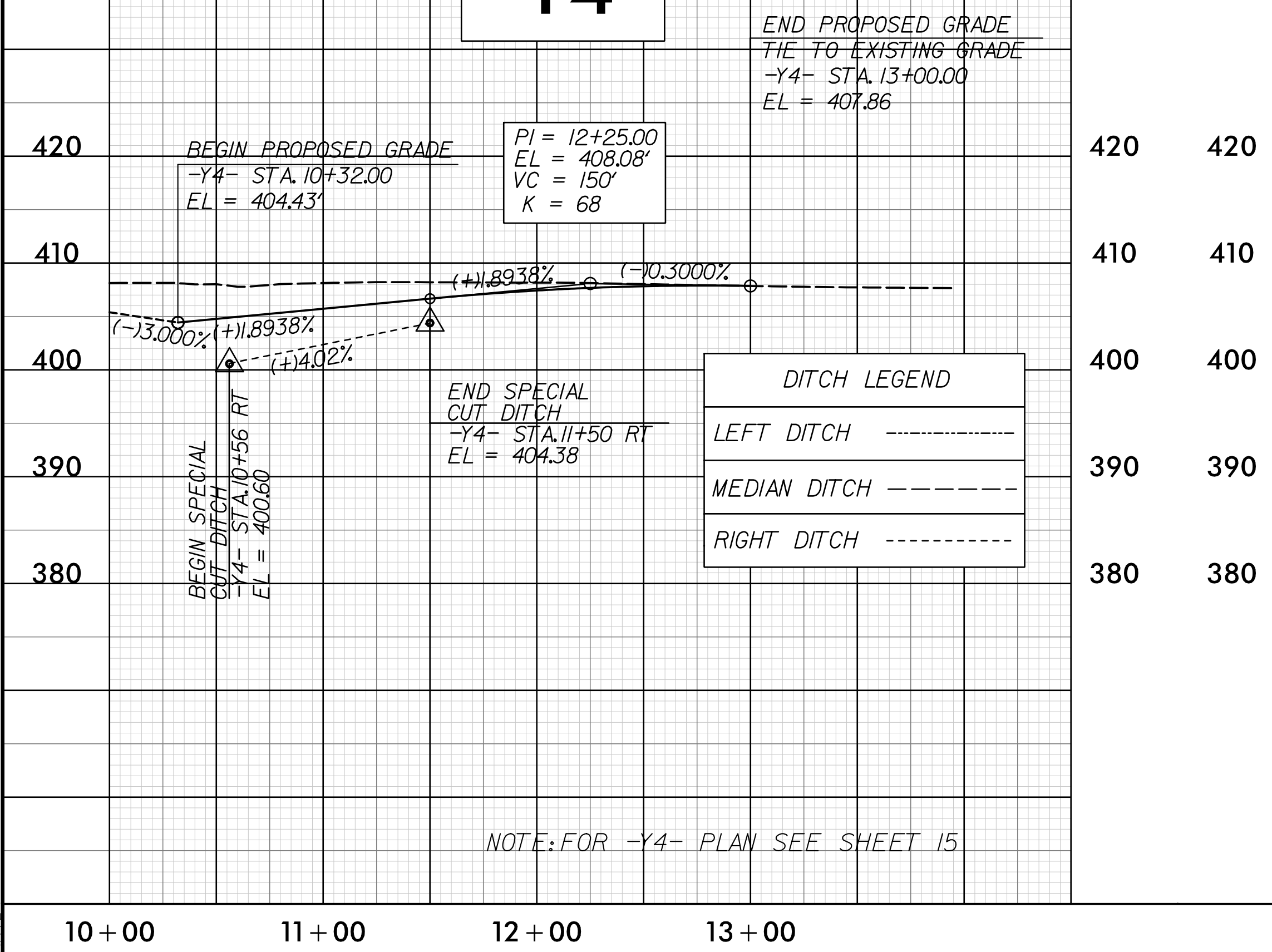


NOTE: FOR -Y3- PLAN SEE SHEET 14

NOTE: FOR -Y3 SPUR- PLAN SEE SHEET 14

# -Y4-

# -RPD-



NOTE: FOR -Y4- PLAN SEE SHEET 15

NOTE: FOR -RPD- PLAN SEE SHEET 14

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