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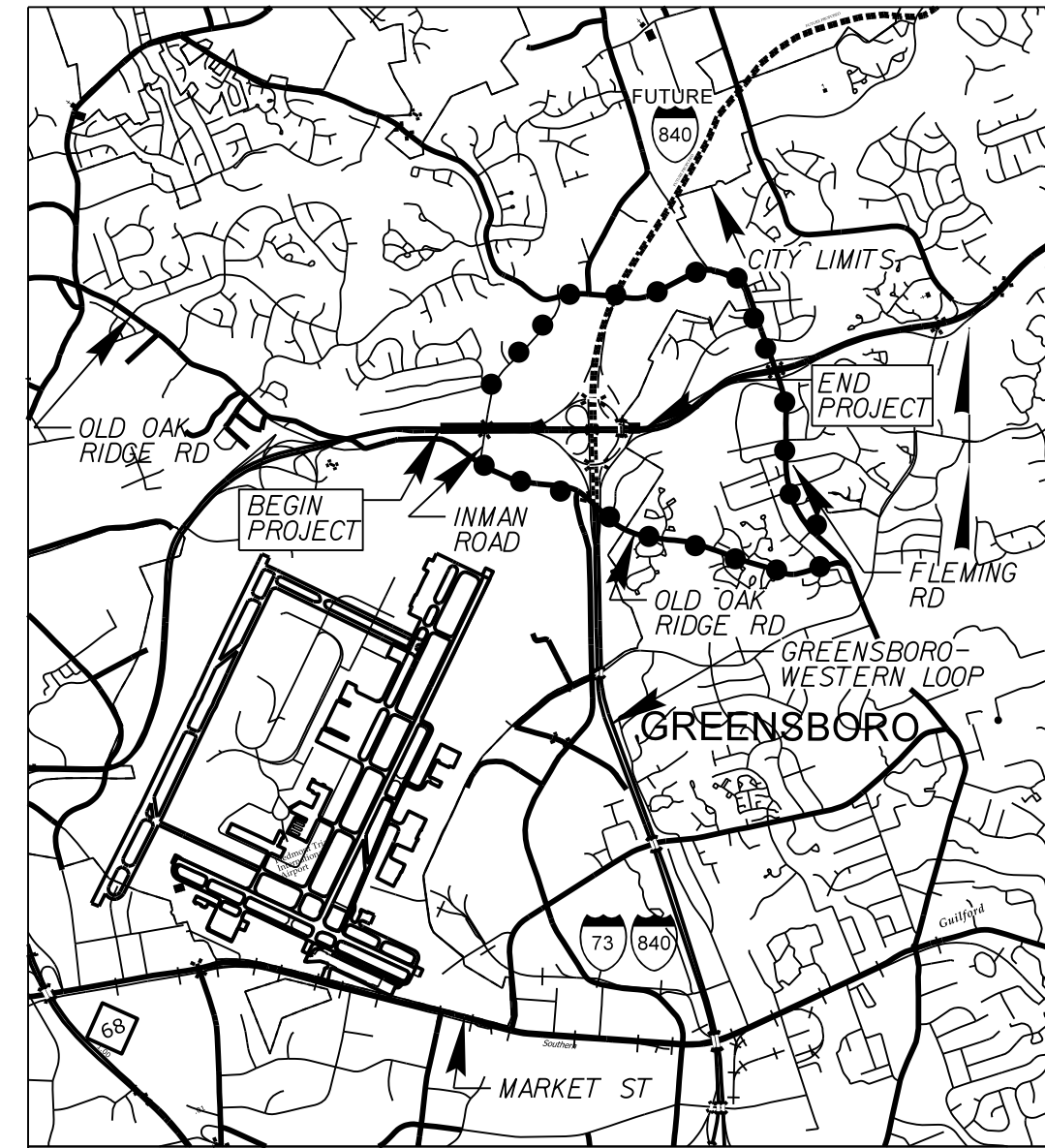
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09/28/15

TIP PROJECT: U-2524BC

CONTRACT: C203290

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



VICINITY MAP  
●●● DETOUR ROUTE

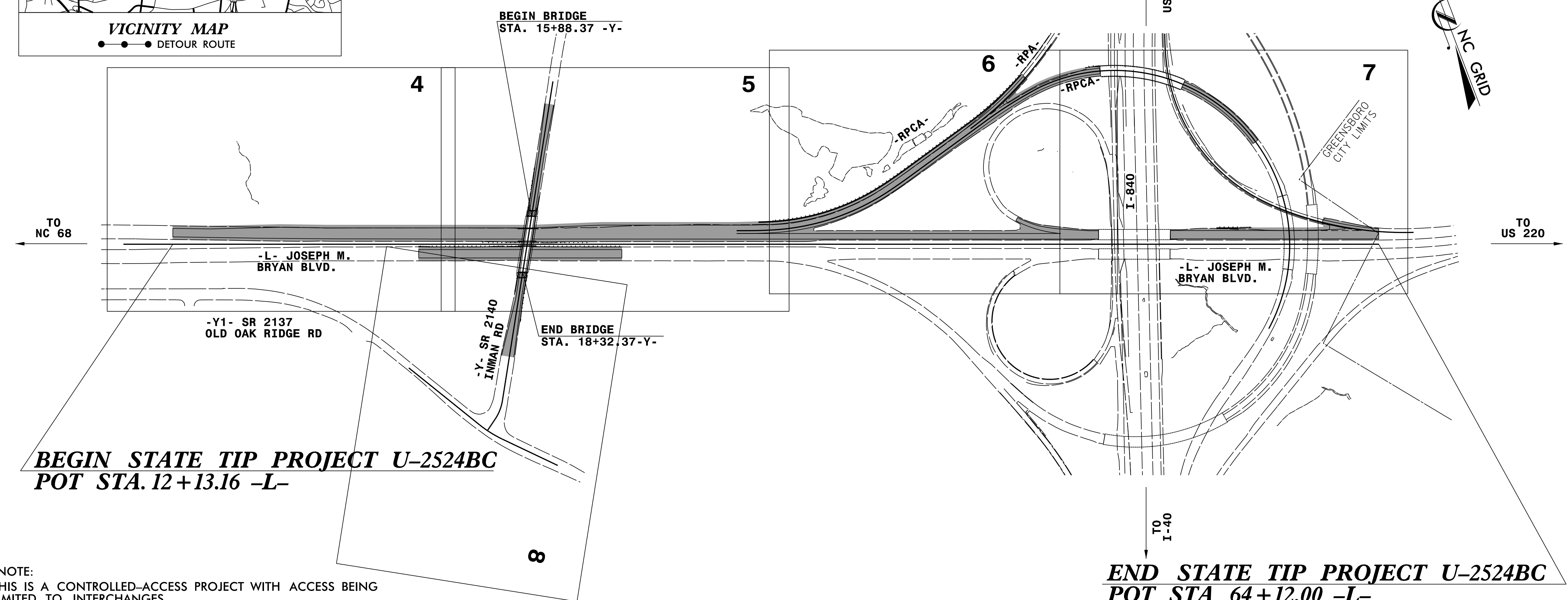
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GUILFORD COUNTY**

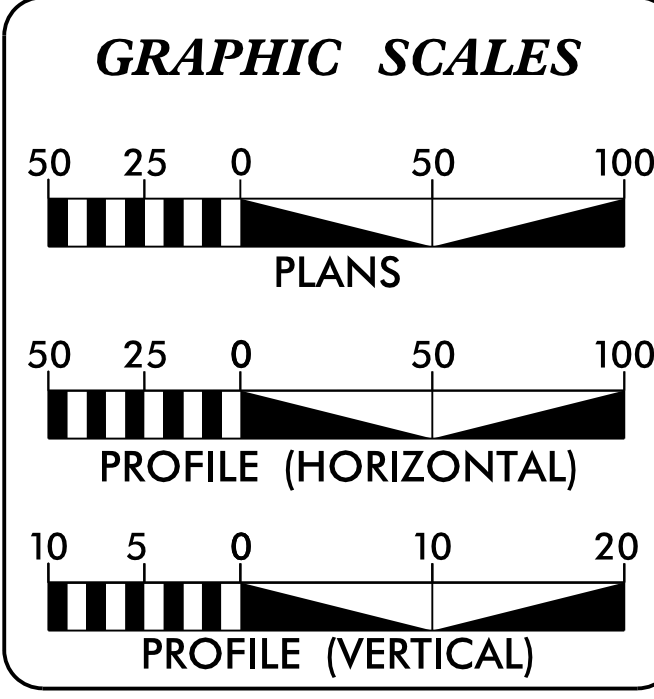
LOCATION: GREENSBORO WESTERN LOOP (I-73 CONNECTOR) FROM I-73 /I-840  
TO SR 2085 (JOSEPH BRYAN BLVD.) INTERCHANGE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES,  
AUXILIARY LANES AND ITS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524BC	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34820.1.13	STP-NHF-124-1 (1)	P.E.	
34820.3.F529	NHF-0708 (62)	CONST.	



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



**DESIGN DATA**

ADT 2014 =	28,300
ADT 2034 =	65,500
K =	11 %
D =	55 %
T =	14 % *
V =	70 MPH

CLASSIFICATION: FREEWAY  
\* (8% TTST DUAL 6%) STATEWIDE TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-2524BC =	0.985 MILES
TOTAL LENGTH OF TIP PROJECT U-2524BC =	0.985 MILES

PLANS PREPARED BY:  
**PARSONS**  
5640 CENTER DR., SUITE 211  
RALEIGH, NORTH CAROLINA 27606  
NC LICENSE NO. 10246

**MULKEY**  
ENGINEERS & CONSULTANTS  
2012 STANDARD SPECIFICATIONS

**TIMOTHY D. GOINS, P.E.**  
PROJECT ENGINEER

**J. MATTHEW PICKENS, P.E.**  
PROJECT DESIGN ENGINEER

**RON E. McCOLLUM, P.E.**  
PROJECT ENGINEER  
NCDOT ROADWAY DESIGN  
ENGINEERING COORDINATION SECTION

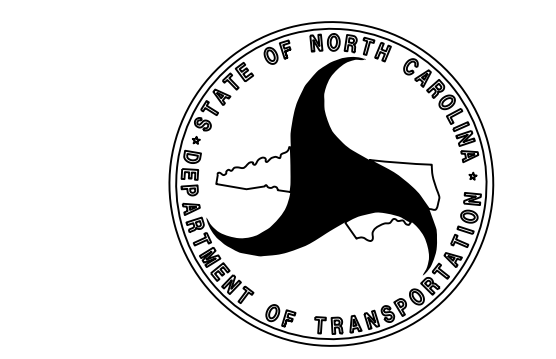
LETTING DATE:  
JUNE 16, 2015

**HYDRAULICS ENGINEER**

4/16/2015  
SEAL 29984  
**DAVID P. BOCKER**  
P.E.

**ROADWAY DESIGN ENGINEER**

4/20/2015  
SEAL 37950  
**JASON M. PICKENS**  
P.E.

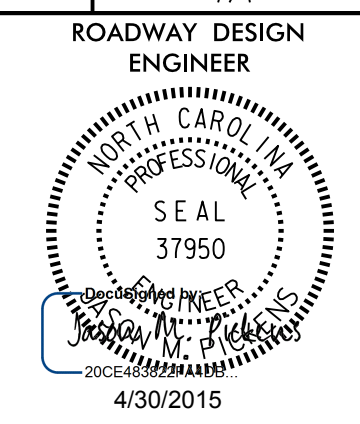


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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524BC	1A



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

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. 225.04 AND 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. 560.01 AND STD. NO. 560.02

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY (DISTRIBUTION), AT&T OF NC (TELEPHONE), TIME WARNER CABLE (CATV), AND CITY OF GREENSBORO (WATER).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

ROCK

CRYSTALLINE ROCK IS PRESENT WITHIN SIX (6) FEET OF THE PROPOSED GRADE BETWEEN -L- STA. 14+00 LT TO 16+00 LT. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

SHEET NUMBER	INDEX OF SHEETS
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-3	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	DETAIL FOR STRUCTURE ANCHOR UNIT (B-77 FOR F-SHAPED BARRIER)
2G-1 THRU 2G-2	STANDARD REINFORCED SOIL SLOPE DETAILS
2G-3	STANDARD TEMPORARY SHORING DETAIL
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 8	PLAN SHEETS
9 THRU 12	PROFILE SHEETS
TMP-1 THRU TMP-7	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-6	PAVEMENT MARKING PLANS
EC-1 THRU EC-13	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-7	SIGNING PLANS
ITS-1 THRU ITS-14	ITS PLANS
UC-1 THRU UC-6	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1A THRU X-1B	CROSS-SECTION TITLE & SUMMARY SHEETS
X-1 THRU X-54	CROSS-SECTIONS
S-1 THRU S-27	STRUCTURE PLANS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
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
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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

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Note: Not to Scale

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Existing Historic Property Boundary, Known Soil Contamination: Area or Site, Potential Soil Contamination: Area or Site.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for right of way: Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite RW Marker, Proposed Control of Access Line with Concrete CA Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal, VEGETATION: Single Tree, Single Shrub, Hedge, Woods Line.

Table listing symbols for orchard and vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for 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, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.\*); TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.\*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.\*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.\*).

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.\*), Above Ground Water Line.

TV:

Table listing symbols for TV: TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.\*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.\*).

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.\*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.\*).

MISCELLANEOUS:

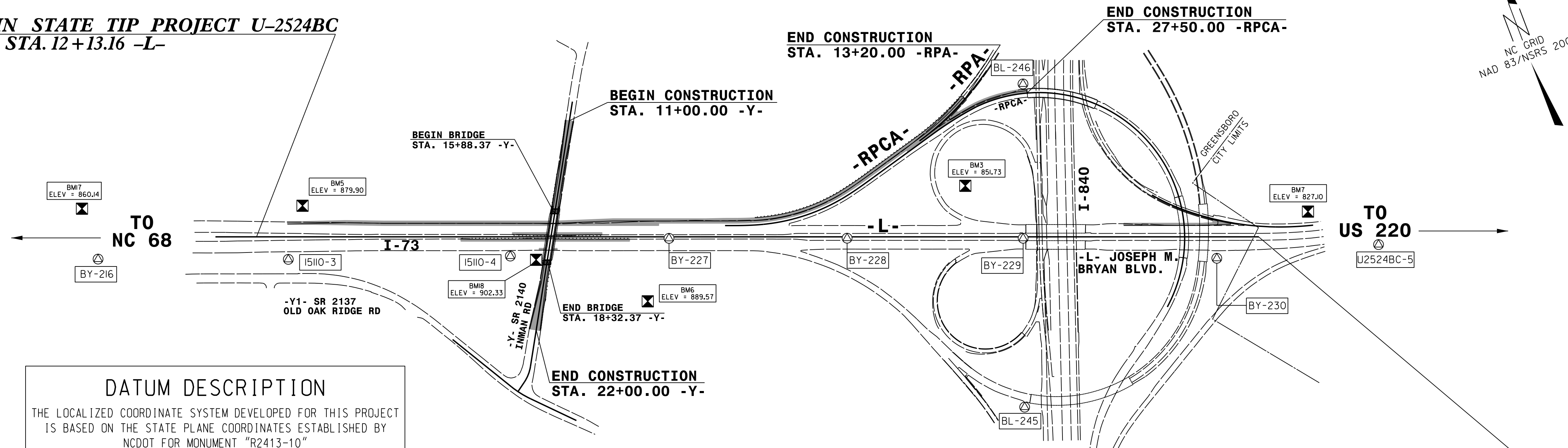
Table listing symbols for miscellaneous: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, U/G Test Hole (S.U.E.\*), Abandoned According to Utility Records, End of Information.



# U2524BC SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
U-2524BC	1C-1
Location and Surveys	

**BEGIN STATE TIP PROJECT U-2524BC**  
**POT STA. 12+13.16 -L-**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 881462.071(ft) EASTING: 1720890.584(ft) ELEVATION: 886.31'(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999635813

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 13+73.50 IS  
 S 22°39'59" E 18,799.87'

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 SYSTEM) 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/PAGES/DEFAULT.ASPX](https://connect.ncdot.gov/resources/location/pages/default.aspx)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 U2524BC\_LS\_GPSCALIB\_141119.HTML  
 U2524BC\_LS\_WGS84\_141119.TXT  
 U2524BC\_LS\_LOCAL\_141119.TXT  
 U2524BC\_LS\_CONTROL\_141119.TXT

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

**NOTE: DRAWING NOT TO SCALE**

**BASELINE DATA**

BL POINT	DESC.	NORTH	EAST	ELEVATION	BL STATION	OFFSET
7	U2524BC-7	855087.3320	1729792.5150	875.39	5+00.00	0.00
8	U2524BC-8	856205.5500	1729816.0850	844.74	16+18.47	0.00
240	BL-240	857184.2092	1730039.4829	840.87	26+22.30	0.00
241	BL-241	858057.7738	1730349.3158	835.20	35+49.18	0.00
242	BL-242	858932.8041	1730659.4828	836.54	44+77.56	0.00
243	BL-243	859884.0794	1730995.5848	847.05	54+86.46	0.00
244	BL-244	860732.4791	1731409.2753	874.17	64+30.35	0.00
245	BL-245	861949.0434	1731409.1026	857.31	76+46.91	0.00
A229	BY-229	862751.7611	1731700.6188	852.35	85+00.93	0.00
246	BL-246	863477.5589	1731983.9017	868.81	92+80.05	0.00
247	BL-247	864176.5882	1732749.3443	883.43	103+16.65	0.00
248	BL-248	865013.2593	1732842.0604	889.38	111+58.44	0.00
249	BL-249	865305.0971	1733313.1960	903.37	117+12.64	0.00

BY POINT	DESC.	NORTH	EAST	ELEVATION	BY STATION	OFFSET
1	I5110-1	864389.9620	1722022.3470	867.67	102+45.95	0.00
2	I5110-2	864793.8080	1722957.4560	854.50	112+64.54	0.00
213	BY-213	864761.8659	1724073.5675	836.19	123+81.11	0.00
214	BY-214	864697.9081	1724911.5145	829.60	132+21.49	0.00
215	BY-215	864485.6735	1726002.8344	820.19	143+33.26	0.00
216	BY-216	864355.2287	1727176.0611	838.68	155+13.71	0.00
3	I5110-3	864028.2020	1728108.5850	863.97	165+01.92	0.00
4	I5110-4	863626.4870	1729186.5010	876.12	176+52.25	0.00
227	BY-227	863403.8479	1729983.1274	876.16	184+79.41	0.00
228	BY-228	863076.5443	1730847.1100	865.16	194+03.31	0.00
229	BY-229	862751.7611	1731700.6188	852.35	203+16.52	0.00
230	BY-230	862321.3232	1732642.0327	836.15	213+51.67	0.00
5	U2524BC-5	862102.4180	1733419.2790	829.76	221+59.16	0.00
6	U2524BC-6	862330.2850	1734368.7800	809.76	231+35.62	0.00

**BENCHMARK DATA**

BM1	ELEVATION = 845.77
N 857663	E 1730270
BL STATION 31+51.00 57 RIGHT	
RR SPIKE IN 9' PINE	
BM2	ELEVATION = 862.05
N 860386	E 1731302
BL STATION 60+72.00 56 RIGHT	
RR SPIKE IN 19' PECAN	
BM3	ELEVATION = 851.73
N 863113	E 1731517
BL STATION 87+70.00 302 LEFT	
RR SPIKE IN 10' OAK	
BM4	ELEVATION = 892.67
N 864404	E 1732372
BL STATION 105+01.00 400 LEFT	
RR SPIKE IN 18' OAK	
BM5	ELEVATION = 879.90
N 864245	E 1728238
L STATION 14+23.00 159 LEFT	
RR SPIKE IN 12' POPLAR	
BM6	ELEVATION = 889.57
N 863138	E 1729764
L STATION 32+43.00 335 RIGHT	
RR SPIKE IN 13' OAK	
BM7	ELEVATION = 827.10
N 862336	E 1733119
L STATION 64+13.00	
N 87+28+55.12' E DIST 272.78	
SE CORNER OF SHOULDER SIDE OVERHEAD SIGN FOUNDATION	
BM15	ELEVATION = 870.41
N 865019	E 1723163
BL STATION 77+17.00 8799 LEFT	
RR SPIKE IN ROOT OF 12' BLACK GUM	
BM16	ELEVATION = 851.41
N 864580	E 1725046
BL STATION 79+48.00 6879 LEFT	
CHISELED SQUARE IN SW END BENT OF BRIDGE WING WALL	
BM17	ELEVATION = 860.14
N 864629	E 1727191
BL STATION 86+10.00 4884 LEFT	
RR SPIKE IN ROOT OF 18' POPLAR	
BM18	ELEVATION = 902.33
N 863533	E 1729324
L STATION 26+91.00 121 RIGHT	
BOLT IN SW END BENT OF BRIDGE WING WALL	

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# SURVEY CONTROL SHEET U2524BC

## GPS Calibration Report

Project : U2524BC\_LS\_0712026

TIP Number	U2524BC	Date & Time	8:42:33 AM 11/18/2014
User name	khudson	Zone	North Carolina 3200
Coordinate System	US State Plane 1983(at ground)	Geoid Model	G09NC
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum	NAVD88		
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

### LOCAL SITE INFORMATION

Localized around	R2413-10
Latitude	36°10'05.55674"N
Longitude	79°56'44.02451"W
Site Scale Factor	1.0000364200
Height	781.391sft

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	862157.519sft
Easting coordinate of rotation center	1722906.371sft
Rotation about the center point	-0°00'01"
Translation north	-0.028sft
Translation east	-0.013sft
Scale factor	1.00000049

### Vertical Adjustment Parameters

Northing coordinate of origin point	863373.849sft
Easting coordinate of origin point	1713366.161sft
Vertical separation at origin	0.183sft
Slope north	2.625ppm
Slope east	3.221ppm

## Geoid Model Definition

G09NC

### Residual Differences Between GPS (WGS84) And Local Coordinates

	Maximum error	Root Mean Square error	Point
Horizontal	0.067sft	0.012	BY1-151_GNSS
Vertical	0.044sft	0.008	U2524BC-10_GNSS
Three-dimensional	0.067sft	0.014	BY1-151_GNSS

### Point Residuals

	WGS84 Coordinates	Calculated point FOR DISPLAY ONLY	Local Coordinates
Point	BY1-151_GNSS	Northing 863373.849sft	Point BY1-151
Latitude	36°07'05.98147"N	Easting 1713366.161sft	Northing 863373.806sft
Longitude	79°58'13.62670"W	Elevation 959.500sft	Easting 1713366.213sft
Height	854.890sft	Horz error 0.067sft	Elevation 959.500sft
		Vert error 0.000sft	Utilized Horz and Vert
		3D error 0.067sft	Quality Control quality
Point	BY5-169_GNSS	Northing 870815.068sft	Point BY5-169
Latitude	36°08'19.63916"N	Easting 1714173.694sft	Northing 870815.126sft
Longitude	79°58'04.66905"W	Elevation 910.830sft	Easting 1714173.681sft
Height	805.895sft	Horz error 0.060sft	Elevation 910.850sft
		Vert error 0.020sft	Utilized Horz and Vert
		3D error 0.063sft	Quality Control quality
Point	R2413-1_GNSS	Northing 853277.661sft	Point R2413-1
Latitude	36°05'26.28963"N	Easting 1714836.090sft	Northing 853277.636sft
Longitude	79°57'54.51644"W	Elevation 870.753sft	Easting 1714836.099sft
Height	766.694sft	Horz error 0.026sft	Elevation 870.780sft
		Vert error 0.027sft	Utilized Horz and Vert
		3D error 0.037sft	Quality Control quality
Point	R2413-3_GNSS	Northing 859578.336sft	Point R2413-3
Latitude	36°06'28.78840"N	Easting 1716883.045sft	Northing 859578.354sft
Longitude	79°57'30.31907"W	Elevation 897.057sft	Easting 1716883.025sft
Height	792.775sft	Horz error 0.027sft	Elevation 897.030sft
		Vert error 0.027sft	Utilized Horz and Vert
		3D error 0.038sft	Quality Control quality
Point	I5110-1_GNSS	Northing 864389.959sft	Point I5110-1
Latitude	36°07'16.85279"N	Easting 1722022.362sft	Northing 864389.962sft
Longitude	79°56'28.24846"W	Elevation 867.711sft	Easting 1722022.347sft
Height	763.408sft	Horz error 0.015sft	Elevation 867.670sft
		Vert error 0.041sft	Utilized Horz and Vert
		3D error 0.043sft	Quality Control quality
Point	I5110-4_GNSS	Northing 863626.475sft	Point I5110-4
Latitude	36°07'09.96603"N	Easting 1729186.534sft	Northing 863626.487sft
Longitude	79°55'00.84725"W	Elevation 876.132sft	Easting 1729186.501sft
Height	772.170sft	Horz error 0.036sft	Elevation 876.120sft
		Vert error 0.012sft	Utilized Horz and Vert
		3D error 0.038sft	Quality Control quality

Point	U2524BC-5_GNSS	Northing	862102.417sft	Point U2524BC-5
Latitude	36°06'55.27919"N	Easting	1733419.275sft	Northing 862102.417sft
Longitude	79°54'09.09193"W	Elevation	829.783sft	Easting 1733419.270sft
Height	726.085sft	Horz error	0.005sft	Elevation 829.760sft
		Vert error	0.023sft	Utilized Horz and Vert
		3D error	0.023sft	Quality Control quality
Point	U2524BC-8_GNSS	Northing	856205.551sft	Point U2524BC-8
Latitude	36°05'56.64337"N	Easting	1729816.084sft	Northing 856205.568sft
Longitude	79°54'52.34173"W	Elevation	844.728sft	Easting 1729816.100sft
Height	741.187sft	Horz error	0.023sft	Elevation 844.740sft
		Vert error	0.012sft	Utilized Horz and Vert
		3D error	0.026sft	Quality Control quality
Point	U2524BC-10_GNSS	Northing	866048.112sft	Point U2524BC-10
Latitude	36°07'34.20821"N	Easting	1732453.970sft	Northing 866048.070sft
Longitude	79°54'21.29463"W	Elevation	908.206sft	Easting 1732453.979sft
Height	804.255sft	Horz error	0.043sft	Elevation 908.250sft
		Vert error	0.044sft	Utilized Horz and Vert
		3D error	0.062sft	Quality Control quality

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 881462.071(+) EASTING: 1720890.584(+) ELEVATION: 886.31'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999635813 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 13+73.50 IS S 22°39'59" E 18,799.87' 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 SYSTEM) 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/PAGES/DEFAULT.ASPX](https://connect.ncdot.gov/resources/location/pages/default.aspx)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
U2524BC\_LS\_GPSCALIB\_141118.HTML  
U2524BC\_LS\_WGS84\_141118.TXT  
U2524BC\_LS\_LOCAL\_141118.TXT  
U2524BC\_LS\_CONTROL\_141118.TXT

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

NOTE: DRAWING NOT TO SCALE



# U2524BC SURVEY CONTROL SHEET

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	864246.8803	1727786.2691
POT	64+12.79	862324.4547	1732846.1642

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	864245.0738	1729766.5524
PC	23+92.26	863036.9090	1729074.6577
PT	24+79.32	862972.9894	1729016.5558
POT	25+38.65	862938.7439	1728968.1146

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	863311.6871	1728747.2585
PC	13+91.05	862974.3912	1728945.1174
PT	15+08.02	862881.3043	1729015.5139
POT	17+71.97	862690.7959	1729198.2073

RPA

TYPE	STATION	NORTH	EAST
PC	10+00.00	863415.0107	1731377.3309
PCC	13+23.69	863536.0797	1731676.7307
PT	15+07.52	863632.5719	1731833.1051

RPCA

TYPE	STATION	NORTH	EAST
TS	10+00.00	863362.4631	1730278.4464
SC	12+00.00	863297.7313	1730467.5873
CS	16+30.07	863277.2362	1730893.8545
ST	18+30.07	863323.5233	1731088.3332
PC	21+93.79	863419.4842	1731439.1701
PCC	24+78.06	863475.8819	1731717.4919
PT	43+71.95	862152.8879	1732273.2109

RPD

TYPE	STATION	NORTH	EAST
CS	32+80.83	865252.1139	1733332.9466
SC	34+77.68	865103.1754	1733204.2662
CS	38+26.96	864819.8086	1733000.4380
ST	40+23.81	864651.0131	1732899.1760
TS	43+52.63	864367.1320	1732733.2305
SC	45+49.48	864196.6145	1732634.8808
CS	52+21.68	863592.2391	1732341.5518
SC	55+00.55	863327.5170	1732255.5519
CS	61+41.31	862723.9349	1732404.4894
SC	63+38.16	862583.6975	1732542.1679
CS	68+08.65	862341.7801	1732943.2700
SC	70+05.50	862280.5137	1733130.2166

### DATUM DESCRIPTION

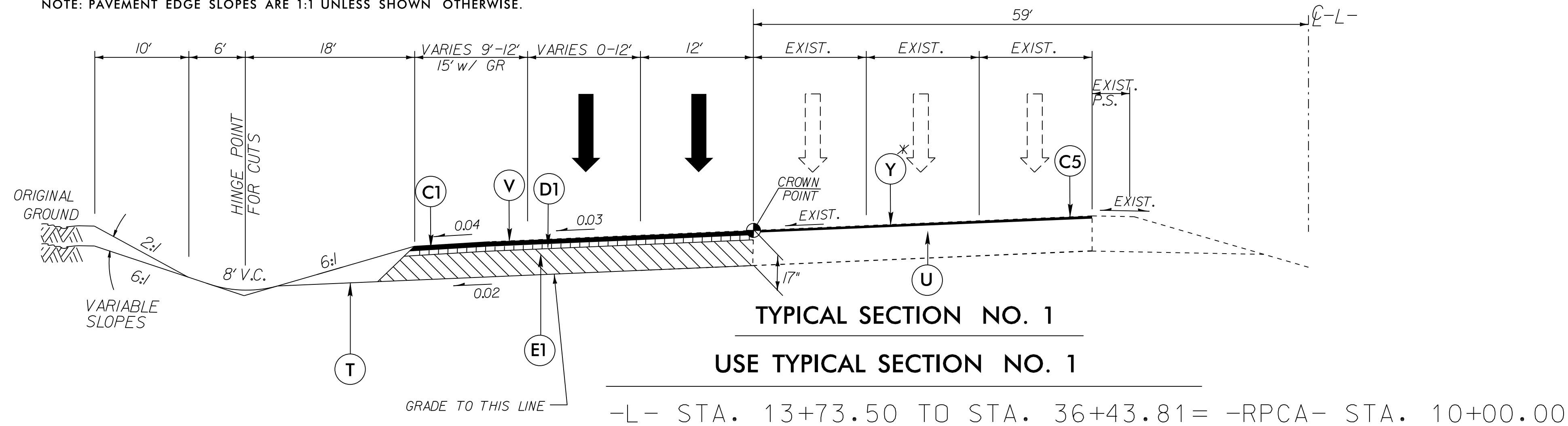
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2413-10"  
 WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF  
 NORTHING: 881462.071(FT) EASTING: 1720890.584(FT)  
 ELEVATION: 886.31'(FT)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999635813  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2413-10" TO -L- STATION 13+73.50 IS  
 S 22°39'59" E 18.799.87'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

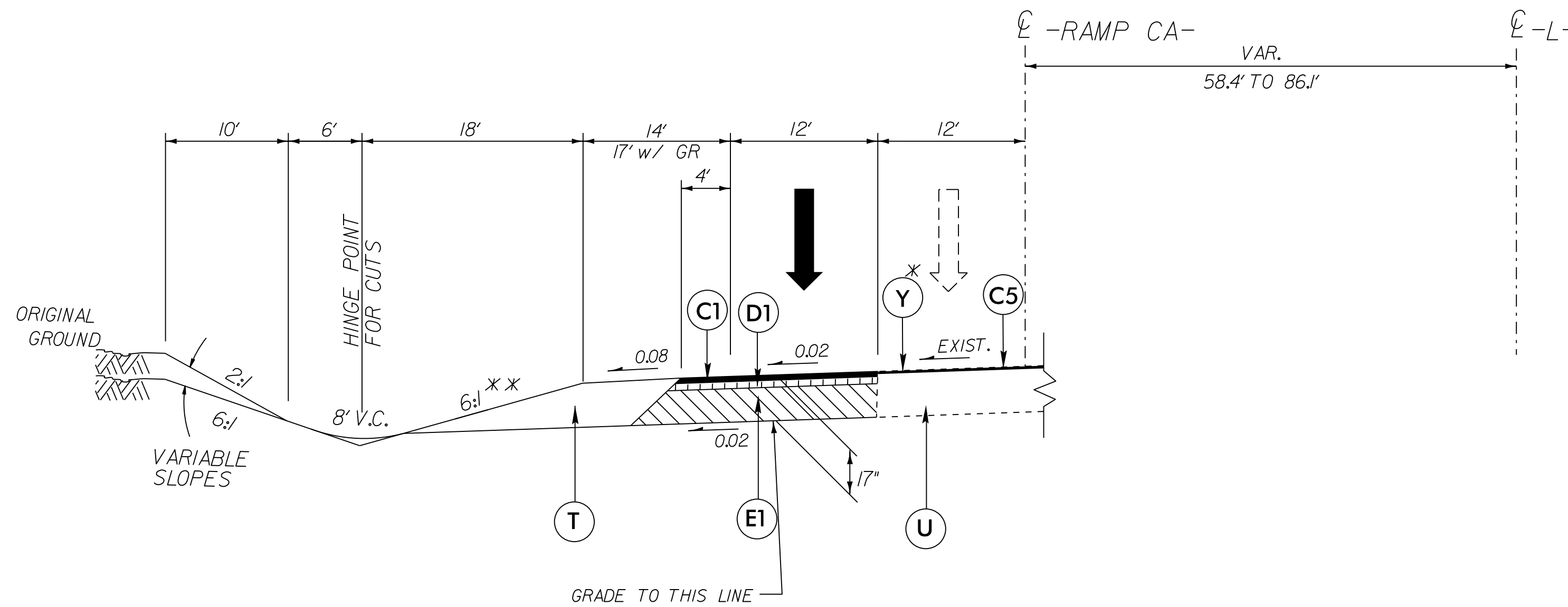
# FINAL PAVEMENT SCHEDULE

CODE	DESCRIPTION	D2	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 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R	EXPRESSWAY GUTTER
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	D3	PROP. APPROX. 3 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1 IN DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.	D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	U	EXISTING PAVEMENT
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	E1	PROP. APPROX. 10" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.	V	MILLED RUMBLE STRIPS
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1 IN DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.	E2	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 5 1/2" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL SHEET 2A-1)
C5	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD	E3	PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YARD.	Y	MILL PAVEMENT TO 1 1/2" IN DEPTH
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.		

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



\*NOTE: MILL AND FILL WITH 1.5" S9.5C FROM STA. 12+13.16 TO STA. 36+43.81 (EXISTING WESTBOUND LANES)

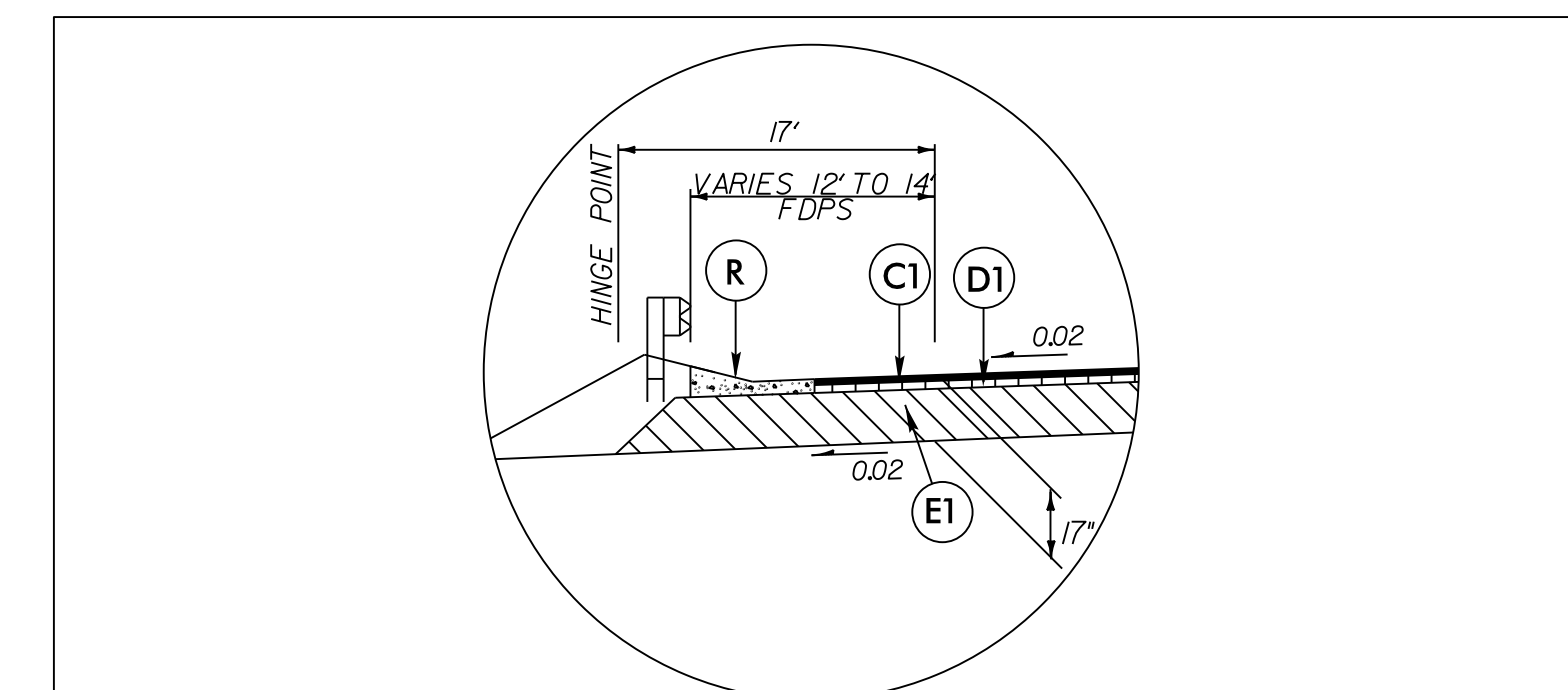


\*NOTE: MILL AND FILL WITH 1.5" S9.5C FROM STA. 10+00.00 TO STA. 19+77.50 (EXISTING RAMP LANES)

\*\*NOTE: -RPCA- 1.5:1 SLOPES FROM STA. 17+00.00 TO STA. 19+77.50 SEE SHEETS 2G-1 & 2G-2 FOR DETAILS

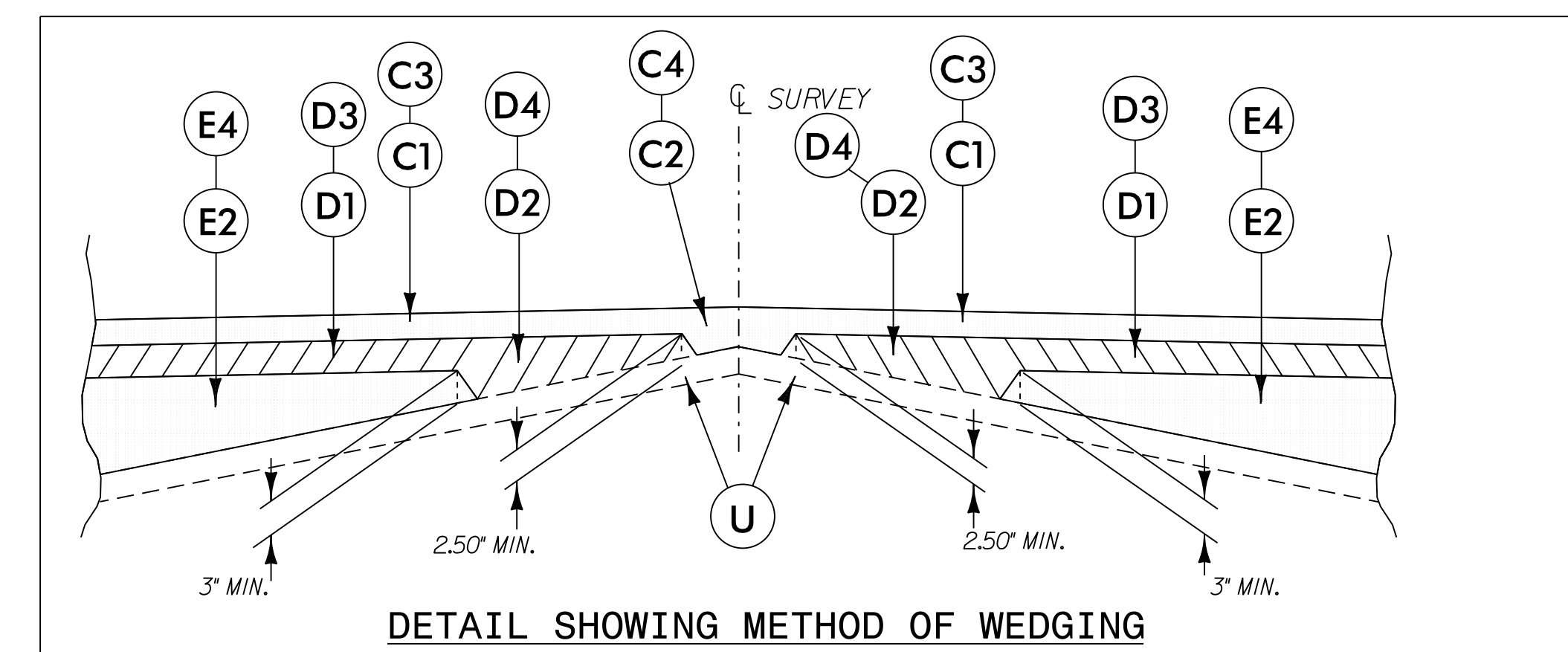
PROJECT REFERENCE NO. <b>U-2524BC</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER <i>Jason M. Beck</i> SEAL 37950 4/20/2015	PAVEMENT DESIGN ENGINEER <i>Clayton M. Wilson</i> SEAL 022896 4/20/2015

PLANS PREPARED BY:  
**PARSONS**  
5540 CENTERVIEW DR., SUITE 217  
RALEIGH, NORTH CAROLINA 27606  
NC LICENSE NO. F-0246  
FOR NORTH CAROLINA COPY OF TRANSPORTATION



USE DETAIL A IN CONJUNCTION WITH TYPICAL SECTIONS NO. 2, 3, 5, & 6 AT THE FOLLOWING LOCATIONS

- RPCA- STA. 10+95.00 +/- TO STA. 21+32.96 LT.
- RPA- STA. 10+00.00 +/- TO STA. 13+20.00 LT.
- L- STA. 57+12.25 +/- TO STA. 58+06.00 LT.

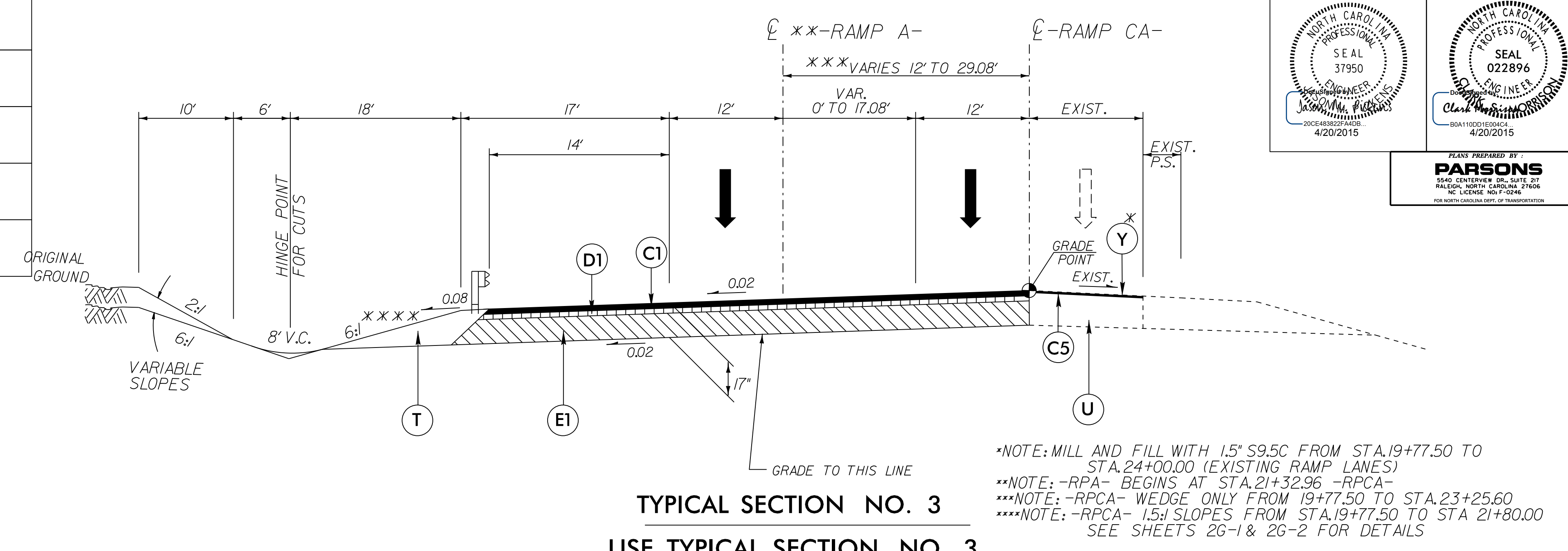




6/22/19

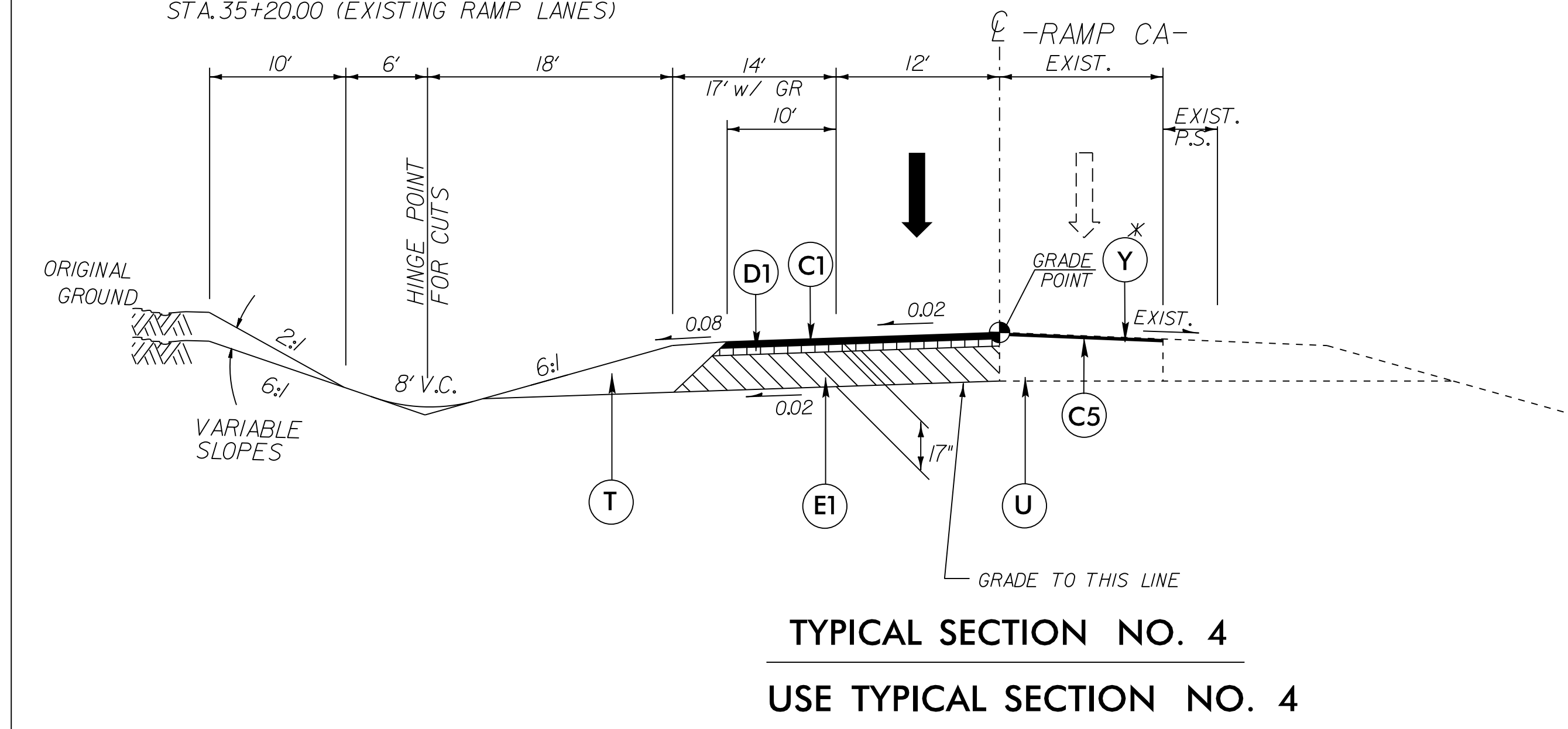
FINAL PAVEMENT SCHEDULE			
CODE	DESCRIPTION		
C1	PROP. 3" A.C.S.C. TYPE S9.5C	E1	PROP. 10" A.C.B.C. TYPE B25.0C
C2	PROP. VAR. DEPTH A.C.S.C. TYPE S9.5C	T	EARTH MATERIAL.
C5	PROP. 1 1/2" A.C.S.C. TYPE S9.5C	U	EXISTING PAVEMENT.
D1	PROP. 4" A.C.I.C. TYPE I19.0C	Y	MILL PAVEMENT TO 1 1/2" IN DEPTH

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

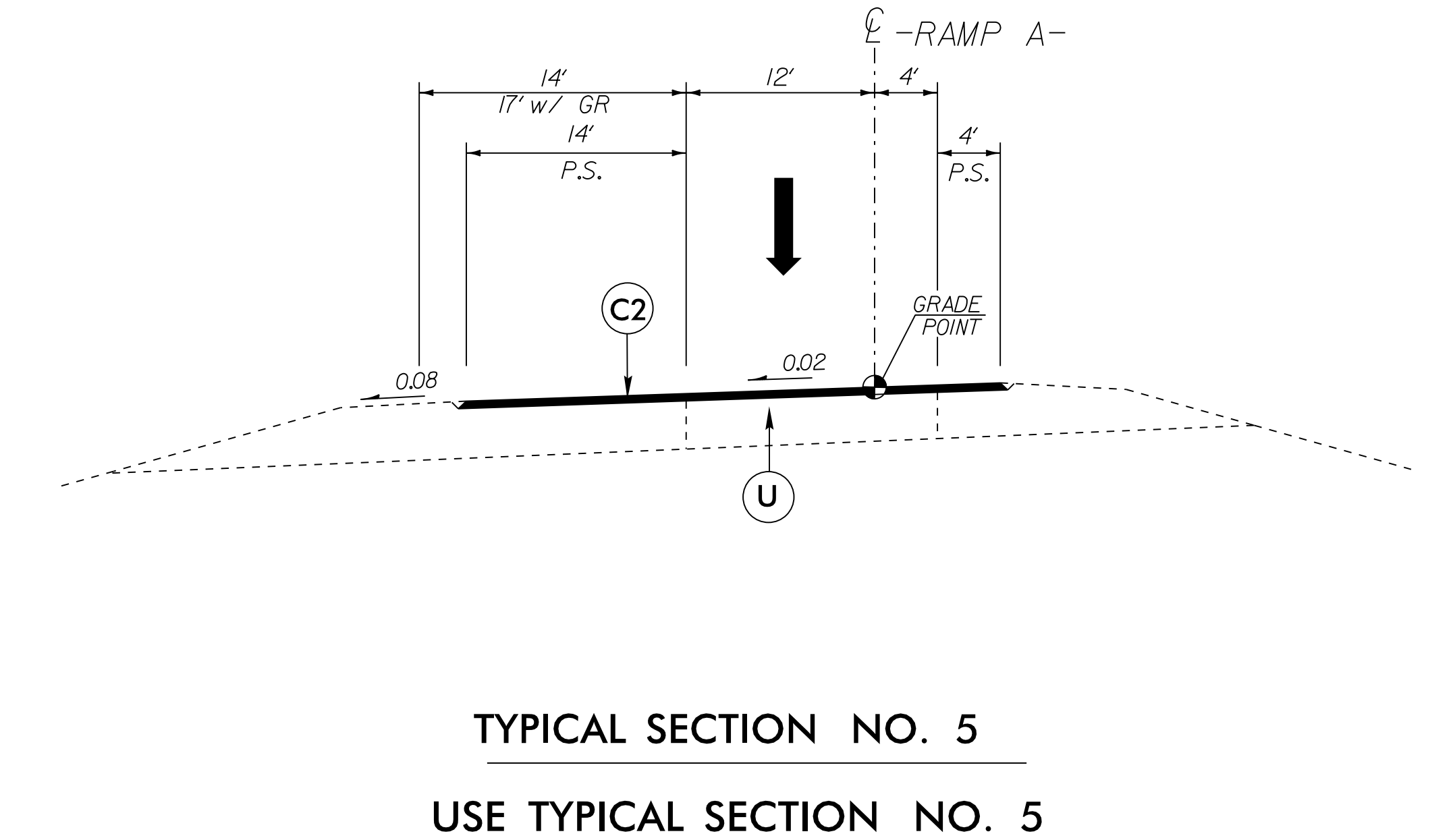


-RPCA- STA. 19+77.50 TO STA. 24+00.00 (= STA. 12+65.73 -RPA-)

\*NOTE: MILL AND FILL WITH 1.5" S9.5C FROM STA. 24+00.00 TO STA. 35+20.00 (EXISTING RAMP LANES)



-RPCA- STA. 24+00.00 TO STA. 27+50.00



-RPA- STA. 12+65.73 (= STA. 24+00.00 -RPCA-) TO STA. 13+20.00

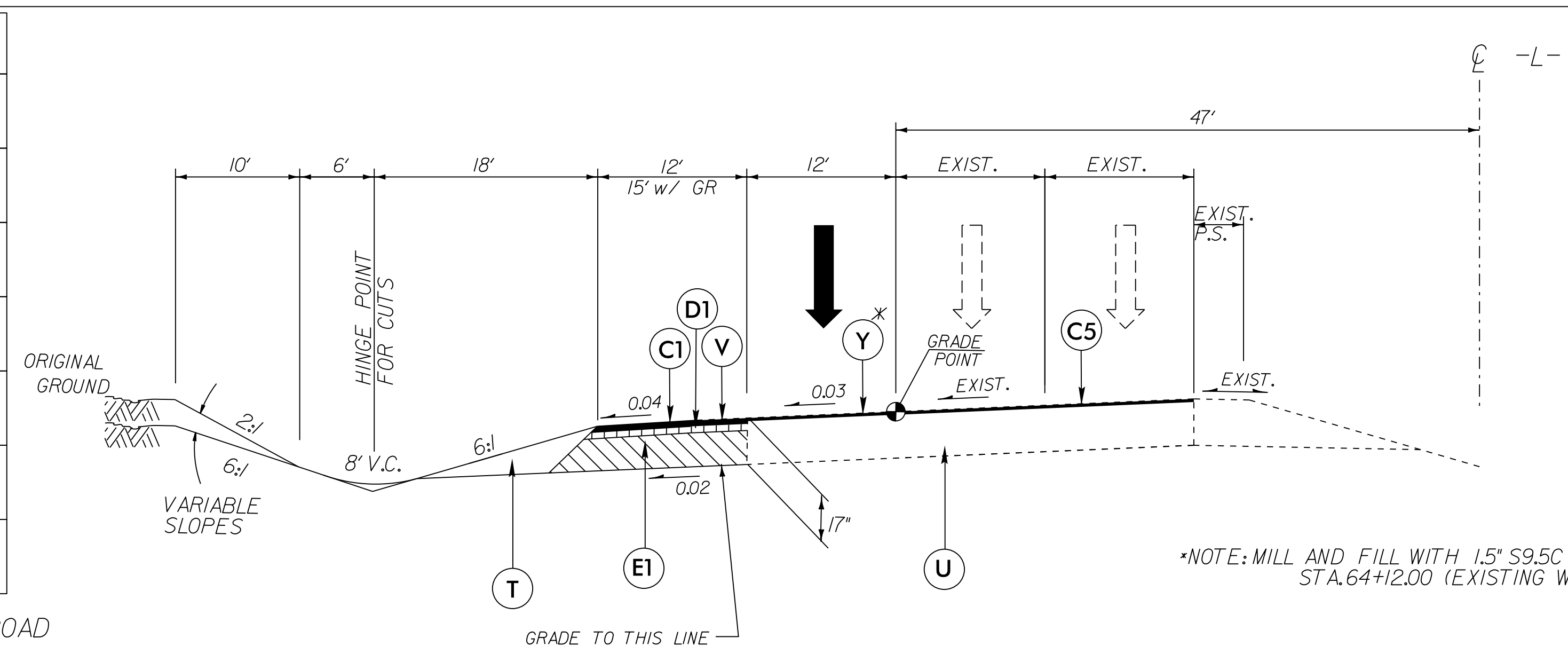
PROJECT REFERENCE NO. U-2524BC	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER SEAL 37950 JASON M. PROFFER	PAVEMENT DESIGN ENGINEER SEAL 022896 CLARK W. BRIDGEMAN
PLANS PREPARED BY: <b>PARSONS</b> 5540 CENTERVIEW DR., SUITE 217 RALEIGH, NORTH CAROLINA 27606 NC LICENSE NO. F-0246 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION	

15-APR-2019 10:49:09  
 U:\11-2524BC\Roadway\Proo\U2524BC\_RDY\_TYP\_2A-2.dgn  
 \$\$\$USERNAME\$\$\$

6/2/19

FINAL PAVEMENT SCHEDULE			
CODE	DESCRIPTION		
C1	PROP. 3" A.C.S.C. TYPE S9.5C	E3	PROP. 5 1/2" A.C.B.C. TYPE B25.0B
C3	PROP. 3" A.C.S.C. TYPE S9.5B	T	EARTH MATERIAL.
C5	PROP. 1 1/2" A.C.S.C. TYPE S9.5C	U	EXISTING PAVEMENT.
D1	PROP. 4" A.C.I.C. TYPE I19.0C	V	MILLED RUMBLE STRIPS
D3	PROP. 3 1/2" A.C.B.C. TYPE I19.0B	W	WEDGING
E1	PROP. 10" A.C.B.C. TYPE B25.0C	Y	MILL PAVEMENT TO 1 1/2"

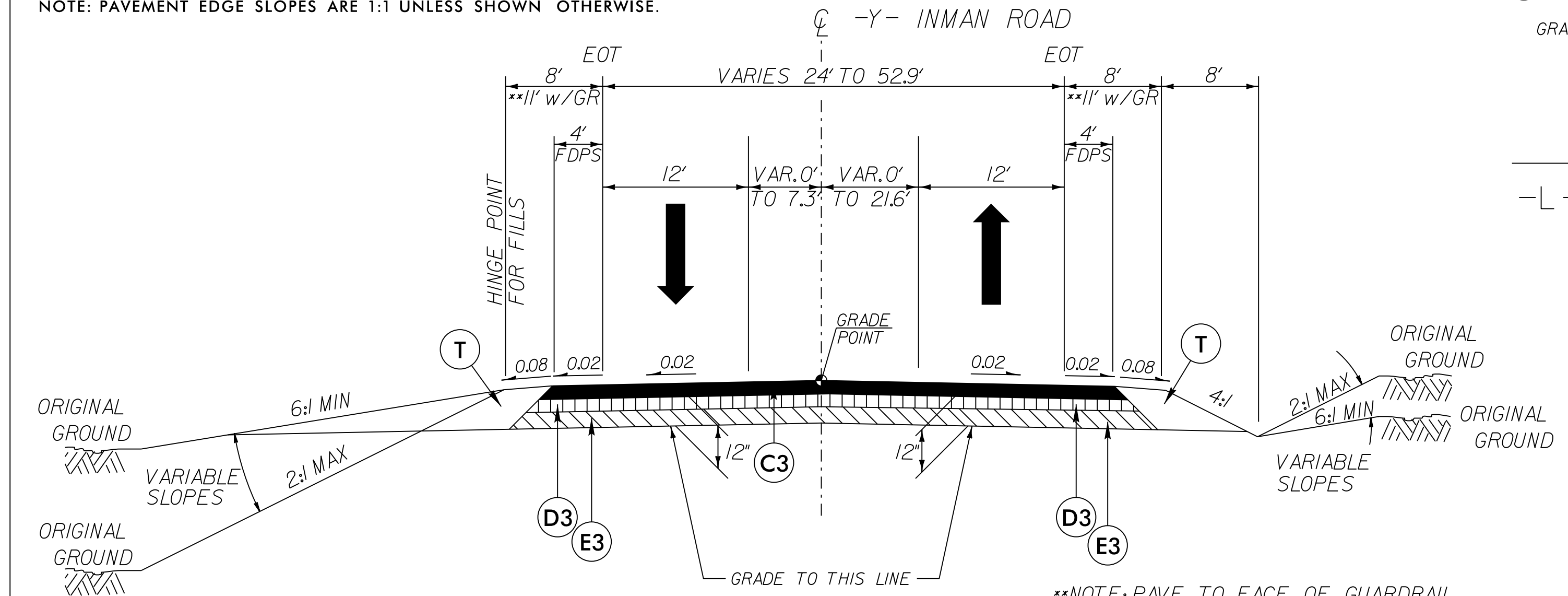
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



**TYPICAL SECTION NO. 6**  
**USE TYPICAL SECTION NO. 6**  
 -L- STA. 57+12.25 TO STA. 62+67.25

PROJECT REFERENCE NO. U-2524BC	SHEET NO. 2A-3
ROADWAY DESIGN ENGINEER Jaslene M. Peltier SEAL 37950 4/30/2015	PAVEMENT DESIGN ENGINEER Clark M. Morrison SEAL 022896 4/30/2015

PLANS PREPARED BY:  
**PARSONS**  
 5540 CENTERVIEW DR., SUITE 217  
 RALEIGH, NORTH CAROLINA 27606  
 NC LICENSE NO. F-0246  
 FOR NORTH CAROLINA COPY OF TRANSPORTATION

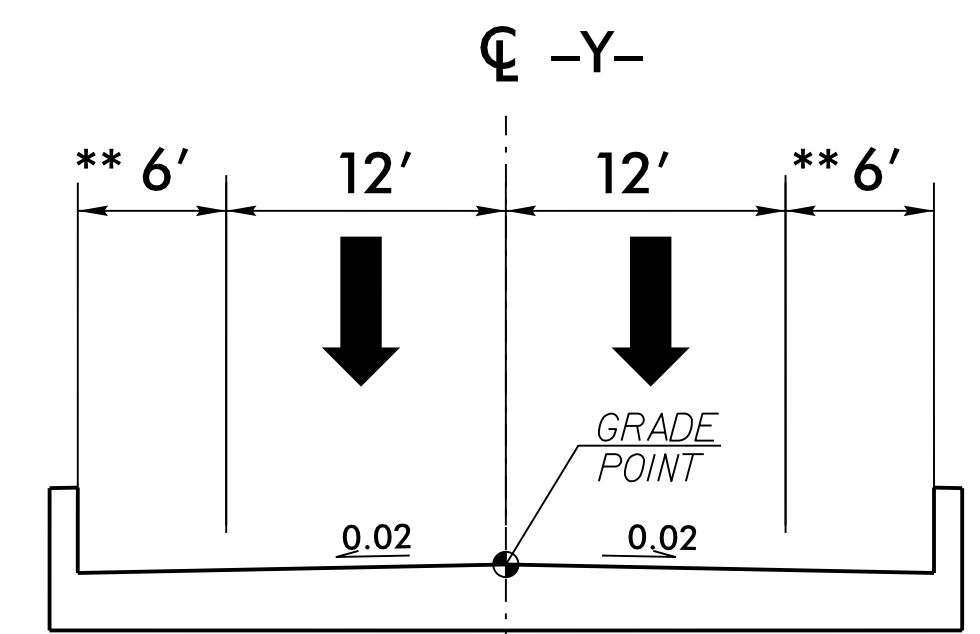


**TYPICAL SECTION NO. 7**  
**USE TYPICAL SECTION NO. 7**

-Y- STA. 11+00.00 TO STA. 15+88.37 (BEGIN BRIDGE)  
 -Y- STA. 18+32.37 (END BRIDGE) TO STA. 22+00.00

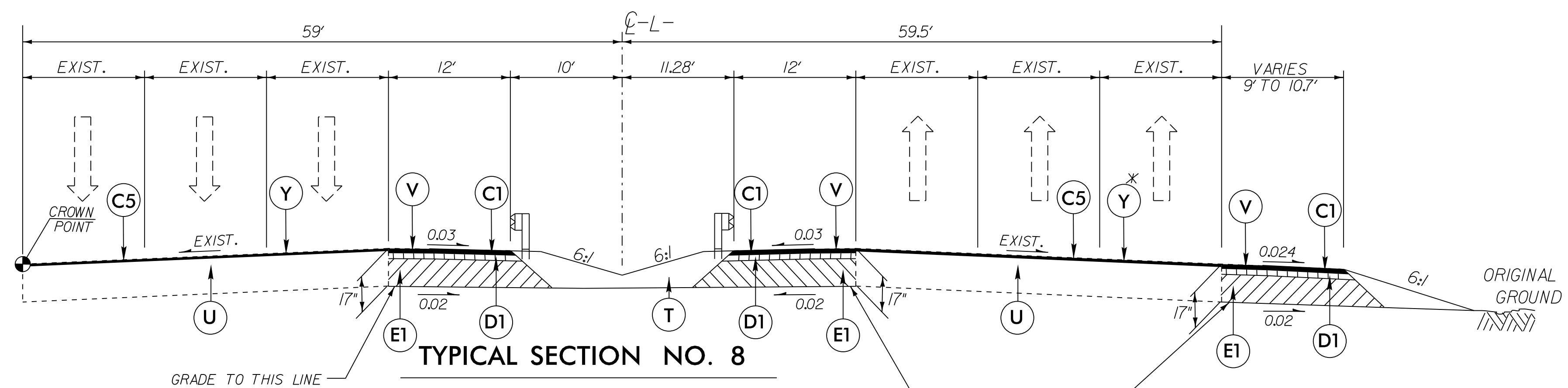
\*\*NOTE: PAVE TO FACE OF GUARDRAIL

-Y- STRUCTURE  
 (INMAN ROAD)



**STRUCTURE TYPICAL SECTION**  
 -Y- STA. STA. 15+88.37 TO STA. 18+32.37

\*\*NOTE: A 6' BRIDGE OFFSET WAS UTILIZED IN LIEU OF 4' DUE TO SPREAD ISSUES ON THE STRUCTURE



**TYPICAL SECTION NO. 8**  
**USE TYPICAL SECTION NO. 8**

-L- STA. 25+39.93 TO STA. 30+05.65 LT MEDIAN  
 -L- STA. 22+73.10 TO STA. 31+48.87 RT MEDIAN  
 -L- STA. 26+79.07 TO STA. 27+73.22 RT

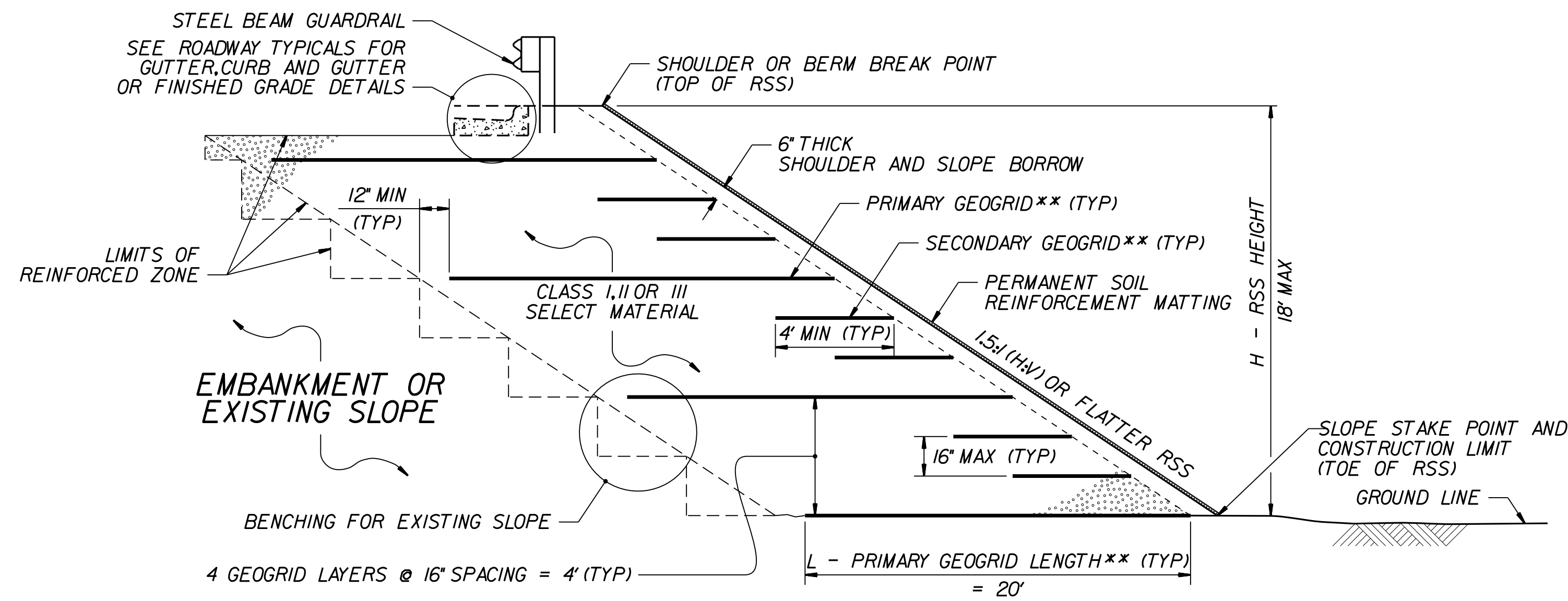
\*\*NOTE: MILL AND FILL WITH 1.5" S9.5C FROM STA. 22+73.10 TO STA. 31+48.87 (EXISTING EASTBOUND LANES)

24-APR-2015 13:15  
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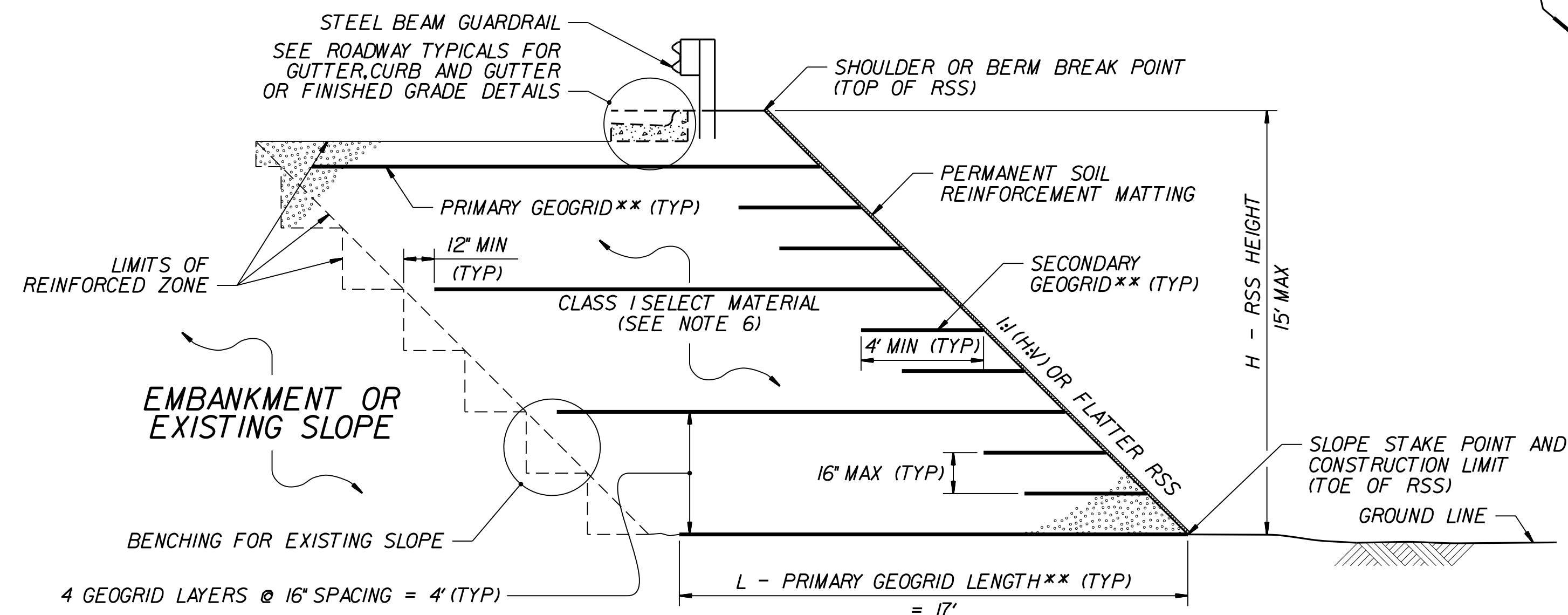






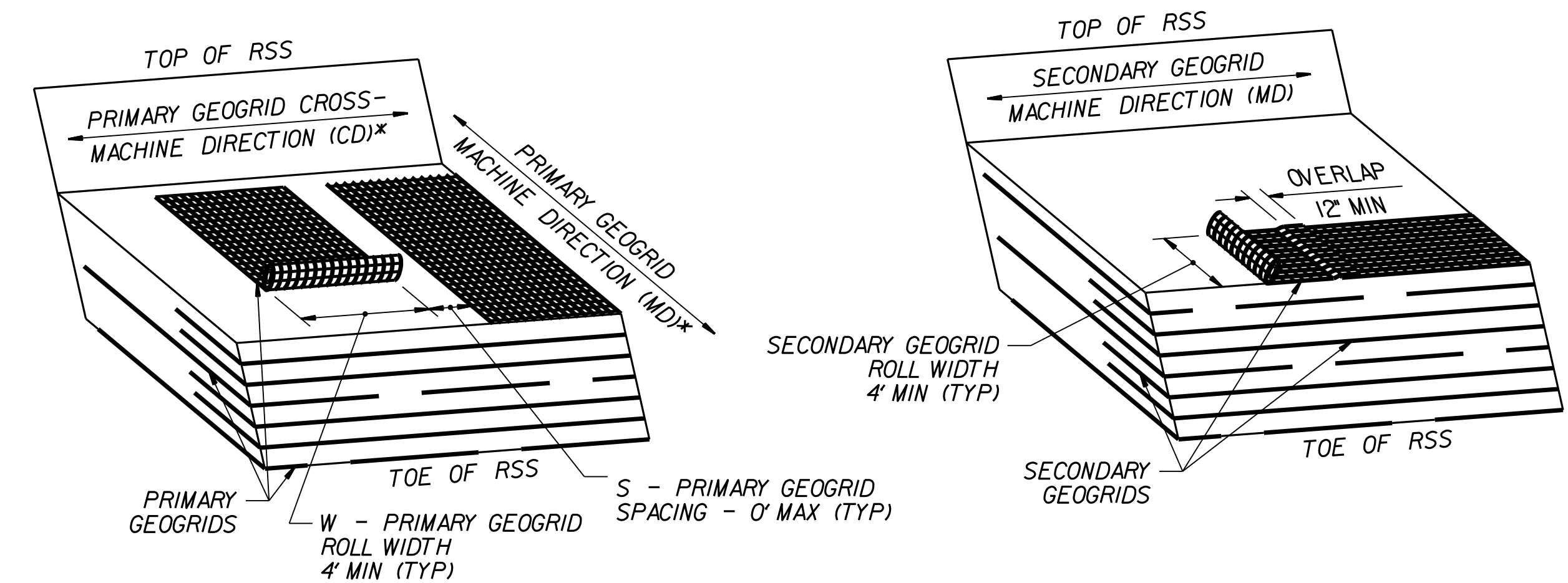
**RSS WITH SELECT MATERIAL THAT DOES NOT MEET ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS**

\*\*SEE TABLES ON SHEET 2 AND GEOGRID PLACEMENT DETAILS.



**RSS WITH SELECT MATERIAL THAT MEETS ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS**

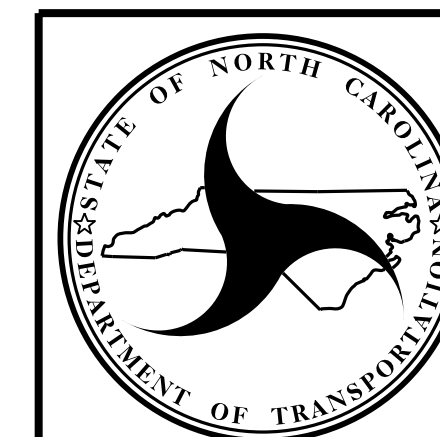
\*\*SEE TABLES ON SHEET 2 AND GEOGRID PLACEMENT DETAILS.



**GEOGRID PLACEMENT DETAILS**

(100 % COVERAGE)

\*SEE NOTES 8 AND 9 ON SHEET 2.



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**GEOTECHNICAL  
ENGINEERING UNIT**

STANDARD  
REINFORCED SOIL SLOPE (RSS)  
SHEET 1 OF 2



GEOGRID TYPE, DIRECTION	H (FT)	
	0 - 15	>15 - 8
	SELECT MATERIAL CLASS	
PRIMARY GEOGRID, MD (SUBSTITUTE SECONDARY GEOGRID FOR PRIMARY GEOGRID FOR 2:1 (H:V) OR FLATTER RSS)	STA.16+50 - STA.18+00 (1.3:1 TO < 1.5:1 (H:V) RSS)	1200
	STA.18+00 - STA.22+00 (1.5:1 TO 2:1 (H:V) RSS)	1000
SECONDARY GEOGRID, CD	1:1 (H:V) OR FLATTER RSS	

**LTDS - MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH (LB/FT)**  
(LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID.)

**NOTES:**

- SEE ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) LOCATIONS.
- FOR STANDARD REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR PERMANENT SOIL REINFORCEMENT MATTING, SEE PERMANENT SOIL REINFORCEMENT MAT PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
- STANDARD RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  LB/CF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  LB/SF
- DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE TOE OF RSS.
- FOR 1:1 TO < 1.5:1 (H:V) RSS, USE CLASS I SELECT MATERIAL IN THE REINFORCED ZONE THAT MEETS ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS EXCEPT FOR SELECT MATERIAL THAT MEETS AASHTO M 145 FOR SOIL CLASSIFICATIONS A-4 AND A-5. DO NOT USE A-4 OR A-5 SOIL OR CLASS II OR III SELECT MATERIAL FOR 1:1 TO < 1.5:1 (H:V) RSS.
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR LONG-TERM DESIGN STRENGTHS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:  
[connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx](http://connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx)  
DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

MATERIAL TYPE	SELECT MATERIAL
BORROW	CLASS I SELECT MATERIAL
FINE AGGREGATE	CLASS II OR III SELECT MATERIAL

- IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE MD, DO NOT USE THE GEOGRID FOR PRIMARY GEOGRID. IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE CD, USE A LONG-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 7 FOR THE SECONDARY GEOGRID.
- DO NOT OVERLAP PRIMARY GEOGRIDS IN THE MD SO OVERLAPS ARE PARALLEL TO THE TOE OF RSS. POLYOLEFIN (e.g., HDPE OR PP) GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH THE GEOGRID MANUFACTURER'S INSTRUCTIONS. USE POLYOLEFIN GEOGRID PIECES AT LEAST 4' LONG. DO NOT SPLICE POLYESTER TYPE (PET) GEOGRIDS.
  - PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD.
- SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.
- DO NOT PLACE PRIMARY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.

H (FT)	0 - 15	>15 - 18
SELECT MATERIAL CLASS	I	I
1:1 TO < 1.5:1 (H:V) RSS	IJ33	N/A
1.5:1 TO 2:1 (H:V) RSS	IJ11	IJ11

**L/H RATIO (L > 4' MIN)**  
(IF L ≤ 4', USE SECONDARY GEOGRID INSTEAD OF PRIMARY GEOGRID.)

**ESTIMATED QUANTITY OF REINFORCED SOIL SLOPE = 1,700 SQUARE YARDS**



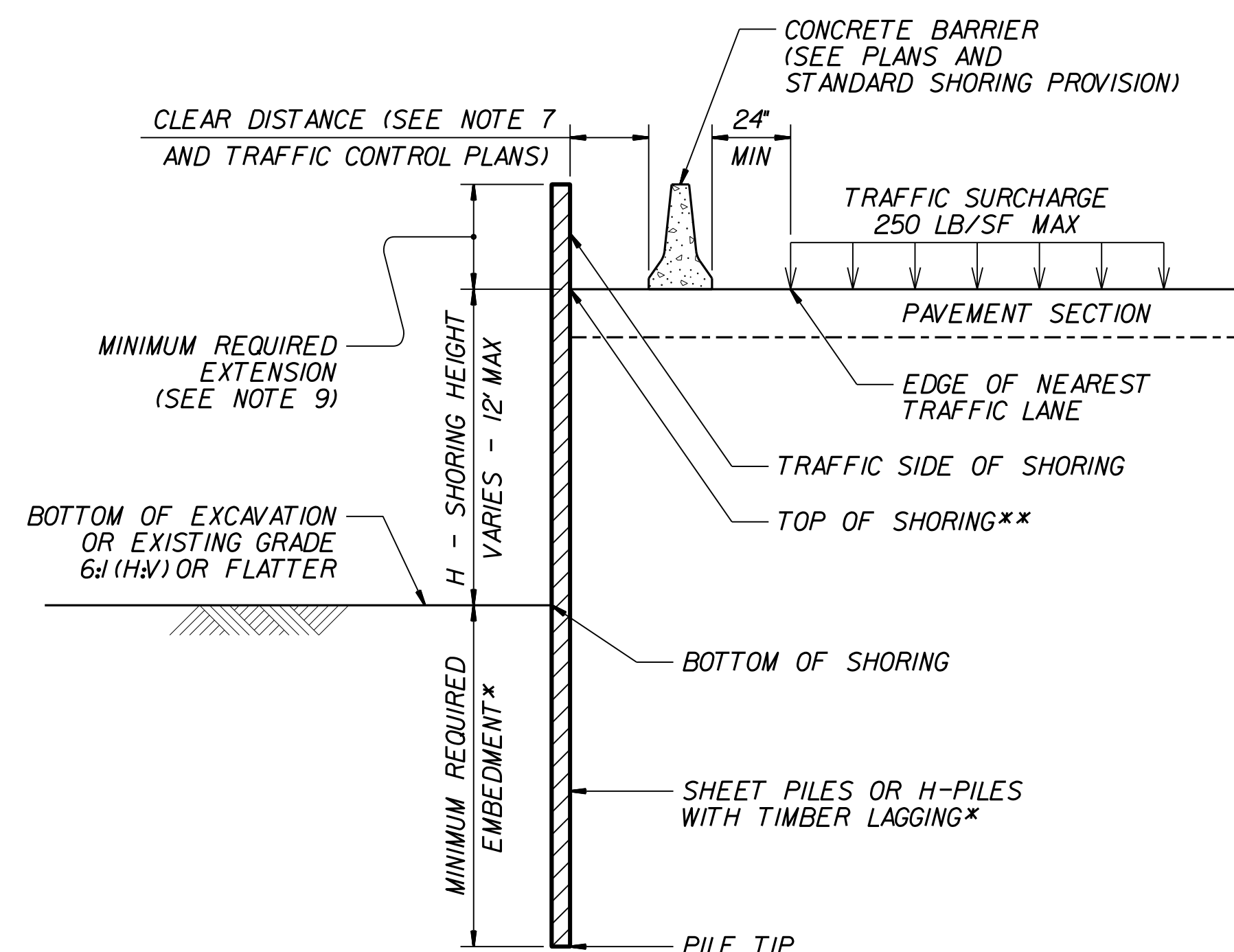
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**

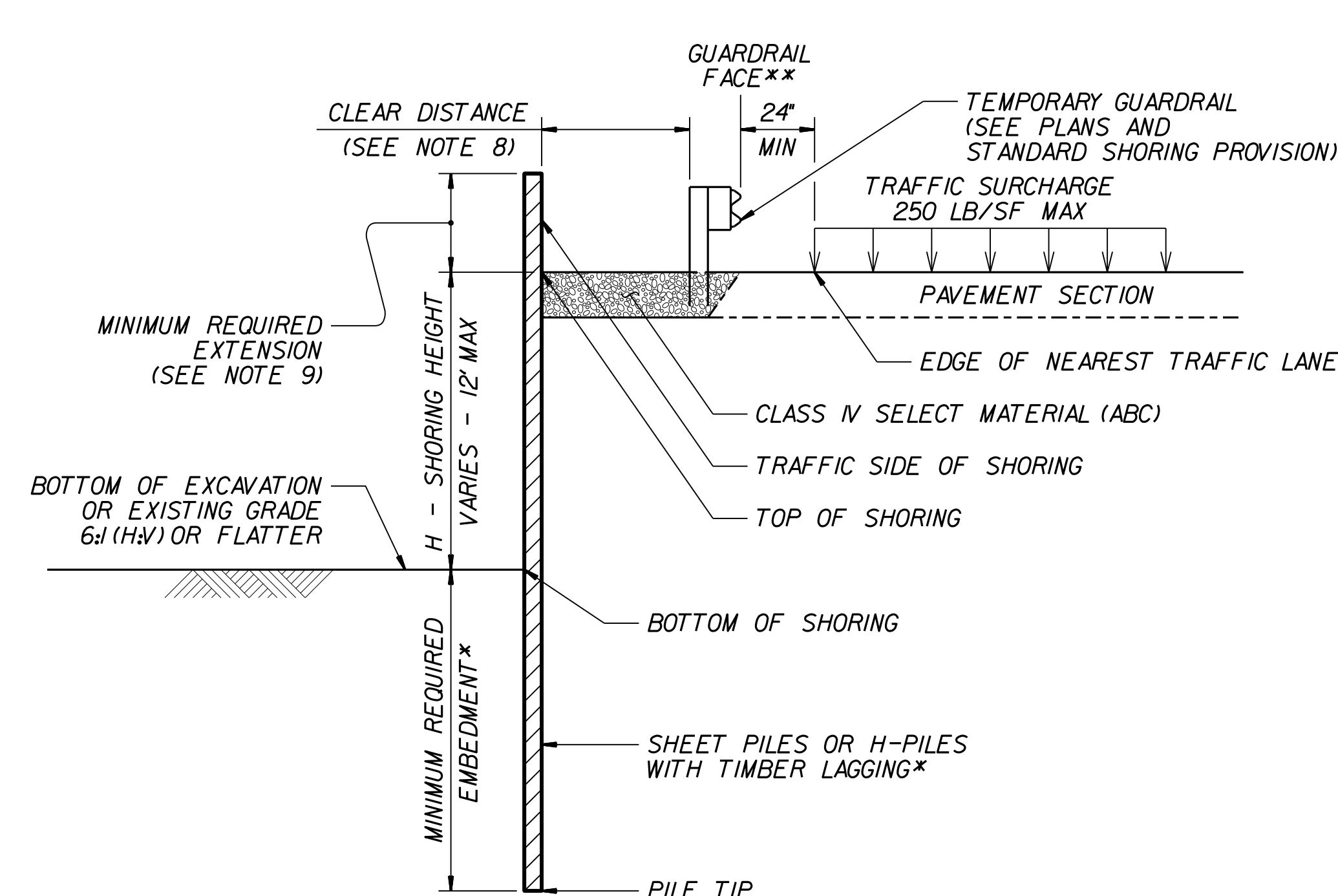
\*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

**NOTES:**

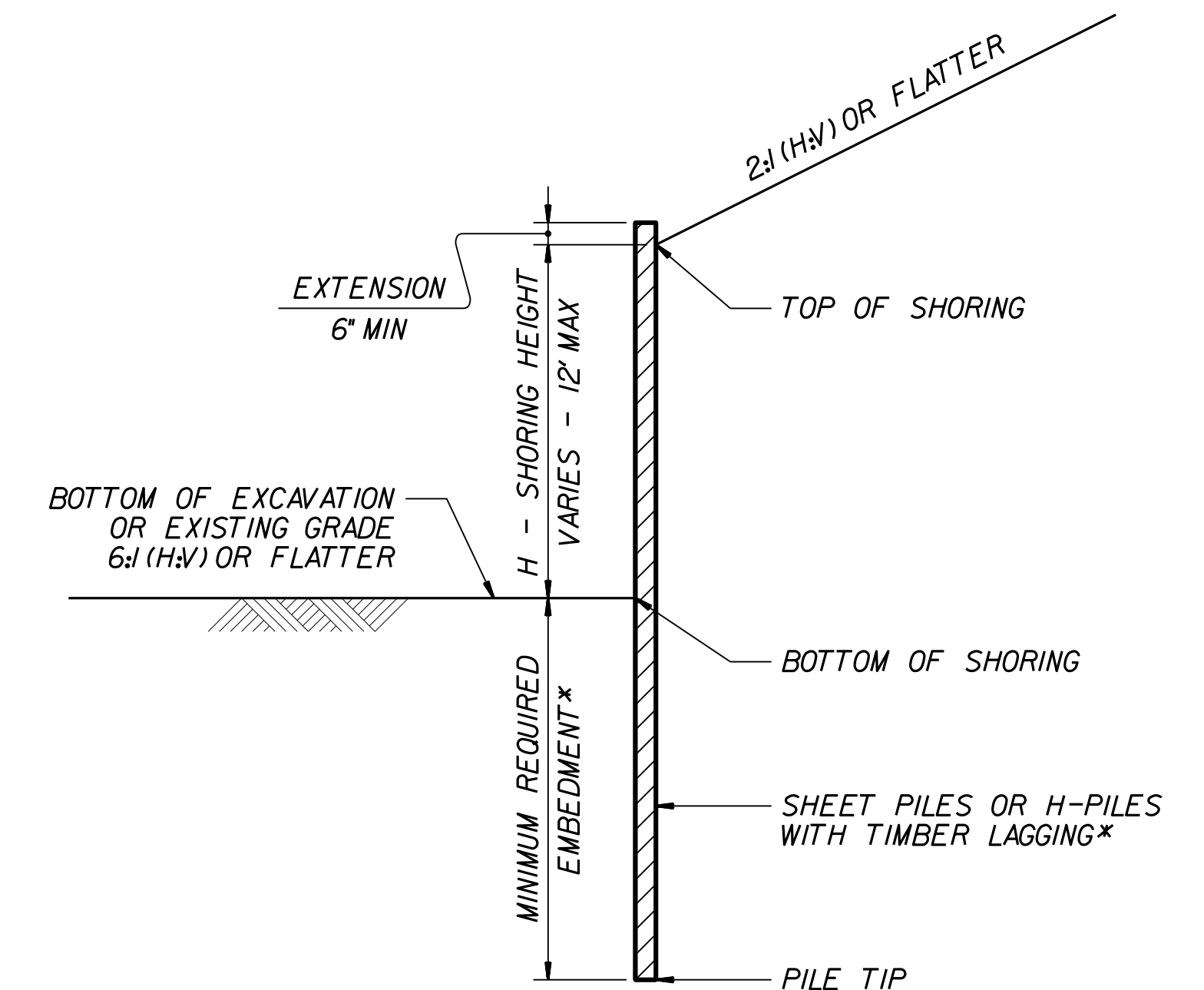
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  LB/CF  
FRICTION ANGLE,  $\phi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



**CONCRETE BARRIER**  
\*\*TOP OF SHORING =  
EDGE OF PAVEMENT

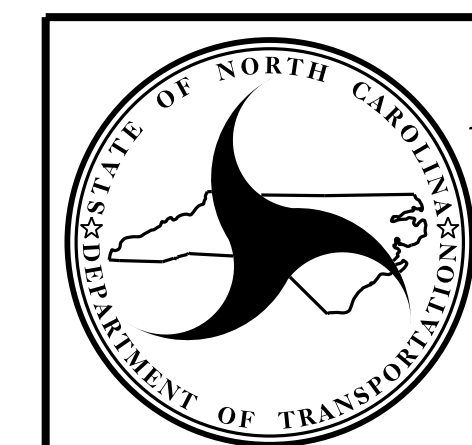


**TEMPORARY GUARDRAIL**  
\*\*GUARDRAIL FACE =  
EDGE OF PAVEMENT



**STANDARD TEMPORARY SHORING**  
(SLOPE CASE)  
\*SEE TABLE ABOVE.

**STANDARD TEMPORARY SHORING**  
(SURCHARGE CASE)  
\*SEE TABLE ABOVE.



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
**GEOTECHNICAL  
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

STANDARD  
TEMPORARY SHORING



COMPUTED BY: JMP DATE: 4-2015  
 CHECKED BY: TDG DATE: 4-2015

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**SUMMARY OF EARTHWORK**

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +% 20	BORROW	WASTE
-L- 13+73	-L- 41+00	12,955		1,032		11,923
-L- 57+12	-L- 64+76	403		66		337
<b>SUBTOTALS:</b>		13,358		1,098		12,260
-RPCA- 15+00	-RPCA- 27+50	1,524		2,761	1,237	
<b>SUBTOTALS:</b>		1,524		2,761	1,237	
-Y- 11+00	-Y- 15+88 (BEGIN BRIDGE)	407		198		209
-Y- 18+33 (END BRIDGE)	-Y- 22+00	376		323		53
<b>SUBTOTALS:</b>		783		521		262
<b>PROJECT TOTALS:</b>		15,665		4,380	1,237	12,522
LOSS DUE TO CLEARING & GRUBBING PER GEOTECH RECS		-30				-30
WASTE IN LIEU OF BORROW					-1,237	-1,237
<b>GRAND TOTALS:</b>		15,635		4,380		11,255
SAY:		15,750				

**REMOVAL OF EXISTING ASPHALT PAVEMENT**

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD <sup>2</sup>
-L-	13+74	36+44	LT	3,217.92
-L-	57+12	64+76 -RPD-	LT	786.39
-RPCA-	10+00	21+32.96	LT	1,614.43
-RPCA-	21+32.96	27+50	LT	358.96
-RPA-	10+00	13+20	LT	448.70
-Y-	11+00	22+00	CL	4154.10
-L-	22+73	31+49	CL	1,784.00
-L-	26+79	27+73	RT	119.13
<b>TOTAL:</b>				12,483.63
SAY:				12,490

CONTINGENCY UNDERCUT EXCAVATION PER GEOTECH RECS: 150 CY  
 SHALLOW UNDERCUT CONTINGENCY PER GEOTECH RECS: 1,100 CY  
 CLASS IV SUBGRADE STABILIZATION CONTINGENCY PER GEOTECH RECS: 2,200 TONS  
 EST. SHOULDER BORROW: 1,860 CY

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

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

**GUARDRAIL SUMMARY**

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350 TL-2	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS								
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	B-77	CAT-1	VI MOD	BIC						AT-1	EA	G	NG				
-L-	22+73.13	31+48.87	CL	875.00					12	15	50.00		1.00			1																876	TIE TO EXIST.		
-L-	25+39.93	30+05.65	CL	462.50					12	15																						462	TIE TO EXIST. (2-SITES)		
-L-	57+12.25	58+62.25	LT	150.00					12	15	50.00		1.00			1																94	TIE TO EXIST.		
-RPCA-	11+58.50	13+20.00	-RPA-	1275.00					14	17									1													1415	TIE TO PROP. U-2524C GUARDRAIL AT STA. 13+20 -RPA-		
-RPCA-	26+91.21	27+51.73	LT	62.50					10	13																						45	TIE TO EXIST. BRIDGE RAIL		
-Y-	13+78.77	15+91.18	RT	212.50			BRIDGE		6	11	50.00		1.00			1																92			
-Y-	14+98.01	15+85.56	LT	87.50				BRIDGE	6	11		68.75		1.38		1																	91		
-Y-	18+35.18	19+22.74	RT	87.50				BRIDGE	6	11		68.75		1.38		1																	92		
-Y-	18+29.56	20+44.23	LT	212.50			BRIDGE		6	11	50.00		1.00			1																	92		
<b>SUBTOTAL</b>				3425.00													6		5	2													3259		
DEDUCT FOR ANCHOR UNITS																																			
GRAU 350 6 @ 50' =				-300			ADDITIONAL GUARDRAIL POST: 5 EA																												
B-77 5 @ 18.75' =				-93.75																															
CAT-1 2 @ 6.25' =				-12.50			TEMPORARY ANCHOR UNITS (SEE TMP-5)																												
<b>TOTAL</b>				3018.75			GRAU 350: 1 EA										6		5	2														3259	
<b>SAY</b>				3025.00			B-77: 1 EA										6		5	2														3260	

5/28/99  
 5/28/09  
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COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**(4-21-15)**

PROJECT NO.	SHEET NO.
U-2524BC	3G-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF REINFORCED SOIL SLOPES (RSS)**

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	SY
RPCA	2.02:1	16+50	1.7:1	22+00	LT	1700
					<b>TOTAL SY:</b>	1700

**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
			AST	3	1000	2000	3000	500	
			ASU	12	100	200	400		
<b>TOTAL CY/TONS/SY:</b>					1100	2200	3400*	500	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization

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

**SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION**

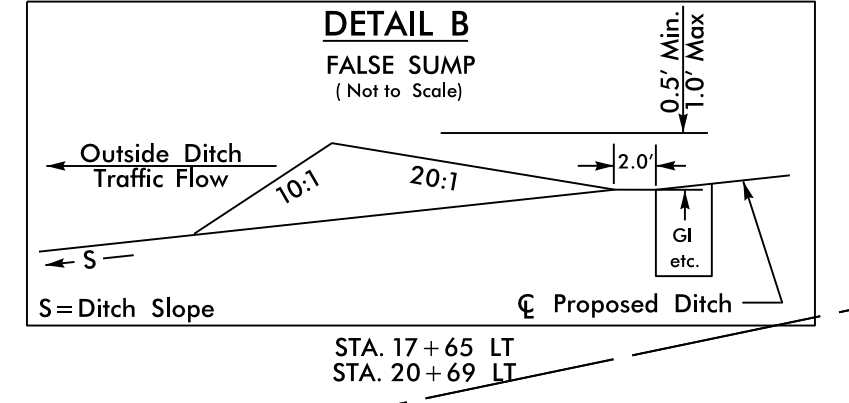
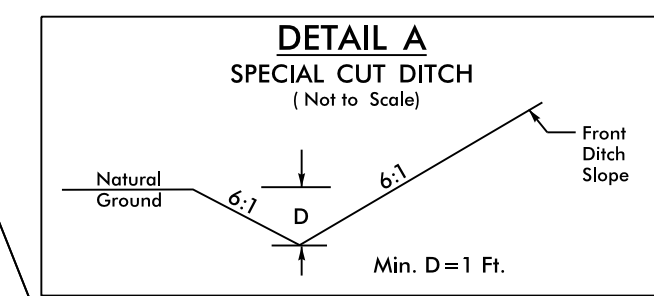
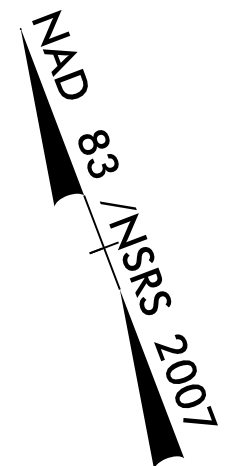
LINE	Station	Station	Offset	SY
CONTINGENCY				5,000
<b>TOTAL SY</b>				5,000

5/14/19

PLANS PREPARED BY:  
**PARSONS**  
2400 CENTERVIEW DR, SUITE 201  
 RALEIGH, NORTH CAROLINA 27606  
 NC LICENSE NO. F-02446

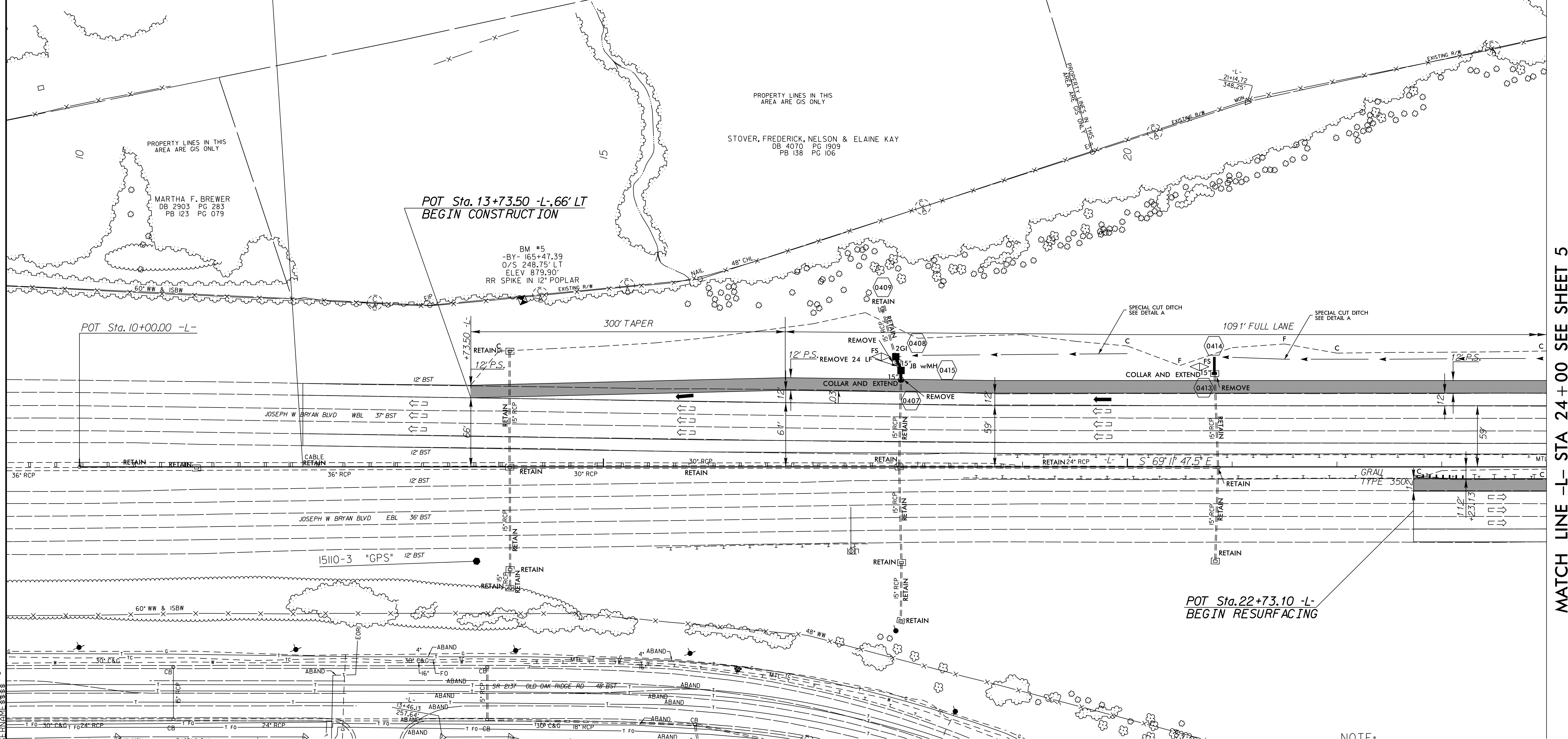
**MULKEY**  
ENGINEERS & CONSULTANTS  
 400 BOX 33127  
 RALEIGH, NC 27634  
 (919) 851-1912 FAX:  
 (919) 851-1918  
 WWW.MULKEYINC.COM

PROJECT REFERENCE NO. <b>U-2524BC</b>		SHEET NO. <b>4</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
 JAMES M. SPENCER 2006-04-08/2022-04-08 4/20/2015		 DAVID B. CROCKER 2006-04-08/2022-04-08 4/16/2015	



-L- STA. 17 + 79.00 TO STA. 20 + 00.00 LT  
 -L- STA. 20 + 83.00 TO STA. 26 + 50.00 LT

BEGIN STATE TIP PROJECT U-2524BC  
 POT Sta. 12+13.16 -L-  
 BEGIN RESURFACING WESTBOUND LANES



NOTE:  
SEE SHEET 9 FOR -L- PROFILE

MATCH LINE -L- STA 24 + 00 SEE SHEET 5

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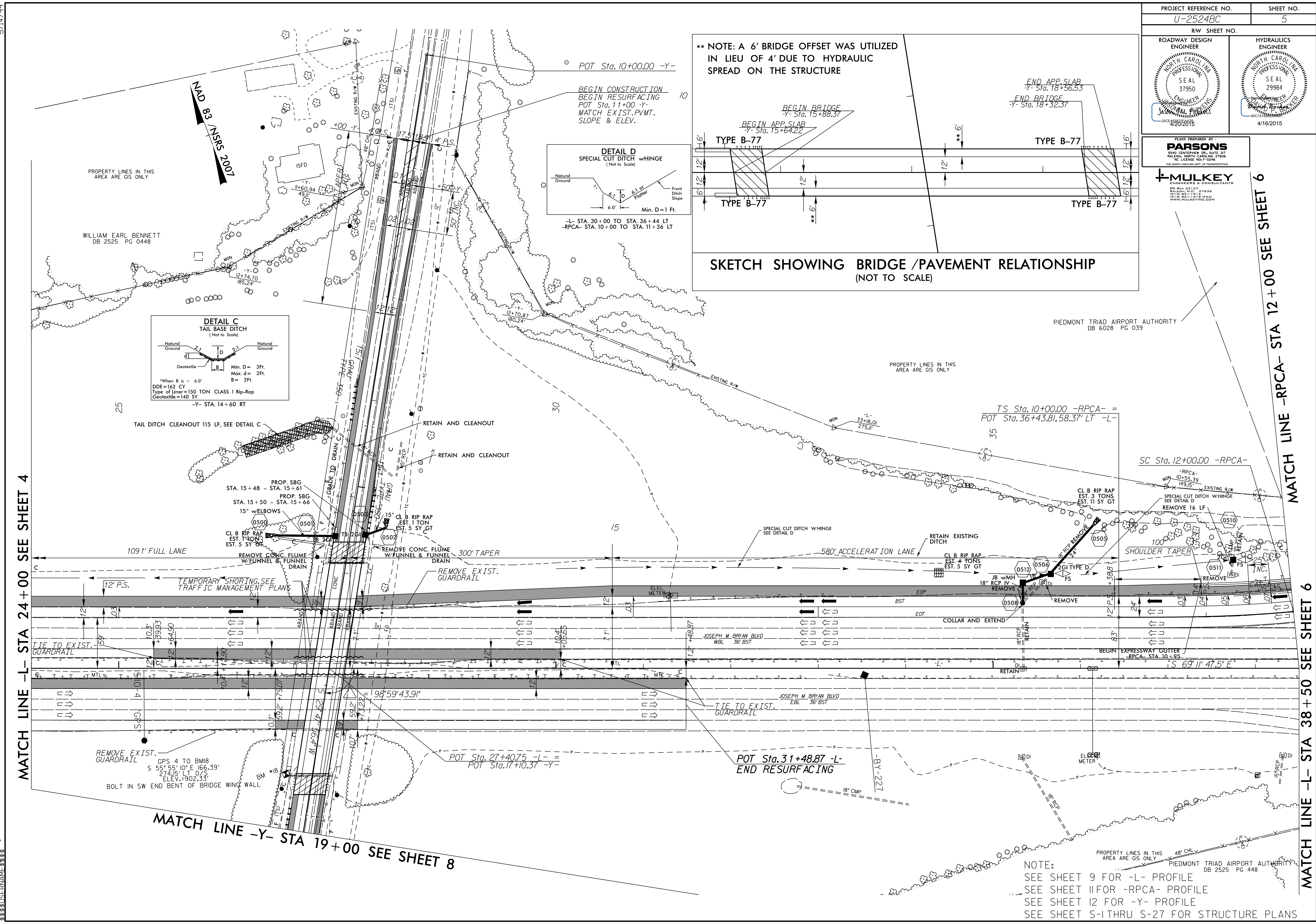


5/14/99

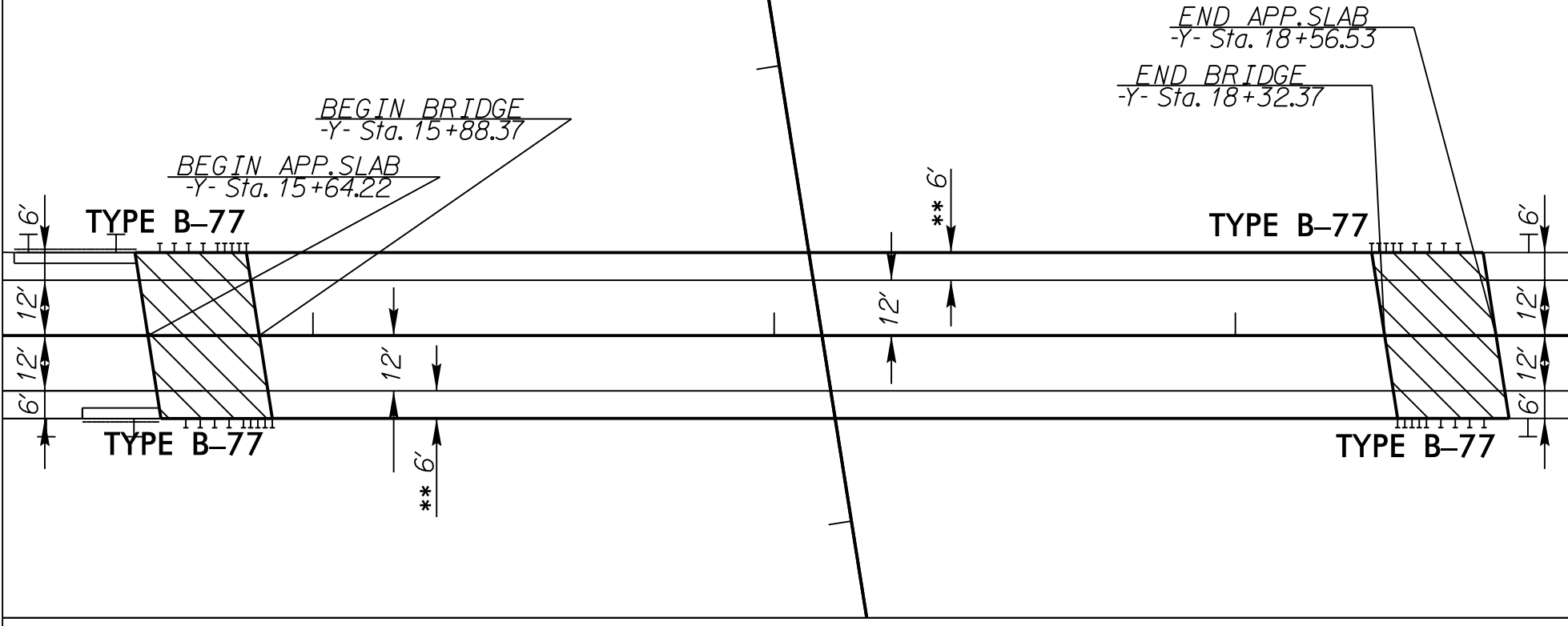
PROJECT REFERENCE NO. U-2524BC		SHEET NO. 5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

PLANS PREPARED BY  
**PARSONS**  
 2640 CENTERVIEW DR., SUITE 200  
 RALEIGH, NORTH CAROLINA 27606  
 NC LICENSE NO. F-0246  
 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

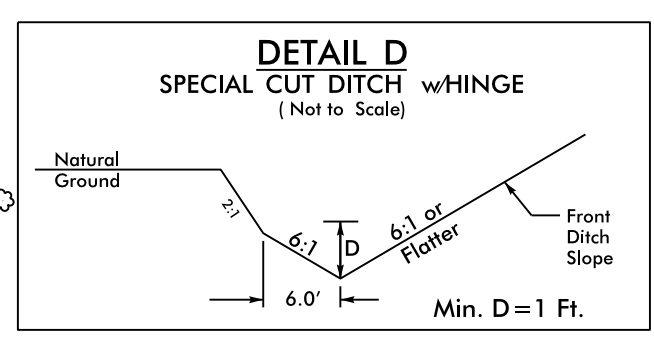
**MULKEY**  
 ENGINEERS & CONSULTANTS  
 4000 W. GARDNER ST., SUITE 100  
 RALEIGH, NC 27606  
 (919) 881-1111 (FAX)  
 WWW.MULKEYENGINEERS.COM



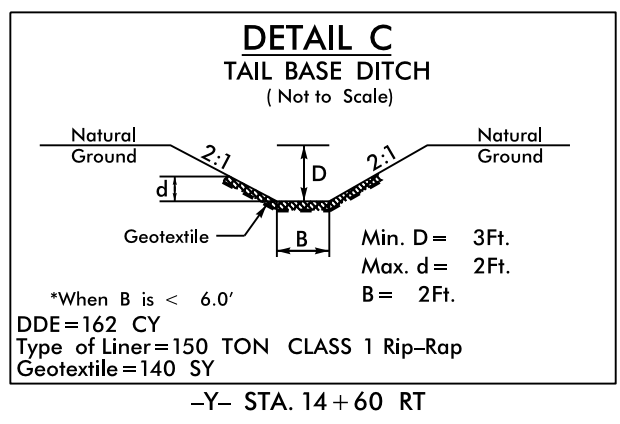
**\*\* NOTE: A 6' BRIDGE OFFSET WAS UTILIZED IN LIEU OF 4' DUE TO HYDRAULIC SPREAD ON THE STRUCTURE**



**SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP (NOT TO SCALE)**



-L- STA. 30+00 TO STA. 36+44 LT  
 -RPCA- STA. 10+00 TO STA. 11+36 LT



-Y- STA. 14+60 RT

MATCH LINE -L- STA 24+00 SEE SHEET 4

MATCH LINE -Y- STA 19+00 SEE SHEET 8

MATCH LINE -RPCA- STA 12+00 SEE SHEET 6

MATCH LINE -L- STA 38+50 SEE SHEET 6

NOTE:  
 SEE SHEET 9 FOR -L- PROFILE  
 SEE SHEET 11 FOR -RPCA- PROFILE  
 SEE SHEET 12 FOR -Y- PROFILE  
 SEE SHEET S-1 THRU S-27 FOR STRUCTURE PLANS

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5/14/99

PROJECT REFERENCE NO. <b>U-2524BC</b>		SHEET NO. <b>6</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

PLANS PREPARED BY:

**PARSONS**  
5540 CENTERVIEW DR., SUITE 217  
FALCON, NORTH CAROLINA 27606  
NC LICENSE NO. F-0246  
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

**MULKEY**  
ENGINEERS & CONSULTANTS

PO BOX 22127  
RANDOLPH, NC 27606  
19101 BELL BLVD. #1010  
WWW.MULKEYINC.COM

-RPCA-

Pls Sta 11+33.40  
 $\Theta_s = 5^\circ 43' 46.5"$   
 $L_s = 200.00'$   
 $LT = 133.40'$   
 $ST = 66.73'$

PI Sta 14+18.41  
 $\Delta = 24^\circ 38' 27.6" (LT)$   
 $D = 5^\circ 43' 46.5"$   
 $L = 430.07'$   
 $T = 218.41'$   
 $R = 1,000.00'$   
 $S.E. = 0.08$

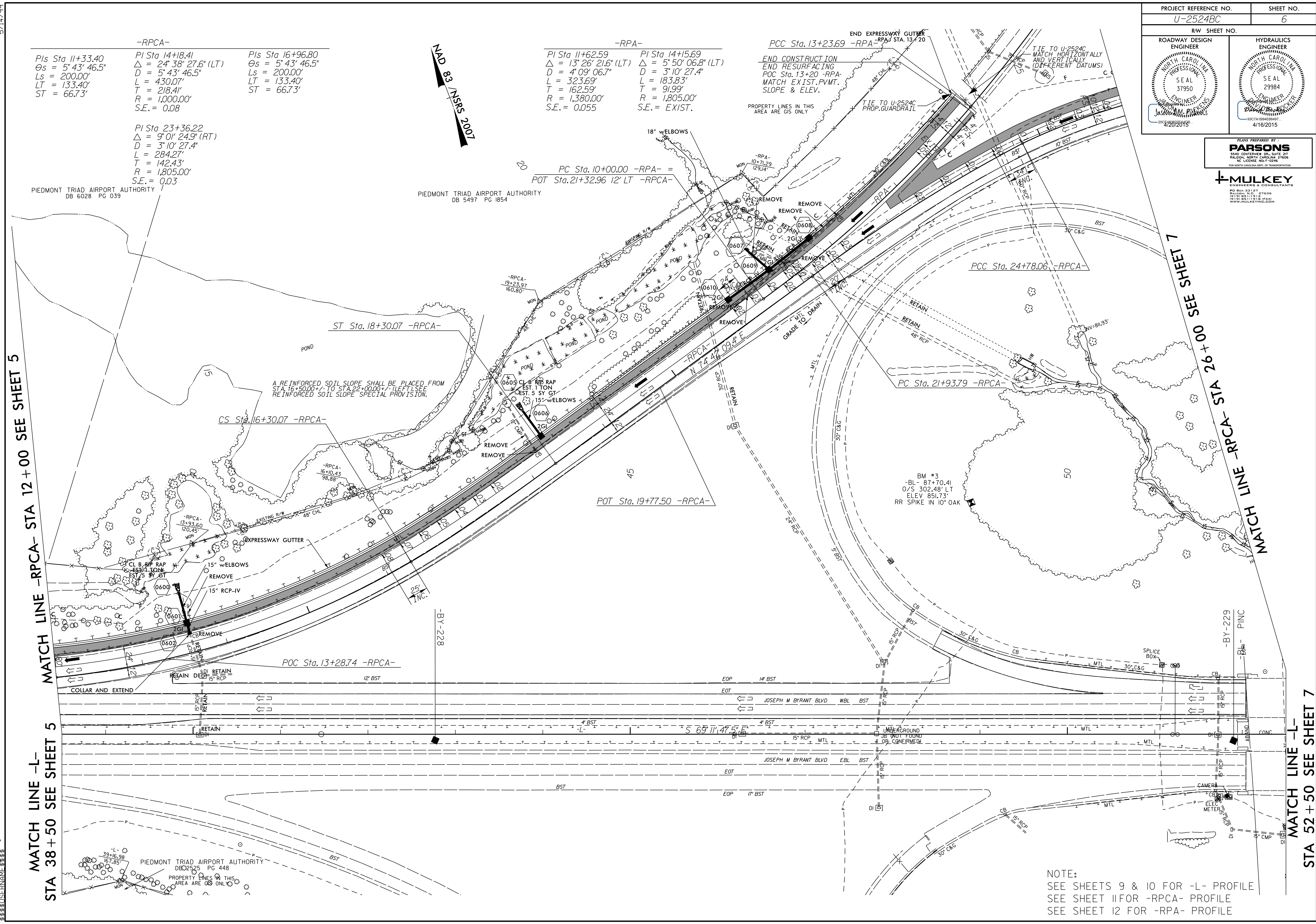
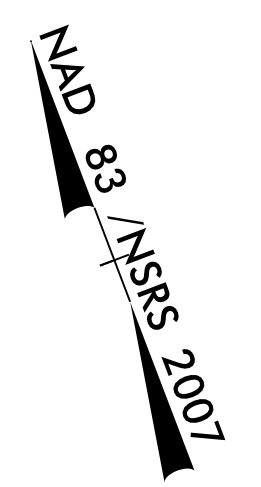
Pls Sta 16+96.80  
 $\Theta_s = 5^\circ 43' 46.5"$   
 $L_s = 200.00'$   
 $LT = 133.40'$   
 $ST = 66.73'$

PI Sta 23+36.22  
 $\Delta = 9^\circ 01' 24.9" (RT)$   
 $D = 3^\circ 10' 27.4"$   
 $L = 284.27'$   
 $T = 142.43'$   
 $R = 1,805.00'$   
 $S.E. = 0.03$

-RPA-

PI Sta 11+62.59  
 $\Delta = 13^\circ 26' 21.6" (LT)$   
 $D = 4^\circ 09' 06.7"$   
 $L = 323.69'$   
 $T = 162.59'$   
 $R = 1,380.00'$   
 $S.E. = 0.055$

PI Sta 14+15.69  
 $\Delta = 5^\circ 50' 06.8" (LT)$   
 $D = 3^\circ 10' 27.4"$   
 $L = 183.83'$   
 $T = 91.99'$   
 $R = 1,805.00'$   
 $S.E. = EXIST.$



MATCH LINE -RPCA- STA 12 + 00 SEE SHEET 5

MATCH LINE -L- STA 38 + 50 SEE SHEET 5

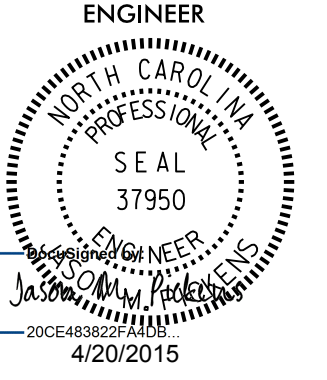
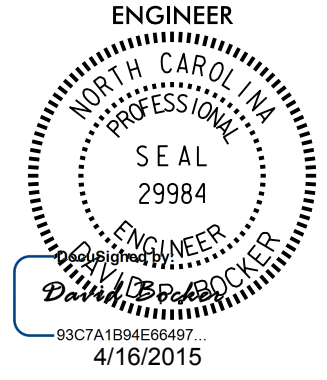
MATCH LINE -RPCA- STA 26 + 00 SEE SHEET 7

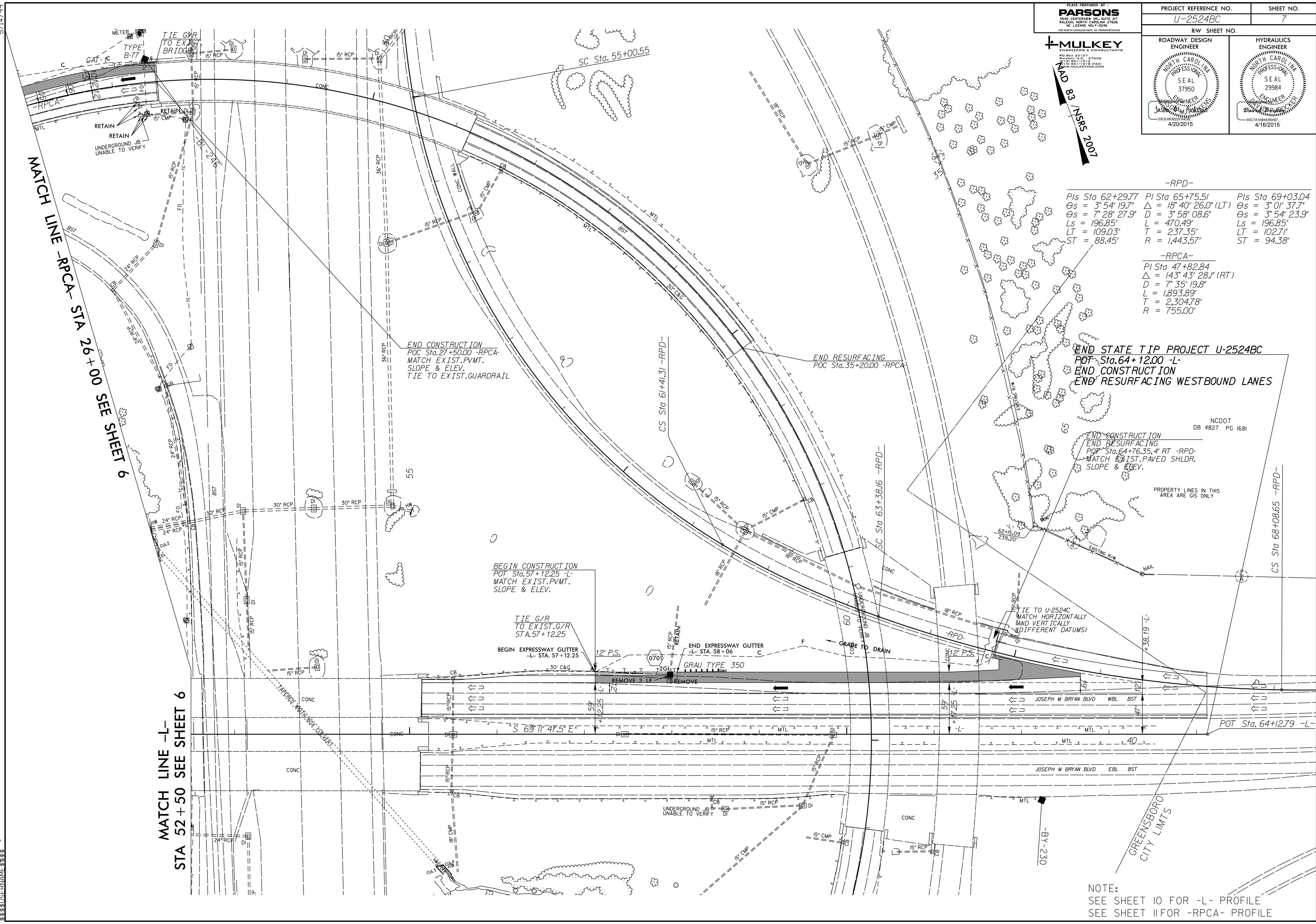
MATCH LINE -L- STA 52 + 50 SEE SHEET 7

NOTE:  
 SEE SHEETS 9 & 10 FOR -L- PROFILE  
 SEE SHEET 11 FOR -RPCA- PROFILE  
 SEE SHEET 12 FOR -RPA- PROFILE

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PROJECT REFERENCE NO. <b>U-2524BC</b>	SHEET NO. <b>7</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 



**-RPD-**

PIs Sta 62+29.77 $\Delta s = 3' 54' 19.7''$ $\Delta s = 7' 28' 27.9''$ $L_s = 196.85'$ $LT = 109.03'$ $ST = 88.45'$	PIs Sta 65+75.51 $\Delta = 18' 40' 26.0'' (LT)$ $D = 3' 58' 08.6''$ $L = 470.49'$ $T = 237.35'$ $R = 1,443.57'$	PIs Sta 69+03.04 $\Delta s = 3' 01' 37.7''$ $\Delta s = 3' 54' 23.9''$ $L_s = 196.85'$ $LT = 102.71'$ $ST = 94.38'$
--	--	--

**-RPCA-**

PIs Sta 47+82.84 $\Delta = 143' 43' 28.1'' (RT)$ $D = 7' 35' 19.8''$ $L = 1,893.89'$ $T = 2,304.78'$ $R = 755.00'$
---

**END STATE TIP PROJECT U-2524BC**  
**POT Sta. 64+12.00 -L-**  
**END CONSTRUCTION**  
**END RESURFACING WESTBOUND LANES**

**END CONSTRUCTION**  
**END RESURFACING**  
**POT Sta. 64+76.35, 4' RT -RPD-**  
**MATCH EXIST. PAVED SHLDR.**  
**SLOPE & ELEV.**

PROPERTY LINES IN THIS AREA ARE GIS ONLY

**NOTE:**  
 SEE SHEET 10 FOR -L- PROFILE  
 SEE SHEET 11 FOR -RPCA- PROFILE

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5/14/19

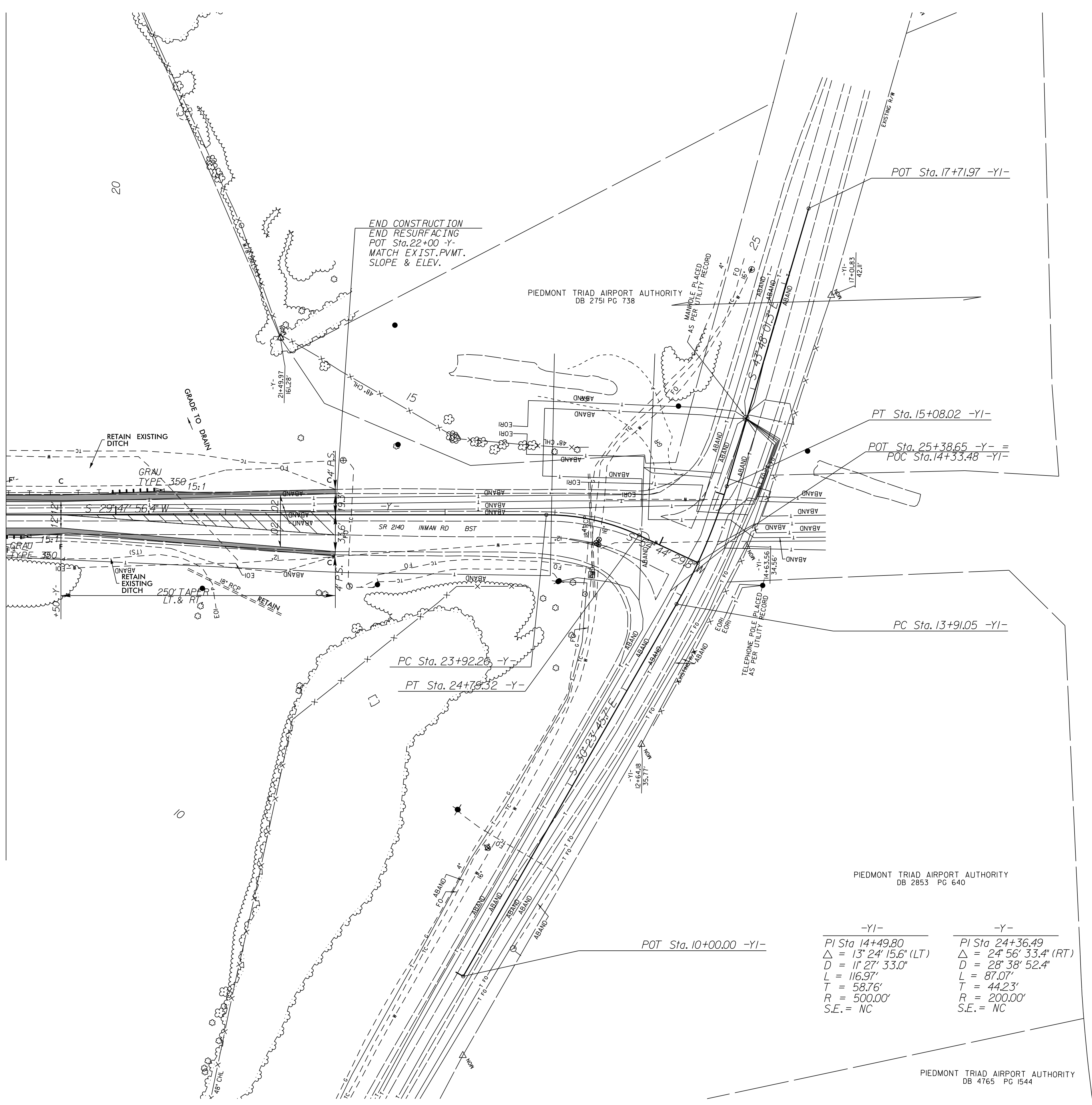
PLANS PREPARED BY:  
**PARSONS**  
 2940 CENTERVIEW DR, SUITE 201  
 RALEIGH, NORTH CAROLINA 27606  
 NC LICENSE NO. F-52465  
 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

**MULKEY**  
 ENGINEERS & CONSULTANTS  
 1000 W. HARRIS ST., SUITE 100  
 RALEIGH, NC 27605  
 NC LICENSE NO. F-10112  
 10110 BEYOND ST. #100  
 WWW.MULKEYINC.COM

PROJECT REFERENCE NO. <b>U-2524BC</b>		SHEET NO. <b>8</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

NAD 83 / NSRS 2007

MATCH LINE -Y- STA 19+00 SEE SHEET 5



-Y-	-Y-
PI Sta 14+49.80	PI Sta 24+36.49
$\Delta = 13^\circ 24' 15.6''$ (LT)	$\Delta = 24^\circ 56' 33.4''$ (RT)
D = 11' 27' 33.0"	D = 28' 38' 52.4"
L = 116.97'	L = 87.07'
T = 58.76'	T = 44.23'
R = 500.00'	R = 200.00'
S.E. = NC	S.E. = NC

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PIEDMONT TRIAD AIRPORT AUTHORITY  
DB 4765 PG 1544

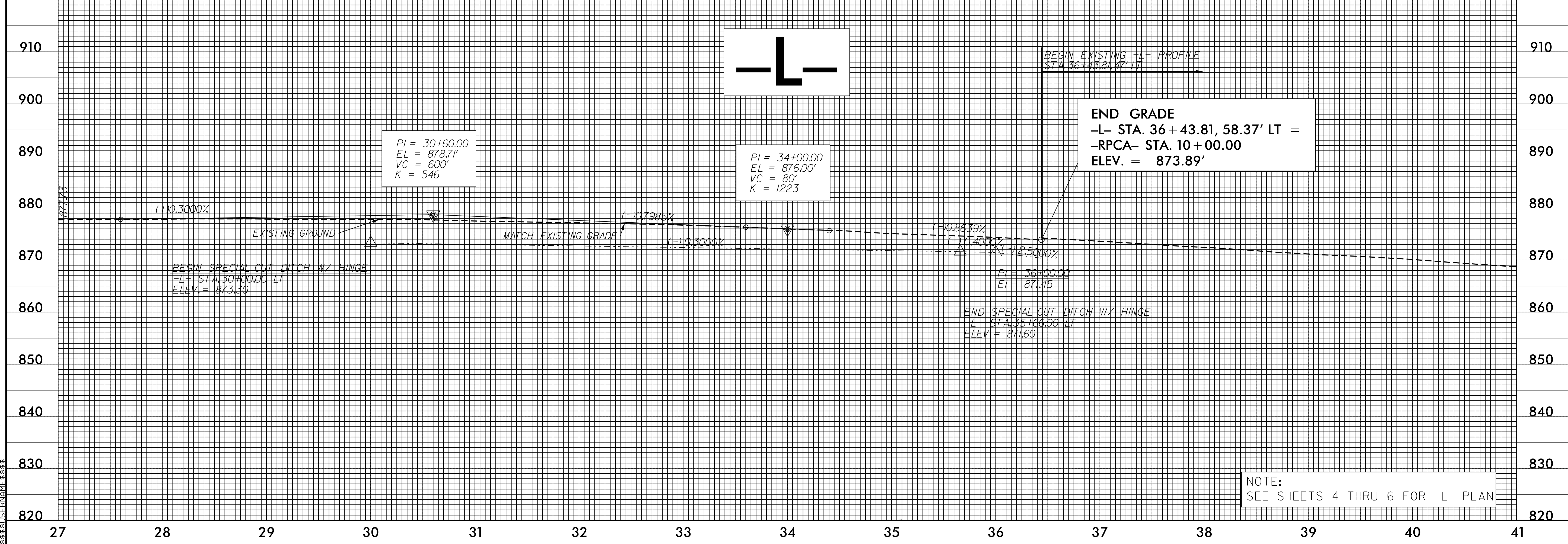
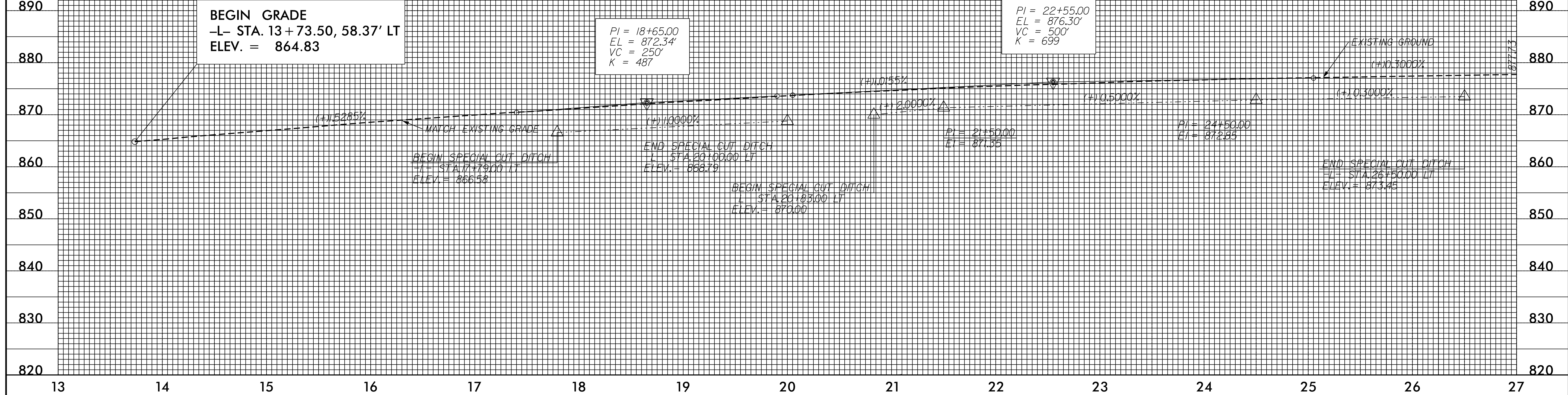
NOTE:  
SEE SHEET 12 FOR -Y- PROFILE



5/28/99

BM #5  
-BY- 165+47.39  
OFF 248.75' LT  
ELEV. 879.90'  
RR SPIKE IN 12" POPLAR

PROJECT REFERENCE NO. U-2524BC	SHEET NO. 9
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 37950 JASON M. HARRIS 4/20/2015	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29984 DANIEL W. BRADY 4/16/2015

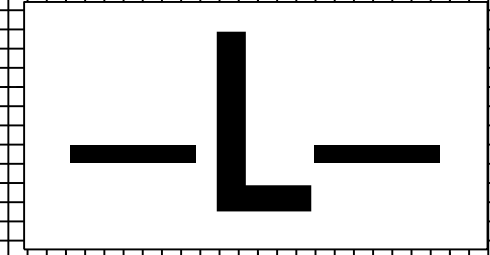
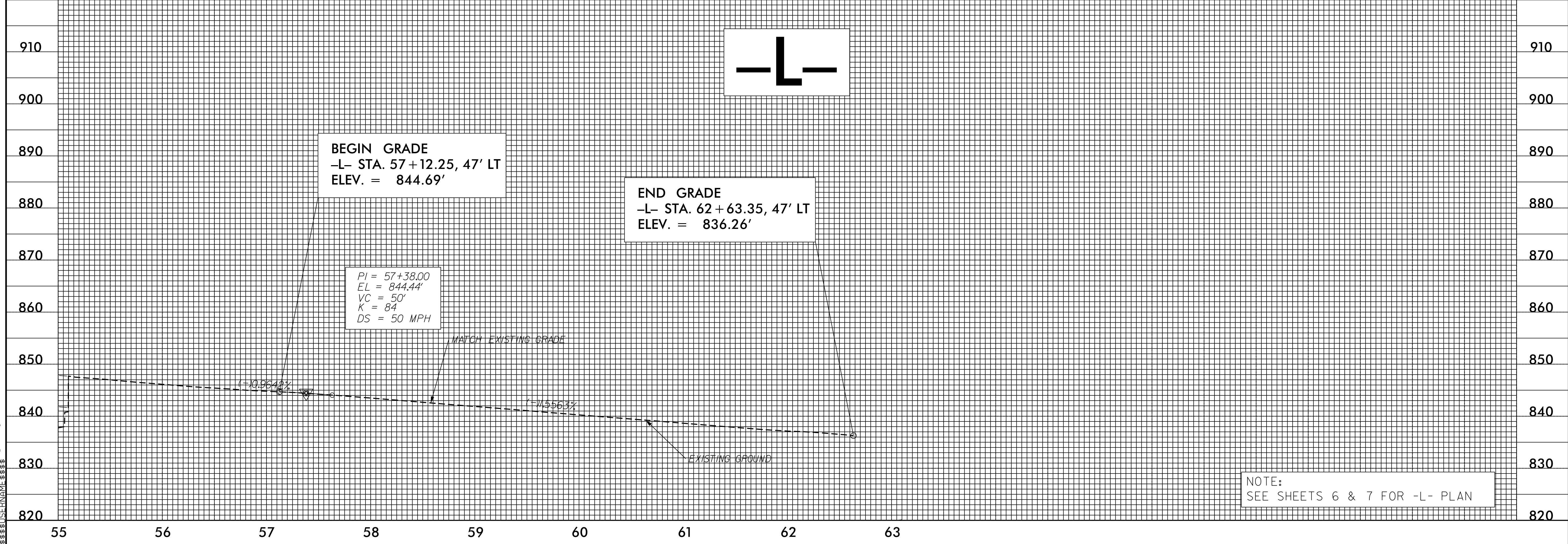
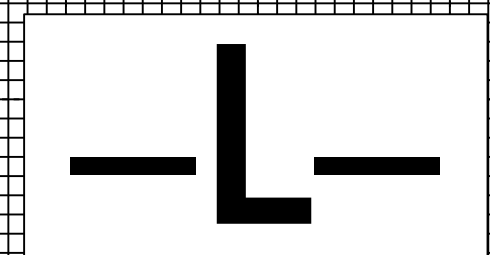


NOTE:  
SEE SHEETS 4 THRU 6 FOR -L- PLAN

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5/28/99

PROJECT REFERENCE NO. <i>U-2524BC</i>	SHEET NO. <i>10</i>
ROADWAY DESIGN ENGINEER <i>JASON M. BICKNER</i>	HYDRAULICS ENGINEER <i>DAVID B. BICKNER</i>
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37950 4/20/2015	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29984 4/16/2015

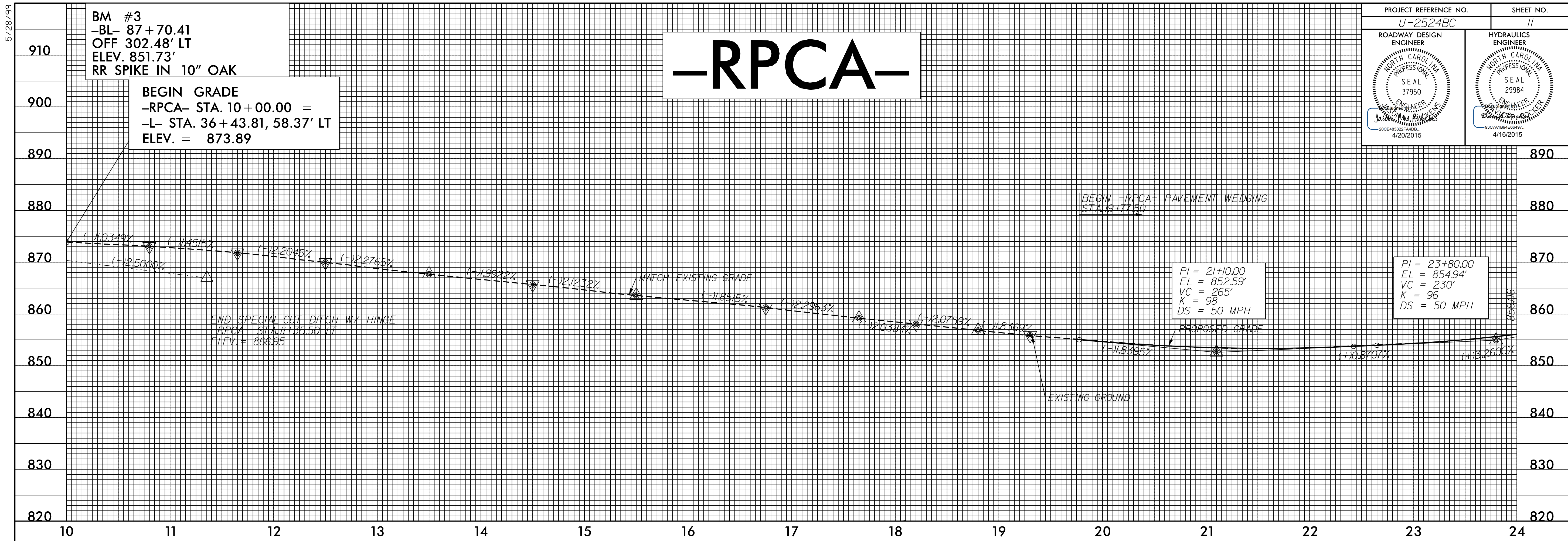


NOTE:  
SEE SHEETS 6 & 7 FOR -L- PLAN

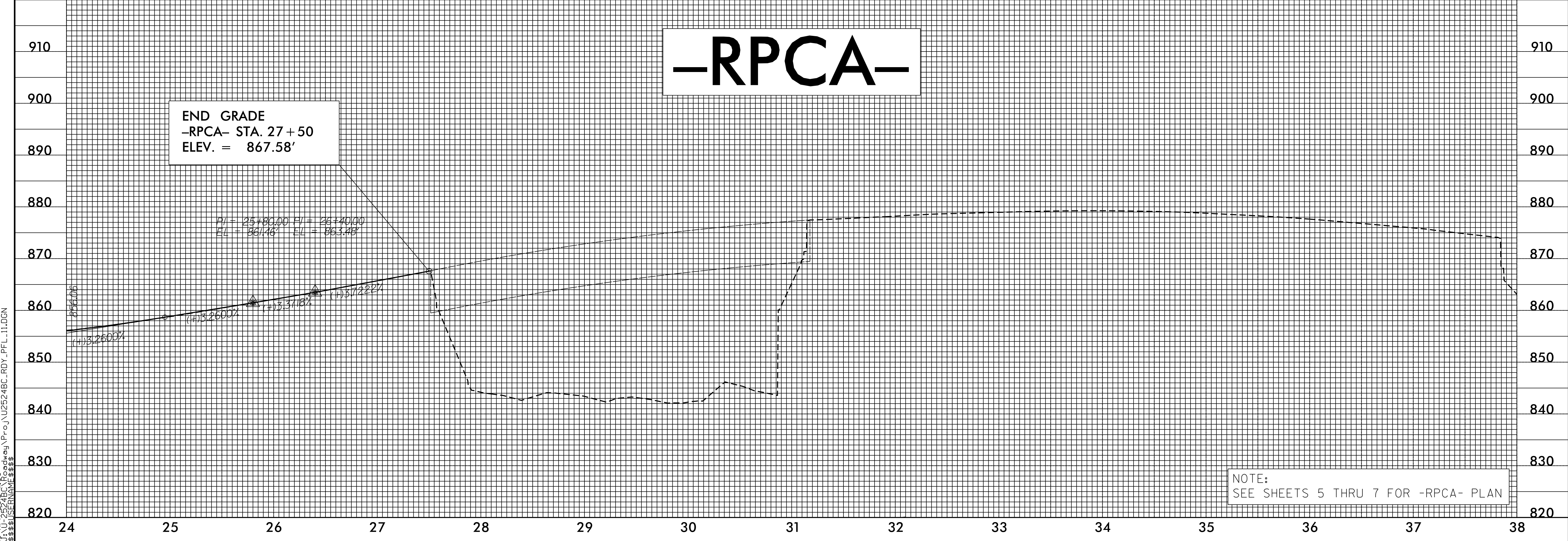
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 5/28/2015 11:00 AM  
 JMB



PROJECT REFERENCE NO. U-2524BC	SHEET NO. 11
ROADWAY DESIGN ENGINEER SEAL 37950 4/20/2015	HYDRAULICS ENGINEER SEAL 29984 4/16/2015



# -RPCA-



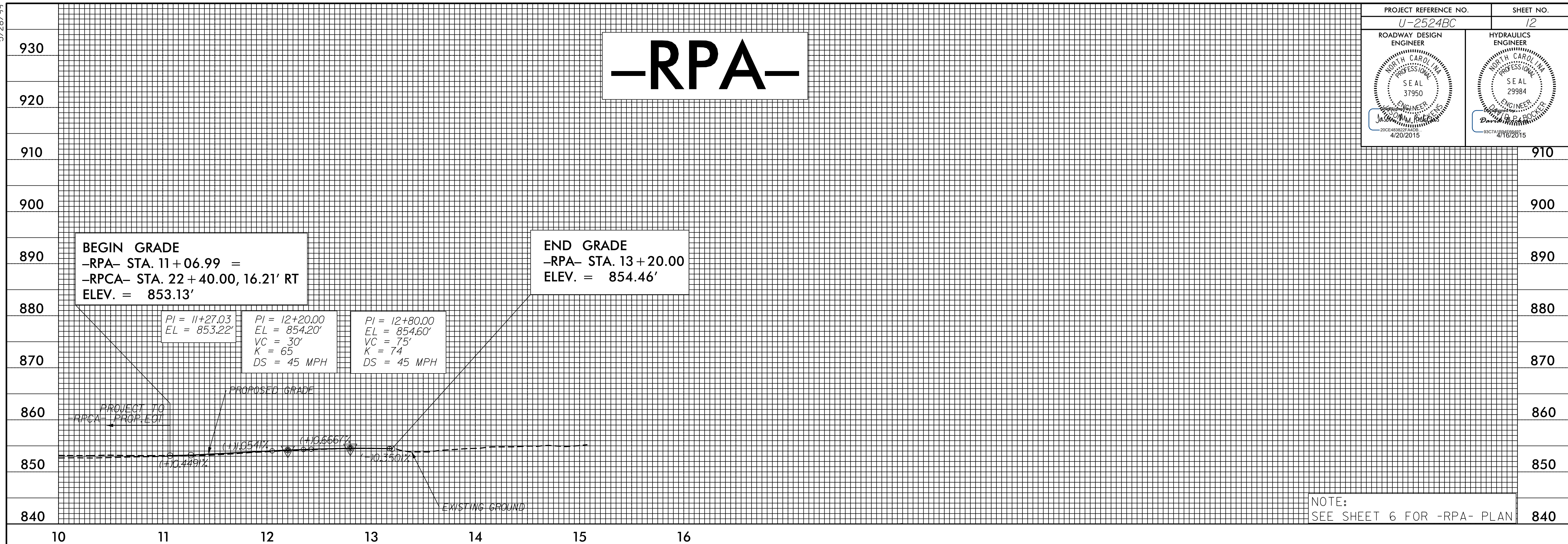
# -RPCA-

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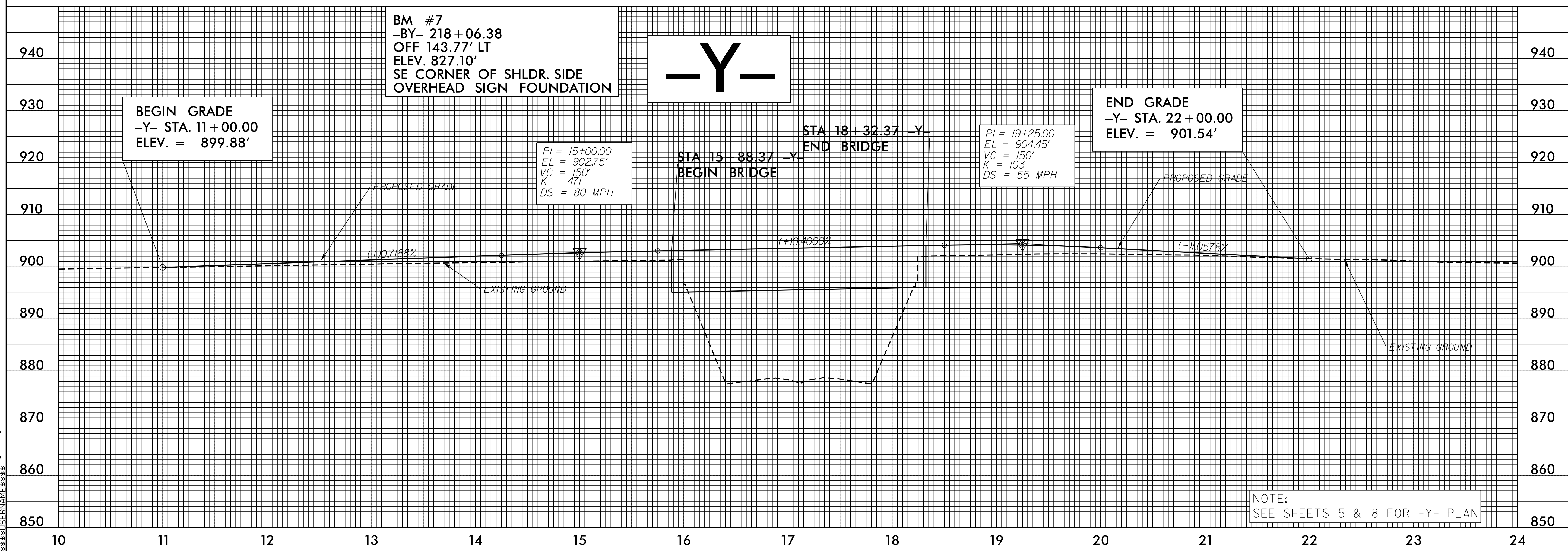
PROJECT REFERENCE NO. <b>U-2524BC</b>	SHEET NO. <b>12</b>
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 37950 4/20/2015	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29984 4/16/2015

5/28/99

# -RPA-



# -Y-



16-Apr-2016 11:00 AM C:\Users\p\Documents\Projects\U2524BC\RDY\_PFL\_12.DGN