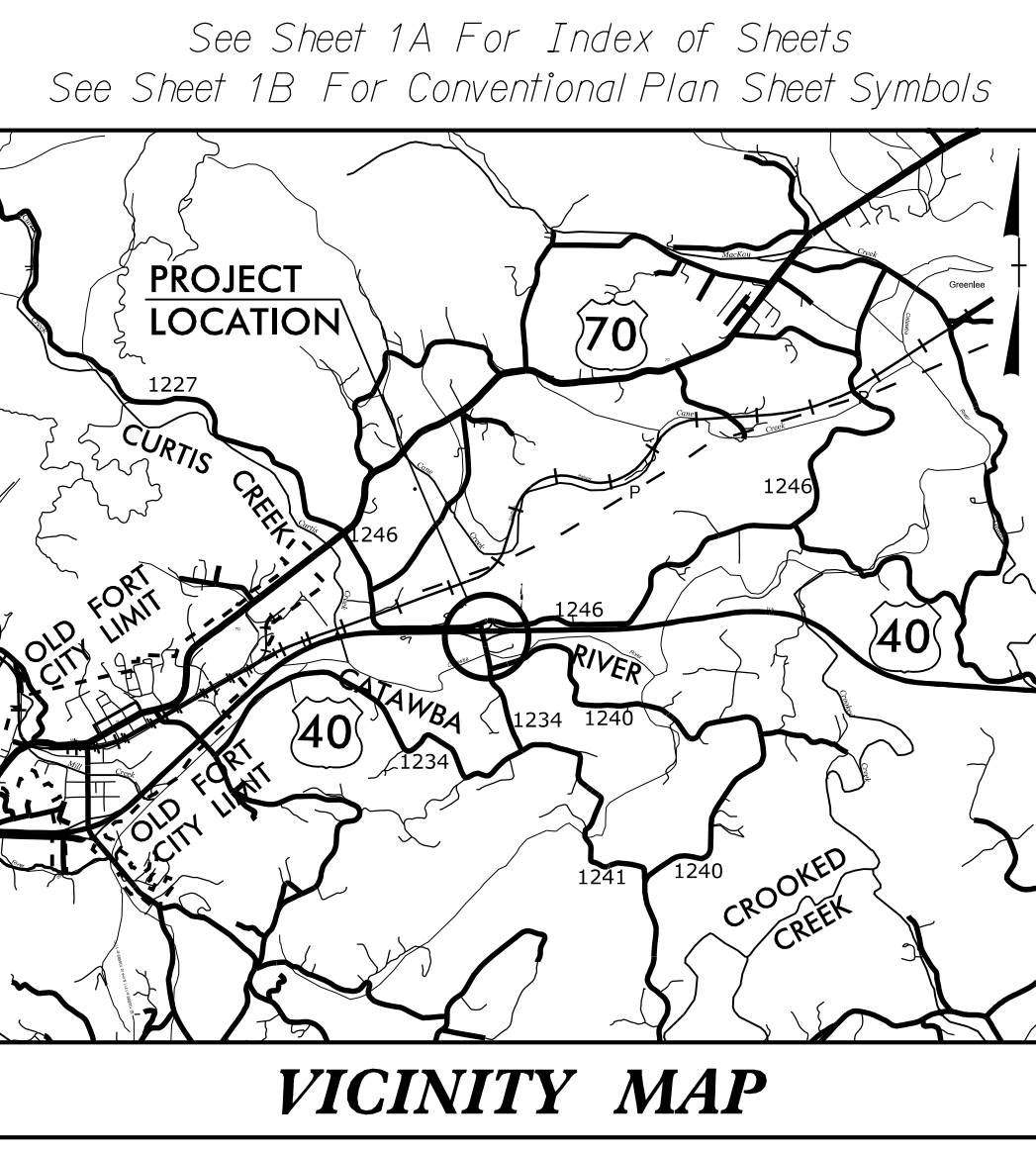


09/08/2019

TIP PROJECT: BR-0033

CONTRACT: C204672

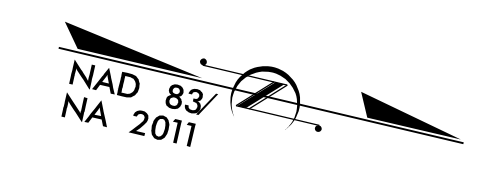


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
MCDOWELL COUNTY

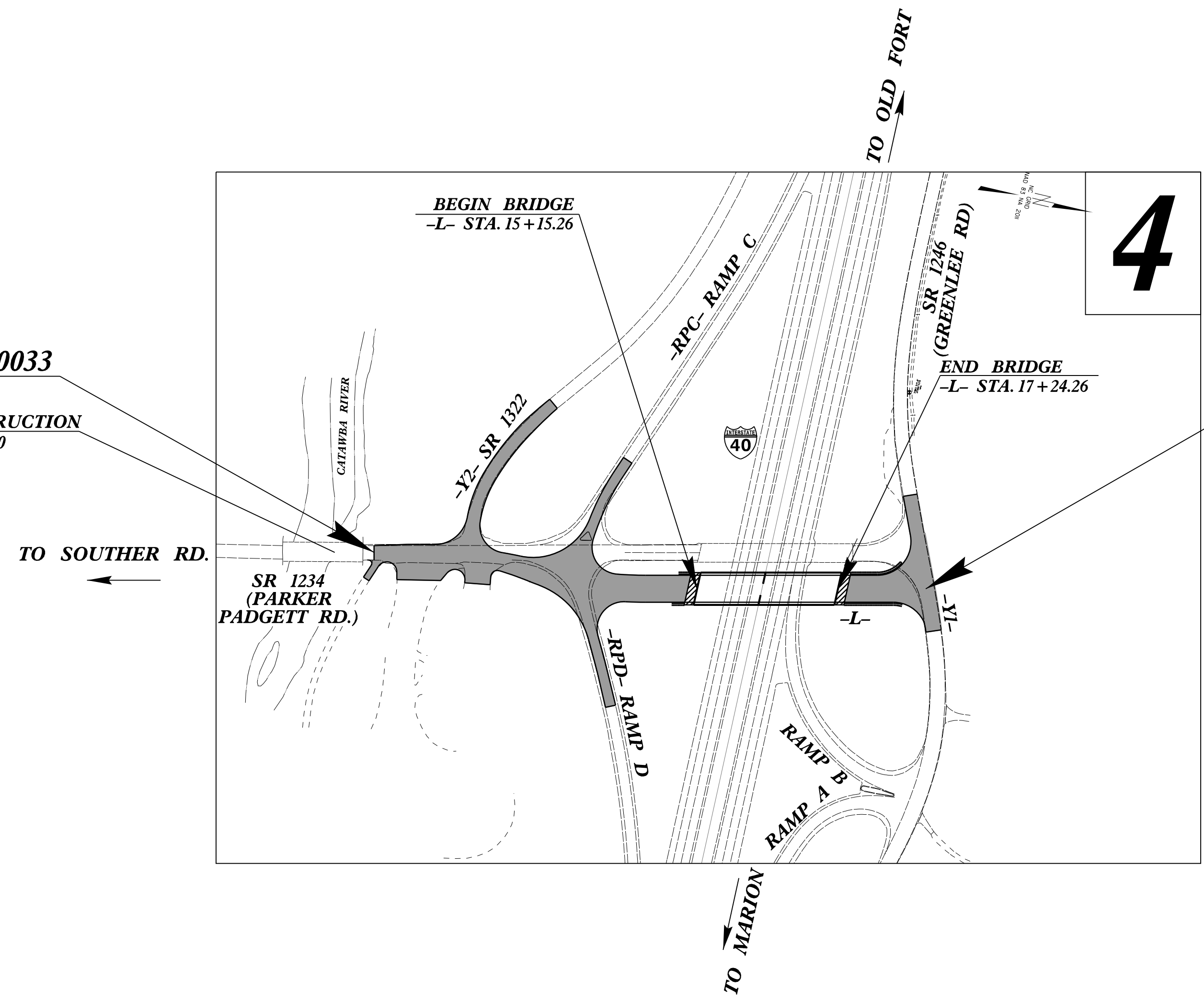
**LOCATION: REPLACE BRIDGE NO. 84
ON SR 1234 (PARKER PADGETT RD.) OVER I-40**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0033	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
67033.1.1	N/A	P.E.	
67033.2.1	N/A	R/W & UTILITIES	
67033.3.1	N/A	CONST.	



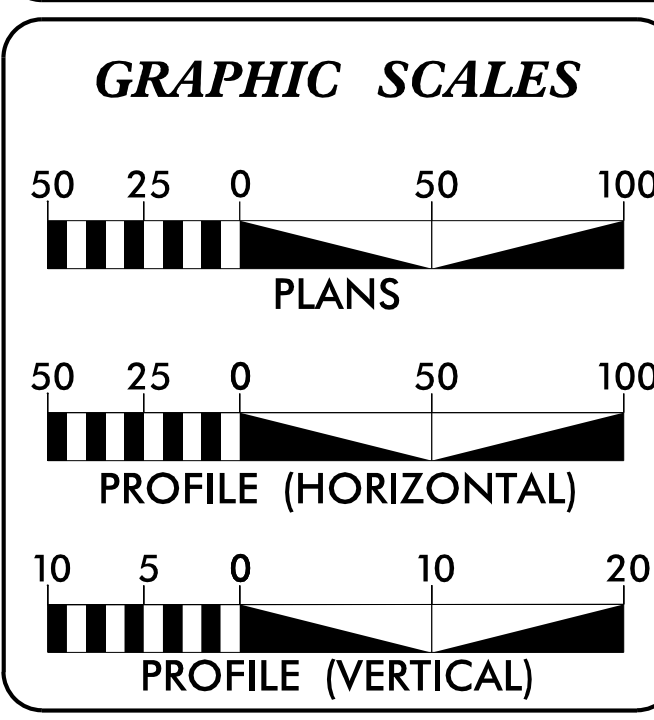
BEGIN TIP PROJECT BR-0033
-L- POT STA. 10 + 30.00
BEGIN CONSTRUCTION
-L- STA. 9 + 70.00



END TIP PROJECT BR-0033
-L- POT STA. 18 + 54.66

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED, MAXIMUM GRADE, HORIZONTAL & VERTICAL CURVES AND VERTICAL STOPPING SIGHT DISTANCE.

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



DESIGN DATA

ADT 2021 =	2410
ADT 2041 =	3140
K =	13 %
D =	70 %
T =	6 % *
V =	60 MPH
* TTST 3%+ DUAL 3%	
FUNC CLASS =	LOCAL
REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BR-0033	=	0.116 MILES
LENGTH STRUCTURE TIP PROJECT BR-0033	=	0.040 MILES
TOTAL LENGTH TIP PROJECT BR-0033	=	0.156 MILES

Prepared for NCDOT in the Office of:
ATCS
100 REGENCY FOREST DRIVE, SUITE 130
CARY, NORTH CAROLINA 27518
919-341-9418 <http://www.atcspc.com/>
NC LICENSE NO. P-0192
ENGINEERING | PLANNING | SURVEYING | ENVIRONMENTAL

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 25, 2021

LETTING DATE:
MARCH 15, 2022

TIM HAYES, PE
PROJECT ENGINEER

JASON BREDA, PE
PROJECT DESIGN ENGINEER

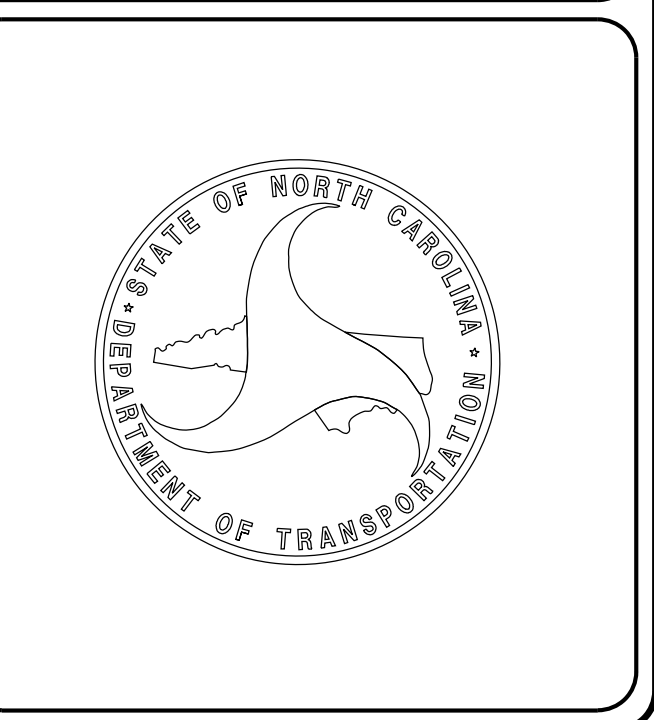
DAVID STUTTS, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Randy Henegar
SIGNATURE

ROADWAY DESIGN ENGINEER

DocuSigned by:
Timothy Hayes
SIGNATURE



02-MAR-2022 11:02
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fbarham

6/2/2019
C:\DEC-2021\4573
S:\P\0-sets\005004-2017-NCDDOT-SMJL-DC\BR-0033\ADMIN\Correspondence\TO\NCDDOT\100% PLANS Revised\Roadway Supporting Documents\BR0033_CADD\Roadway\Proj\BR0033_rdy_1A.dgn

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	TEMPORARY RAMP
2C-1	STRUCTURE ANCHOR UNITS DETAIL SHEET
2C-2	GUARDRAIL INSTALLATION SYSTEM PARTS DETAIL SHEET
2C-3	GUARDRAIL INSTALLATION A.T.-1 SYSTEM DETAIL SHEET
3B-1	EARTHWORK, PAVEMENT REMOVAL, SHOULDER BERM GUTTER AND GUARDRAIL SUMMARIES
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
5 THRU 7	PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL RIGHT OF WAY SHEETS
TMP-1 THRU TMP-8	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-9	CROSS-SECTIONS
S-1 THRU S-32	STRUCTURE PLANS

EFF. 01-16-2018
REV.

2018 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, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
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
815.02	Subsurface Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete 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
840.22	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
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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 II.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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.

SUBSURFACE DRAINS:

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

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.

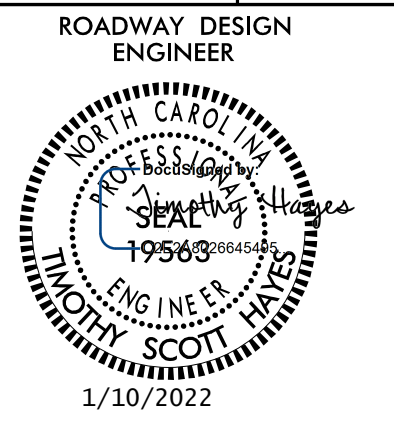

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Frontier Communications

RIGHT-OF-WAY MARKERS:

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

PROJECT REFERENCE NO. <i>BR-0033</i>	SHEET NO. <i>1A</i>
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	
<small>100 REGENCY FOREST DRIVE, SUITE 130 CARY, NORTH CAROLINA 27518 919-341-9418 http://www.atcsplc.com/</small>	
<small>ENGINEERING PLANNING SURVEYING ENVIRONMENTAL</small>	

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

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
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-☒-s-
Potential Contamination Area: Soil	☒-s-☒-s-
Known Contamination Area: Water	☒-w-☒-w-
Potential Contamination Area: Water	☒-w-☒-w-
Contaminated Site: Known or Potential	☠ ?

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:

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	WLB
Proposed Lateral, Tail, Head Ditch	-----
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Secondary Horiz and Vert Control Point	◆
Vertical Benchmark	⊕
Existing Right of Way Monument	△
Proposed Right of Way Monument (Rebar and Cap)	▲
Proposed Right of Way Monument (Concrete)	▲
Existing Permanent Easement Monument	◇
Proposed Permanent Easement Monument (Rebar and Cap)	◆
Existing C/A Monument	△
Proposed C/A Monument (Rebar and Cap)	▲
Proposed C/A Monument (Concrete)	▲
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Drainage/Utility Easement	DUE
Proposed Permanent Utility Easement	PUE
Proposed Temporary Utility Easement	TUE
Proposed Aerial Utility Easement	AUE

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	T
Proposed Guardrail	T
Existing Cable Guiderail	□
Proposed Cable Guiderail	□
Equality Symbol	⊕
Pavement Removal	⊗
VEGETATION:	
Single Tree	○
Single Shrub	○
Hedge	-----

Woods Line	-----
Orchard	○
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:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)

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	PH
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	P
U/G Power Line (SUE - LOS C)*	P
U/G Power Line (SUE - LOS D)*	P

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	PH
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	T
U/G Telephone Cable (SUE - LOS C)*	T
U/G Telephone Cable (SUE - LOS D)*	T
U/G Telephone Conduit (SUE - LOS B)*	TC
U/G Telephone Conduit (SUE - LOS C)*	TC
U/G Telephone Conduit (SUE - LOS D)*	TC
U/G Fiber Optics Cable (SUE - LOS B)*	T FO
U/G Fiber Optics Cable (SUE - LOS C)*	T FO
U/G Fiber Optics Cable (SUE - LOS D)*	T FO

WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line Test Hole (SUE - LOS A)*	⊕
U/G Water Line (SUE - LOS B)*	-----
U/G Water Line (SUE - LOS C)*	-----
U/G Water Line (SUE - LOS D)*	-----
Above Ground Water Line	A/G Water

TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	PH
U/G TV Test Hole (SUE - LOS A)*	⊕
U/G TV Cable (SUE - LOS B)*	TV
U/G TV Cable (SUE - LOS C)*	TV
U/G TV Cable (SUE - LOS D)*	TV
U/G Fiber Optic Cable (SUE - LOS B)*	TV FO
U/G Fiber Optic Cable (SUE - LOS C)*	TV FO
U/G Fiber Optic Cable (SUE - LOS D)*	TV FO

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line Test Hole (SUE - LOS A)*	⊕
U/G Gas Line (SUE - LOS B)*	G
U/G Gas Line (SUE - LOS C)*	G
U/G Gas Line (SUE - LOS D)*	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 Force Main Line Test Hole (SUE - LOS A)*	⊕
SS Force Main Line (SUE - LOS B)*	FSS
SS Force Main Line (SUE - LOS C)*	FSS
SS Force Main Line (SUE - LOS D)*	FSS

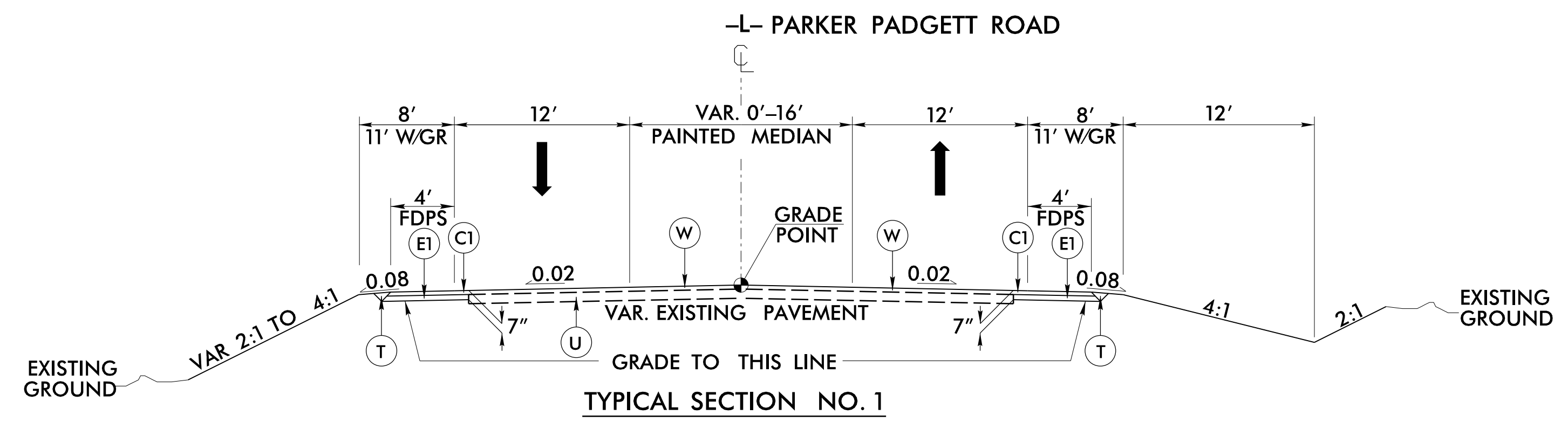
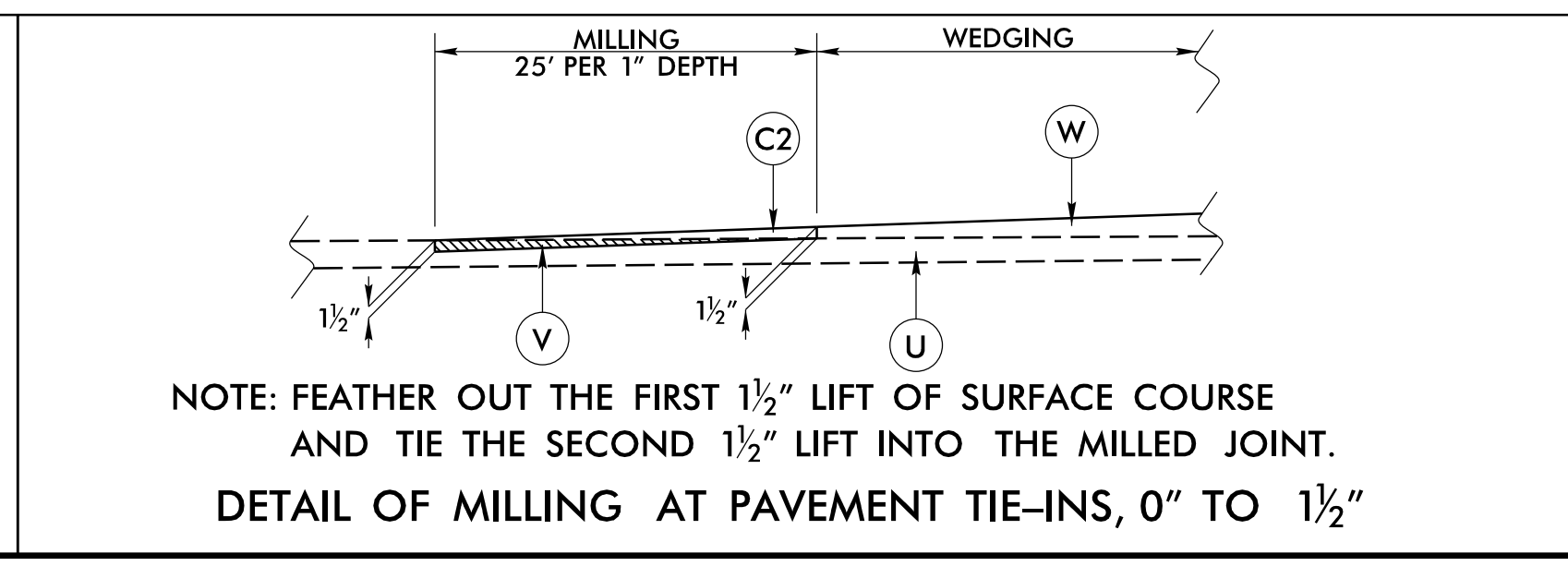
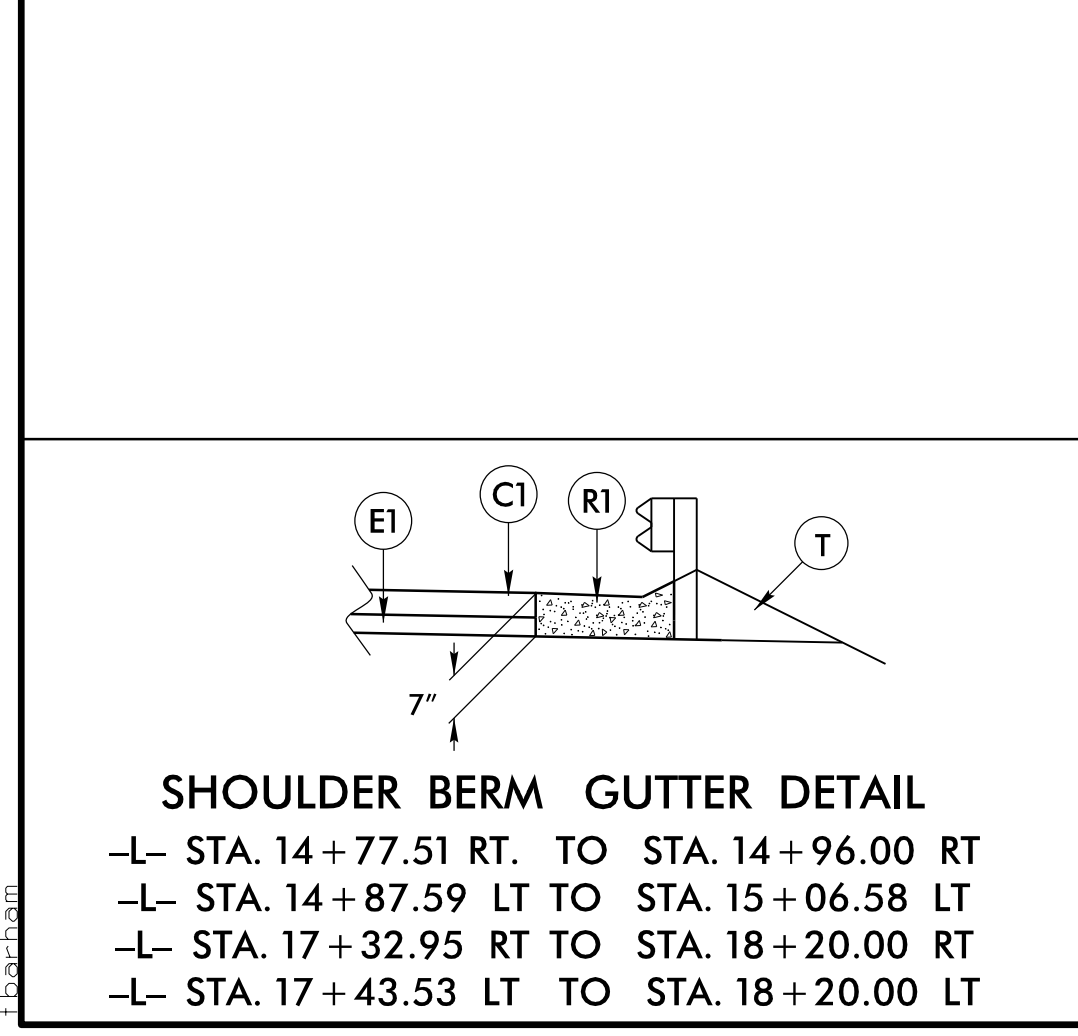
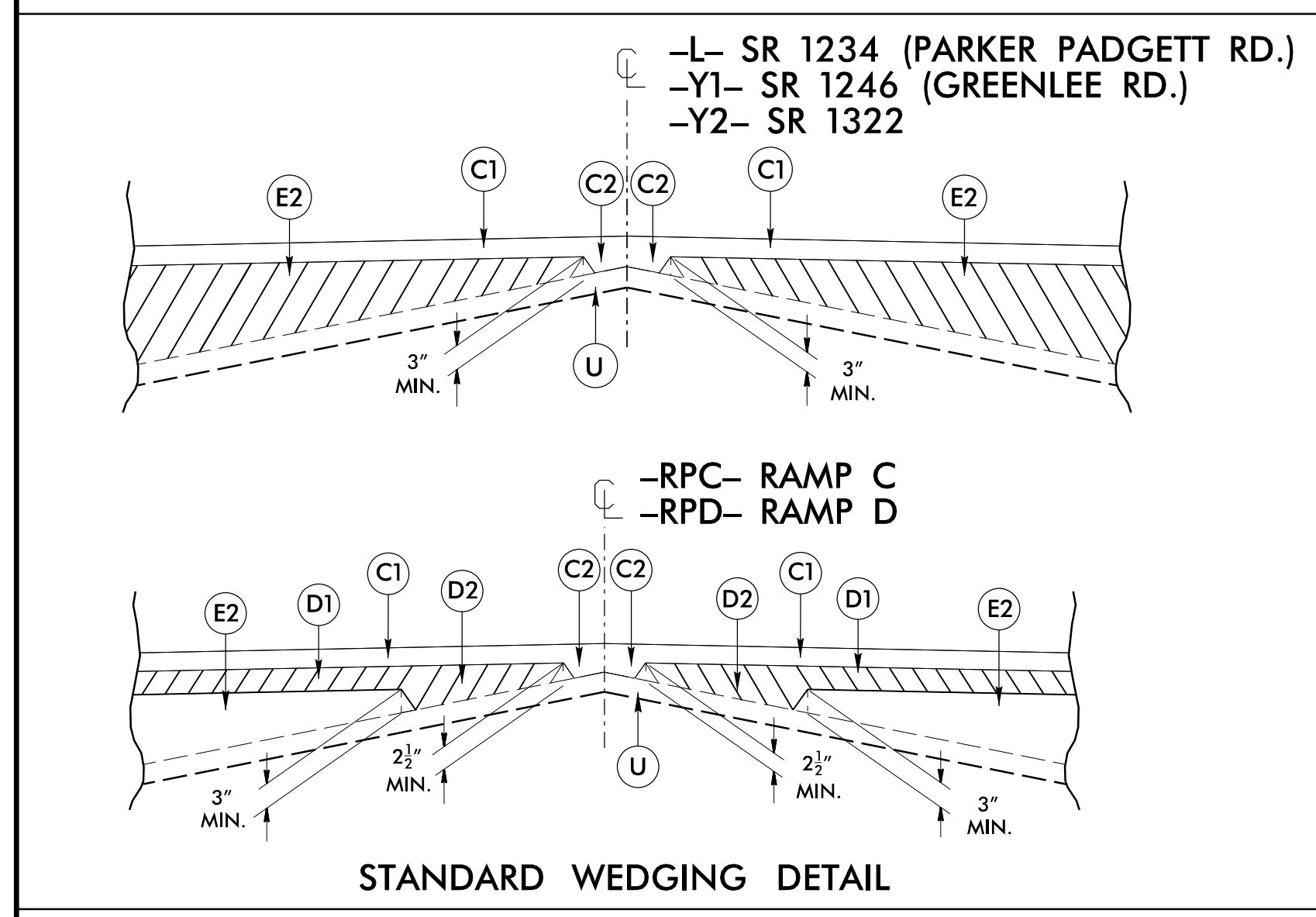
MISCELLANEOUS:

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

6/2/2022

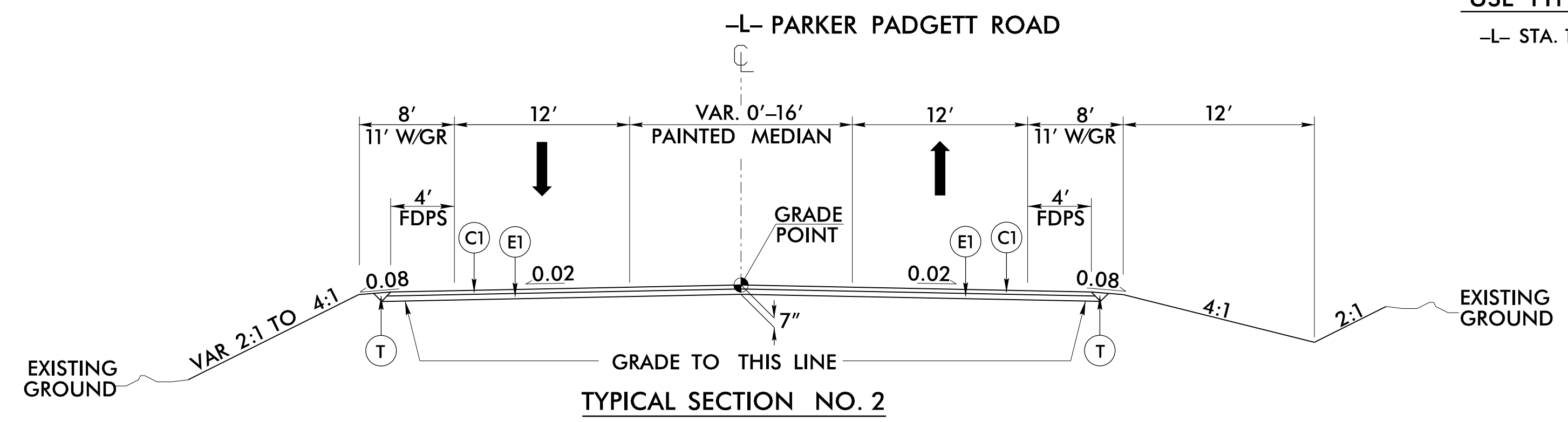
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
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" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
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.
R1	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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

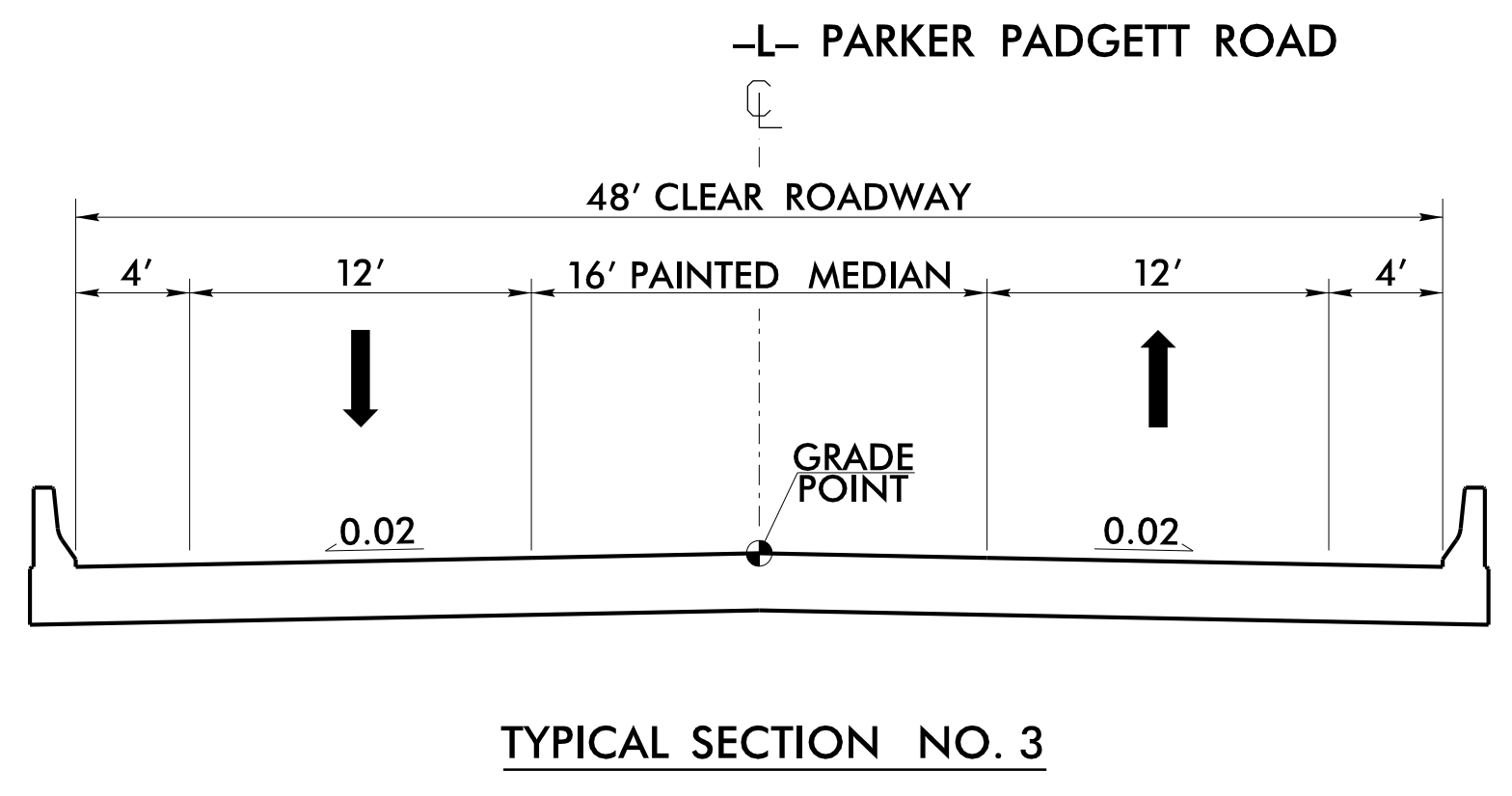


NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
 -L- STA. 10+30.00 TO STA. 10+80.00

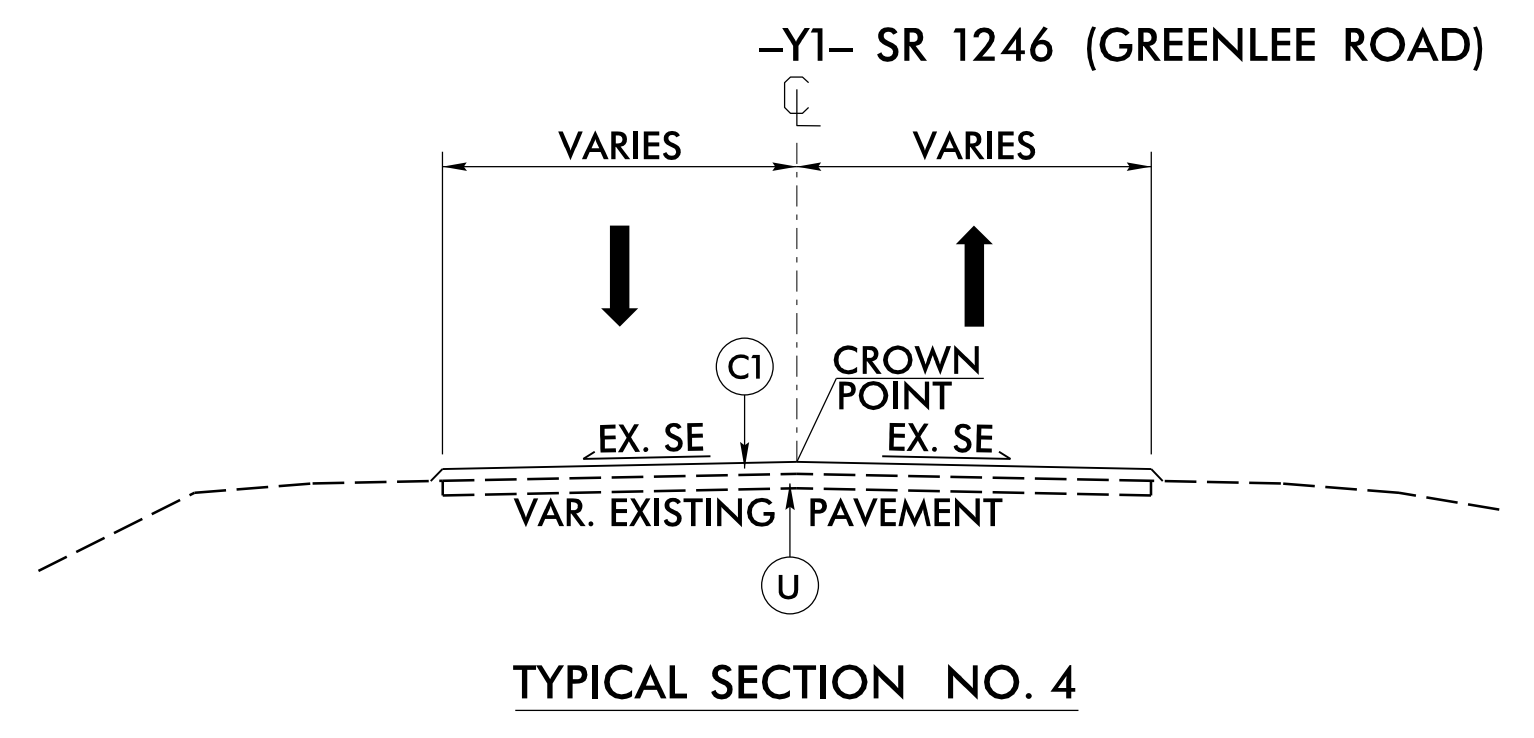
USE TYPICAL SECTION NO. 1
 -L- STA. 10+80.00 TO STA. 13+00.00



USE TYPICAL SECTION NO. 2
 -L- STA. 13+00.00 TO STA. 15+15.26 (BEGIN BRIDGE)
 -L- STA. 17+24.26 (END BRIDGE) TO STA. 18+44.52



USE TYPICAL SECTION NO. 3
 -L- STA. 15+15.26 TO STA. 17+24.26

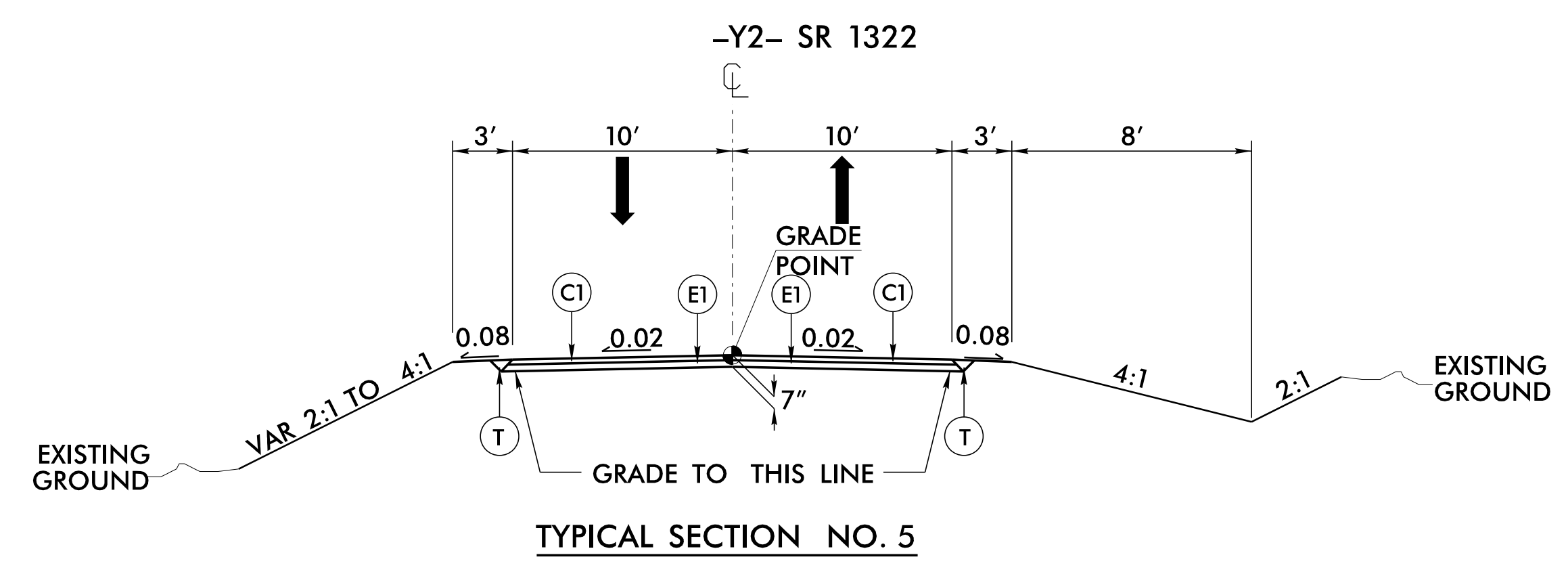


USE TYPICAL SECTION NO. 4
 -Y1- STA. 13+00.00 TO STA. 15+04.53

PROJECT REFERENCE NO. BR-0033	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER JIMMY SCOTT 1/14/2022	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON 1/14/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ATCS 100 REGENCY FOREST DRIVE, SUITE 130 CARY, NORTH CAROLINA 27518 919-341-9418 http://www.atcsplc.com/ ENGINEERING PLANNING SURVEYING ENVIRONMENTAL	

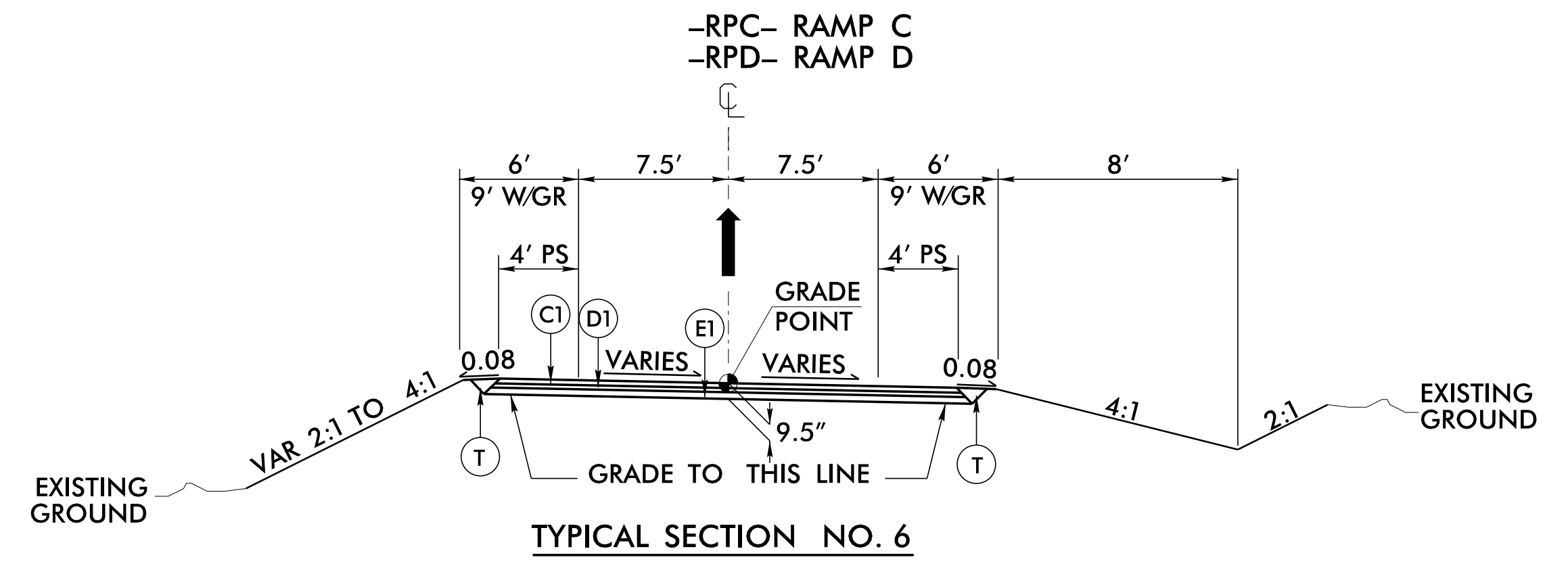
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6/2/2022



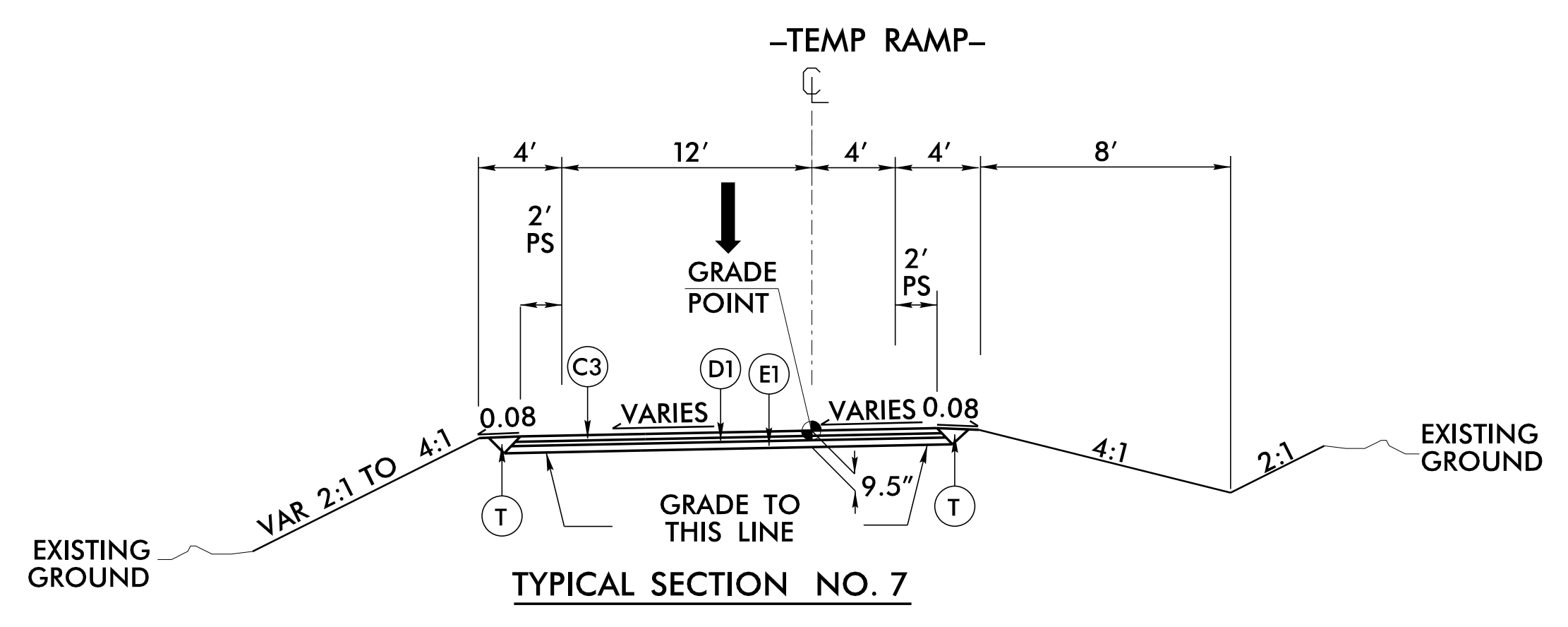
NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 5
 -Y2- STA. 11+25.00 TO STA. 11+75.00

USE TYPICAL SECTION NO. 5
 -Y2- STA. 11+75.00 TO STA. 13+80.53

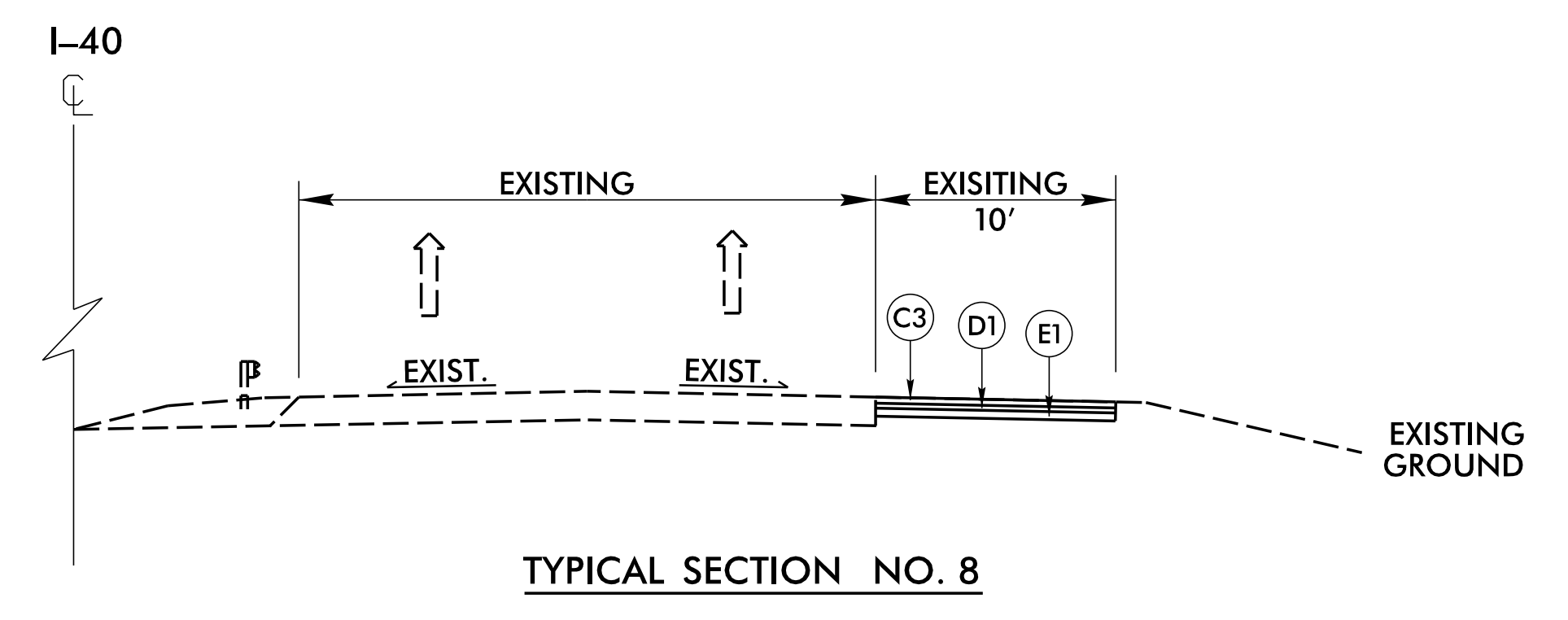


NOTE: TRANSITION FROM TYPICAL SECTION NO. 6 TO EXISTING
 -RPD- STA. 11+40.00 TO STA. 11+90.00
 -RPC- STA. 11+90.00 TO STA. 12+40.00

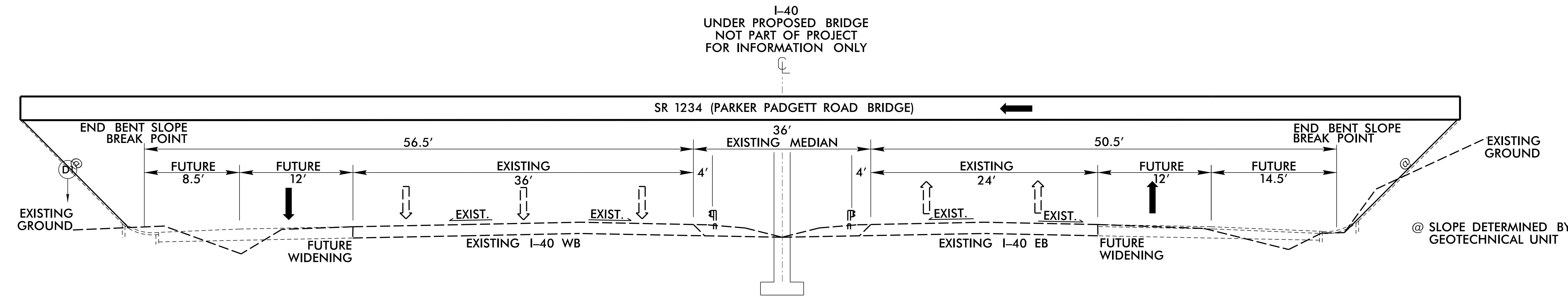
USE TYPICAL SECTION NO. 6
 -RPC- STA. 12+40.00 TO STA. 13+67.43
 -RPD- STA. 10+22.15 TO STA. 11+40.00



USE TYPICAL SECTION NO. 7
 -TEMP RAMP- STA. 12+43.92 TO STA. 14+24.52



USE TYPICAL SECTION NO. 8
 I-40 STA. 7+01.03 TO STA. 8+68.19
 I-40 STA. 12+30 TO STA. 22+10 (MIRROR)



DETAIL OF TYPICAL SECTION UNDER STRUCTURE ASSUMING FUTURE WIDENING
 I-40 WIDENING NOT PART OF PROJECT.
 FOR INFORMATION ONLY

PROJECT REFERENCE NO. BR-0033	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER CLAYTON SCOTT 1/14/2022	PAVEMENT DESIGN ENGINEER CLARK S. MORRISON 1/14/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ATCS 100 REGENCY FOREST DRIVE, SUITE 130 CARY, NORTH CAROLINA 27518 919-341-9418 http://www.atcsplc.com/ ENGINEERING PLANNING SURVEYING ENVIRONMENTAL	

PAVEMENT SCHEDULE	
C1	3" TYPE S9.5B
C2	VAR. TYPE S9.5B
C3	3" TYPE S9.5C
D1	2 1/2" TYPE I19.0C
D2	VAR. TYPE I19.0C
E1	4" TYPE B25.0C
E2	VAR. TYPE B25.0C
R1	CONG. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	WEDGING

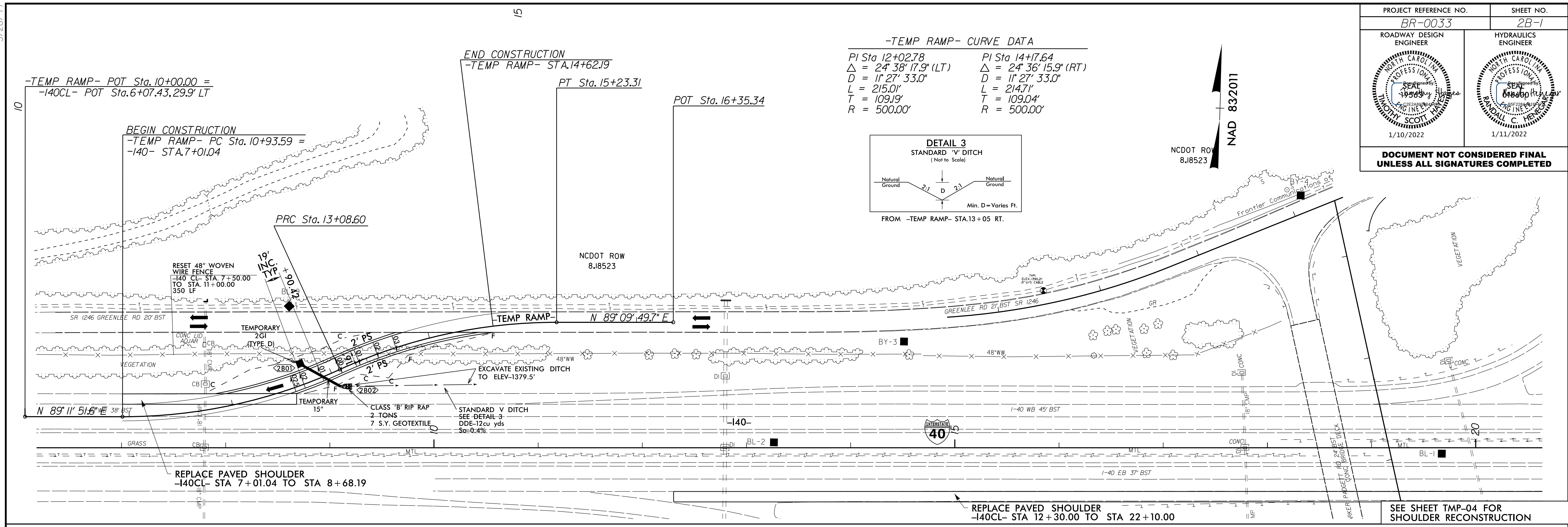
@ SLOPE DETERMINED BY THE GEOTECHNICAL UNIT

14-JAN-2022 09:08 BR0033_PdJ_tjrp.dgn

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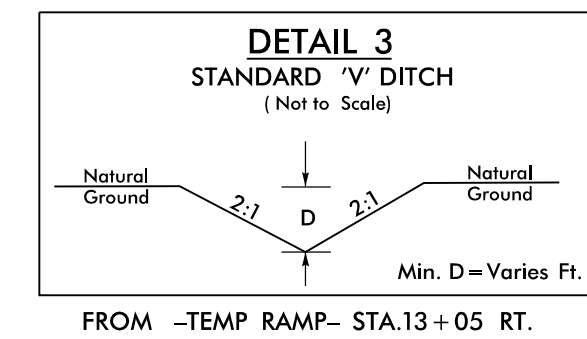
PROJECT REFERENCE NO. BR-0033	SHEET NO. 2B-1
ROADWAY DESIGN ENGINEER JUDITH SCOTT	HYDRAULICS ENGINEER BRADLEY C. HENNING
1/10/2022	1/11/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

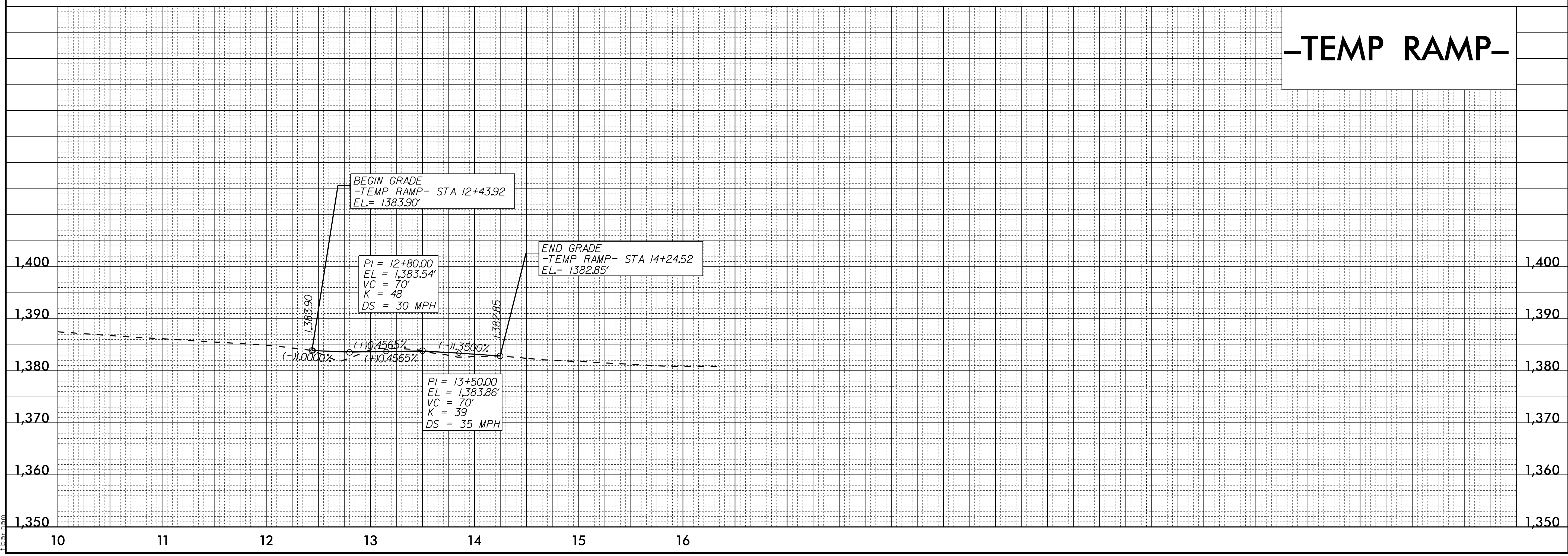


-TEMP RAMP- CURVE DATA

PI Sta 12+02.78 Δ = 24° 38' 17.9\" (LT) D = 11° 27' 33.0\" L = 215.01' T = 109.19' R = 500.00'	PI Sta 14+17.64 Δ = 24° 36' 15.9\" (RT) D = 11° 27' 33.0\" L = 214.71' T = 109.04' R = 500.00'
---	---



NAD 832011
NCDOT ROW
8.8523



-TEMP RAMP-

SEE SHEET TMP-04 FOR SHOULDER RECONSTRUCTION

I4-DEC-2017 10:36
 S:\Contracts\Projects\Special Details\Standard Drawings\Division 8\08662d0301.dgn
 Jhowerton AT: USD-292595

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE**

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
- SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

SHEET 1 OF 7
862D03

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

PLAN VIEW

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

NOTE:

- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
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- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

12/2/2021

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

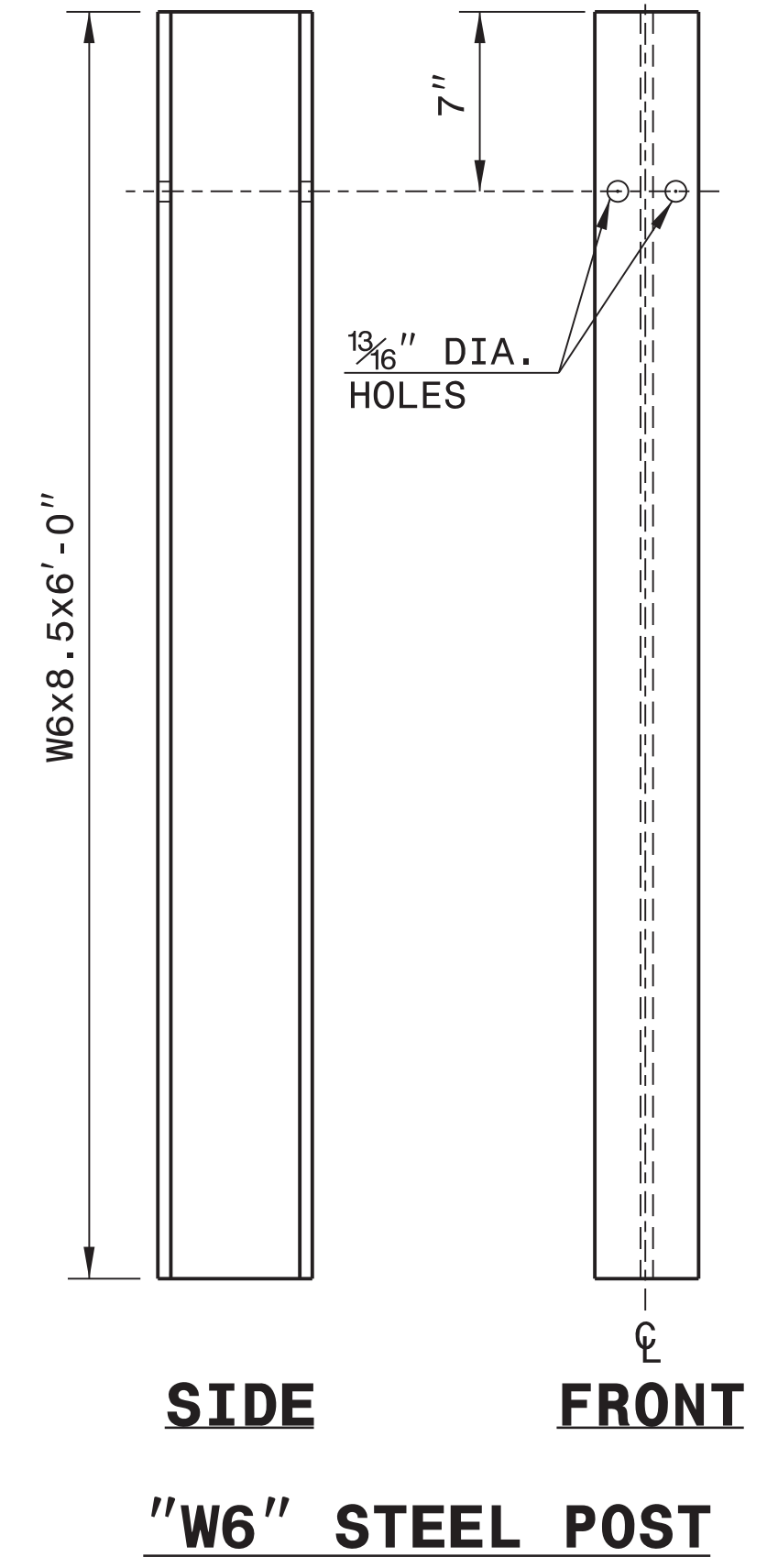
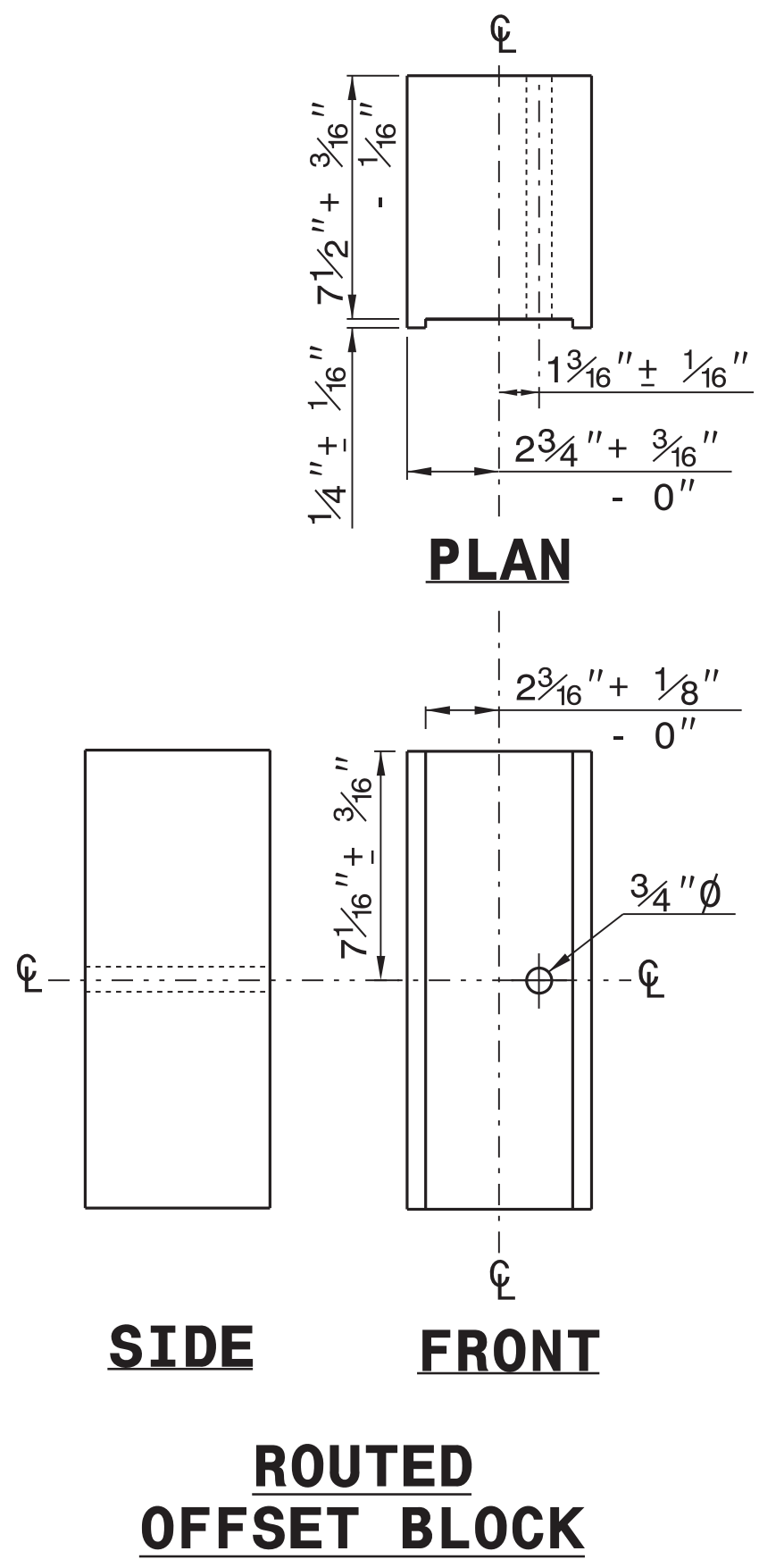
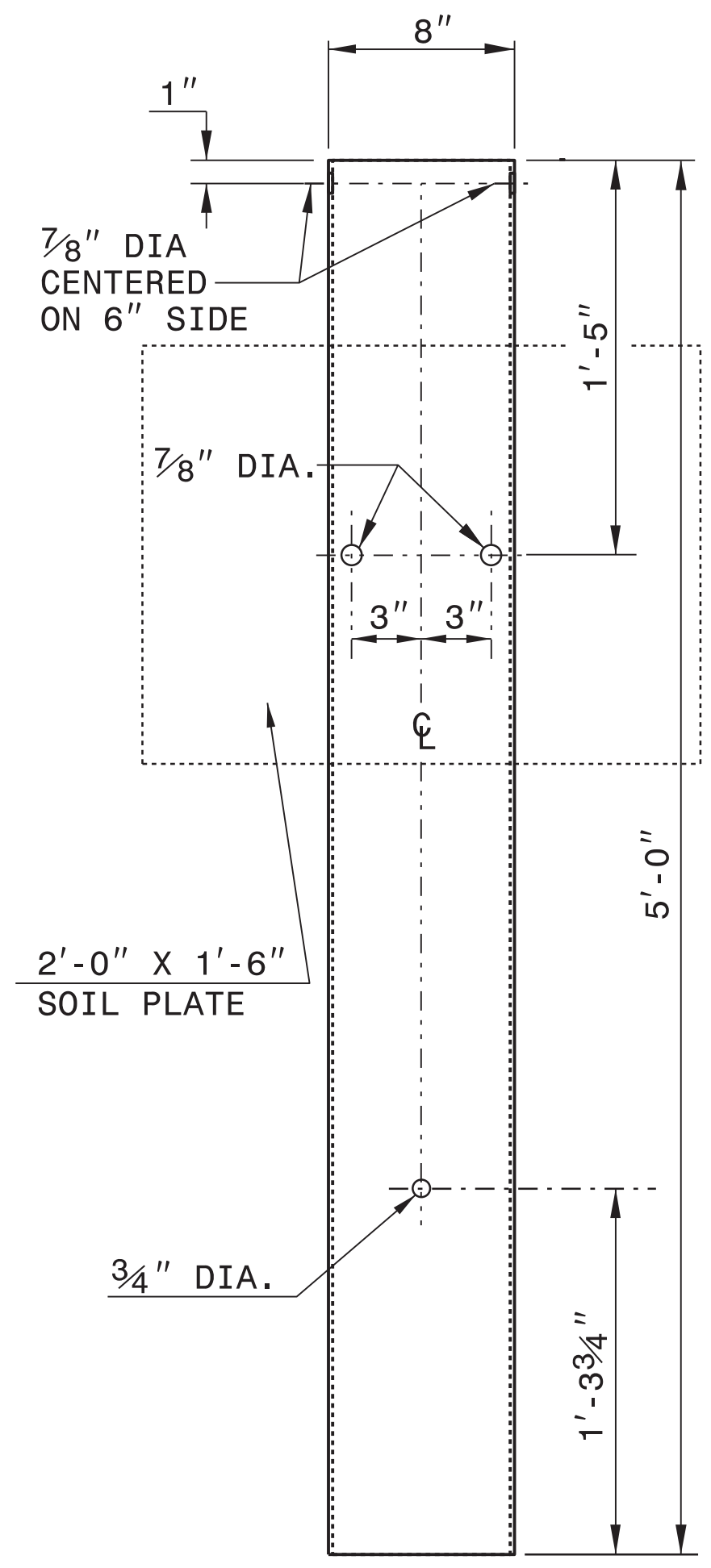
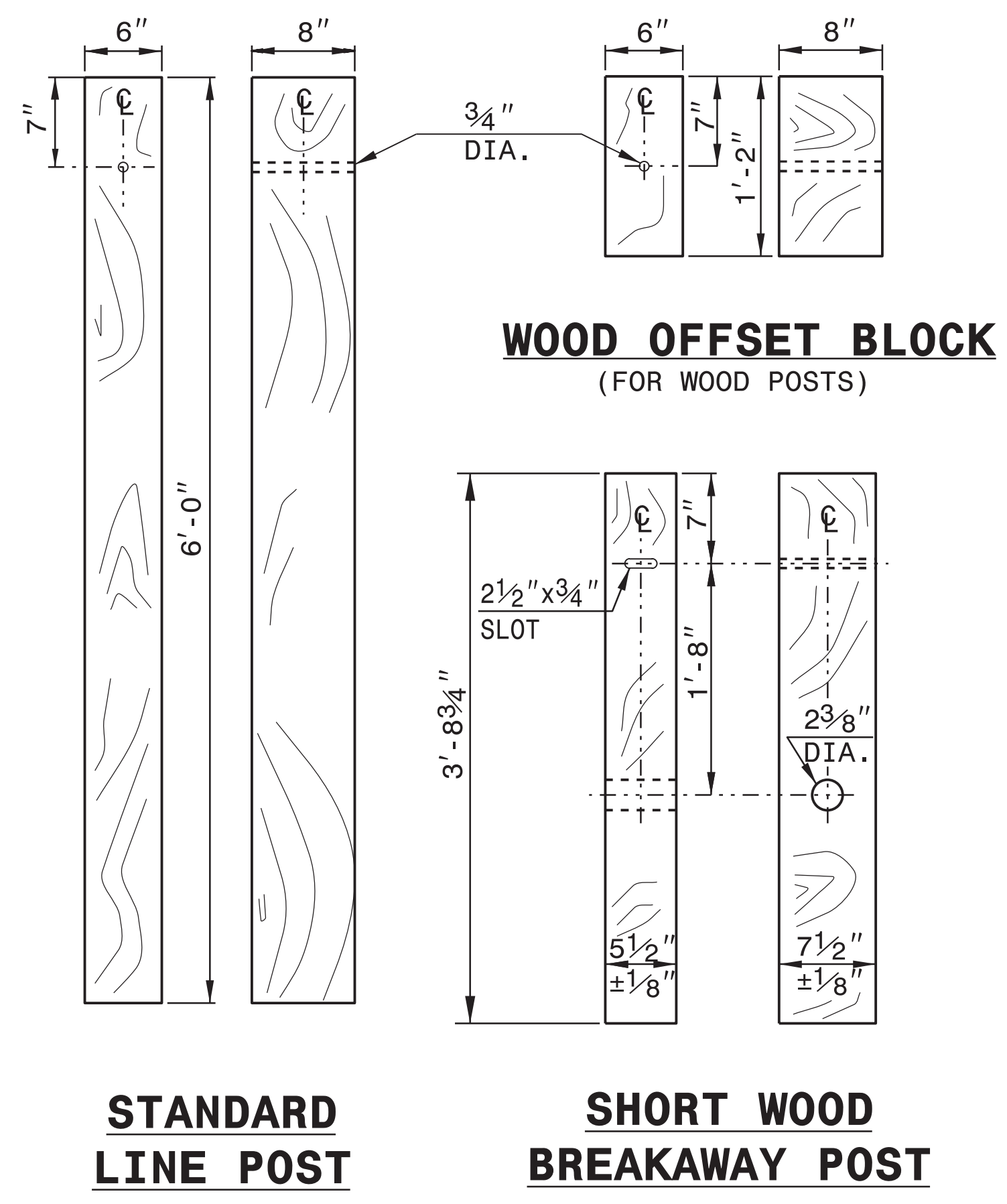
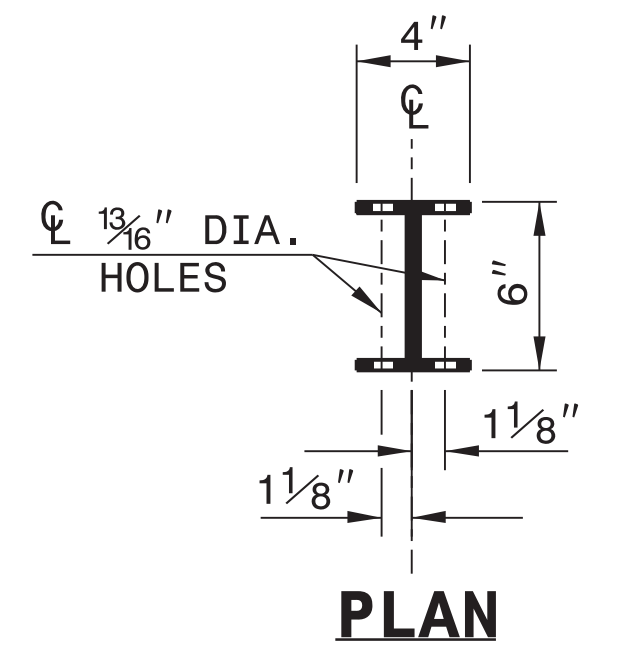
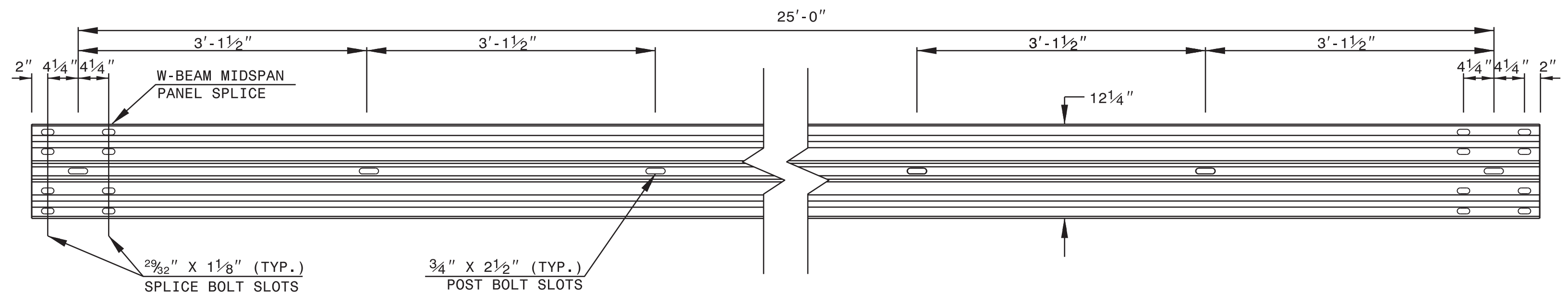
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

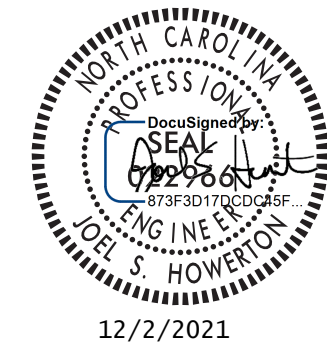
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



SYSTEM PARTS



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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON	DATE: 3-7-2018
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

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

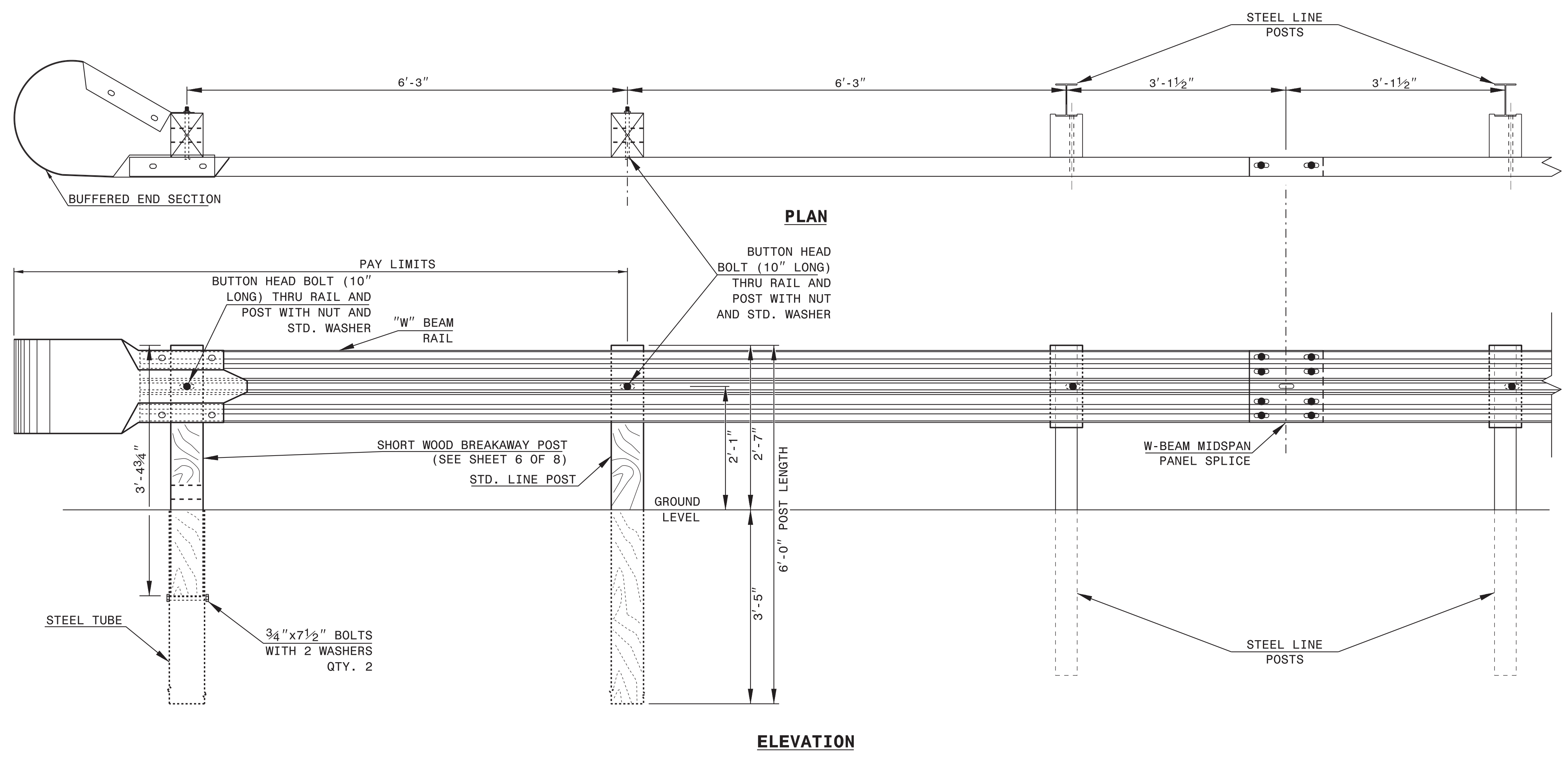
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

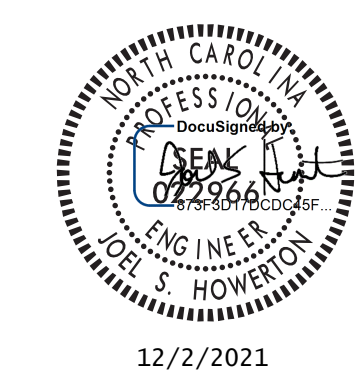
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM



12/2/2021

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACTS STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950 FAX 919-250-4119	
A.T. - 1 SYSTEM	
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	

COMPUTED BY: KK
CHECKED BY: FAB

DATE: 8/31/21
DATE: 9/2/21

PROJECT NO.
BR-0033

SHEET NO.
3B-1

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK (In Cubic Yards)

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
SUMMARY NO. I					
-L- STA. 10+30.00	-L- STA. 15+15.26 (BB)	463	8232	7769	
-L- STA. 17+24.26 (EB)	-L- STA. 18+44.52	63	2466	2403	
-RPC- STA. 11+90.00	-RPC- STA. 13+67.43	332	15		317
-RPD- STA. 10+22.15	-RPD- STA. 11+90.00	5	668	663	
SUMMARY NO. I TOTALS		863	11381	10835	317
SUMMARY NO. II					
-Y2- STA. 11+25.00	-Y2- STA. 13+80.01	4	366	362	
-TEMP RAMP- STA. 12+43.92	-TEMP RAMP- STA. 14+24.52	230	15		215
-TEMP RAMP- STA. 12+43.92	-TEMP RAMP- STA. 14+24.52	13	265	252	
SUMMARY NO. II TOTALS		247	646	614	215
SUMMARY TOTALS:		1110	12027	11449	532
LOSS DUE TO CLEARING AND GRUBBING		-30		30	
WASTE IN LIEU OF BORROW				-532	
PROJECT TOTALS:		1080	12027	10947	532
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				547	
GRAND TOTALS:		1080		11494	
SAY:		1100		11500	
UNDERCUT CONTINGENCY = 450 CY					
GEOTEXTILE FOR SOIL STABILIZATION = 700 SY					
SELECT GRANULAR MATERIAL = 400 CY					
EST. SHALLOW UNDERCUT = 100 CY					
CLASS IV SUBGRADE STABILIZATION = 200 TONS					

SHOULDER BERM GUTTER SUMMARY IN LINEAR FEET

LINE	Station	Station	LENGTH
-L- LT.	END BRIDGE	18+20.00	77
-L- RT.	END BRIDGE	18+20.00	87
-L- LT.	14+87.00	BEGIN BRIDGE	19
-L- RT.	14+77.00	BEGIN BRIDGE	19
TOTAL:			202
SAY:			205

PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT PAVEMENT REMOVAL	ASPHALT PAVEMENT BREAKUP	CONCRETE PAVEMENT REMOVAL	CONCRETE PAVEMENT BREAKUP
-L-	11+91.45	13+00.00	LT	195.09			
-L-	13+76.00	15+23.00	LT	360.65			
-L-	17+48.00	18+32.00	LT	391.11			
-L-	13+00.00	13+60.10	CL	233.27			
-Y2-	11+25.00	13+76.76	CL	560.88			
-RPC-	11+90.00	13+67.43	CL	834.14			
-RPD-	10+22.15	11+90.00	CL	452.6			
-TEMP RAMP-	12+43.92	14+24.52	CL	401.64			
-I40-	7+01.03	8+68.19	SHOULDER RT	188.79			
-I40-	12+30	22+10	SHOULDER LT	1043.09			
TOTAL:				4661.27			
SAY:				4700			

Note: These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

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		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	AT-1	TYPE III	CAT-1	G	NG					
-L-	-RPC- 13+01.66	15+20.55	BEG. BRG. LT.	137.50	75.00				4	11														
-L-	-RDP- 11+00.34	15+09.97	BEG. BRG. RT.	112.50	50.00		15+09.97	15+20.55	4	11	100	100	2	2	1	1						103		
-L-	17+29.55	18+26.95	END BRG. LT.	62.50	62.50		17+29.55		4	11					1	1						104		
-L-	17+18.97	18+49.48	END BRG. RT.	100.00	50.00			17+18.97	4	11					1	1						44		
-RPC-	-RCP- 12+12.94	-Y2-13+20.54	-RPC- RT	137.50	187.50		12+50.00		8	11	83.5		4		1							56		
-I40-	18+14.21	19+68.09	MEDIAN RIGHT	162.50				19+41.37	10	13												73		
-I40-	18+47.62	19+73.36	MEDIAN LEFT	137.50					10	13												68		
SUBTOTAL				850.00	425.00				10	13												159		
LESS DEDUCTIONS FOR ANCHOR																						607		
AT-1 5@6.25'				-31.25																				
TYPE III 4 @18.75'				-75																				
CAT-1 2@6.25'				-12.5																				
PROJECT TOTAL				731.25	425										5	4	2							
SAY				737.5	425																			
ADDITIONAL GUARDRAIL POSTS = 5 EA.																						650		

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

TSBEN\LAPTOP

COMPUTED BY: BAJ DATE: 5/6/2021
CHECKED BY: PF DATE: 5/6/2021

PROJECT NO. SHEET NO.
BR-0033 3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns: LINE & STATION, OFFSET, STRUCTURE NUMBER, TOPOGRAPHY, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, PIPE TYPE (Drainage Pipe, C.S. PIPE, R.C. PIPE), ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, GRATE TYPE, and REMARKS. Includes summary rows for SHEET TOTALS and PROJECT TOTALS.

COMPUTED BY: D. Clayton Elliott DATE: July 24, 2019
 CHECKED BY: Jody C. Kuhne DATE: July 24, 2019

(5-15-18)

PROJECT NO.
67033.1.1(BR-0033)

SHEET NO.
3G-1

**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			SD	200
				TOTAL LF:	200

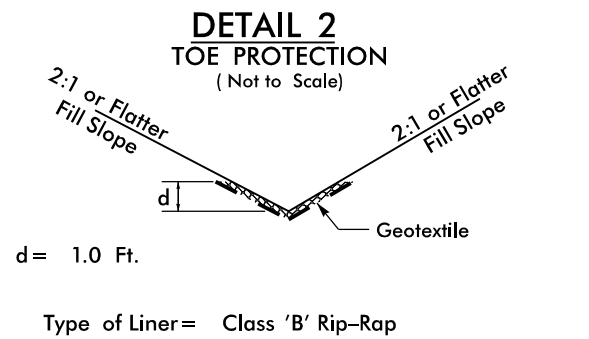
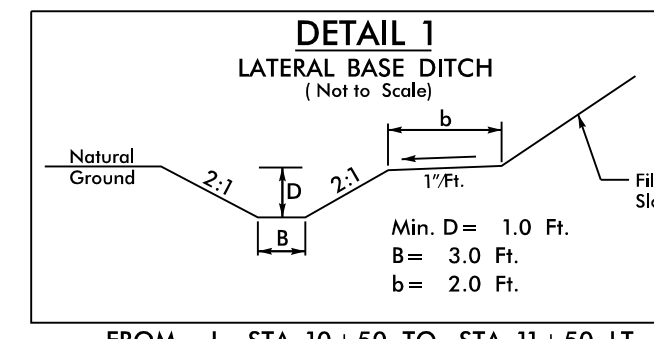
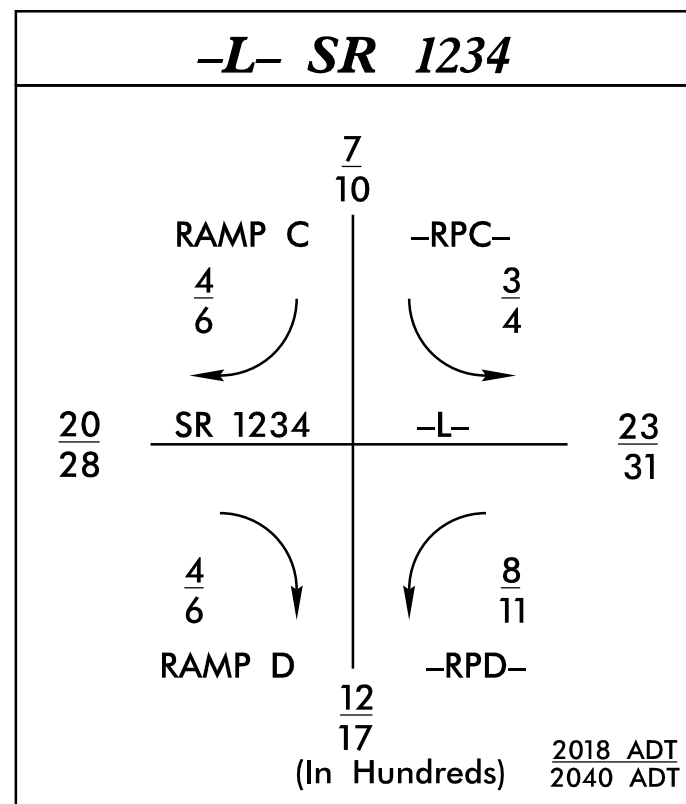
*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
	CONTINGENCY		ASU	12	100	200	500		
			TOTAL CY/TONS/SY:		100	200**	500**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons

PROJECT REFERENCE NO. BR-0033		SHEET NO. 4
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
1/10/2022	1/13/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
ATCS 100 REGENCY FOREST DRIVE, SUITE 130 CARY, NORTH CAROLINA 27518 919-341-9418 http://www.atcsplc.com/		
ENGINEERING PLANNING SURVEYING ENVIRONMENTAL		

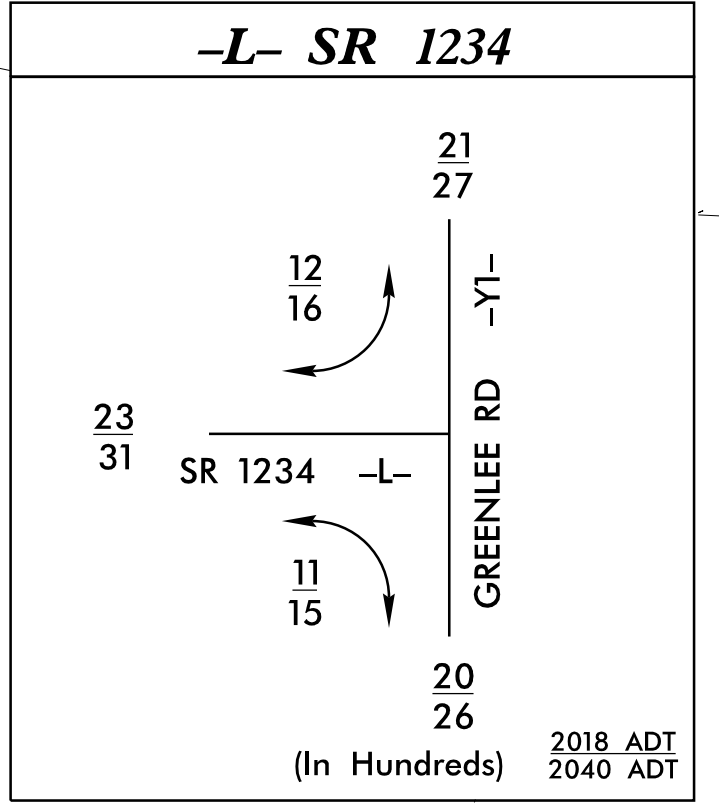
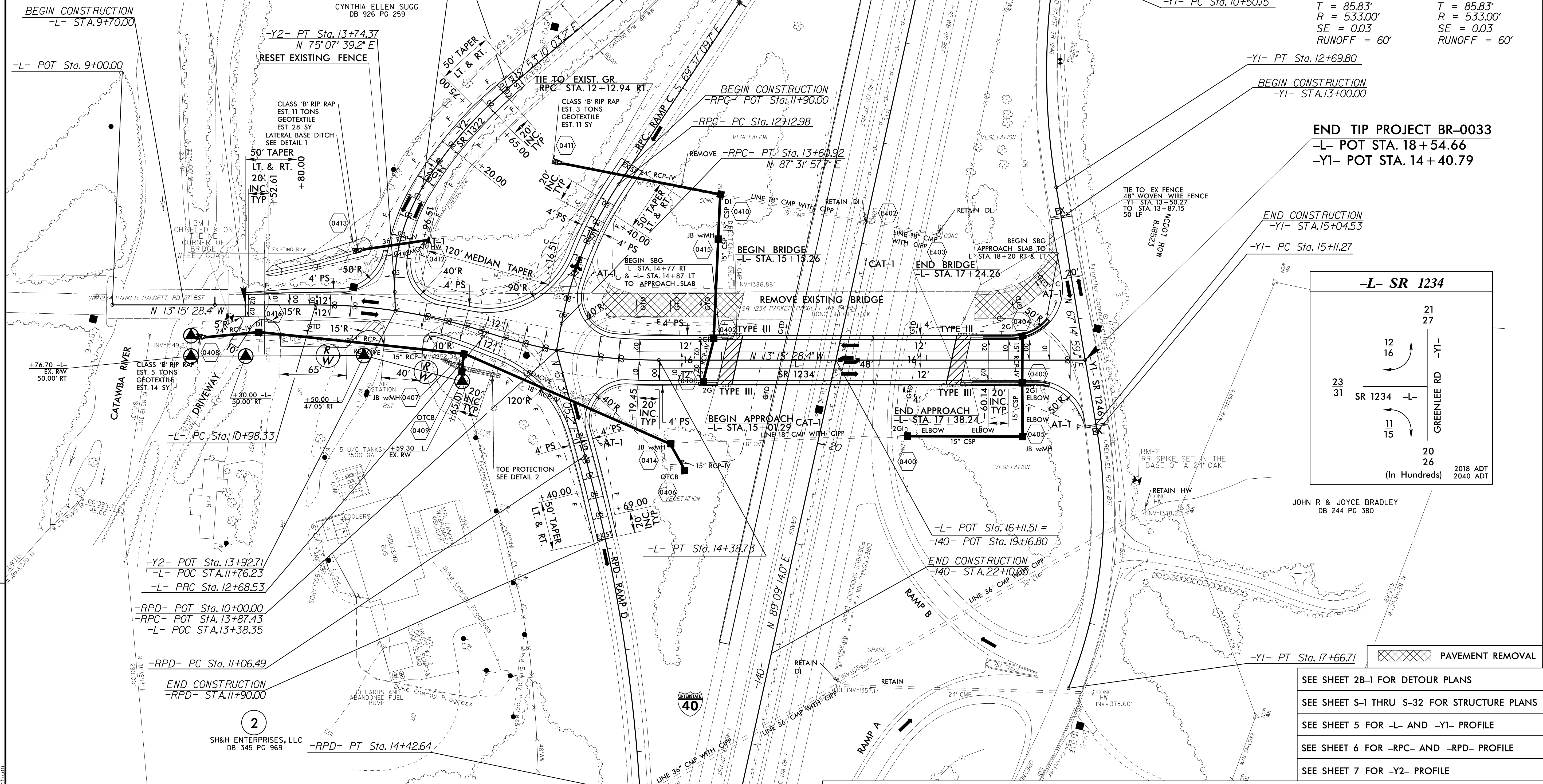


-Y2- CURVE DATA		-RPC- CURVE DATA		-RPD- CURVE DATA	
PI Sta 12+03.89	PI Sta 13+22.38	PI Sta 12+87.95	PI Sta 12+75.17	PI Sta 12+75.17	PI Sta 12+75.17
$\Delta = 18^{\circ} 43' 38.8"$ (LT)	$\Delta = 32^{\circ} 58' 38.8"$ (LT)	$\Delta = 22^{\circ} 50' 52.6"$ (LT)	$\Delta = 11^{\circ} 53' 00.3"$ (RT)	$\Delta = 11^{\circ} 53' 00.3"$ (RT)	$\Delta = 11^{\circ} 53' 00.3"$ (RT)
D = 1437' 30.8'	D = 3048' 46.7'	D = 1526' 37.0'	D = 332' 06.5"	D = 332' 06.5"	D = 332' 06.5"
L = 128.05'	L = 107.02'	L = 147.94'	L = 336.15'	L = 336.15'	L = 336.15'
T = 64.60'	T = 55.04'	T = 74.97'	T = 168.68'	T = 168.68'	T = 168.68'
R = 391.76'	R = 185.95'	R = 371.00'	R = 1620.76'	R = 1620.76'	R = 1620.76'
SE = 0.02					

-L- CURVE DATA	
PI Sta 11+84.16	PI Sta 13+54.36
$\Delta = 18^{\circ} 17' 46.1"$ (RT)	$\Delta = 18^{\circ} 17' 46.1"$ (LT)
D = 1044' 58.8'	D = 1044' 58.8'
L = 170.20'	L = 170.20'
T = 85.83'	T = 85.83'
R = 533.00'	R = 533.00'
SE = 0.03	SE = 0.03
RUNOFF = 60'	RUNOFF = 60'

BEGIN TIP PROJECT BR-0033
-L- STA. 10+30.00

END TIP PROJECT BR-0033
-L- POT STA. 18+54.66
-YI- POT STA. 14+40.79



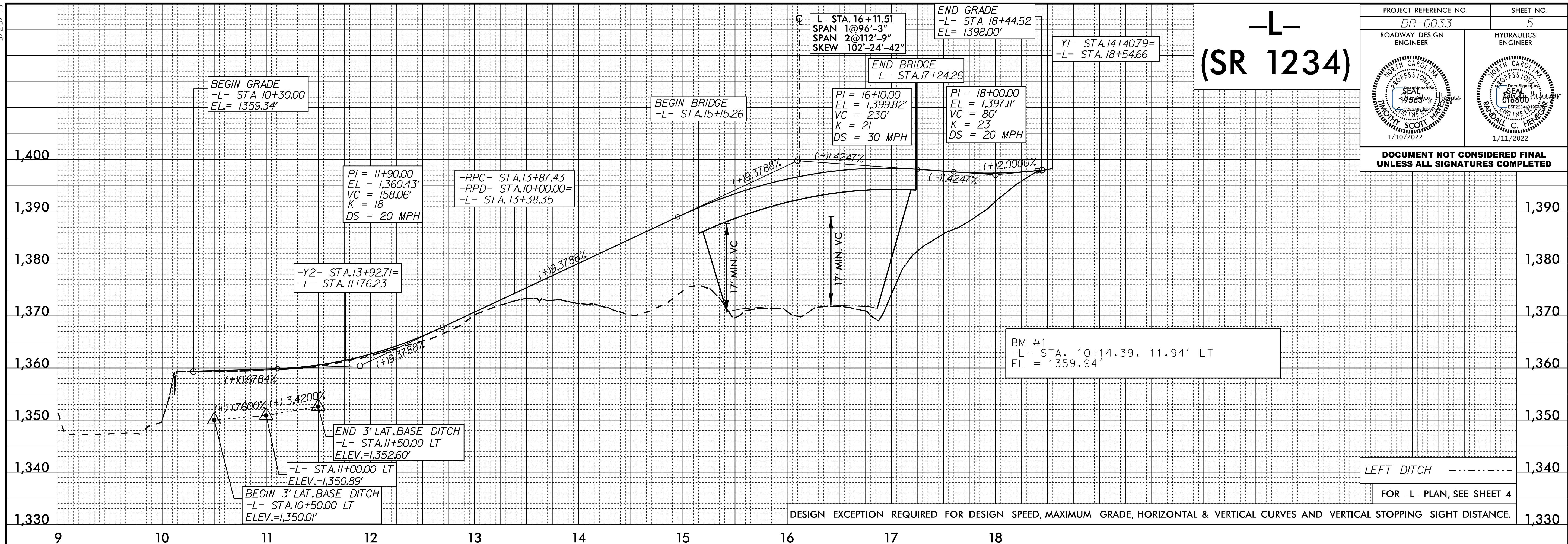
JOHN R & JOYCE BRADLEY
DB 244 PG 380

- SEE SHEET 2B-1 FOR DETOUR PLANS
- SEE SHEET S-1 THRU S-32 FOR STRUCTURE PLANS
- SEE SHEET 5 FOR -L- AND -YI- PROFILE
- SEE SHEET 6 FOR -RPC- AND -RPD- PROFILE
- SEE SHEET 7 FOR -Y2- PROFILE

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED, MAXIMUM GRADE, HORIZONTAL & VERTICAL CURVES AND VERTICAL STOPPING SIGHT DISTANCE.

15 DEC 2021 10:06
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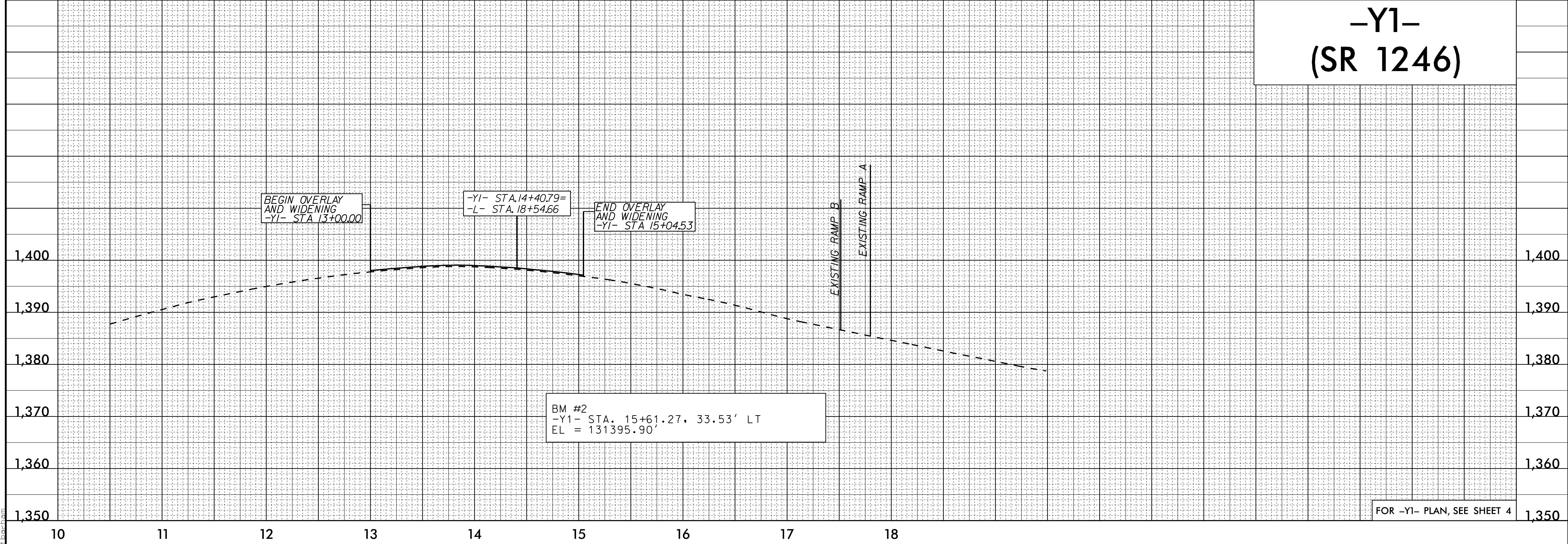
5/28/24



PROJECT REFERENCE NO. BR-0033	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
1/10/2022	1/11/2022

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-Y1- (SR 1246)



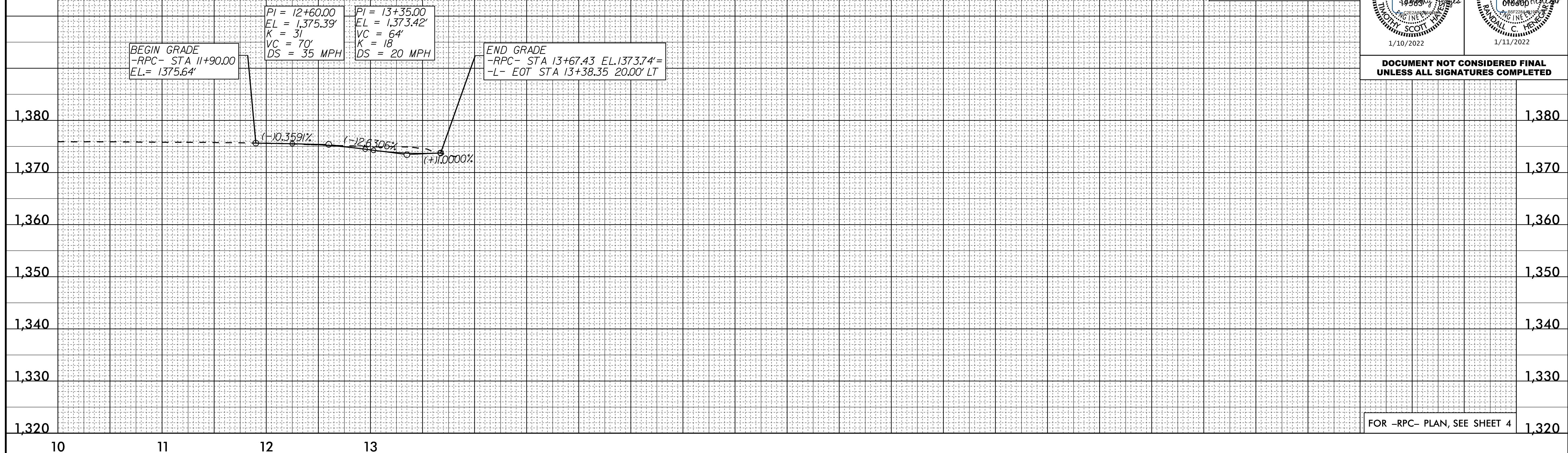
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5/28/22

-RPC- RAMP C

PROJECT REFERENCE NO. <i>BR-0033</i>	SHEET NO. 6
ROADWAY DESIGN ENGINEER <i>Anthony Scott</i>	HYDRAULICS ENGINEER <i>Matthew C. Henning</i>
1/10/2022	1/11/2022

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



FOR -RPC- PLAN, SEE SHEET 4

-RPD- RAMP D

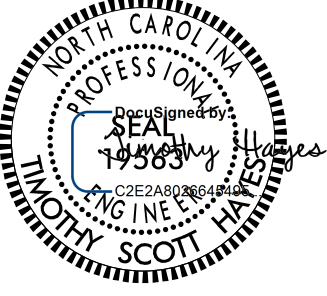



FOR -RPD- PLAN, SEE SHEET 4

03-NOV-2021 10:18
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5/28/99

-Y2- SR 1322

PROJECT REFERENCE NO. BR-0033	SHEET NO. 7
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

