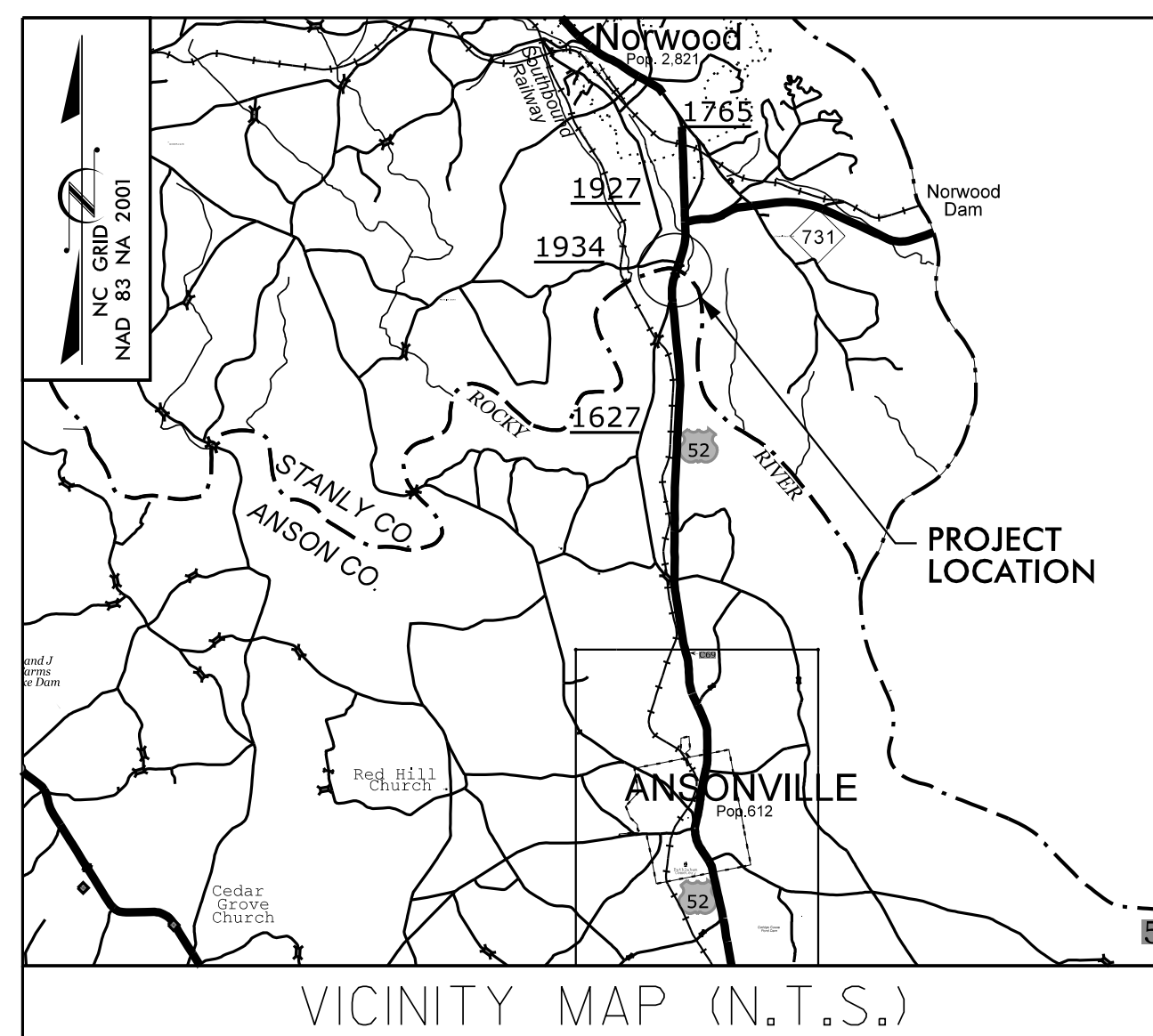


**TIP PROJECT: B-4407**

**CONTRACT: C204469**

See Sheet 1A For Index of Sheets



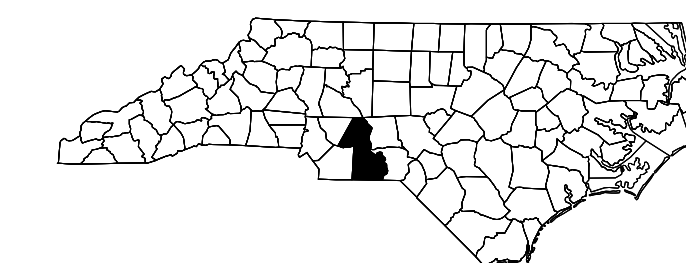
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# ANSON /STANLY COUNTIES

**LOCATION: REPLACE BRIDGE 70 OVER  
ROCKY RIVER ON US-52**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-4407</b>	<b>1</b>	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38356.1.2	NA	PE	
38356.2.2	NA	RW & UTILITIES	
38356.3.2	NA	CONST.	

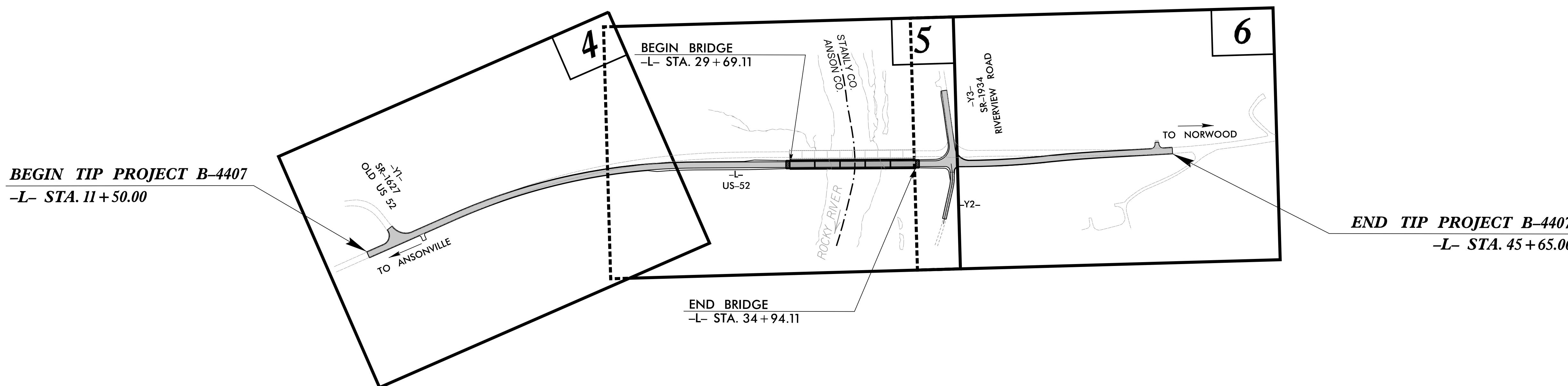
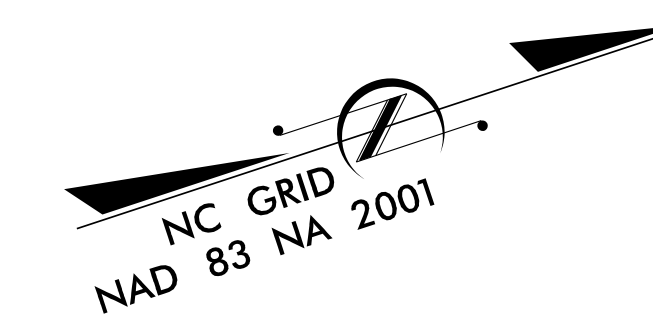


**V&M**  
**Vaughn & Melton**  
Consulting Engineers

Asheville, NC  
828-253-2796

Charlotte, NC 704-357-0488  
Tri-Cities, TN 423-467-8506  
Knoxville, TN 606-248-6600  
Middlesboro, KY 606-546-5900  
Spartanburg, SC 864-574-4775

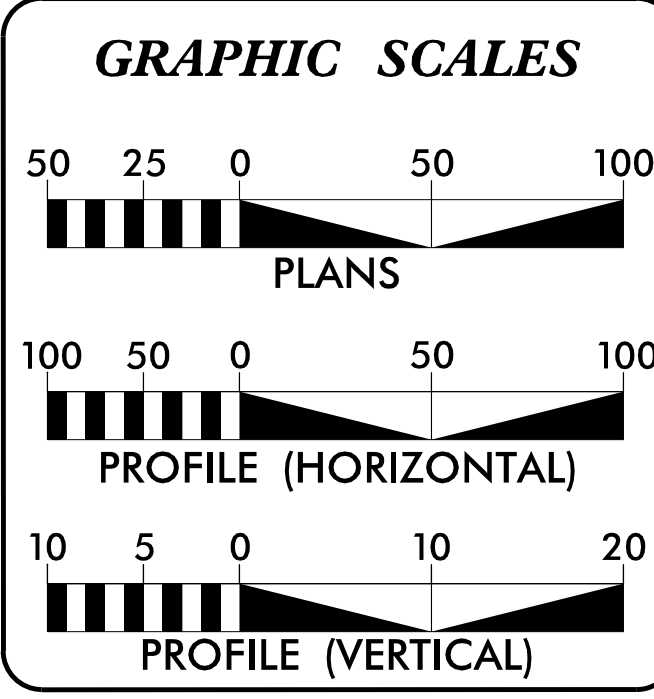
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DESIGN EXCEPTION REQUIRED FOR PAVEMENT CROSS-SLOPES ON BRIDGE APPROACH SLABS AND BRIDGE DECK, AND MAXIMUM VERTICAL GRADE -L- STA. 36+45.00 TO 43+75.00

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2020 = 4100  
ADT 2040 = 4900  
D = 60%  
K = 9%  
T = 22%  
V = 60 MPH  
\*TTST = 8% DUAL = 14%  
FUNCT. CLASS =  
PRINCIPAL ARTERIAL  
REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4407 = 0.548 MI  
LENGTH STRUCTURE TIP PROJECT B-4407 = 0.099 MI  
TOTAL LENGTH OF TIP PROJECT B-4407 = 0.647 MI

Prepared in the Office of:  
**VAUGHN & MELTON**  
1318-F PATTON AVE.  
ASHEVILLE NC, 28806  
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
NOVEMBER 8, 2019

**LETTING DATE:**  
MAY 18, 2021

**REECE SCHULER, PE, PLS**  
PROJECT ENGINEER

**JOHN LANSFORD, PE**  
PROJECT DESIGN ENGINEER

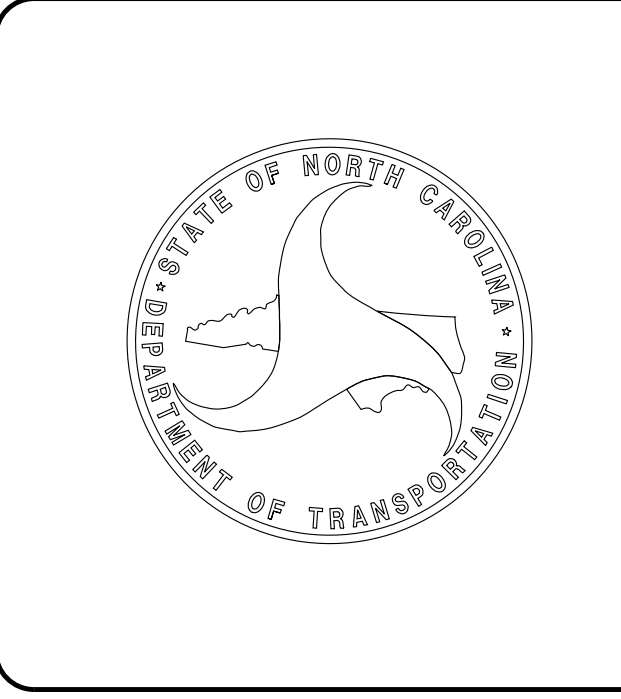
**DAVID STUTTS, PE**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

DocuSigned by:  
*Bradley Kidner*  
73041212021454  
SIGNATURE: P.E. 3/26/2021

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
*Reece M. Schuler*  
1663402467624FC  
SIGNATURE: P.E. 3/26/2021







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

12/2/2016

## BOUNDARIES AND PROPERTY:

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

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	▬

## HYDROLOGY:

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

## RAILROADS:

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

## RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	◆
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite R/W Marker	-----
New Control of Access Line with Concrete CA Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

## ROADS AND RELATED FEATURES:

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

## VEGETATION:

Single Tree	☼
Single Shrub	☼

Note: Not to Scale

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

Hedge	-----
Woods Line	-----
Orchard	☼
Vineyard	□ Vineyard

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	-----

## UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	○
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

## TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	○
U/G Telephone Cable LOS B (S.U.E.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

## WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----

## TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	○
U/G TV Cable LOS B (S.U.E.*)	-----
U/G TV Cable LOS C (S.U.E.*)	-----
U/G TV Cable LOS D (S.U.E.*)	-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----

## GAS:

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

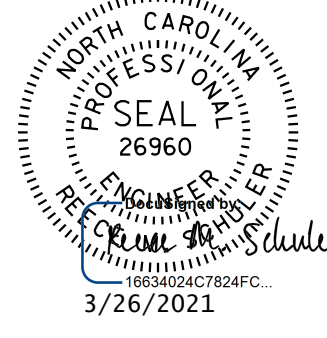
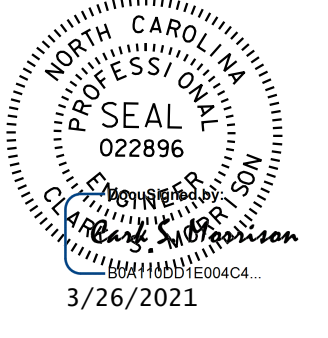
## SANITARY SEWER:

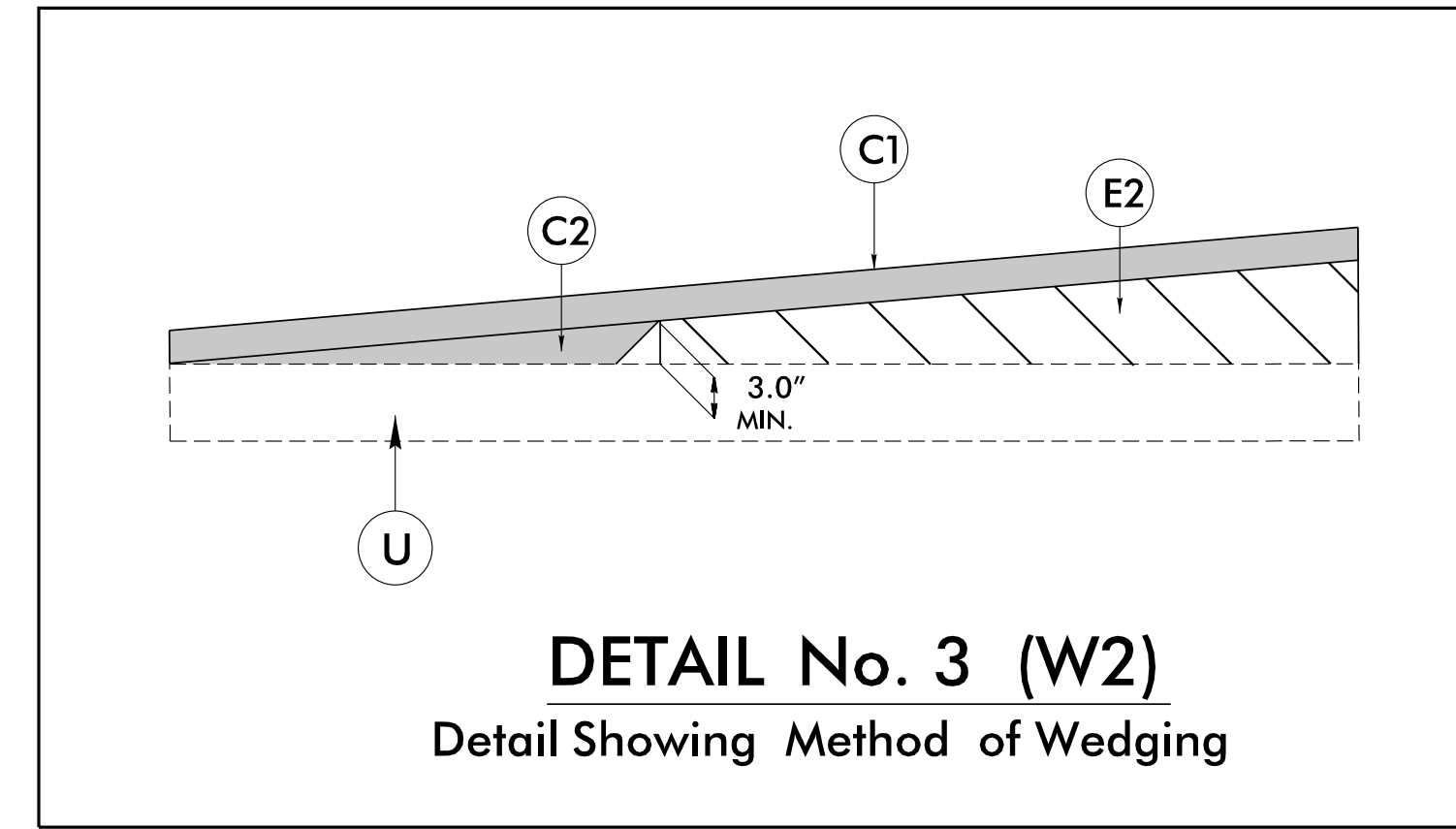
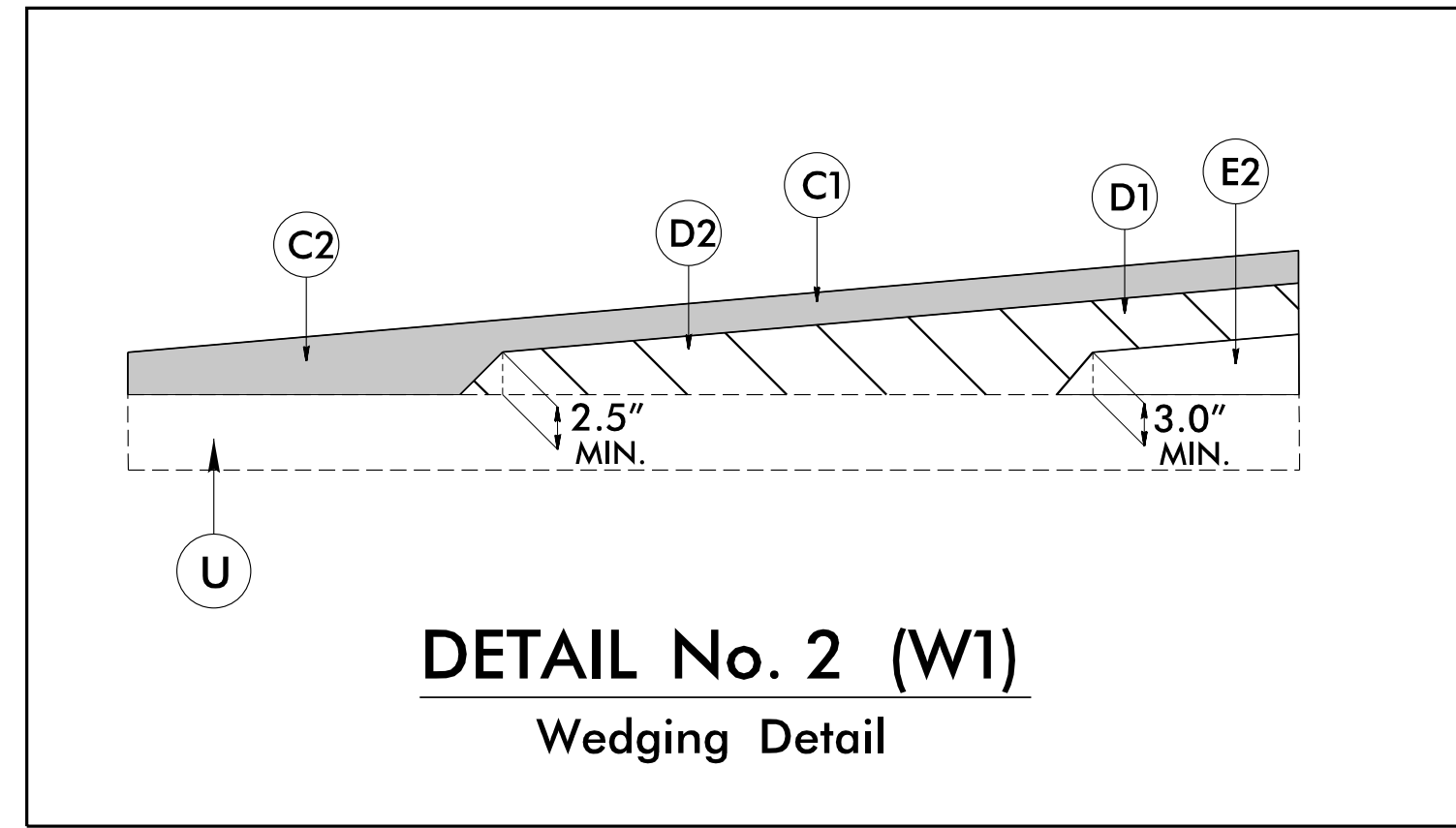
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Forced Main Line LOS B (S.U.E.*)	-----
SS Forced Main Line LOS C (S.U.E.*)	-----
SS Forced Main Line LOS D (S.U.E.*)	-----

## MISCELLANEOUS:

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

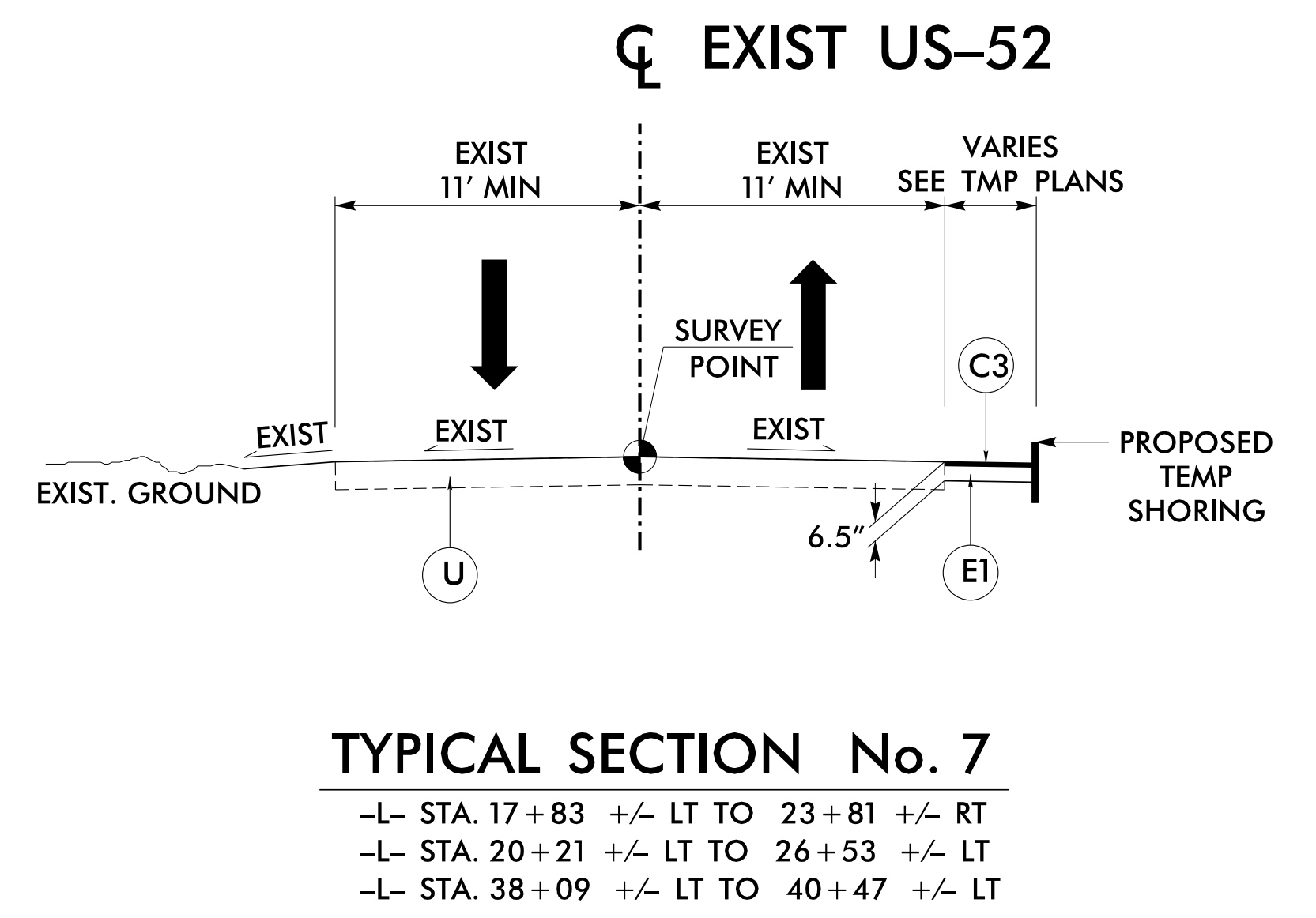
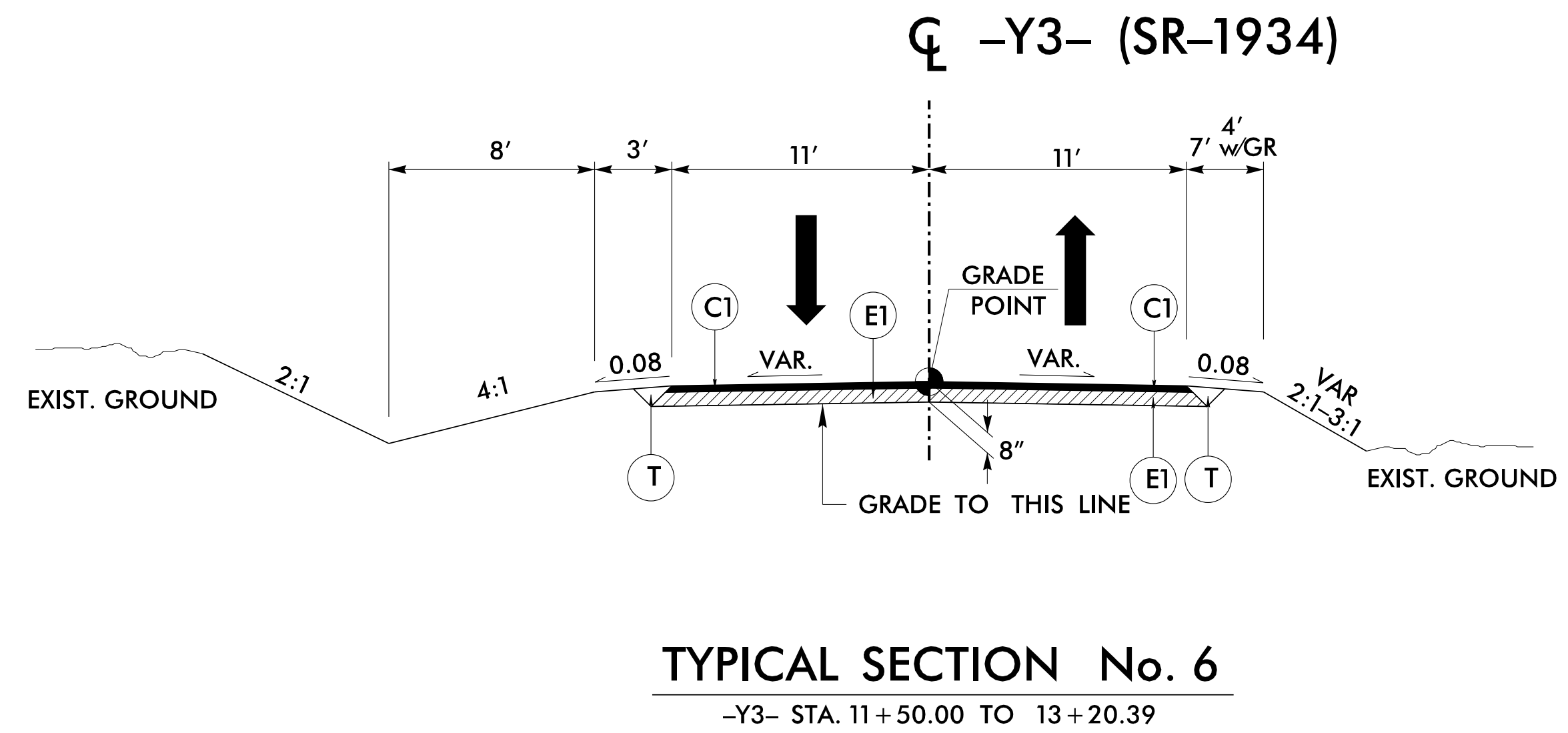
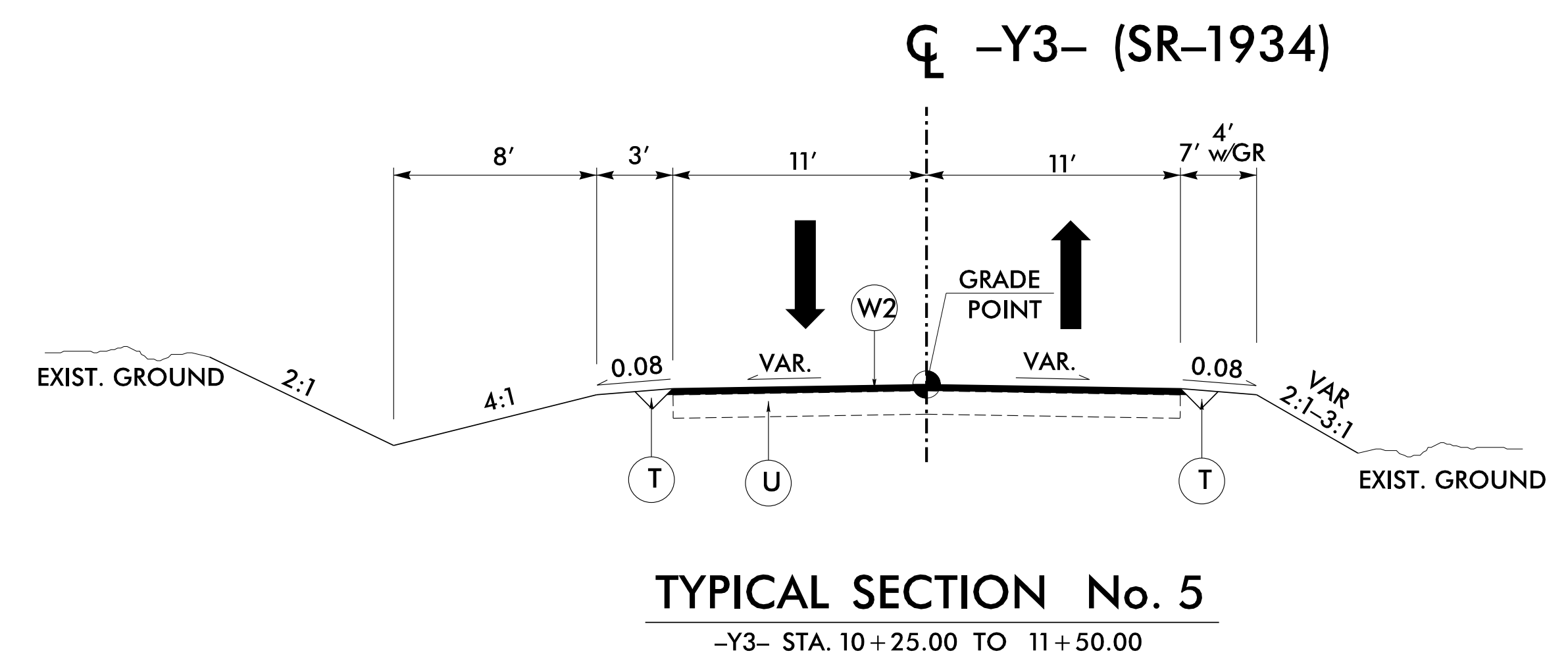
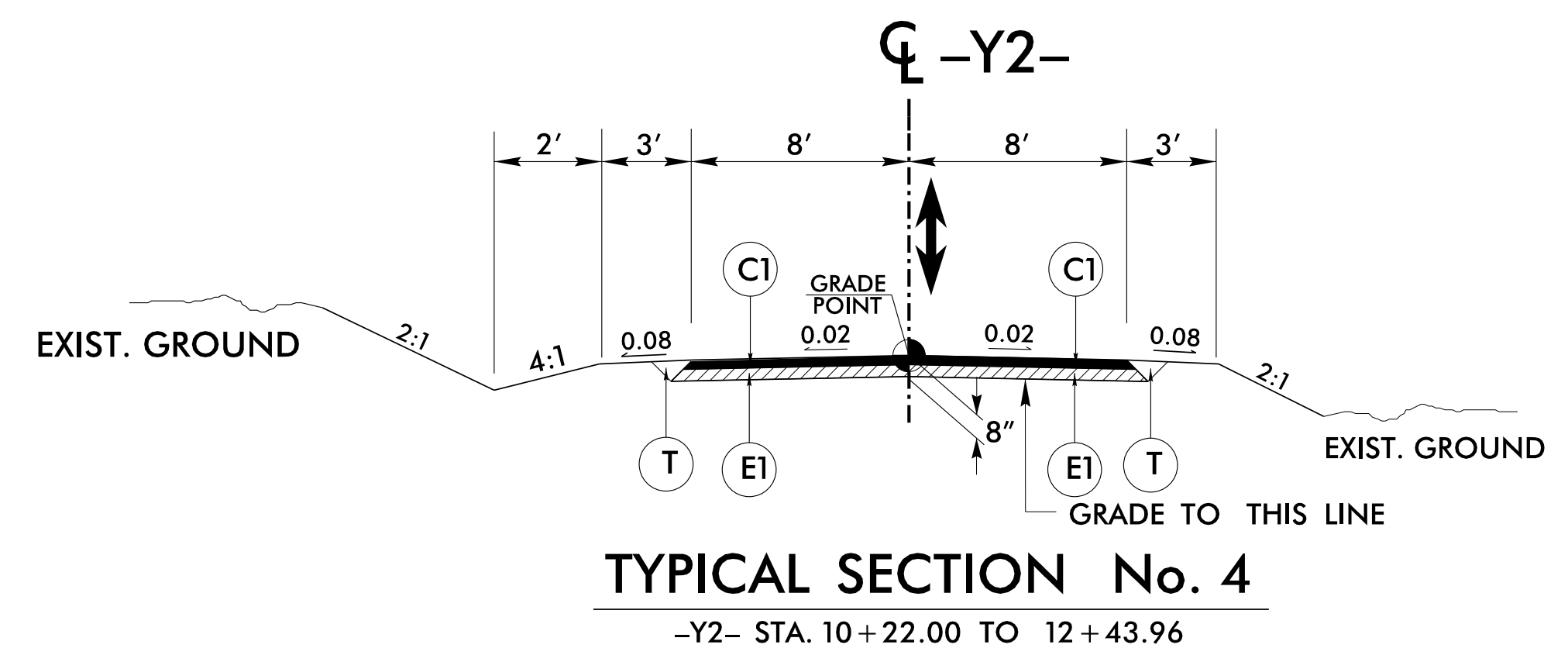


PROJECT REFERENCE NO. B-4407	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



PAVEMENT SCHEDULE

C1	3" S9.5B
C2	VAR. DEPTH S9.5B
C3	1.5" S9.5B
D1	4" I19.0C
D2	VAR. DEPTH I19.0C
E1	5" B25.0C
E2	VAR. DEPTH B25.0C
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VAR. DEPTH MILLING
W1	WEDGING (DETAIL 2)
W2	WEDGING (DETAIL 3)





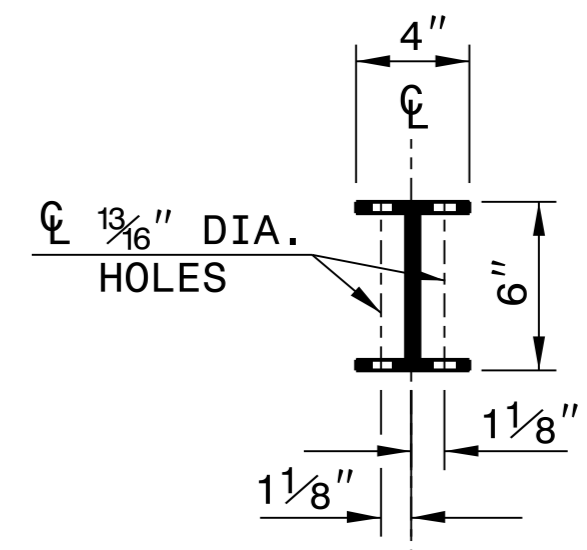
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**



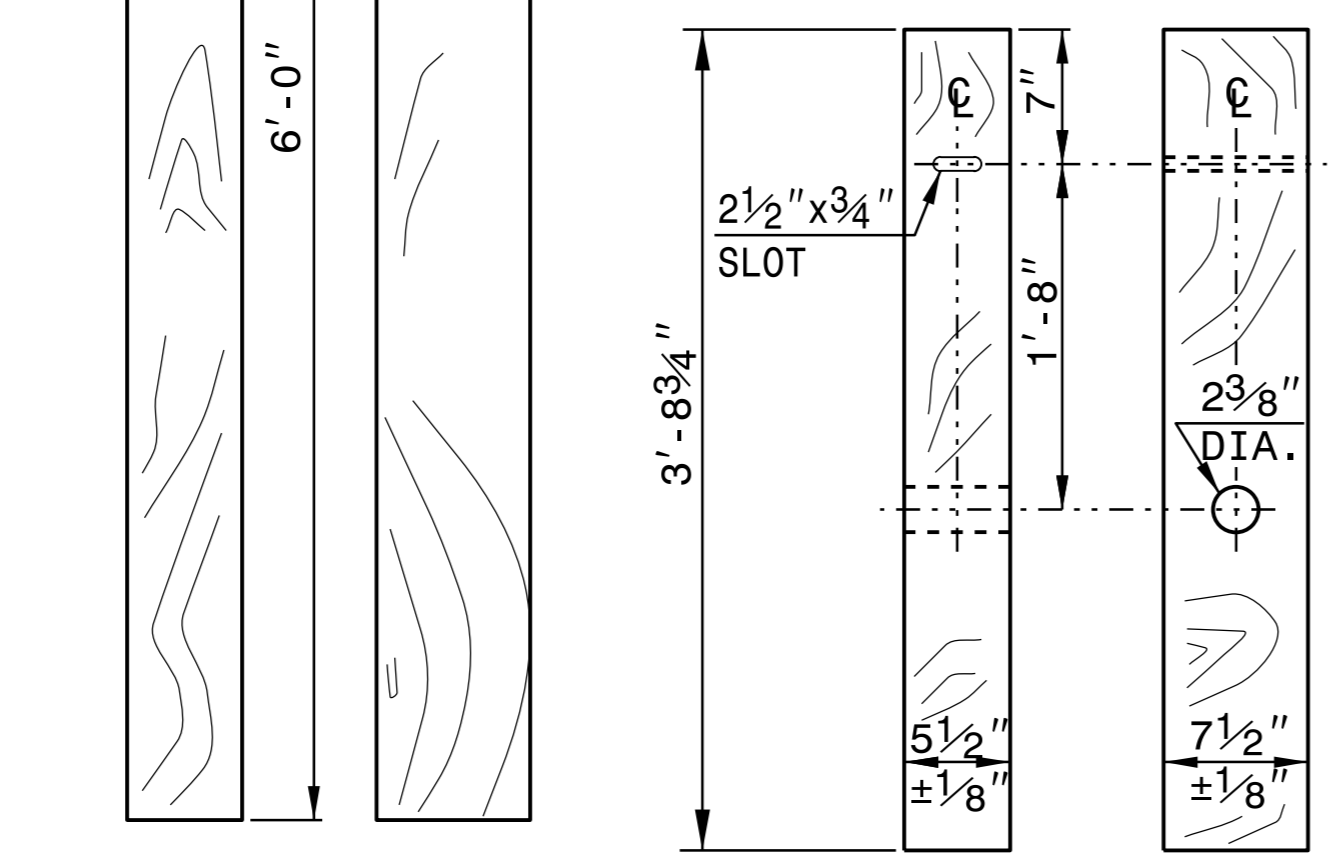
**STANDARD W-BEAM GUARDRAIL**



**PLAN**

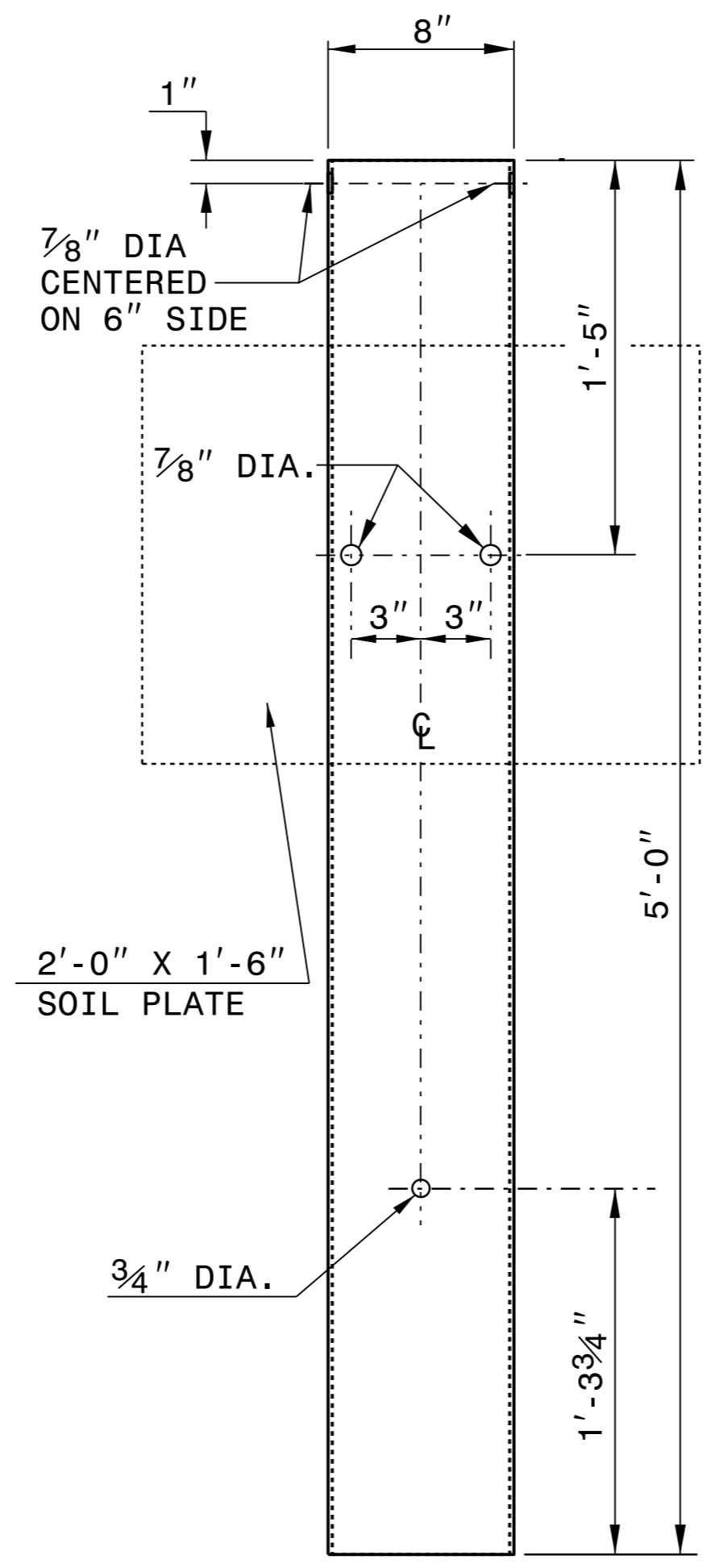


**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

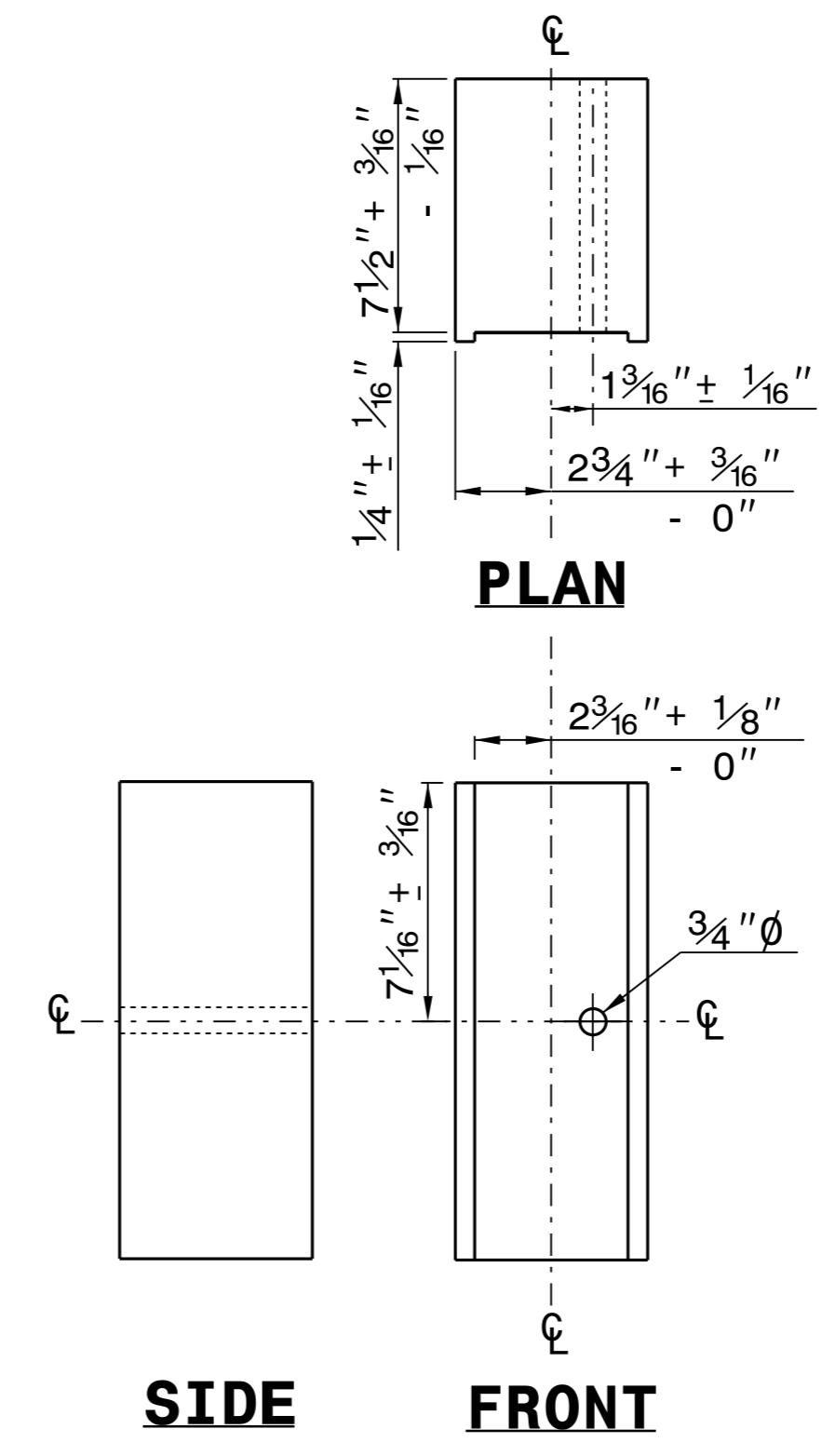


**STANDARD  
LINE POST**

**SHORT WOOD  
BREAKAWAY POST**



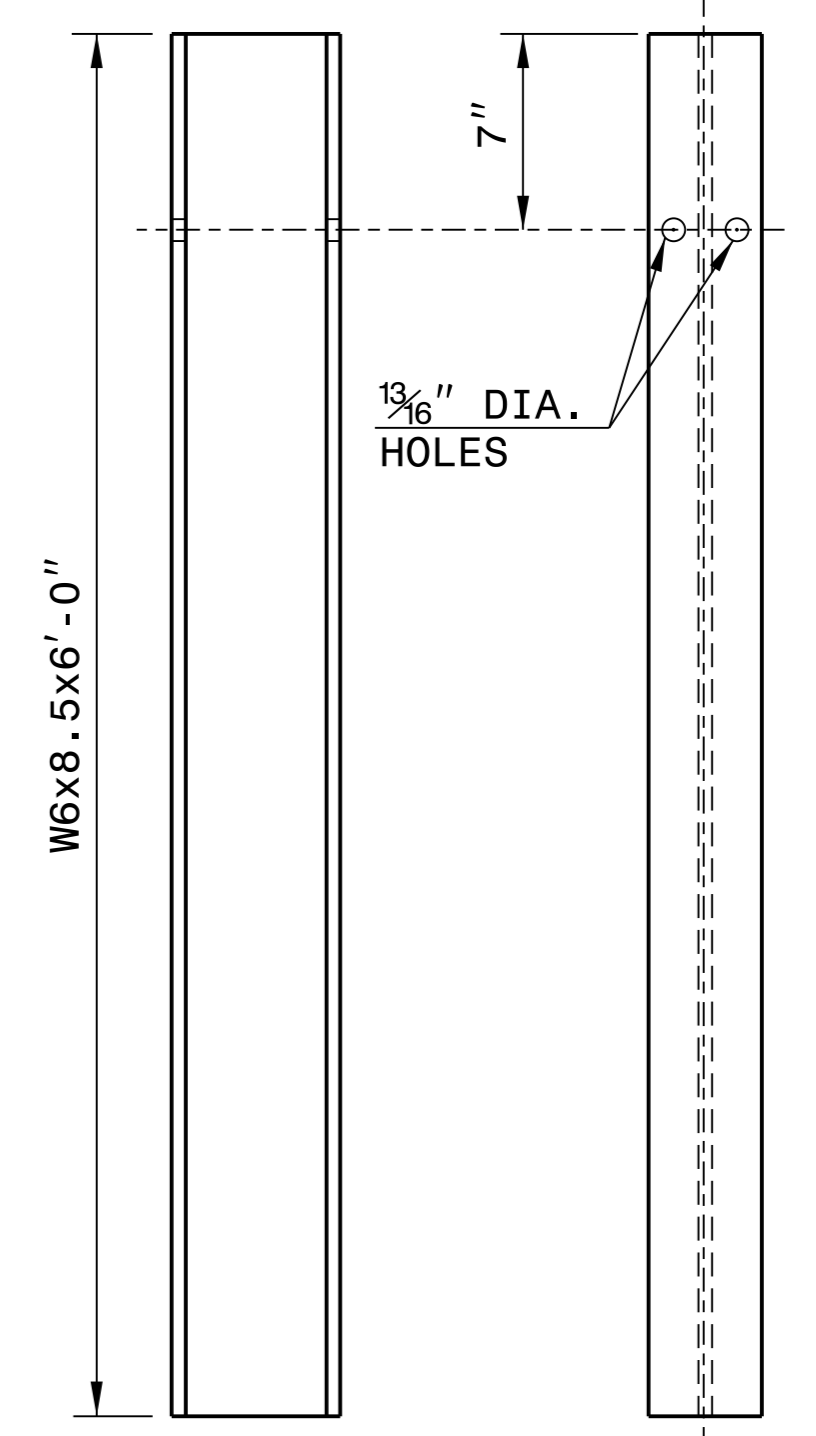
**STEEL TUBE  
TS 6"x8"x0.1875"**



**SIDE**

**FRONT**

**ROUTED  
OFFSET BLOCK**



**SIDE**

**FRONT**

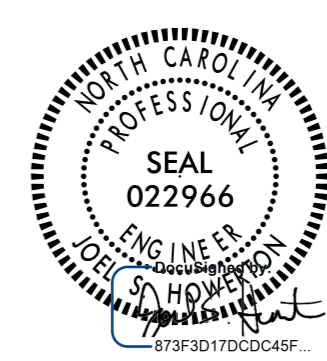
**"W6" STEEL POST**

**SYSTEM PARTS**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**



**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.

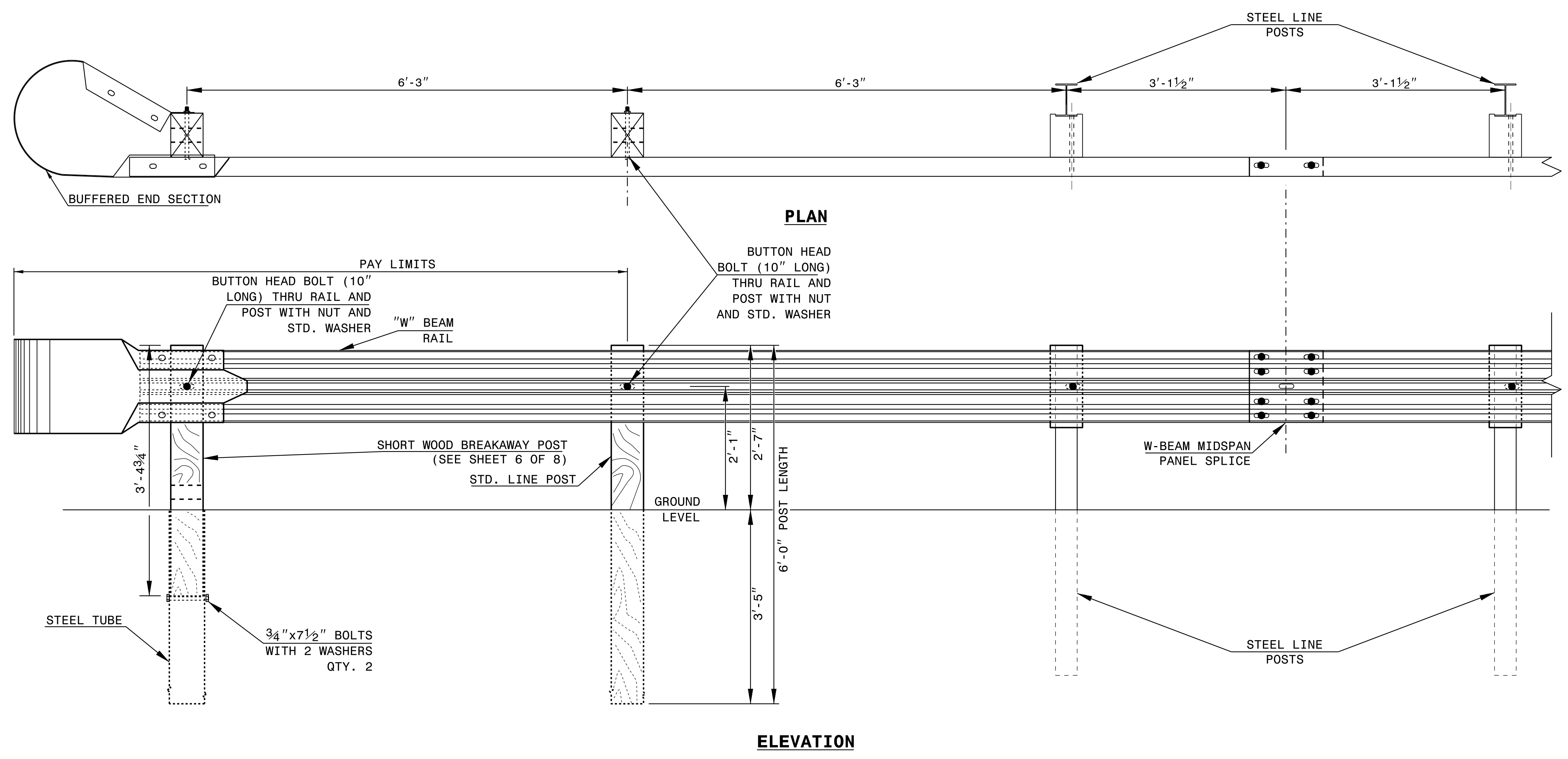
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

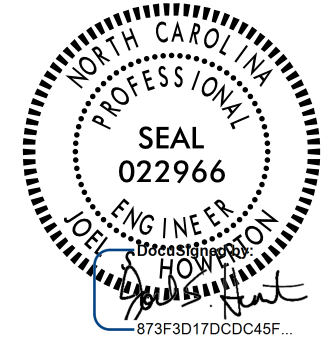
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF



**TRAILING END UNIT ASSEMBLY**  
**A.T. - 1 SYSTEM**



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**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:     E. Beverly    DATE: 1-7-19  
CHECKED BY:                         DATE:                     

PROJECT NO.	SHEET NO.
B-4407	3G-1

**(5-15-18)**

**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	250
				<b>TOTAL LF:</b>	0

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

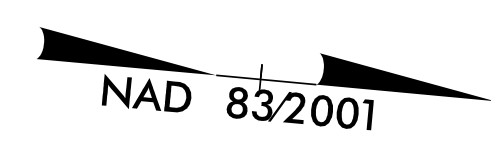
B.17/199

**-L- CURVE DATA**

PI Sta 20+65.38  
Δ = 23° 31' 00.6" (RT)  
D = 2' 17" 30.6"  
L = 1,026.12'  
T = 520.38'  
R = 2,500.00'  
SE = .05  
Ds = 60 mph

**-YI- CURVE DATA**

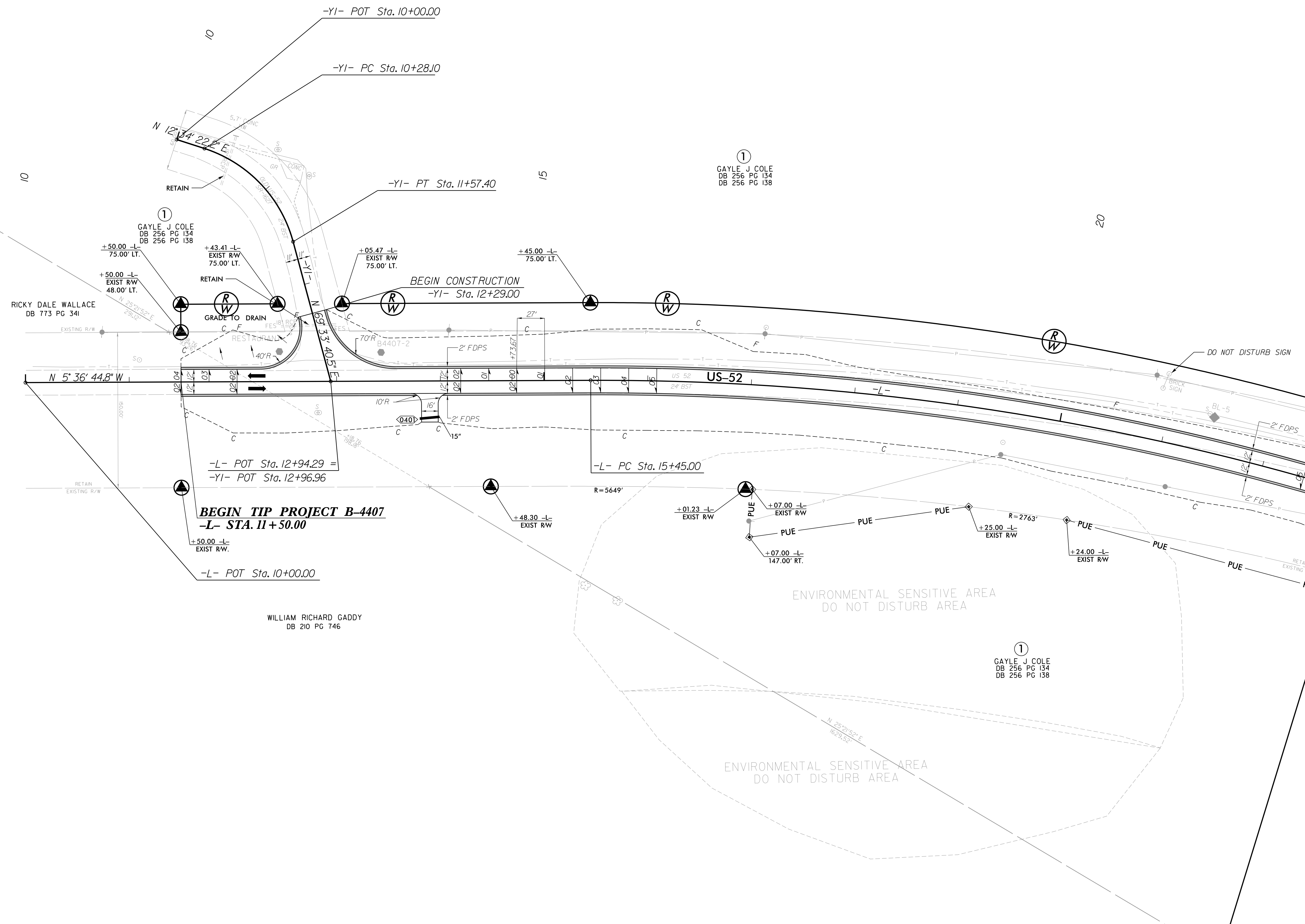
PI Sta 10+98.66  
Δ = 56° 59' 18.3" (RT)  
D = 44' 04" 25.2"  
L = 129.30'  
T = 70.57'  
R = 130.00'



PROJECT REFERENCE NO. B-4407	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 26960 3/26/2021	HYDRAULICS ENGINEER SEAL 033023 3/26/2021
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SEE SHEET 7 FOR -L- PROFILE

REVISIONS



MATCH LINE -L- STA. 23+00.00 SEE SHEET 5



PROPOSED FULL DEPTH PAVED SHOULDER

2/23/2021 8:43:37 AM  
C:\Users\B4407\OneDrive\Documents\B4407\pesh\_04.dgn







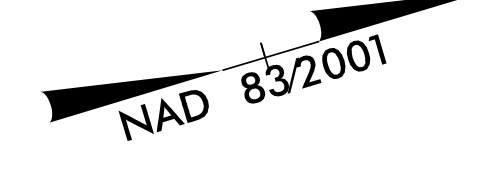
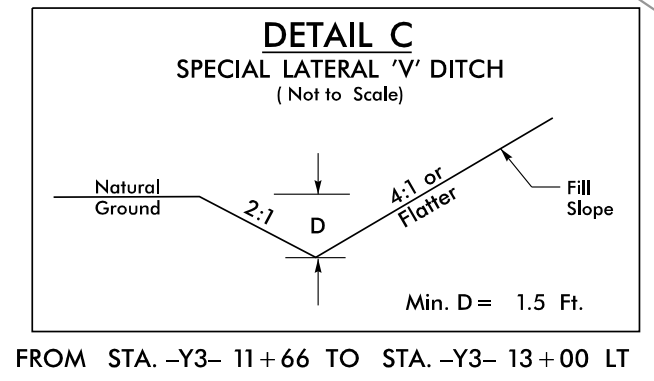
PROJECT REFERENCE NO. B-4407		SHEET NO. 6	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

**-L- CURVE DATA**

PI Sta 38+69.15 Δ = 5° 37' 47.3" (LT) D = 1' 41' 24.5" L = 333.10' T = 166.68' R = 3,390.00' SE = .04 Ds = 60 mph	PI Sta 41+55.74 Δ = 2° 45' 19.5" (RT) D = 1' 08' 47.8" L = 240.31' T = 120.18' R = 4,996.93' SE = .03 Ds = 60 mph	PI Sta 48+77.96 Δ = 10° 25' 56.0" (LT) D = 1' 28' 29.3" L = 707.37' T = 354.66' R = 3,885.00' SE = .04 Ds = 60 mph
----------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------

**-Y2- CURVE DATA**

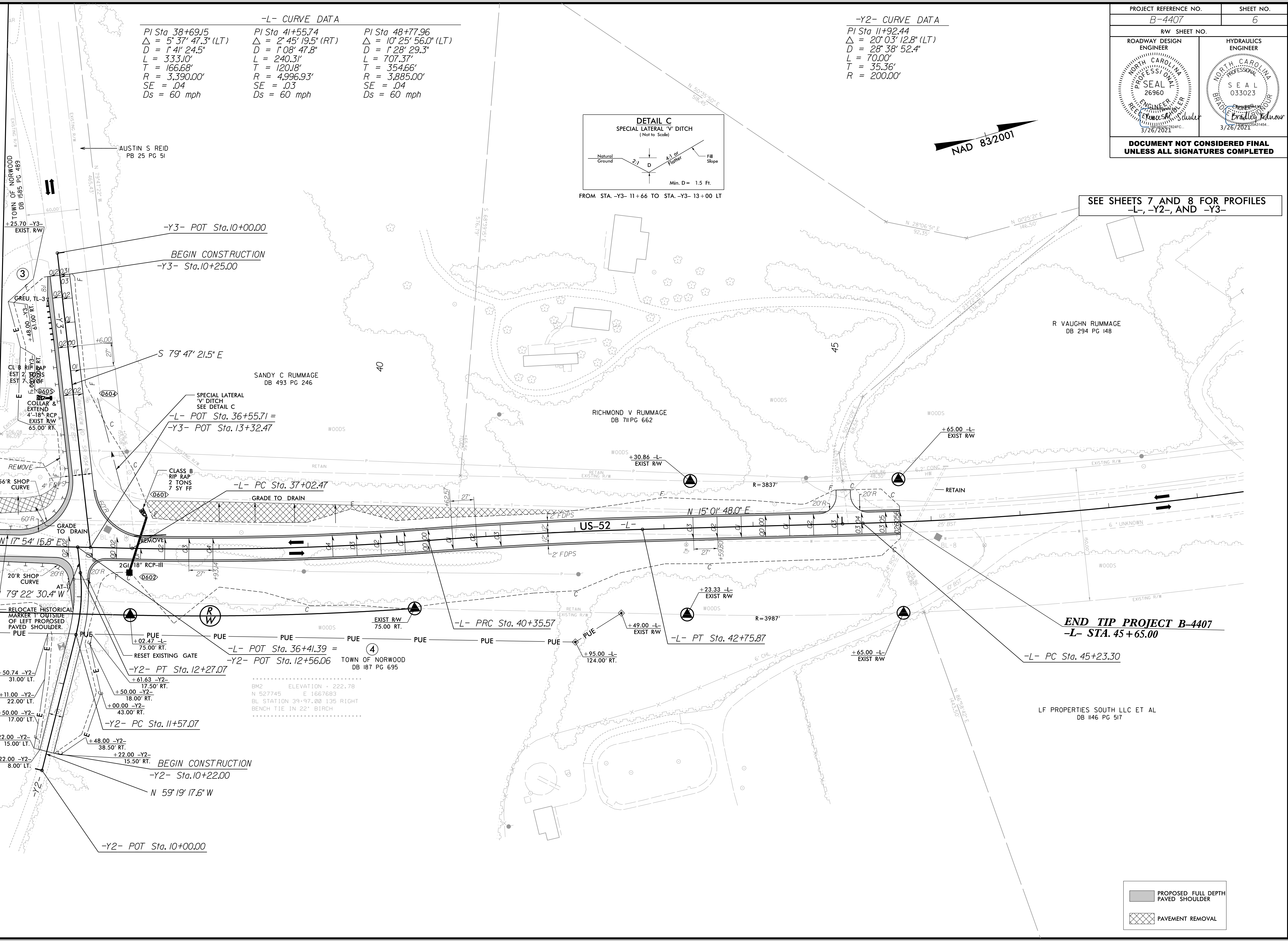
PI Sta 11+92.44 Δ = 20° 03' 12.8" (LT) D = 28° 38' 52.4" L = 70.00' T = 35.36' R = 200.00'
-----------------------------------------------------------------------------------------------------------



SEE SHEETS 7 AND 8 FOR PROFILES  
-L-, -Y2-, AND -Y3-

MATCH LINE -L- STA. 35+50.00 SEE SHEET 5

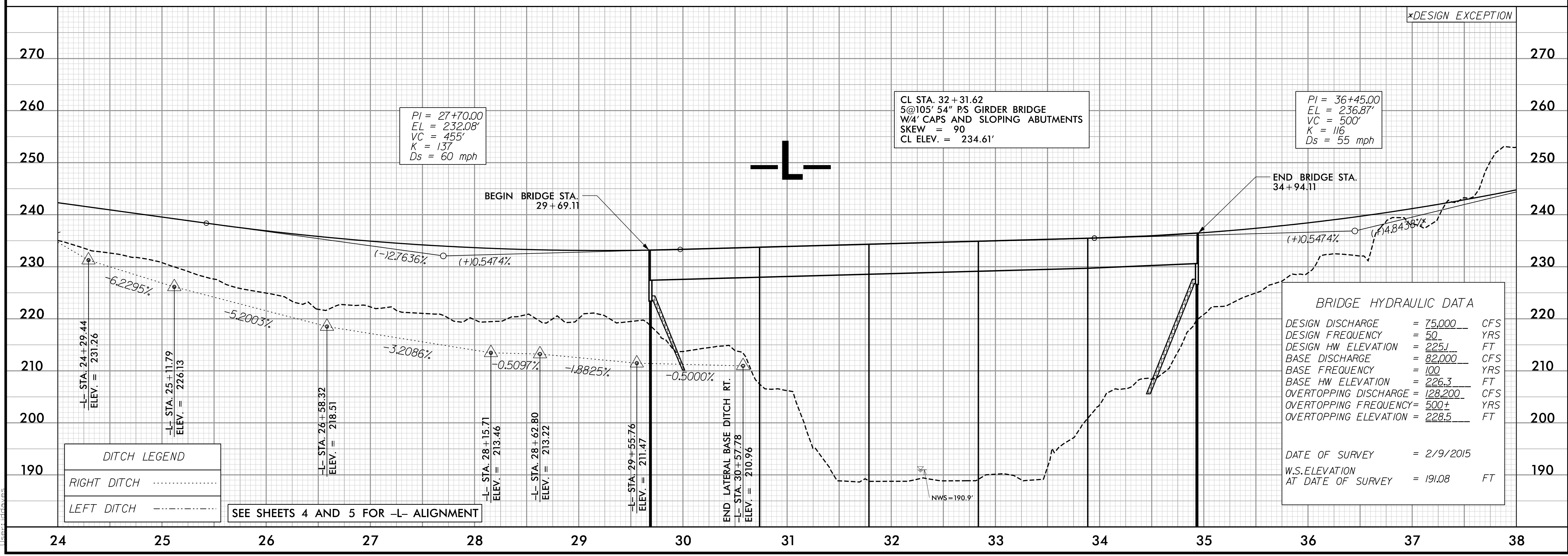
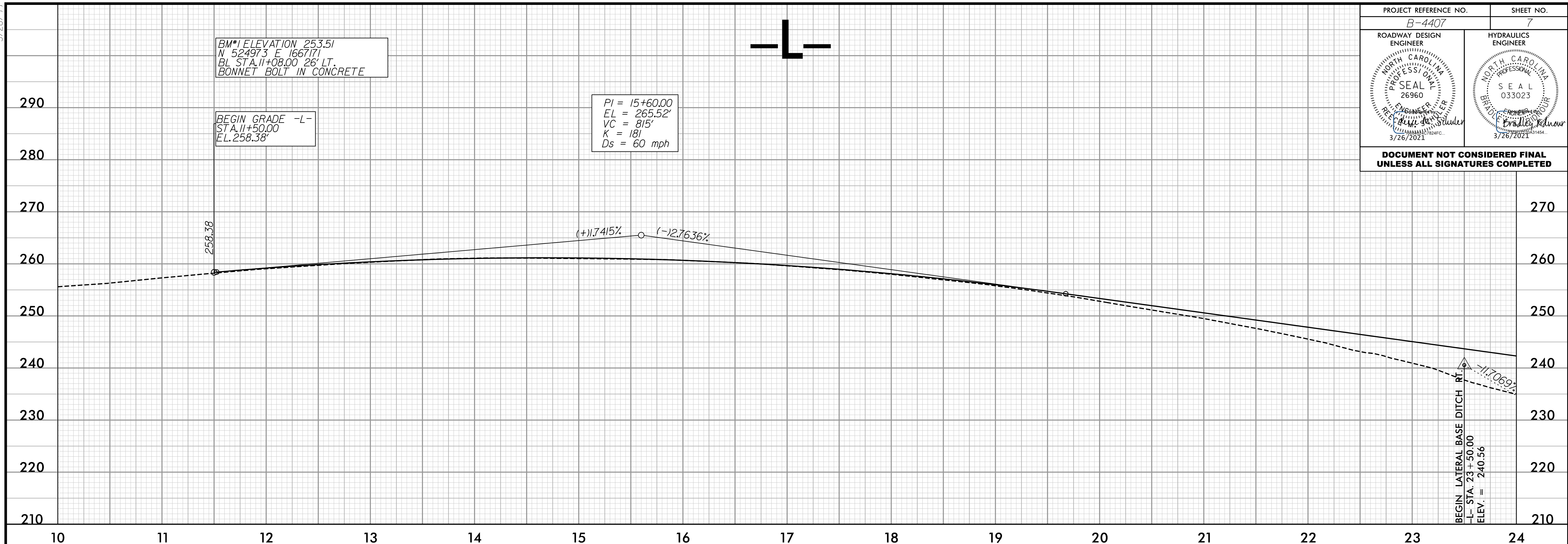
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5/28/21

PROJECT REFERENCE NO. B-4407		SHEET NO. 7
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26960 3/26/2021	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 033023 3/26/2021	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		



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

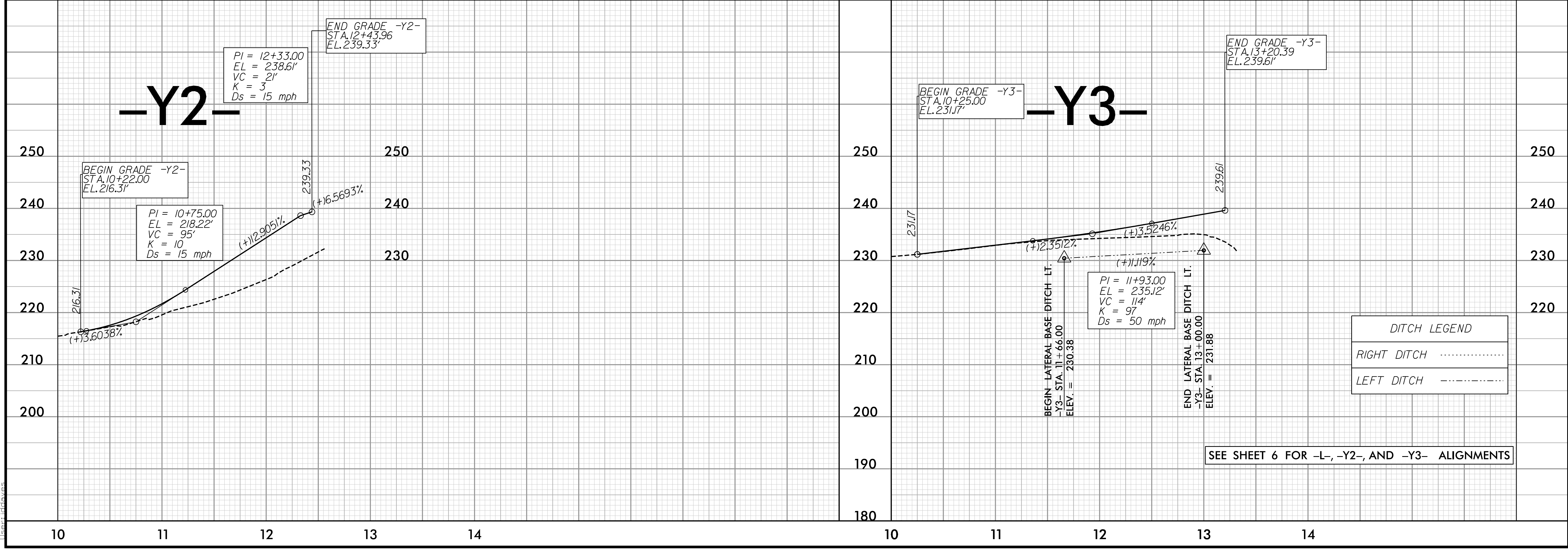
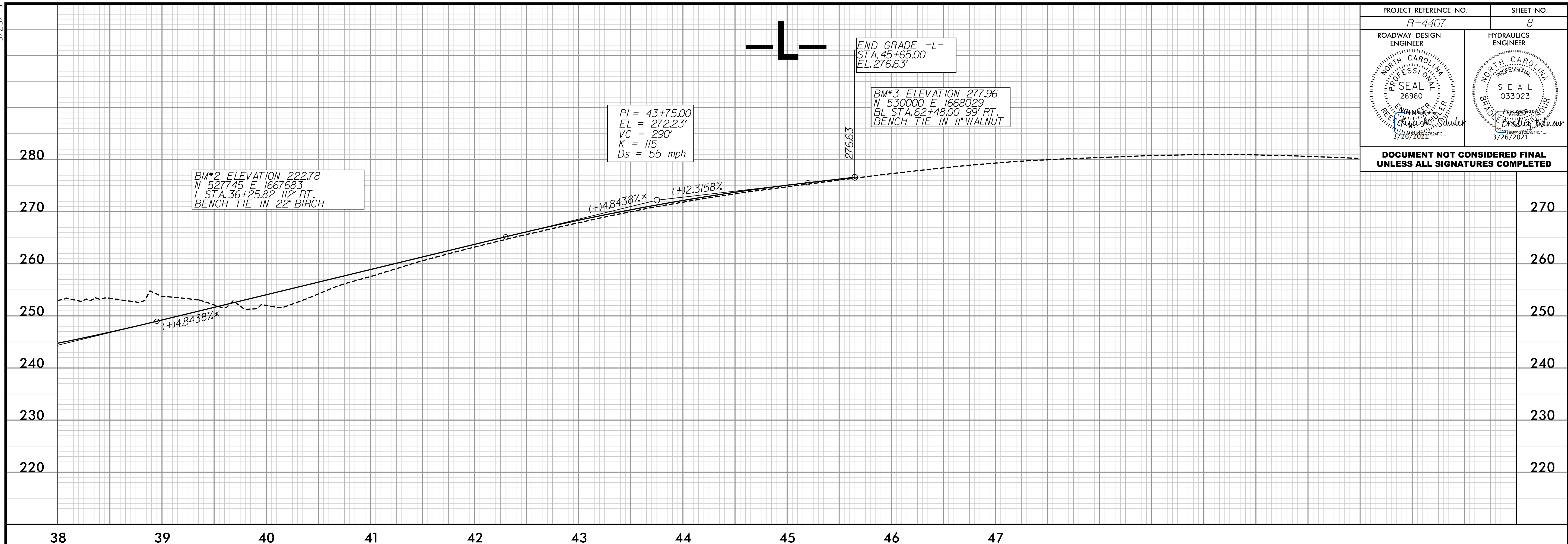
SEE SHEETS 4 AND 5 FOR -L- ALIGNMENT



5/28/21

PROJECT REFERENCE NO. B-4407	SHEET NO. 8
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 26960 3/26/2021	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 033023 3/26/2021

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