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09/08/99

See Sheet 1A For Index of Sheets

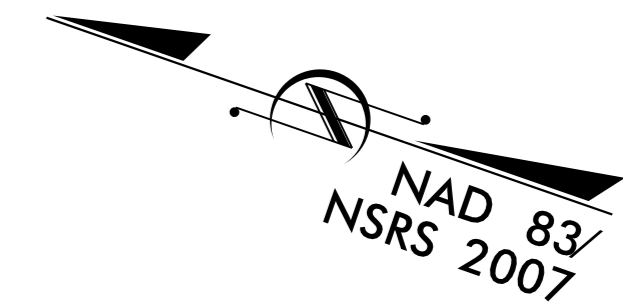
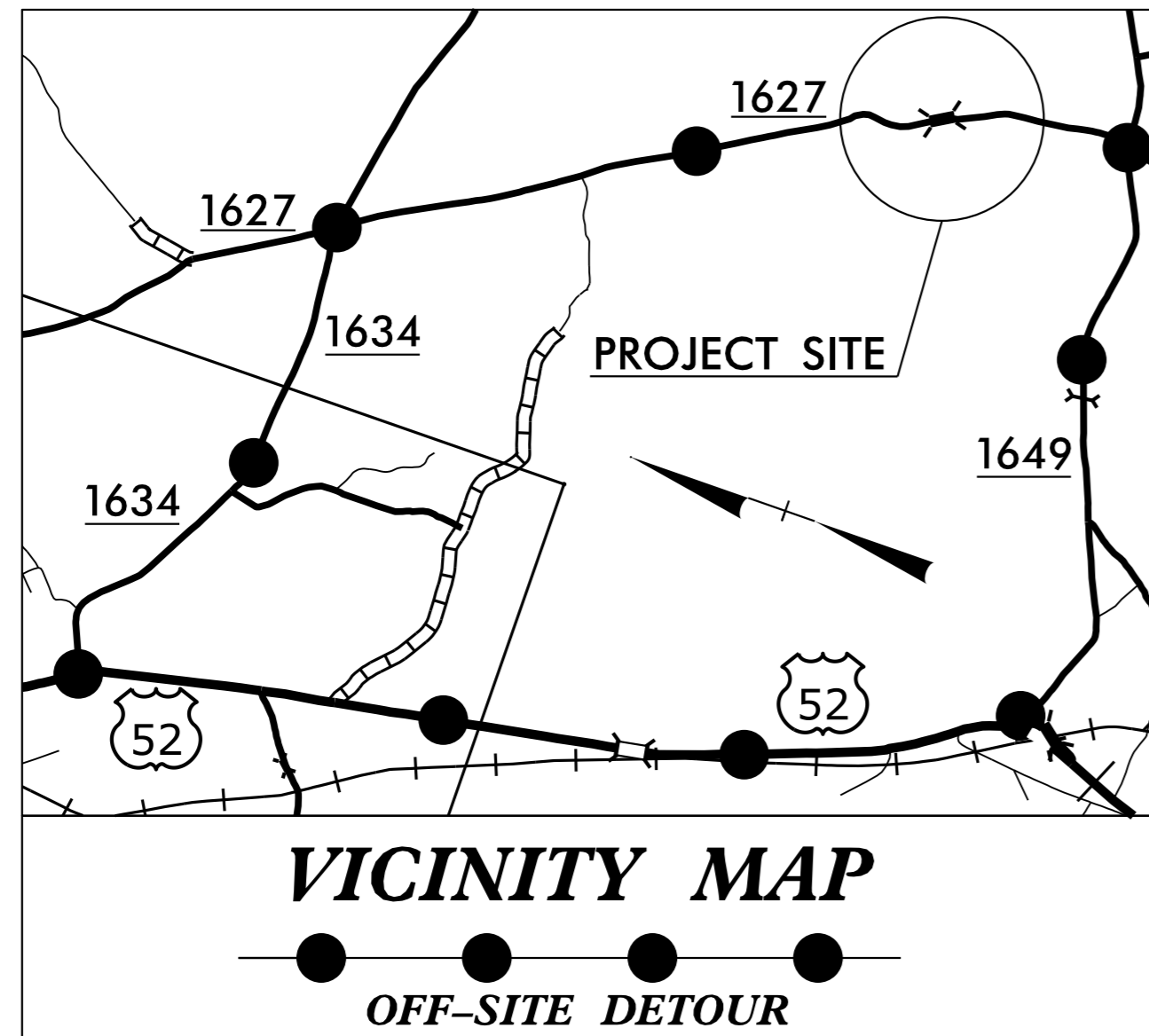
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**ANSON COUNTY**

LOCATION: BRIDGE 8 OVER BROWN CREEK ON SR 1627

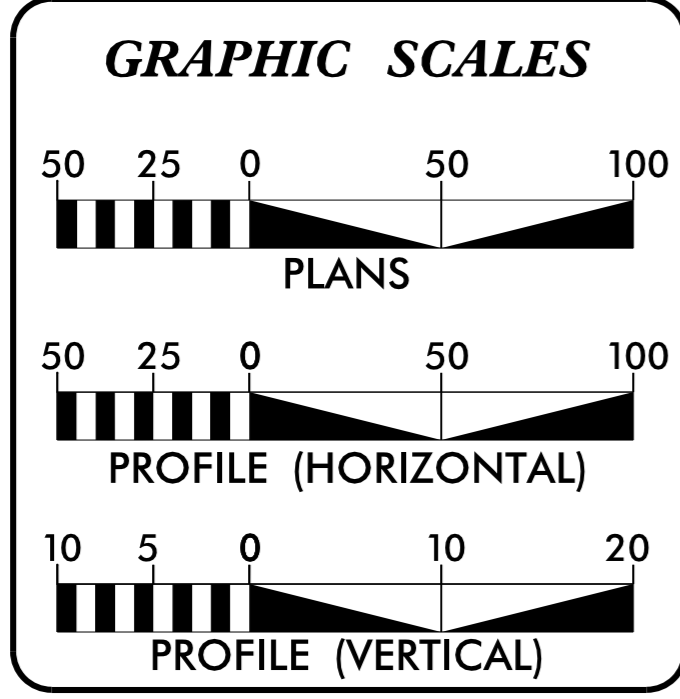
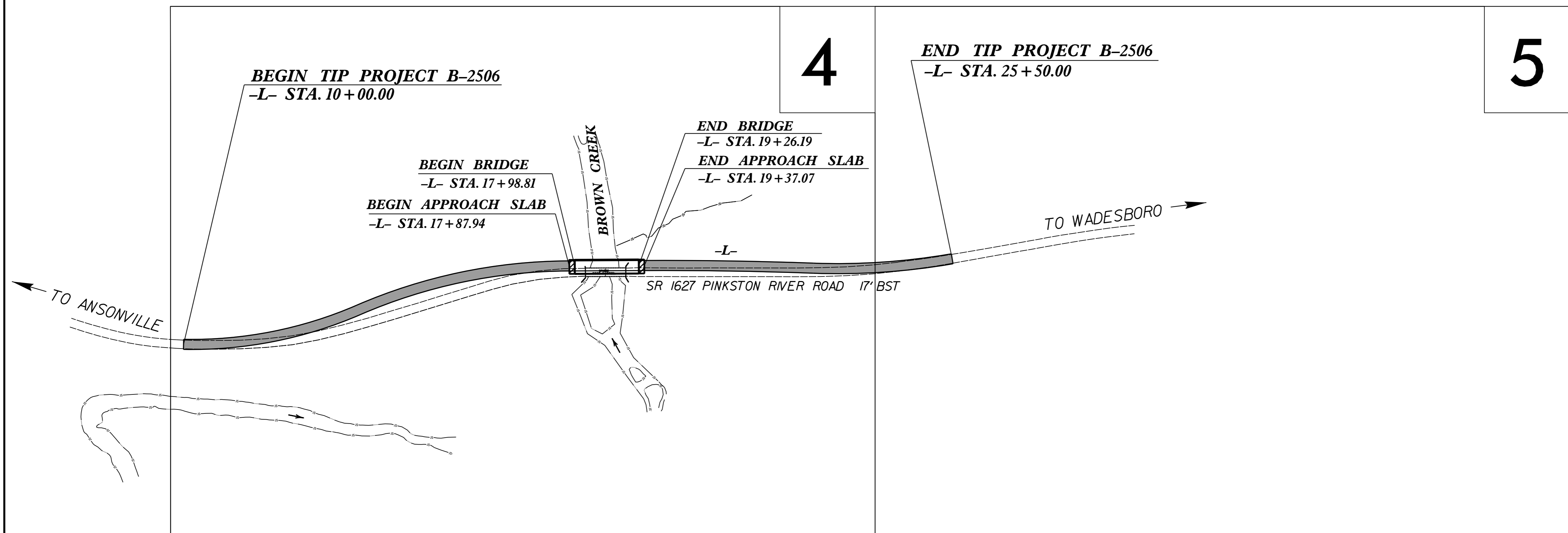
TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2506	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32638.1.2	BRZ-1627(13)	PE	
32638.2.2	BRZ-1627(13)	ROW, UTIL	
32638.3.1	BRZ-1627(13)	CONST	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			



TIP PROJECT: B-2506

CONTRACT: C203790



**DESIGN DATA**

ADT 2016 =	200
ADT 2040 =	300
K =	15 %
D =	65 %
T =	21 % *
V =	60 MPH
* TTST = 2% DUAL 19%	
FUNC CLASS =	RURAL LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-2506 =	0.270 MILES
LENGTH OF STRUCTURE TIP PROJECT B-2506 =	0.024 MILES
LENGTH OF TIP PROJECT B-2506 =	0.294 MILES

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
SEPTEMBER 18, 2015

**LETTING DATE:**  
MAY 15, 2018

**B. L. MOORE, PE, CPM**  
ASSIST. STATE ROADWAY DESIGN ENGINEER

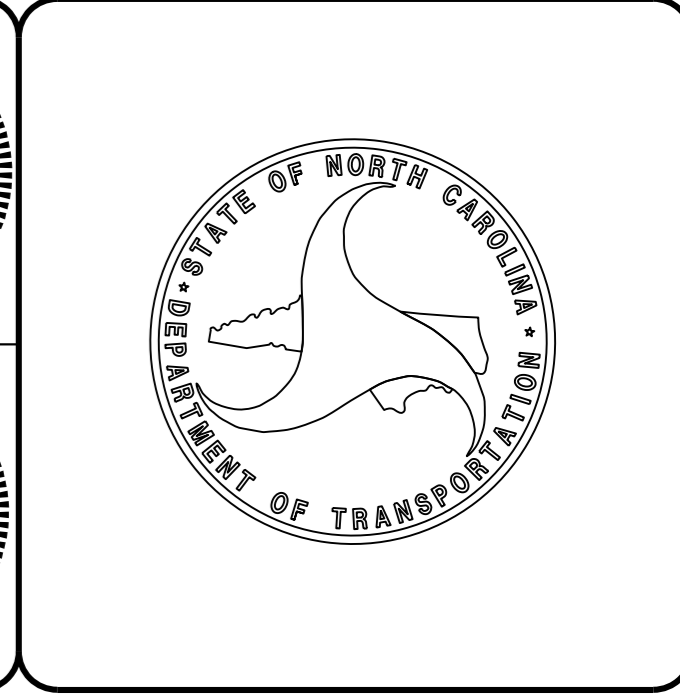
**THAD F. DUNCAN, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

DocuSigned by:  
William S. Zerman 10/2018  
SIGNATURE:

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
Thad F. Duncan 4/9/2018  
SIGNATURE:



09-APR-2018 15:30 R:\Roadway\Proj\B2506\_Rdy-fsh.dgn \$\$\$\$USERNAME\$\$\$



04/05/15

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

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

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	----- NLB
Proposed Wetland Boundary	----- NLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Existing Historic Property Boundary	----- HPB
Known Contamination Area: Soil	----- ☠
Potential Contamination Area: Soil	----- ☠
Known Contamination Area: Water	----- ☠
Potential Contamination Area: Water	----- ☠
Contaminated Site: Known or Potential	----- ☠ ?

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

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

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	----- RW
Proposed Right of Way Line with Iron Pin and Cap Marker	----- RW ▲
Proposed Right of Way Line with Concrete or Granite R/W Marker	----- RW ▲
Proposed Control of Access Line with Concrete CA Marker	----- CA

Existing Control of Access	----- CA
Proposed Control of Access	----- CA
Existing Easement Line	----- E
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
Proposed Permanent Easement with Iron Pin and Cap Marker	----- ◆

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	☼ ☼ ☼ ☼
Vineyard	□ Vineyard

### EXISTING STRUCTURES:

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

### UTILITIES:

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

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

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

### SANITARY SEWER:

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

### MISCELLANEOUS:

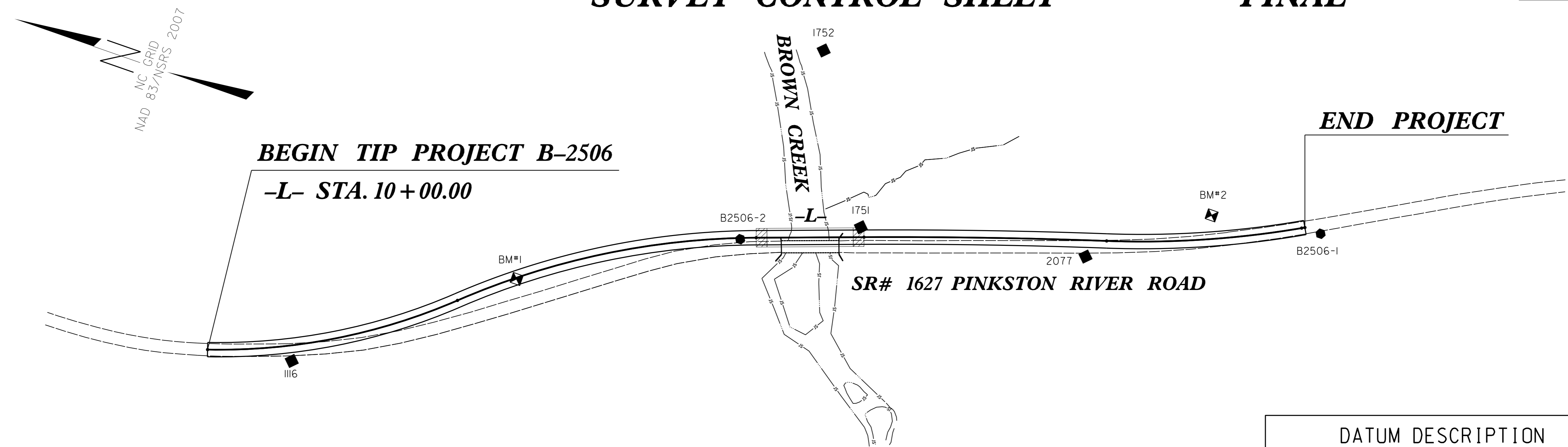
Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- ?U/L
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊠ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)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

10/9/2014

# SURVEY CONTROL SHEET

# FINAL

PROJECT REFERENCE NO.	SHEET NO.
B-2506	1C-1
Location and Surveys	



**BEGIN TIP PROJECT B-2506**  
**-L- STA. 10+00.00**

**END PROJECT**

**SR# 1627 PINKSTON RIVER ROAD**

**DATUM DESCRIPTION**  
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B2506-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 479843.924(ft) EASTING: 1684958.840(ft) ELEVATION: 203.73(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999873  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B2506-2" TO -L- STATION 10+00.00 IS N 30°57'27.6" W 757.116'  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

BL1	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	1752	REBAR	479820.8040	1685245.4020	199.17	18+80.35	260.36 LT
	EQ1751	REBAR	479690.7300	1685029.8990	201.07	19+30.84	13.76 LT
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	1116	REBAR	480377.3210	1684592.9900	201.67	11+14.85	21.65 RT
	2	B2506-2	479843.9240	1684958.8400	203.73	17+62.67	1.73 RT
	1751	REBAR	479690.7300	1685029.8990	201.07	19+30.84	13.76 LT
	2077	REBAR	479382.1030	1685094.3120	205.95	22+44.19	22.86 RT
	1	B2506-1	479083.6230	1685232.2070	210.89	OUTSIDE PROJECT LIMITS	

\*\*\*\*\*  
 BM1 ELEVATION = 200.86  
 N 480119 E 1684804  
 L STATION 14+45 2 RIGHT  
 BM 30" OAK  
 \*\*\*\*\*

\*\*\*\*\*  
 BM2 ELEVATION = 207.56  
 N 479235 E 1685206  
 L STATION 24+21 33 LEFT  
 BM 24" PINE  
 \*\*\*\*\*

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)  
  
THE FILES TO BE FOUND ARE AS FOLLOWS:  
B2506\_LS\_CONTROL.TXT  
B2506\_LS\_LOCAL.TXT
2. SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).  
  
MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:  
  - INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
  - INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
  - ✕ INDICATES BENCHMARKS FOR VERTICAL CONTROL

	L	NORTH	EAST
TYPE	STATION	NORTH	EAST
PC	10+00.00	480493.1833	1684569.3783
PRC	13+57.27	480187.3251	1684748.6697
PT	17+85.07	479823.5048	1684968.1689
PC	19+35.07	479682.1448	1685018.3420
PRC	22+72.93	479361.4736	1685124.6456
PT	25+45.46	479111.0586	1685230.9924
POT	25+50.00	479107.0871	1685233.1830

NOTE: DRAWING NOT TO SCALE

20 JUN-2016 15:58 10-2506-1s-1C-1.dgn

# SURVEY CONTROL SHEET

# FINAL

ROW MARKER CONCRETE OR GRANITE				
ALIGN	STATION	OFFSET	NORTH	EAST
L	10+00.00	-30.00	480502.4994	1684597.8952
L	10+00.00	30.00	480483.8671	1684540.8615
L	13+57.27	-30.00	480207.6565	1684770.7294
L	13+57.27	30.00	480166.9937	1684726.6099
L	17+70.00	-40.00	479851.5844	1685000.5294
L	17+70.00	30.00	479827.2348	1684934.9010
L	17+70.00	43.00	479822.7127	1684922.7128
L	17+70.00	-30.00	479848.1059	1684991.1539
L	17+85.07	-40.00	479836.8843	1685005.8649
L	17+85.07	43.00	479809.1219	1684927.6457
L	19+35.07	-40.00	479695.5243	1685056.0380
L	19+35.07	43.00	479667.7619	1684977.8188
L	19+55.00	-40.00	479676.6406	1685062.7142
L	19+55.00	-30.00	479673.3191	1685053.2819
L	19+90.00	43.00	479616.2099	1684995.9187
L	19+90.00	30.00	479620.4747	1685008.1992
L	22+72.93	30.00	479352.6325	1685095.9779
L	22+72.93	-30.00	479370.3147	1685153.3132
L	25+50.00	30.00	479092.5976	1685206.9141
L	25+50.00	-30.00	479121.5767	1685259.4519

ROW MARKER PERMANENT EASEMENT				
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+20.00	40.00	480273.5354	1684630.8988
L	12+25.00	30.00	480274.6897	1684642.1154
L	12+37.00	50.00	480253.0833	1684632.5602
L	12+47.00	30.00	480255.8670	1684654.9671
L	12+56.00	-30.00	480283.2782	1684709.0921
L	12+63.00	-42.00	480284.8990	1684722.7386
L	12+84.00	-30.00	480261.6275	1684725.2082
L	13+56.00	-36.00	480212.6143	1684774.3209
L	13+72.00	30.00	480156.3991	1684736.2390
L	13+79.00	70.00	480124.8192	1684710.7994
L	13+81.00	-40.00	480196.1378	1684794.5702
L	13+83.00	-30.00	480187.9826	1684788.4251
L	13+92.00	30.00	480141.8057	1684749.0725
L	13+99.00	67.00	480112.6560	1684725.3259
L	14+65.00	-45.00	480131.5174	1684853.5475
L	14+70.00	-30.00	480118.4013	1684844.6163
L	14+83.00	-52.00	480120.5073	1684870.3432
L	14+90.00	-30.00	480101.7698	1684856.7136
L	14+90.00	30.00	480066.9356	1684807.8610
L	15+06.00	70.00	480031.4807	1684783.8762
L	15+13.00	30.00	480048.5995	1684820.6378
L	15+26.00	62.00	480020.4314	1684801.0120
L	16+07.00	-30.00	480000.1590	1684921.0204
L	16+07.00	-52.00	480010.8807	1684940.2309
L	16+08.00	30.00	479970.0693	1684869.1011
L	16+09.00	60.00	479954.6491	1684843.3497
L	16+26.00	-52.00	479993.3897	1684949.7883
L	16+27.00	-30.00	479982.1071	1684930.8732
L	16+30.00	30.00	479951.2860	1684879.3072
L	16+31.00	60.00	479936.4036	1684853.2413
L	17+85.07	-55.00	479841.9017	1685020.0009
L	18+26.00	-55.00	479803.3290	1685033.6915
L	18+27.00	-40.00	479797.3693	1685019.8900
L	18+88.00	-40.00	479739.8829	1685040.2938
L	19+06.00	53.00	479691.8124	1684958.6713
L	19+06.00	43.00	479695.1572	1684968.0953
L	19+12.00	-50.00	479720.6102	1685057.7455
L	19+35.07	-50.00	479698.8690	1685065.4621
L	19+35.07	53.00	479664.4168	1684968.3949

**NOTES:**

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B2506\_LS\_LOCAL.TXT

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3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).

MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:

- INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
- INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
- ✠ INDICATES BENCHMARKS FOR VERTICAL CONTROL

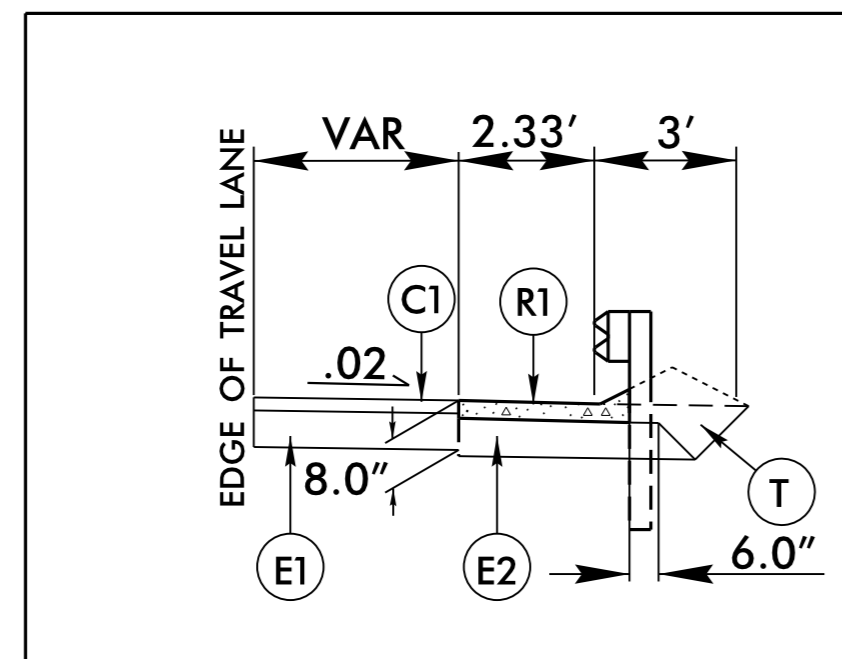
# PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

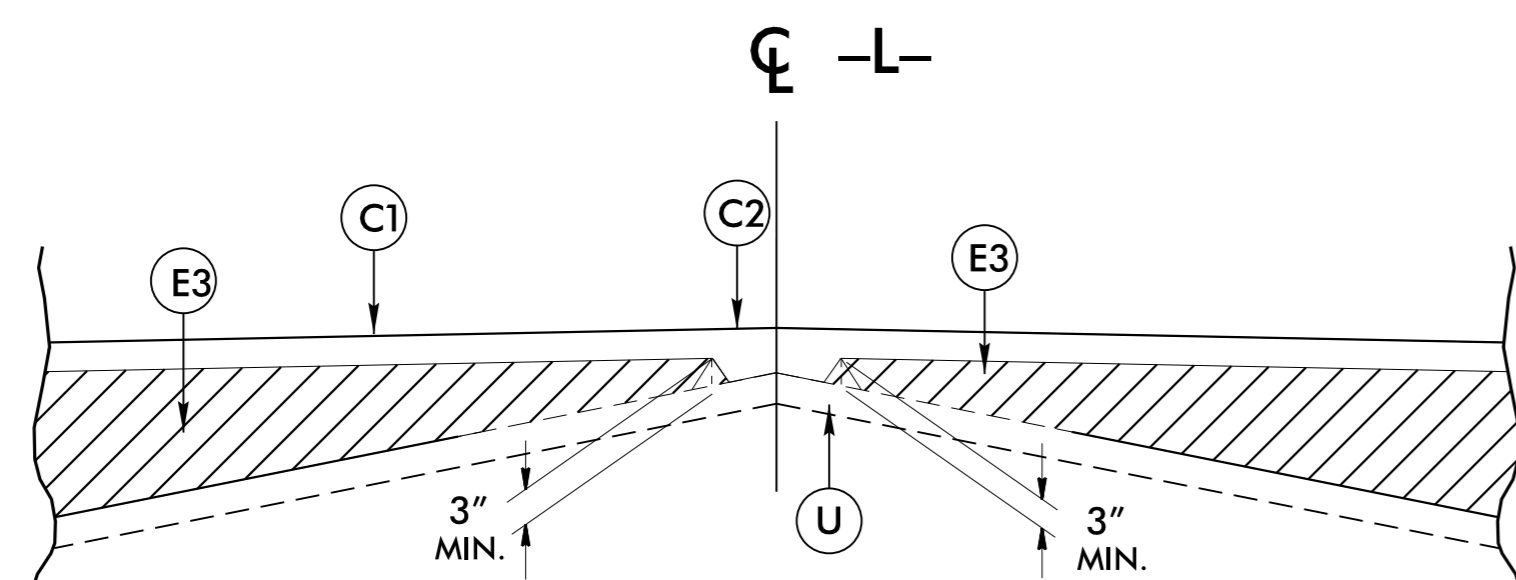
C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NO LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
R1	CONCRETE SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

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

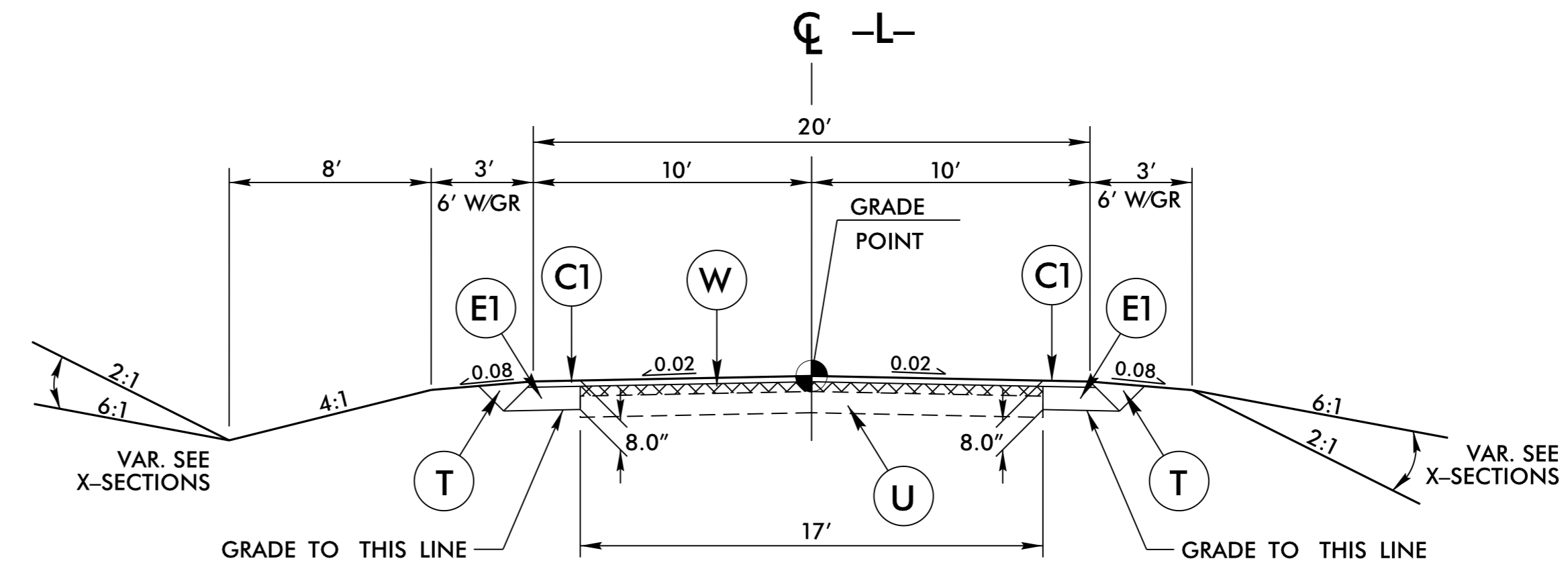
### SHOULDER BERM GUTTER DETAIL



-L- STA 19+37.19 TO -L- STA 19+80 RT

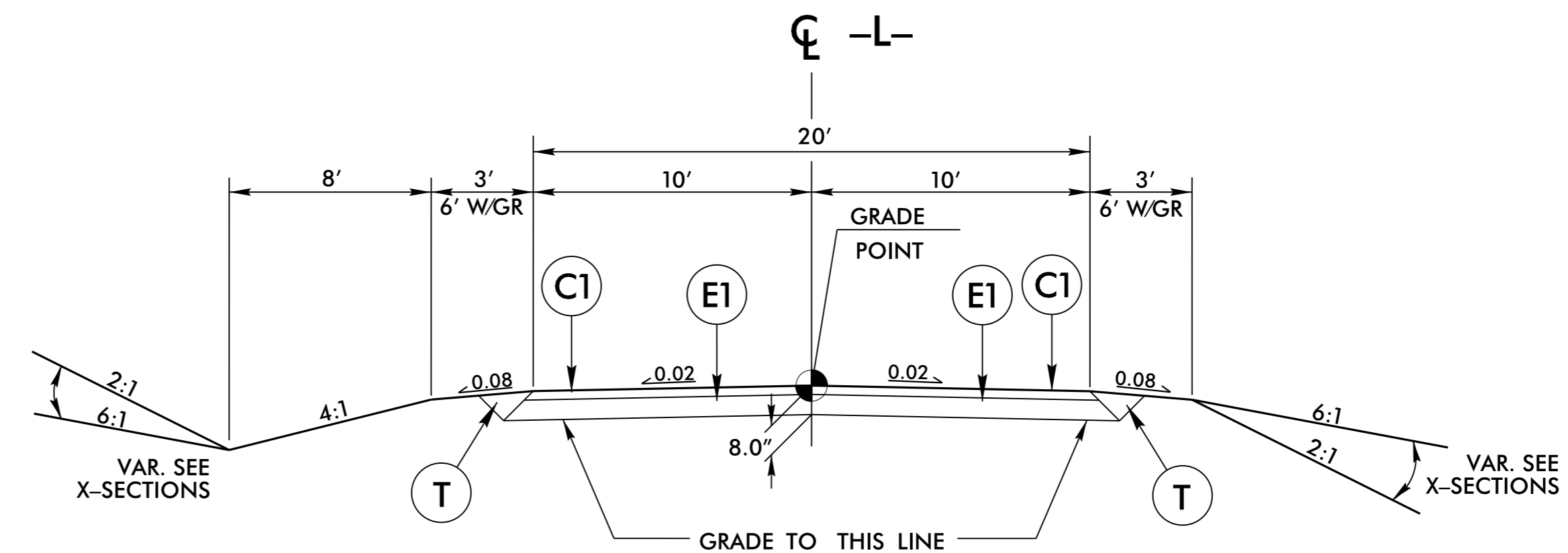


Detail Showing Method of Wedging  
USE WITH TYPICAL SECTION NO. 1



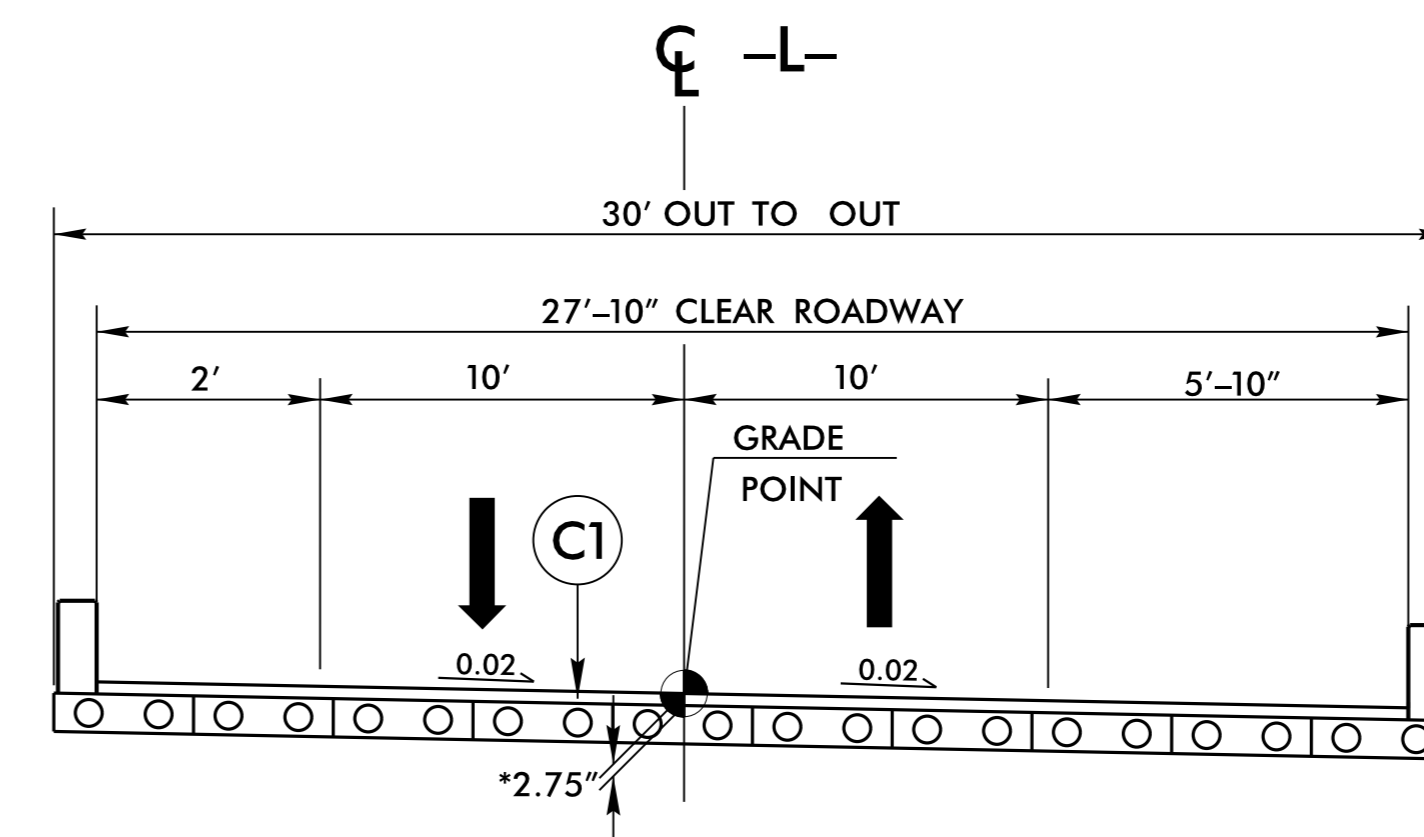
### USE TYPICAL SECTION NO. 1

-L- STA. 10+00.00 TO STA. 11+50.00  
-L- STA. 24+00.00 TO STA. 25+50.00



### USE TYPICAL SECTION NO. 2

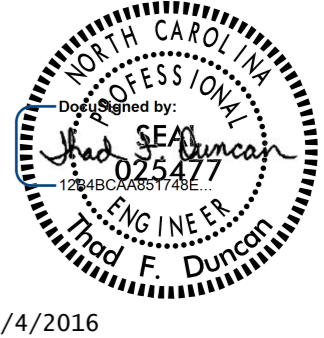
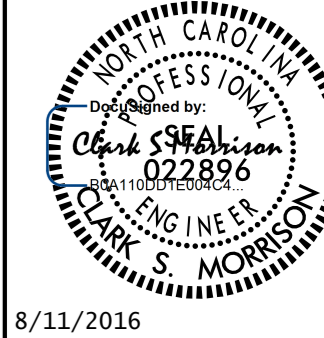
-L- STA. 11+50.00 TO STA. 17+98.81 (BEGIN BRIDGE)  
-L- STA. 19+26.19 (END BRIDGE) TO STA. 24+00.00



### TYPICAL SECTION ON BRIDGE

-L- STA. 17+98.81 TO STA. 19+26.19

**\*NOTE:**  
FOR ASPHALT WEARING SURFACE THICKNESS  
SEE STRUCTURE PLANS

PROJECT REFERENCE NO. <b>B-2506</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
8/4/2016	8/11/2016
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

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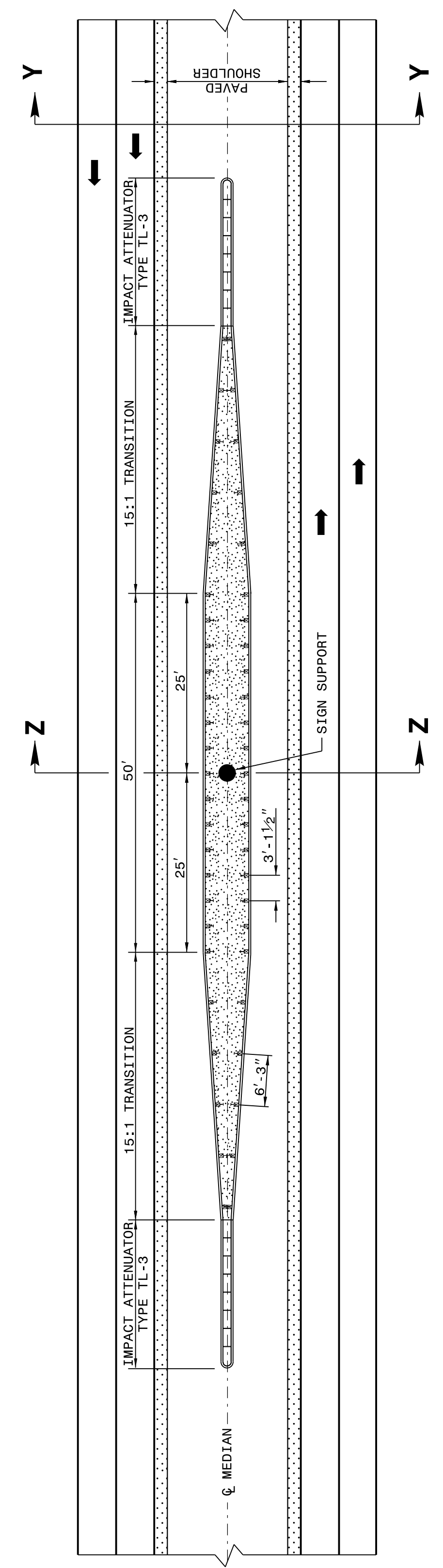
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 2 OF 11  
**862D01**

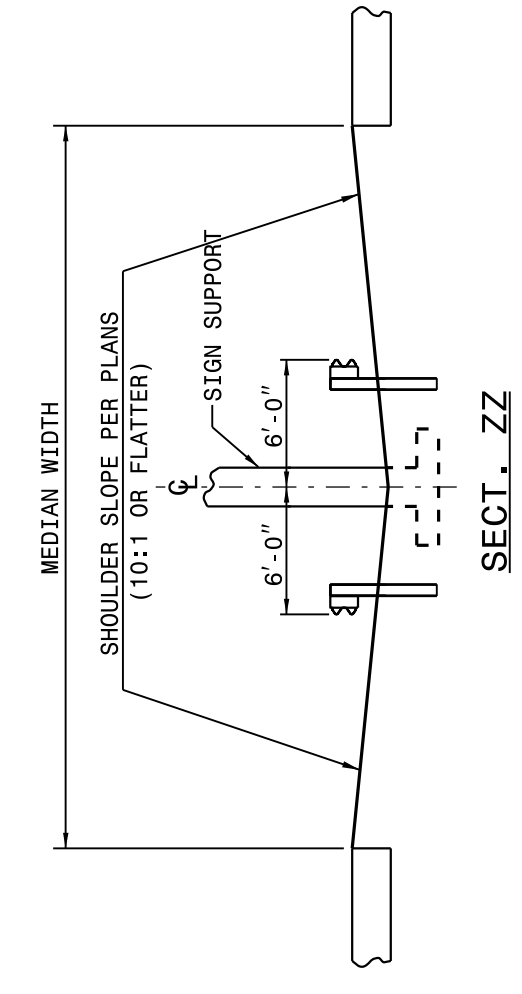
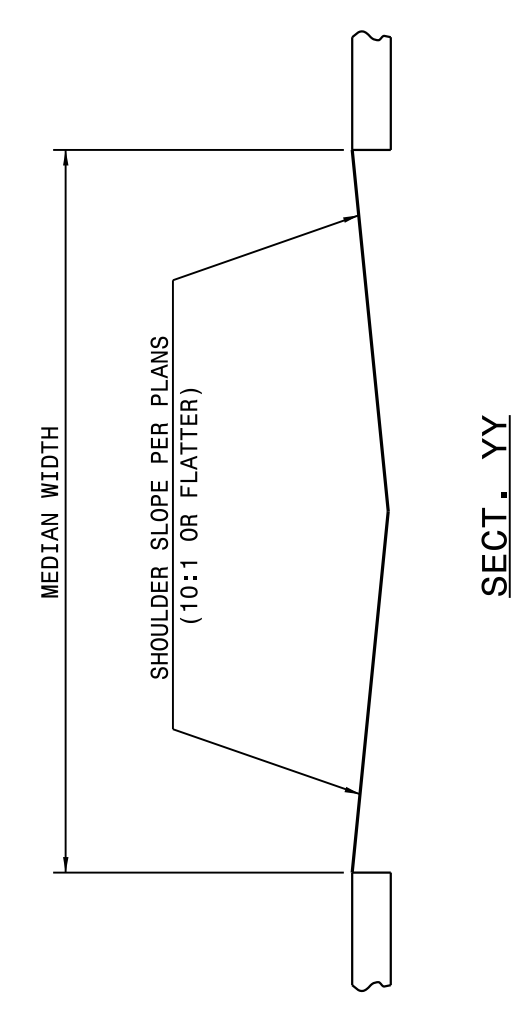
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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 2 OF 11  
**862D01**



NOTE SPECIAL LAYER OF PAVEMENT .....  
 USE 3'-1 1/2" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.  
 GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STANDARD 862D01 SHEET 1 OF 12).

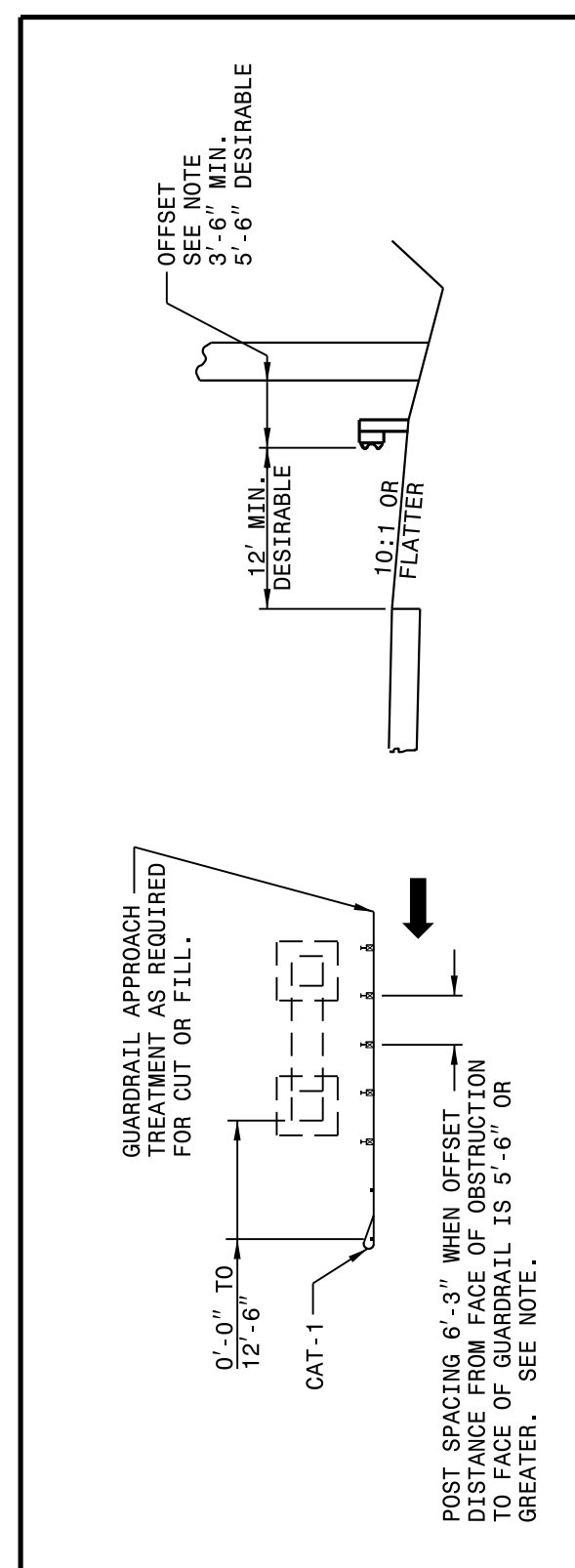
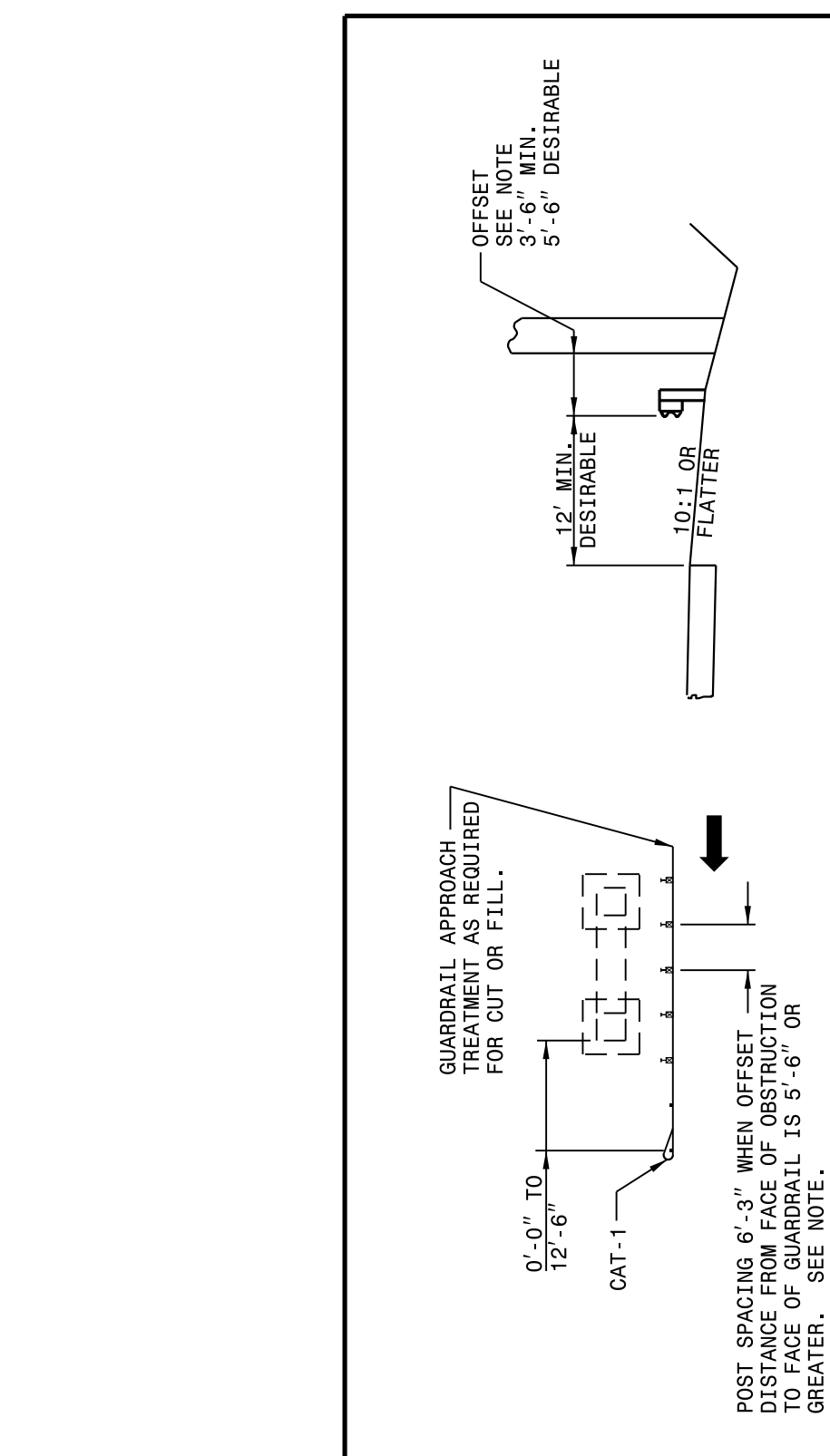
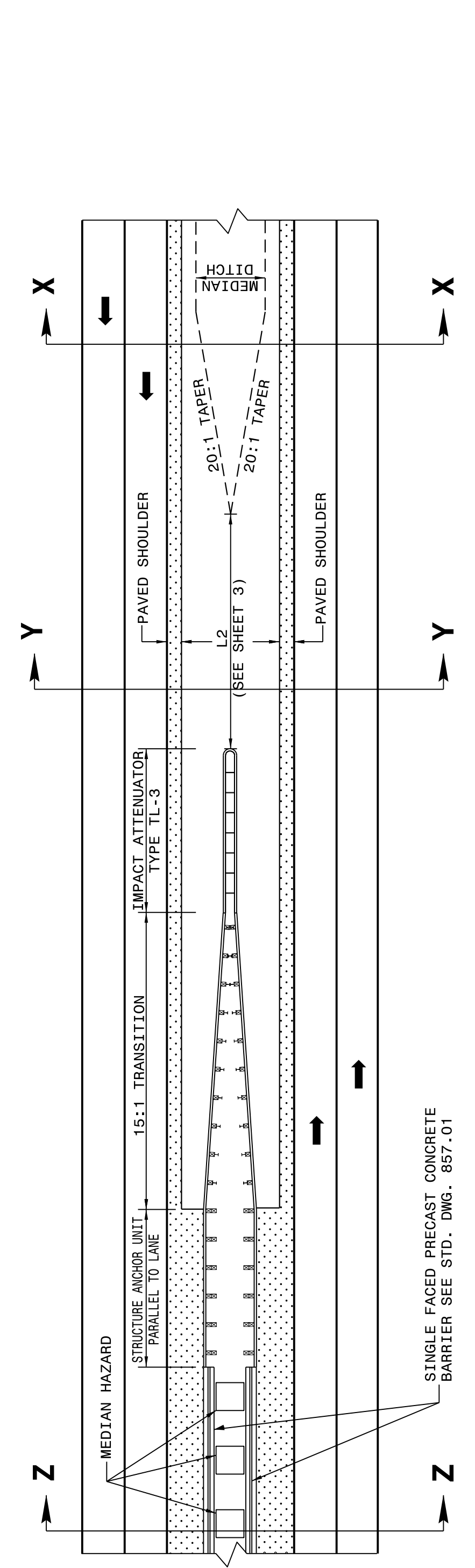


**DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT**

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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 1 OF 11  
**862D01**



NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6", BEGIN 3'-1 1/2" POST SPACING AT POINT 26' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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**GUARDRAIL PLACEMENT**

SHEET 1 OF 11  
**862D01**

**DETAIL OF MEDIAN TREATMENT AT UNDERPASS**

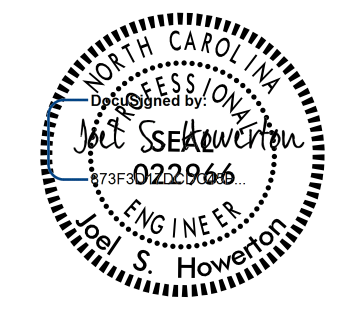
**DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS**

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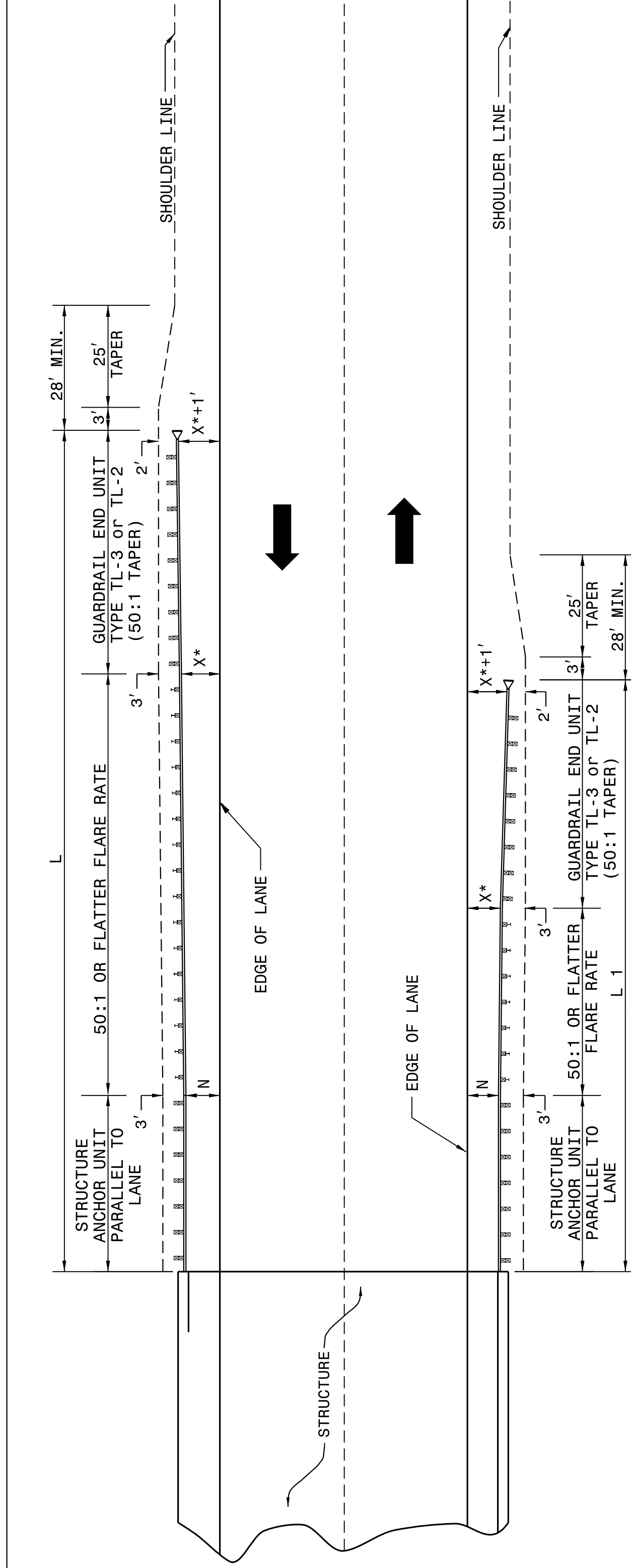




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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 4 OF 11  
**862D01**



ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 4 OF 11  
**862D01**

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
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**GUARDRAIL INSTALLATION AT BRIDGE APPROACHES FOR TWO-LANE, TWO-WAY TRAFFIC**

DESIGN SPEED (MPH)	"L" APPROACH LENGTH (FT.)		"L" TRAILING LENGTH (FT.)	
	DESIGN YEAR ADT OVER 2000	CURRENT YEAR ADT UNDER 400	DESIGN YEAR ADT OVER 2000	CURRENT YEAR ADT UNDER 400
70	362.5'	362.5'	350.0'	287.5'
60	300.0'	287.5'	275.0'	225.0'
50	212.5'	212.5'	200.0'	162.5'
40	175.0'	150.0'	137.5'	112.5'
X*	8'	6'	4'	4'

\* USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1).

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

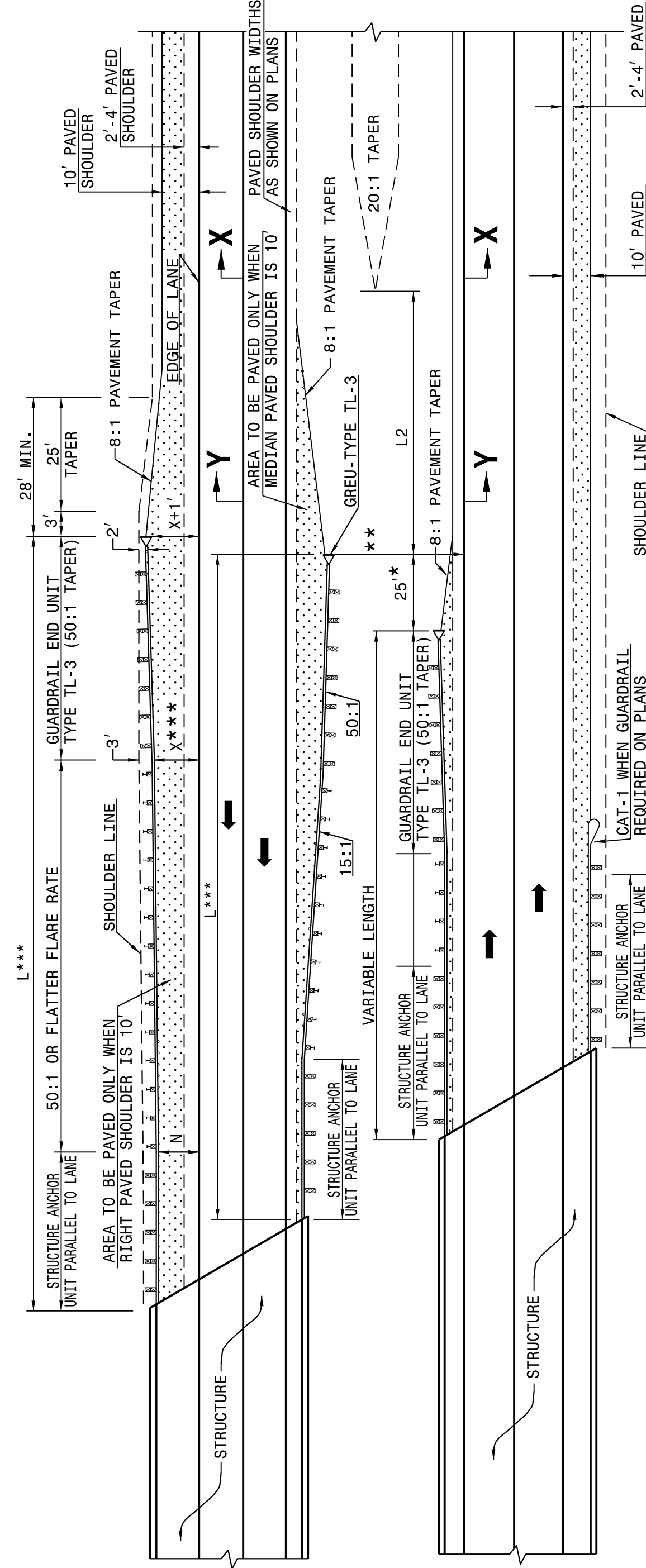
SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

**LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS**

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FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

**DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES**

MEDIAN WIDTH	-L-***		-L2- DIM.
	60 MPH	50 MPH	
30'	300.0'	250.0'	80.0'
36'	300.0'	250.0'	60.0'
40' & ABOVE	300.0'	250.0'	40.0'

NOTES: \* MINOR VARIATION TO THE 25'-0" DIMENSION IS PERMISSIBLE TO ACCOMMODATE THE 12'-6" IN GUARDRAIL LENGTHS.

\*\* NO GUARDRAIL IS REQUIRED ON THE TRAILING END WHEN THIS DISTANCE EXCEEDS CLEAR ROADSIDE RECOVERY AREA FOR THE APPROPRIATE DESIGN SPEED.

\*\*\* BASED ON "X" OF 12' USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).  
 "N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.  
 THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS.  
 SEE SHEET 1 OF 12 FOR SECTIONS XX, YY  
 SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

**DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES**

SHEET 3 OF 11  
**862D01**

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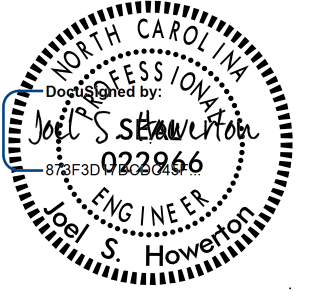
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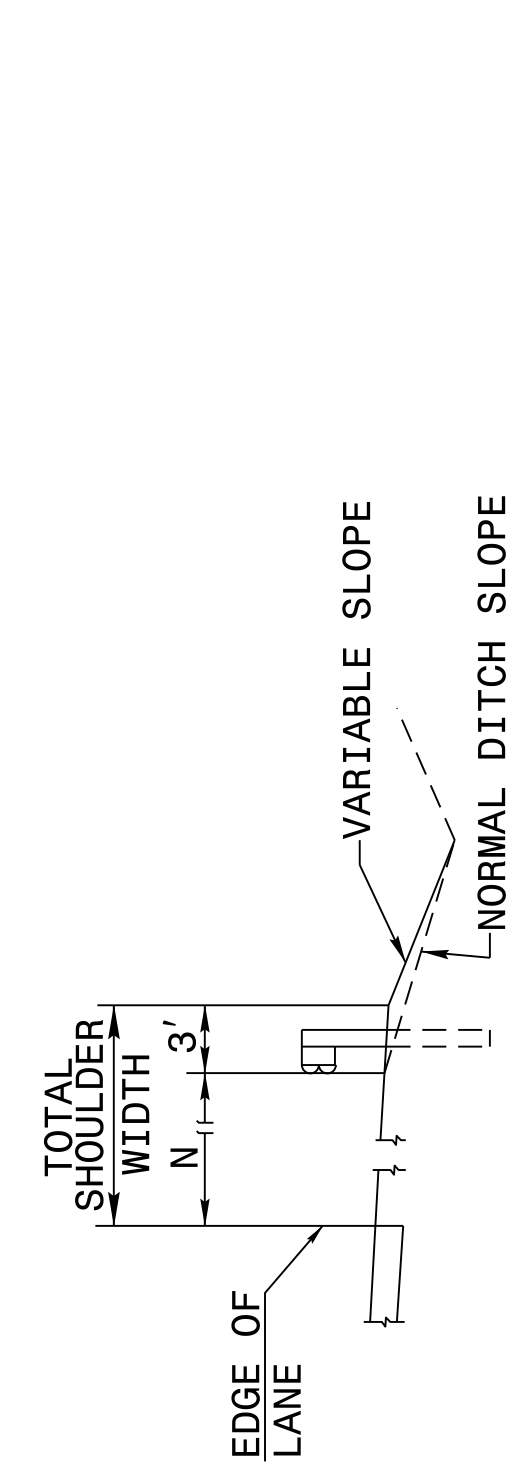
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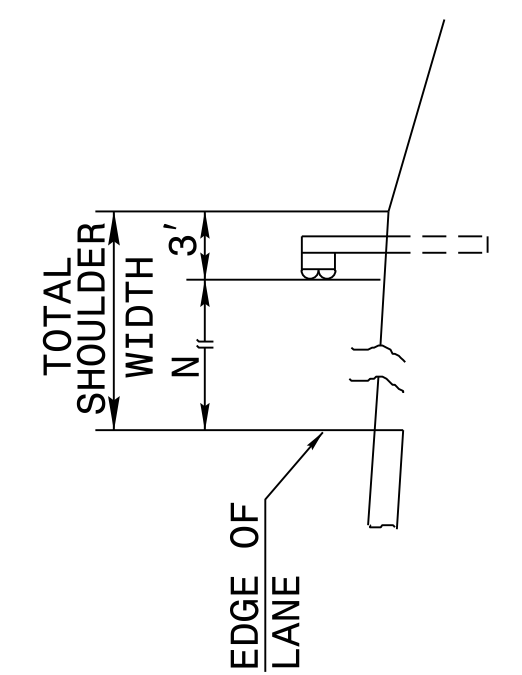


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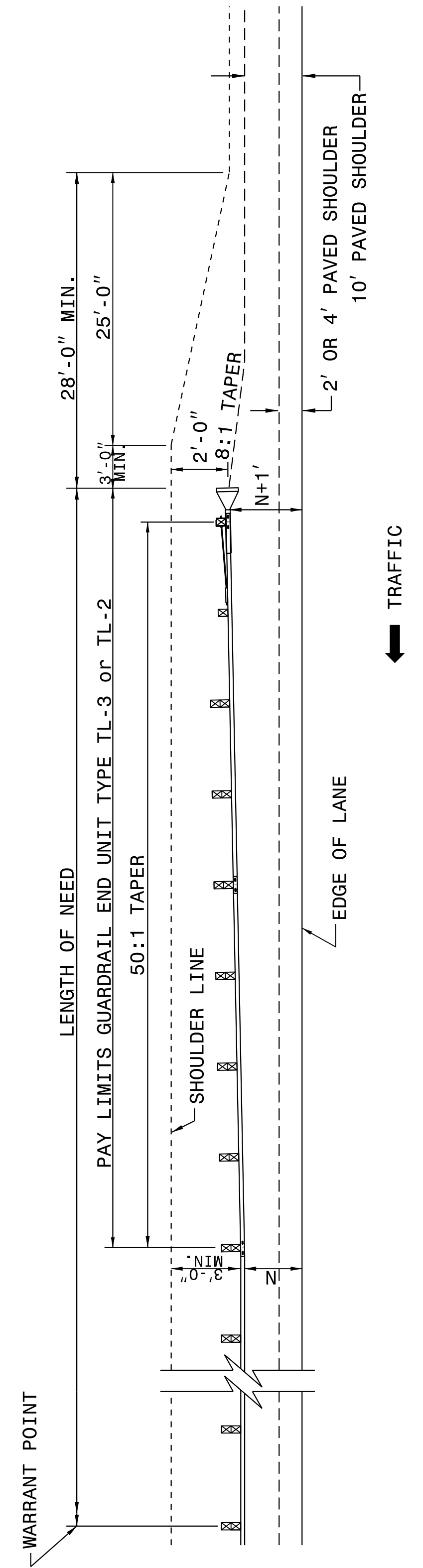


**CUT SECTION**



**FILL SECTION**

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

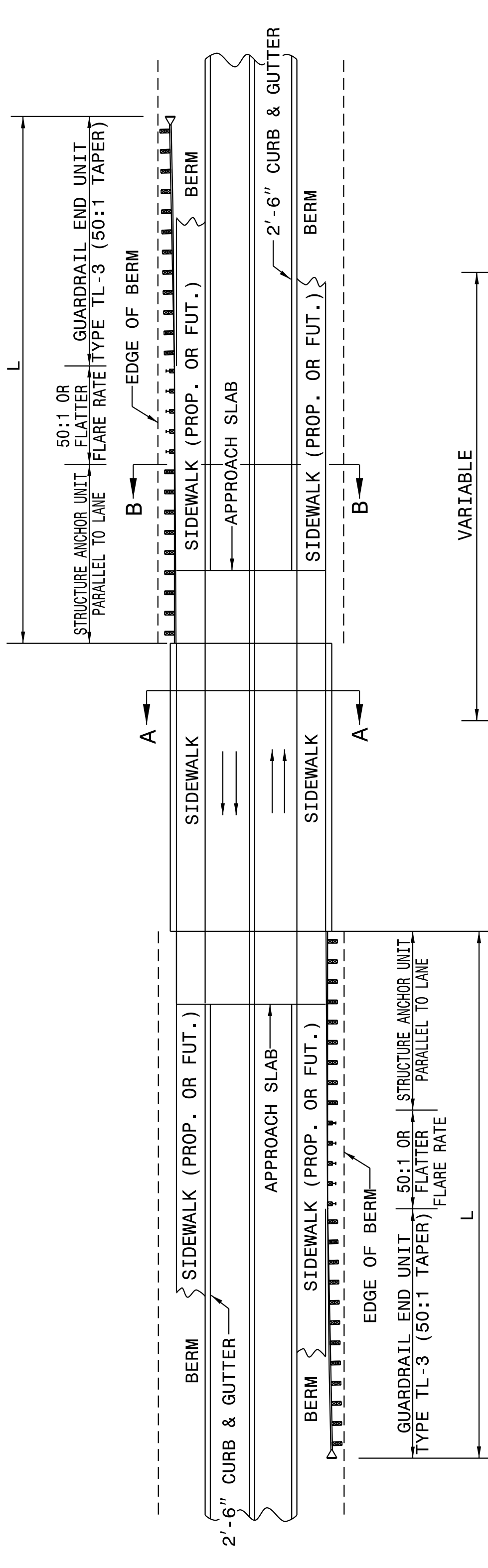


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 6 OF 11  
**862D01**

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MINIMUM GUARDRAIL LENGTHS "L" REQUIRED AT BRIDGE APPROACHES ON 2'-6" CONCRETE CURB AND GUTTER ROADWAYS	"L"
DESIGN SPEED (MPH)	150'
	225'

NOTE: "L" VALUES ARE BASED ON NO HAZARDS OTHER THAN END OF BRIDGE BEING PRESENT WITHIN THE CLEAR ZONE.

SEE STD. 862D03 FOR STRUCTURE ANCHOR UNITS.

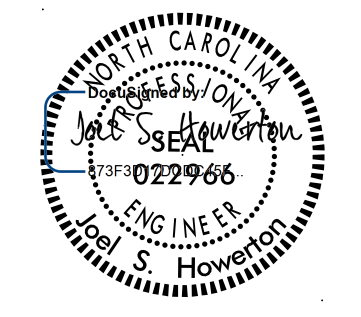
FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 5 OF 11  
**862D01**

**DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION**

**STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER**



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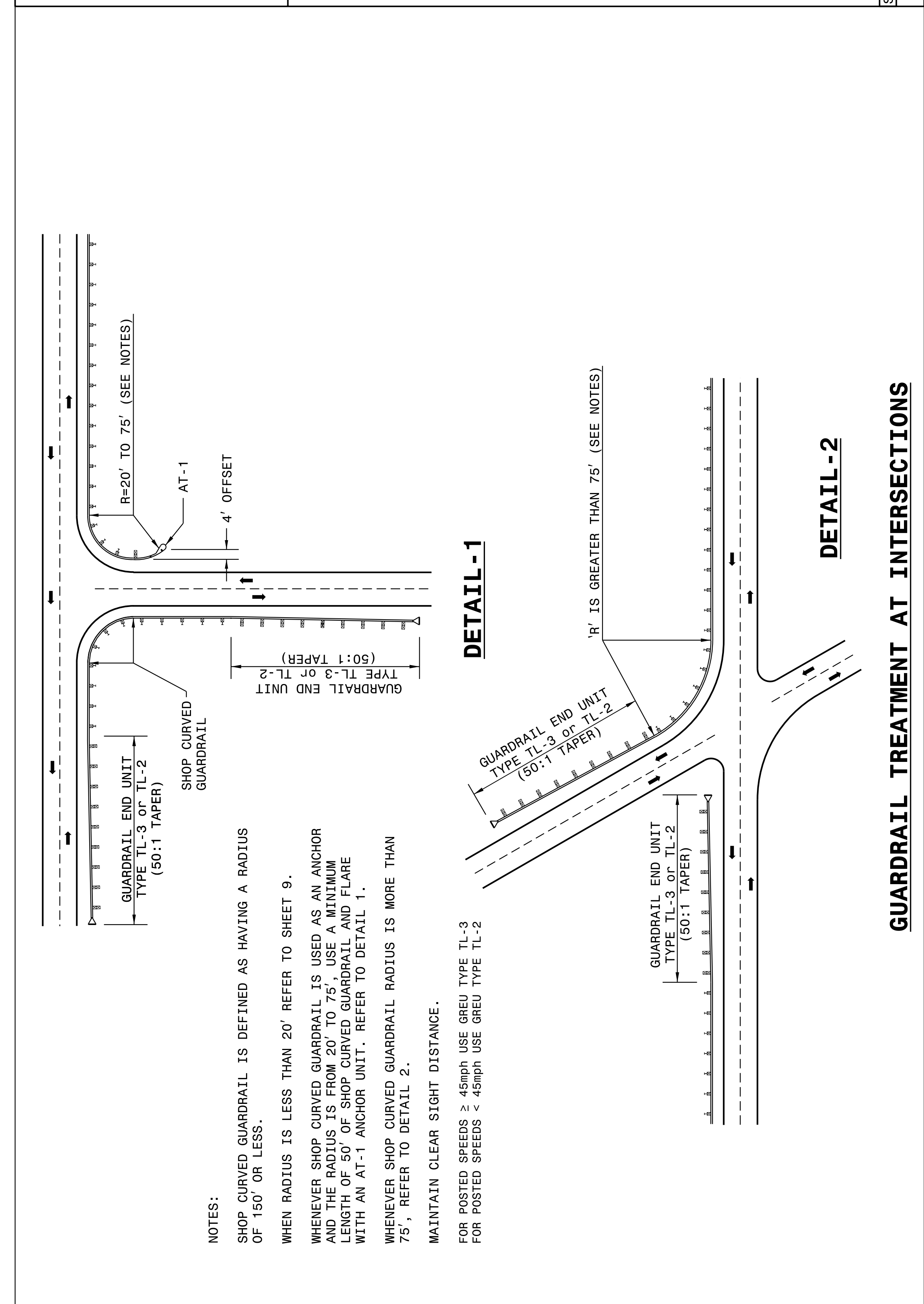
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SHEET 5 OF 11  
**862D01**

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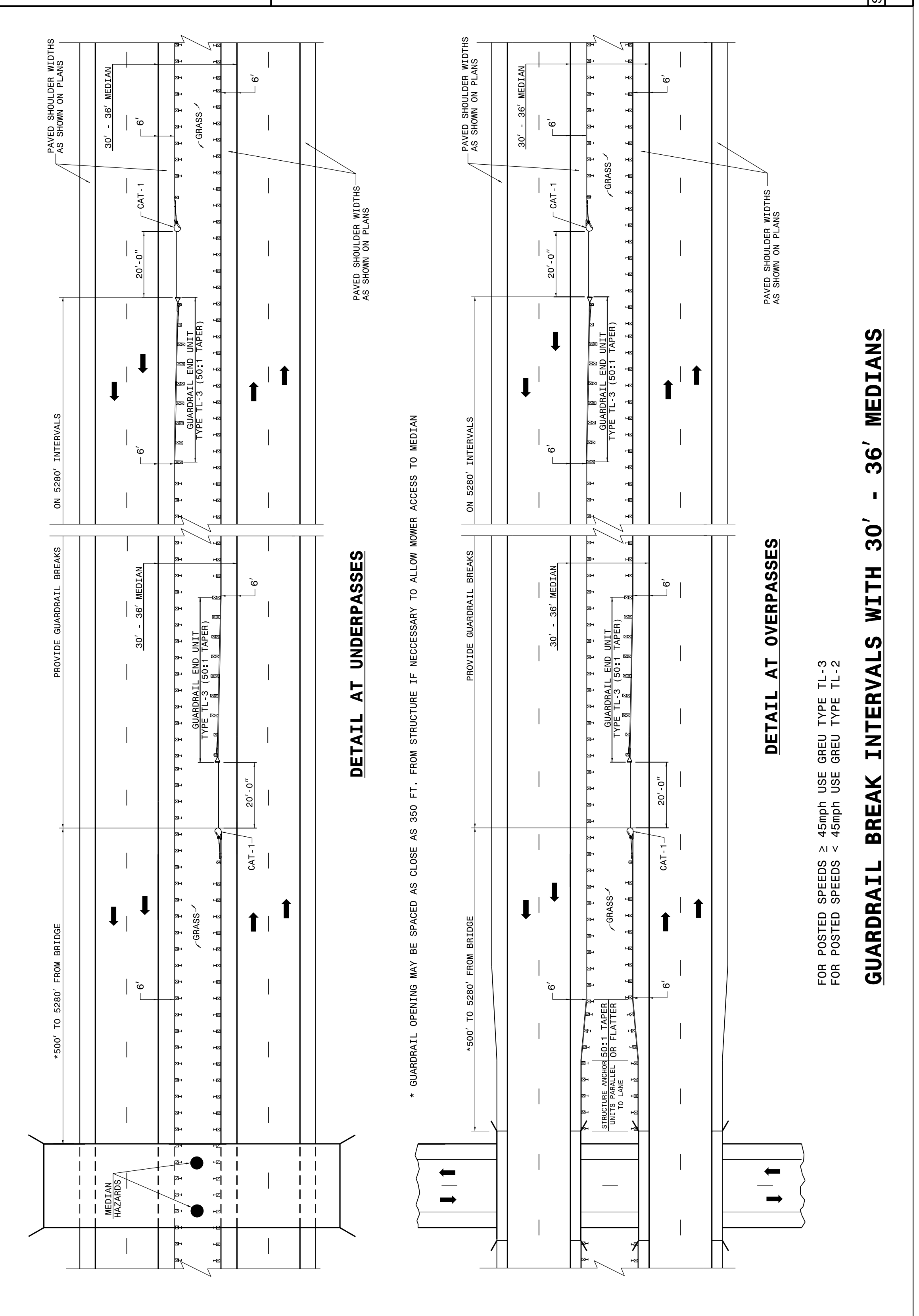
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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 8 OF 11  
**862D01**

SHEET 8 OF 11  
**862D01**

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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

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 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 7 OF 11  
**862D01**

SHEET 7 OF 11  
**862D01**

NOTES:  
 SHOP CURVED GUARDRAIL IS DEFINED AS HAVING A RADIUS OF 150' OR LESS.  
 WHEN RADIUS IS LESS THAN 20' REFER TO SHEET 9.  
 WHENEVER SHOP CURVED GUARDRAIL IS USED AS AN ANCHOR AND THE RADIUS IS FROM 20' TO 75', USE A MINIMUM LENGTH OF 50' OF SHOP CURVED GUARDRAIL AND FLARE WITH AN AT-1 ANCHOR UNIT. REFER TO DETAIL 1.  
 WHENEVER SHOP CURVED GUARDRAIL RADIUS IS MORE THAN 75', REFER TO DETAIL 2.

MAINTAIN CLEAR SIGHT DISTANCE.  
 FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

**DETAIL - 2**

**GUARDRAIL TREATMENT AT INTERSECTIONS**

**DETAIL AT UNDERPASSES**

**DETAIL AT OVERPASSES**

**GUARDRAIL BREAK INTERVALS WITH 30' - 36' MEDIANS**

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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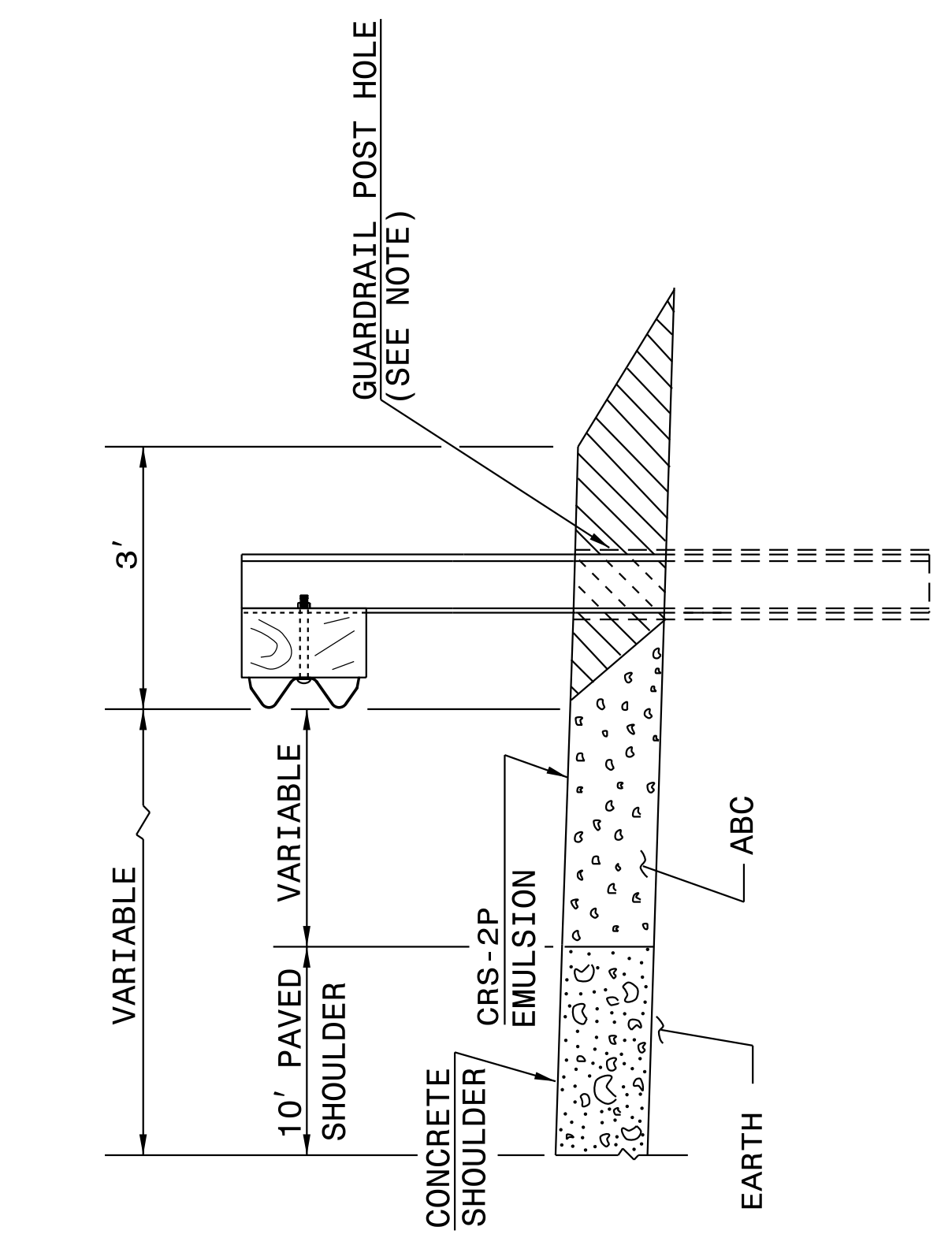
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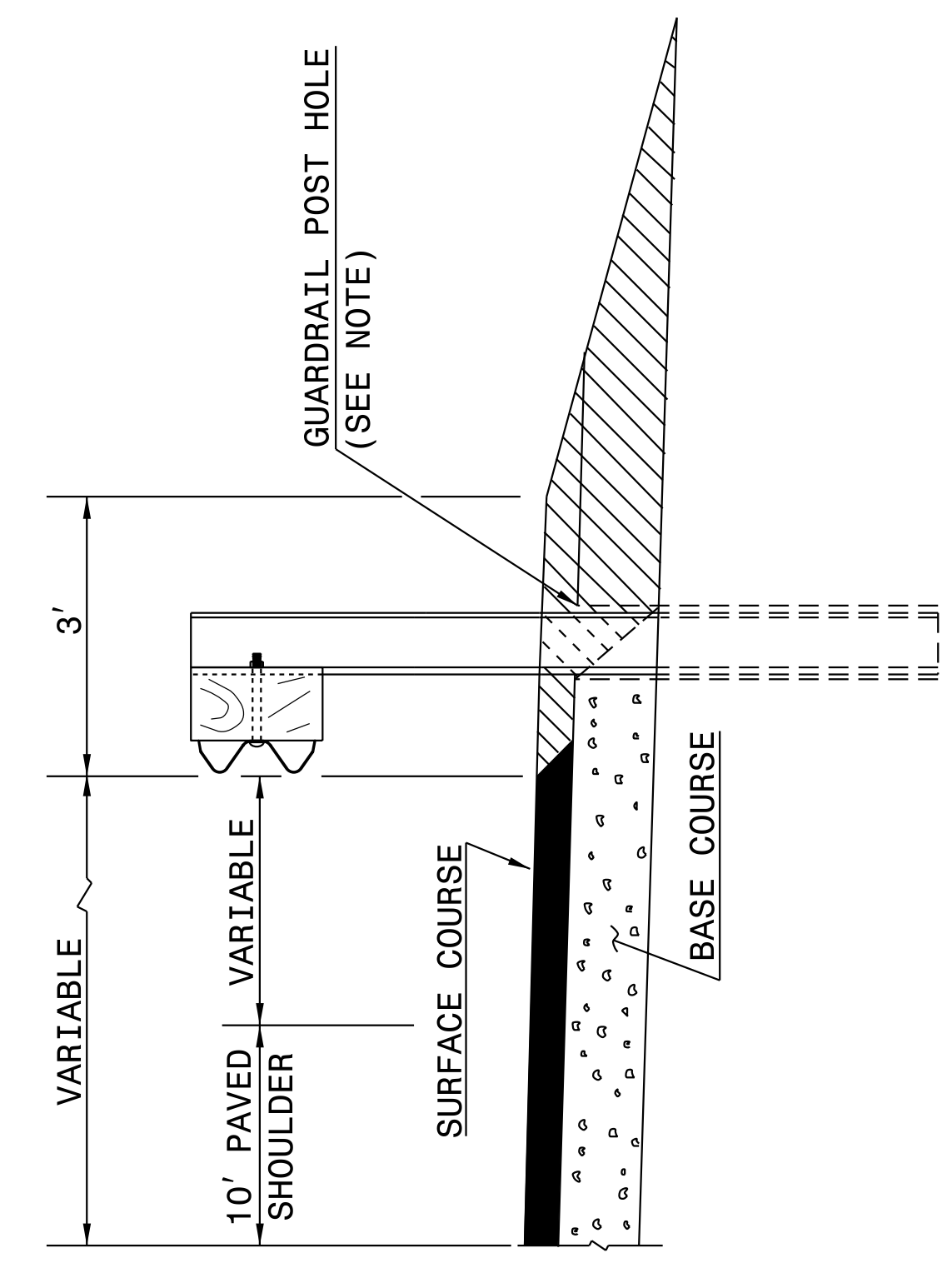
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ENGLISH DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 10 OF 11  
**862D01**



**CONCRETE PAVED SHOULDER**



**FLEXIBLE PAVED SHOULDER**

NOTE: WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

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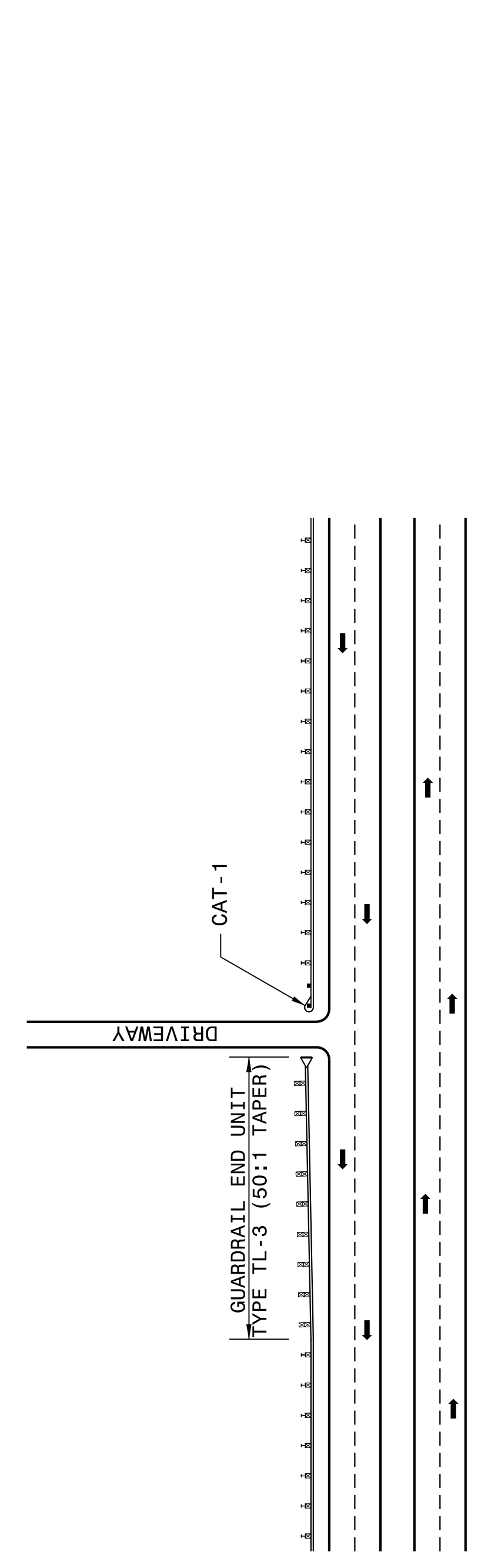
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SHEET 10 OF 11  
**862D01**

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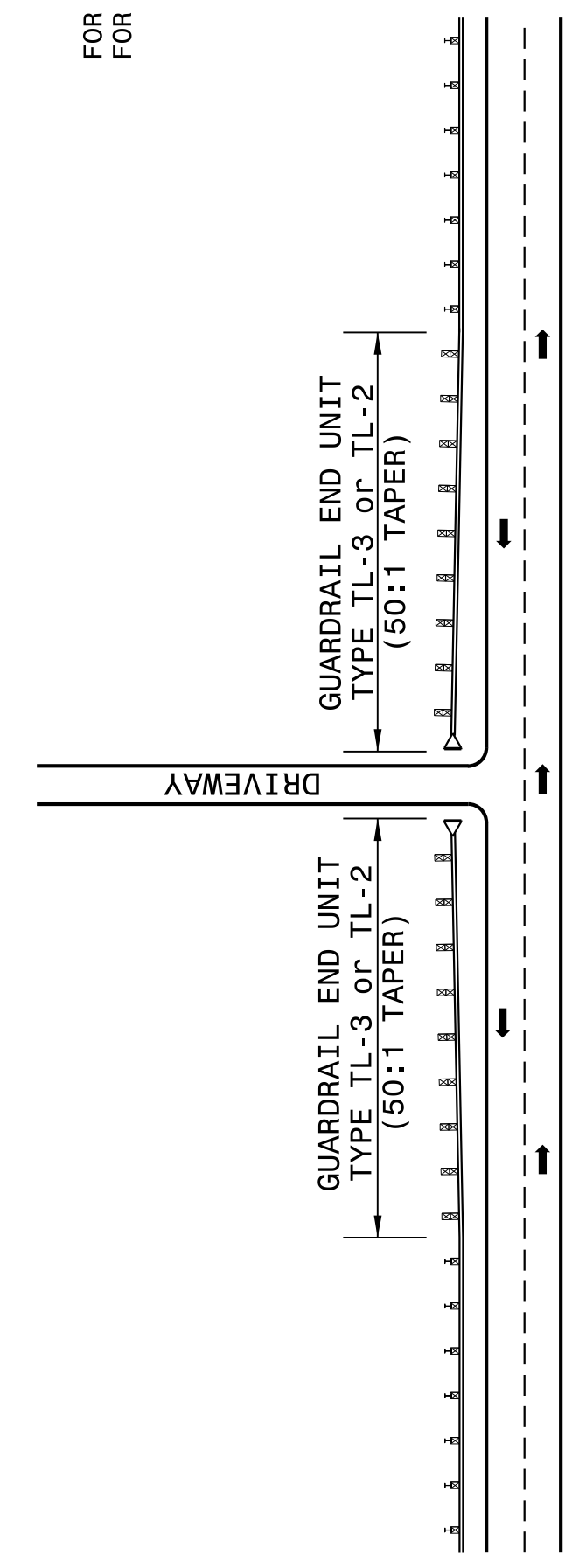
SHEET 9 OF 11  
**862D01**



**DETAIL - 3**  
DIVIDED HIGHWAY

NOTE: USE DETAIL 3 & 4 WHENEVER 20' OR LARGER RADIUS CANNOT BE UTILIZED. MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2



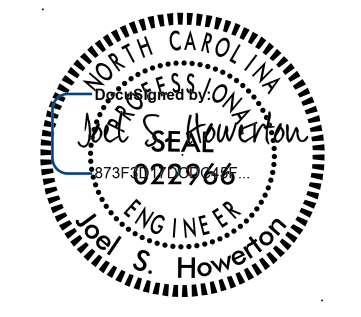
**DETAIL - 4**  
UNDIVIDED HIGHWAY  
**GUARDRAIL TREATMENT AT DRIVEWAYS**

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ROADWAY DETAIL DRAWING FOR  
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SHEET 9 OF 11  
**862D01**

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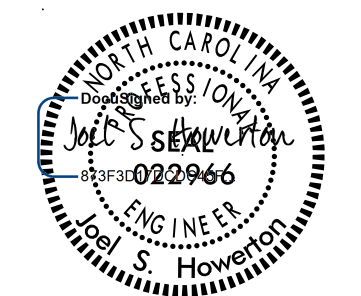
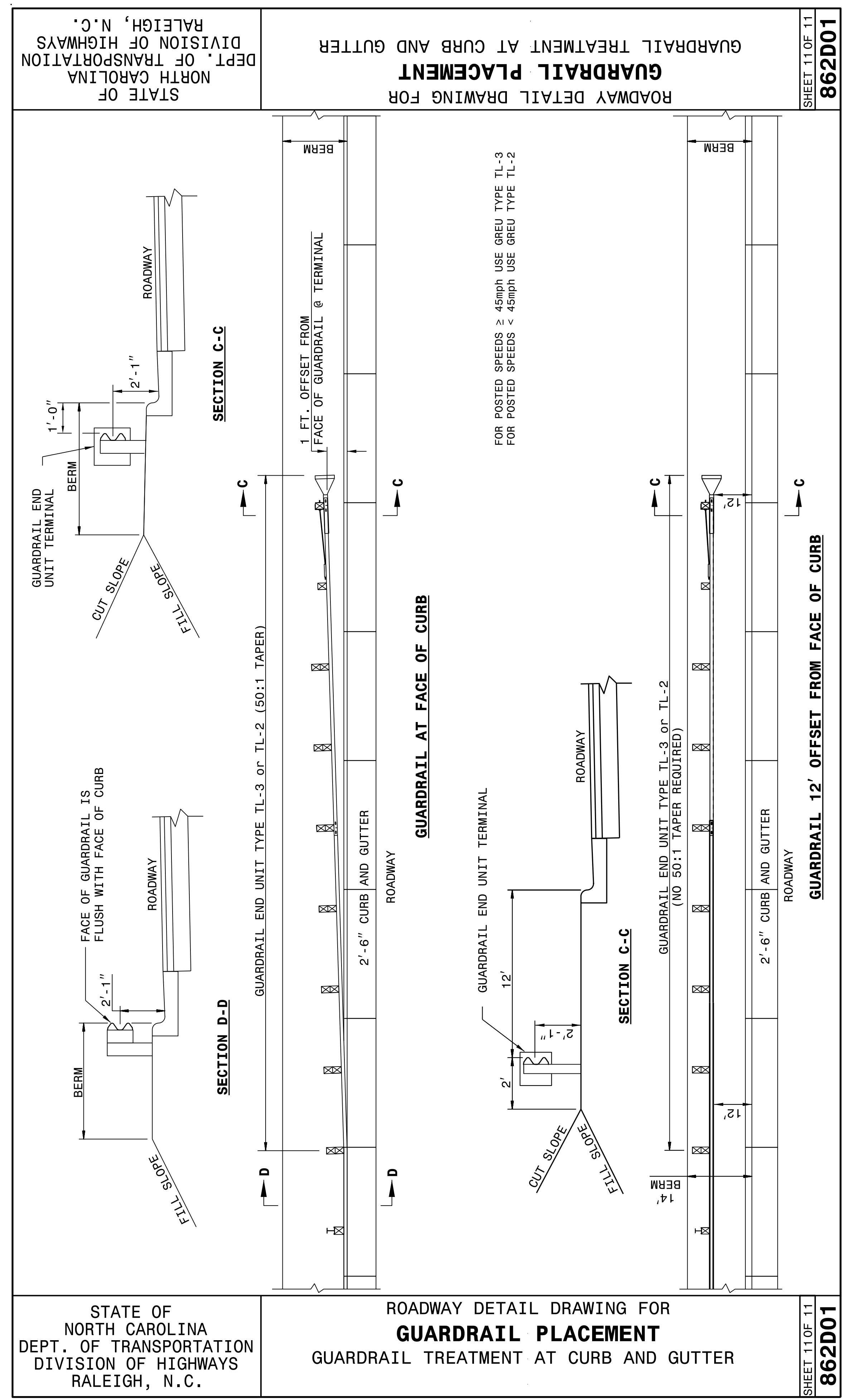
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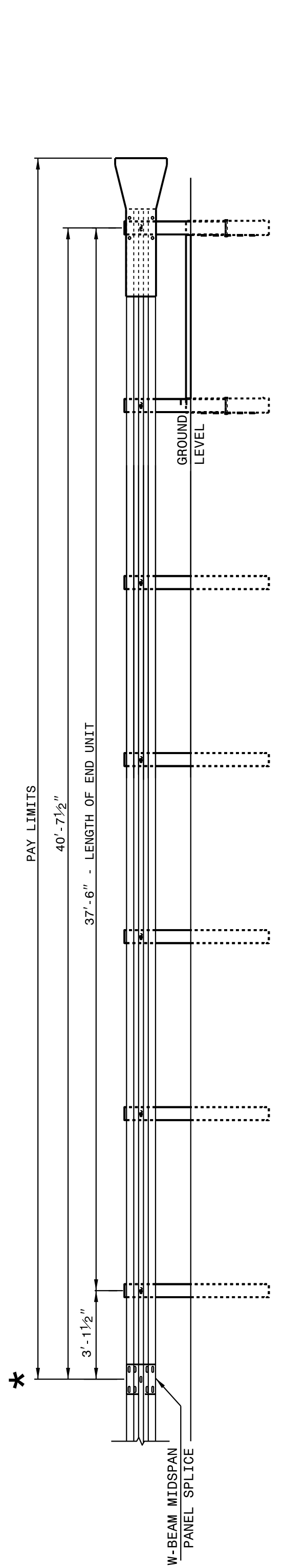
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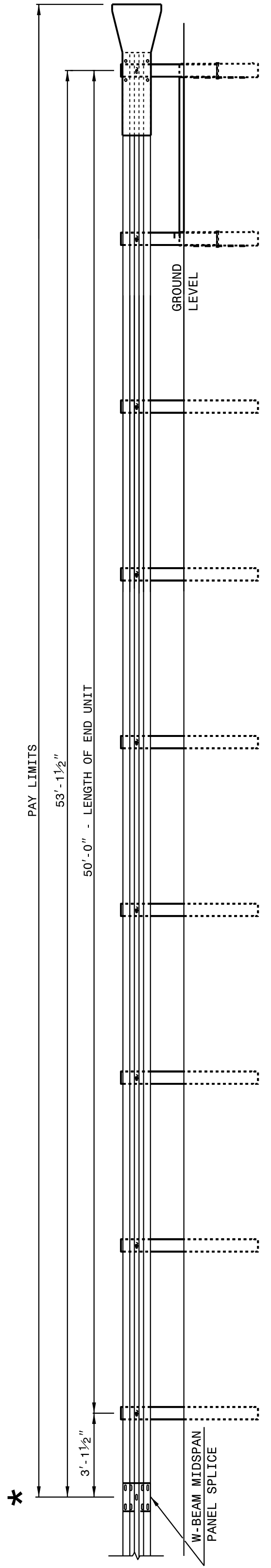
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**GUARDRAIL INSTALLATION**

SHEET 2 OF 8  
**862D02**



**FLARED AND TANGENT  
ELEVATION VIEW**

\* WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 2'-1" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 2'-1" HEIGHT. SEE 862.02, SHEET 4 OF 8 FOR TRANSITION DETAILS.



**FLARED AND TANGENT  
ELEVATION VIEW**

**APPROACH END UNITS**

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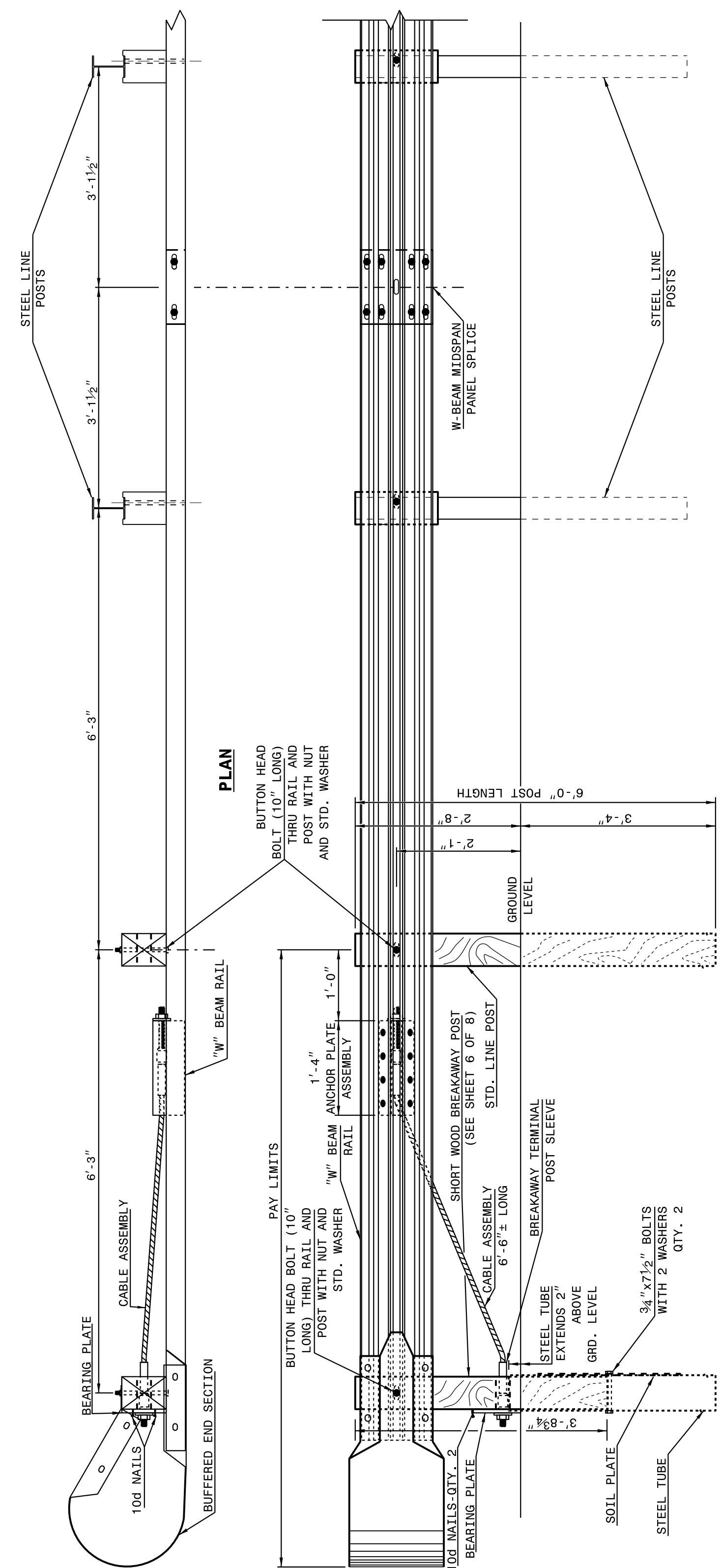
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ROADWAY DETAIL DRAWING FOR  
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SHEET 1 OF 8  
**862D02**



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

**ELEVATION**

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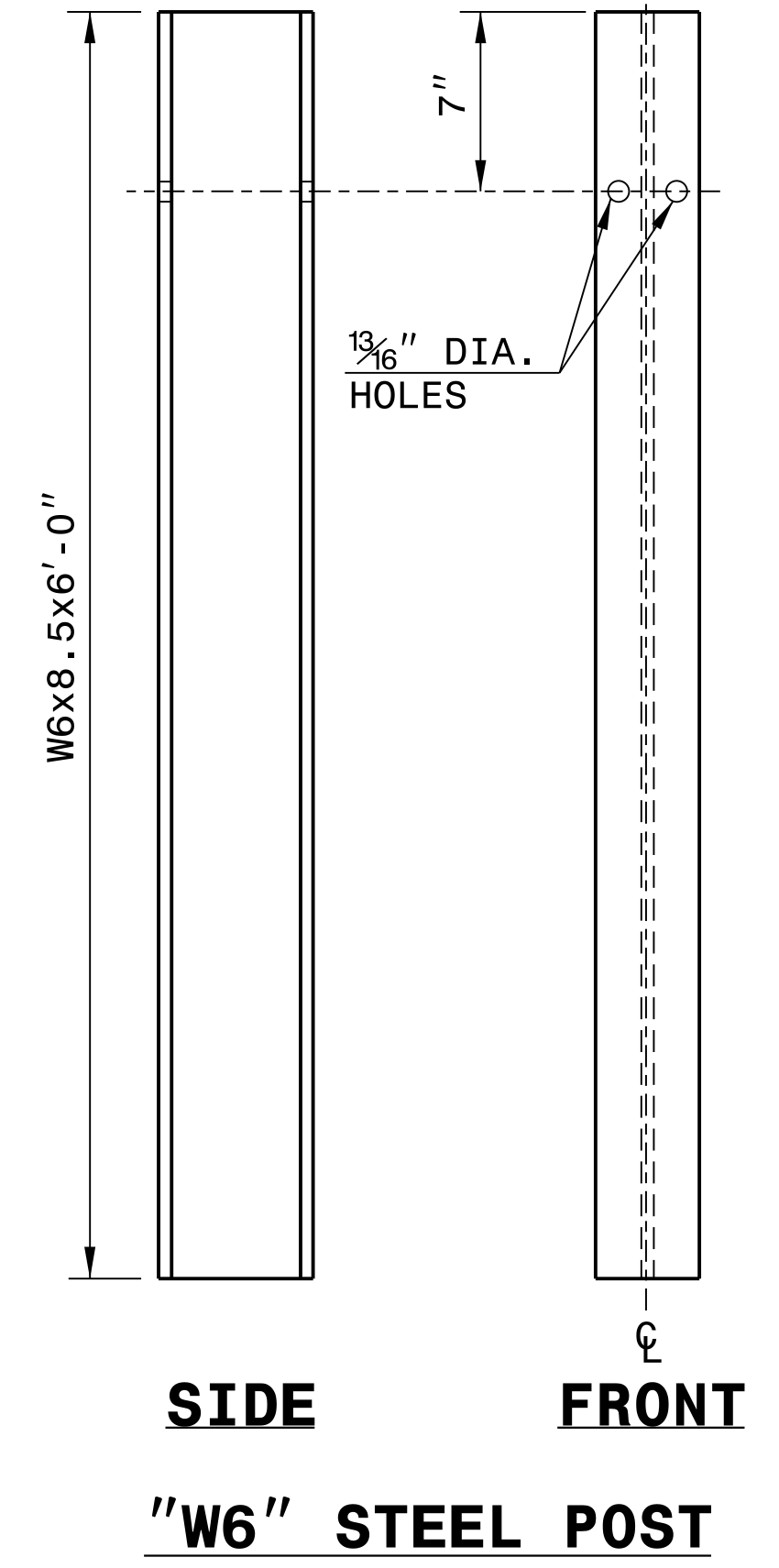
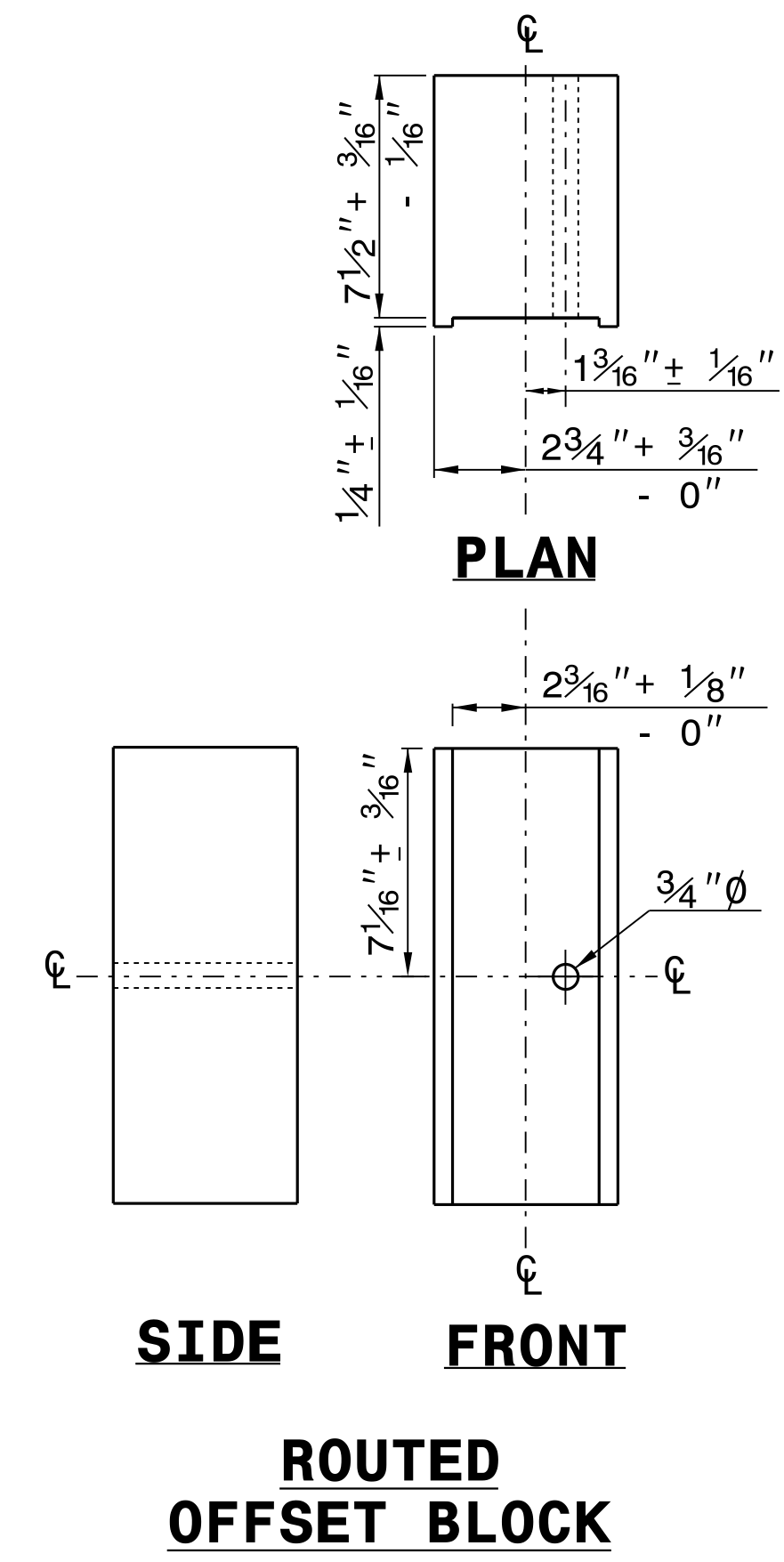
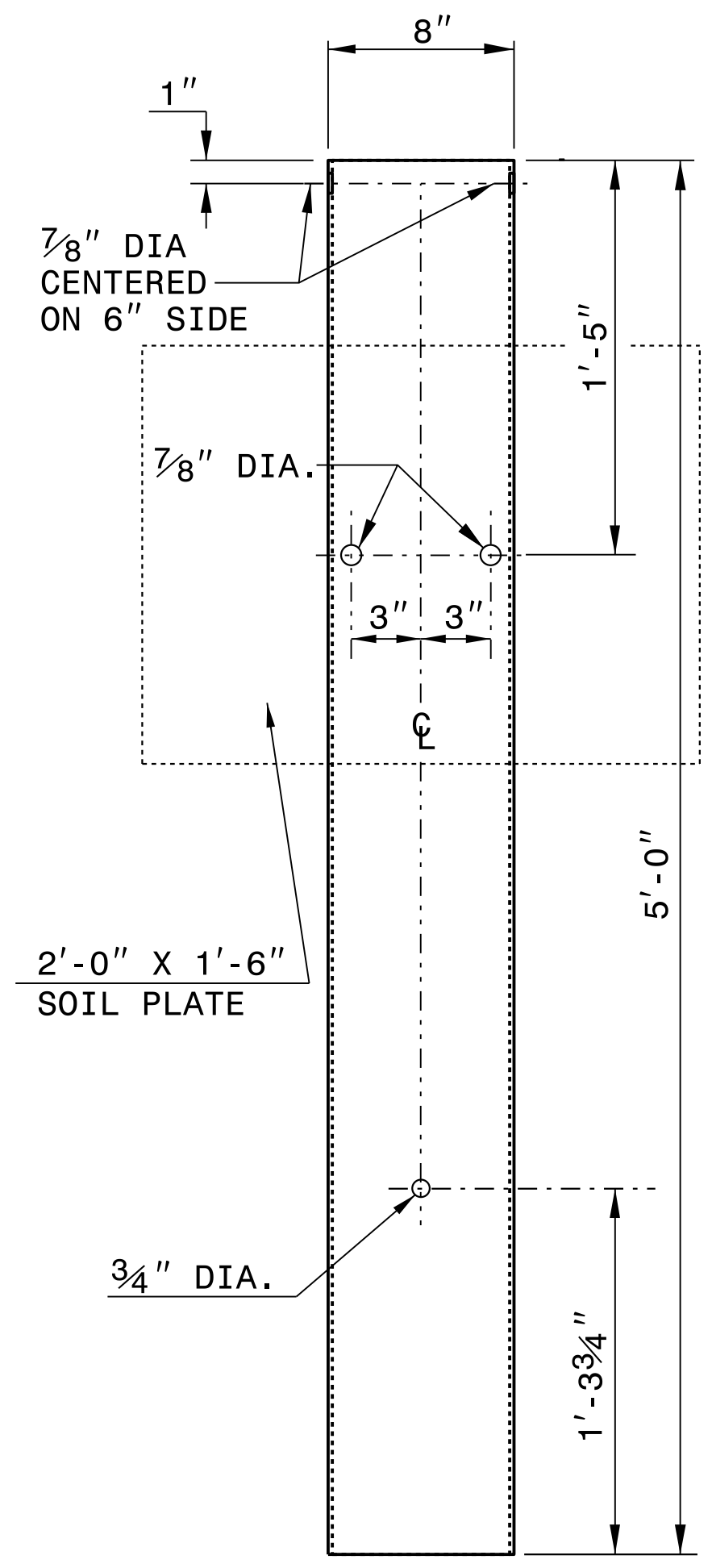
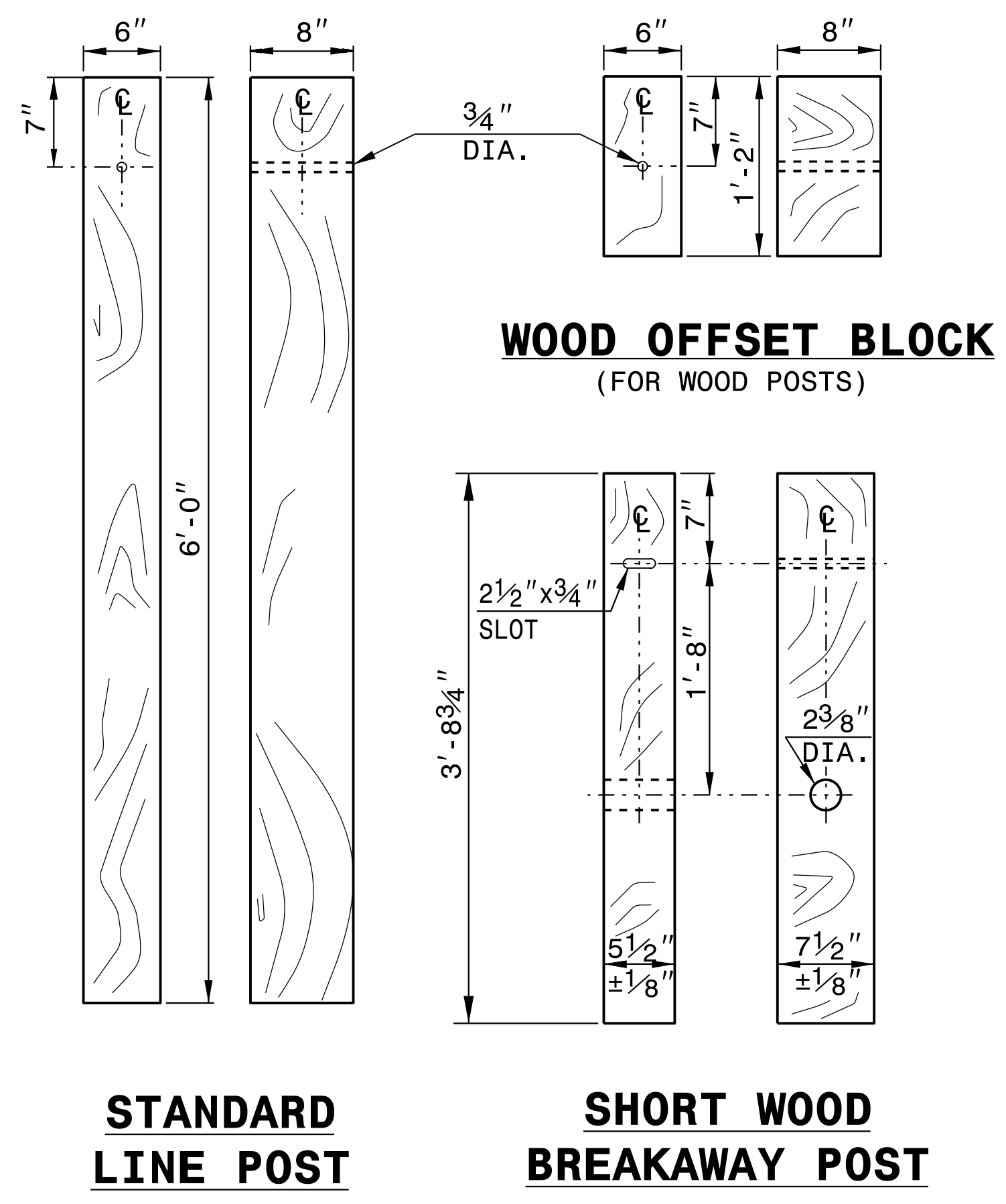
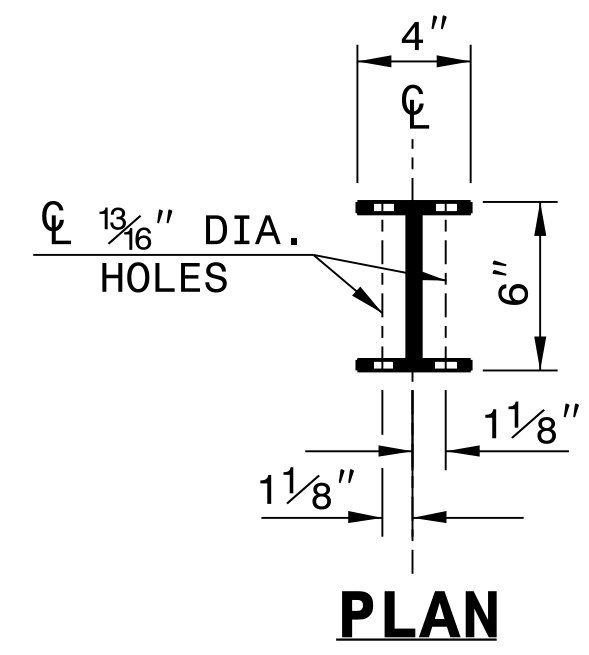
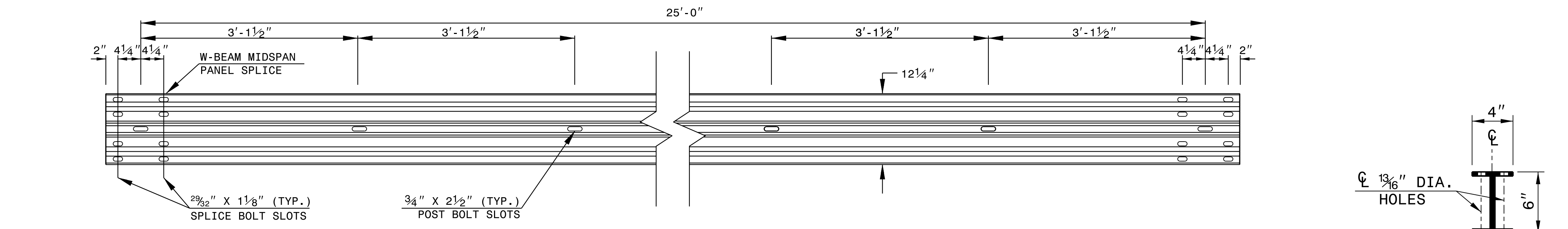
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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

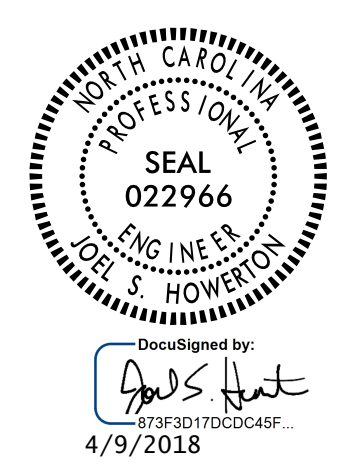


STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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
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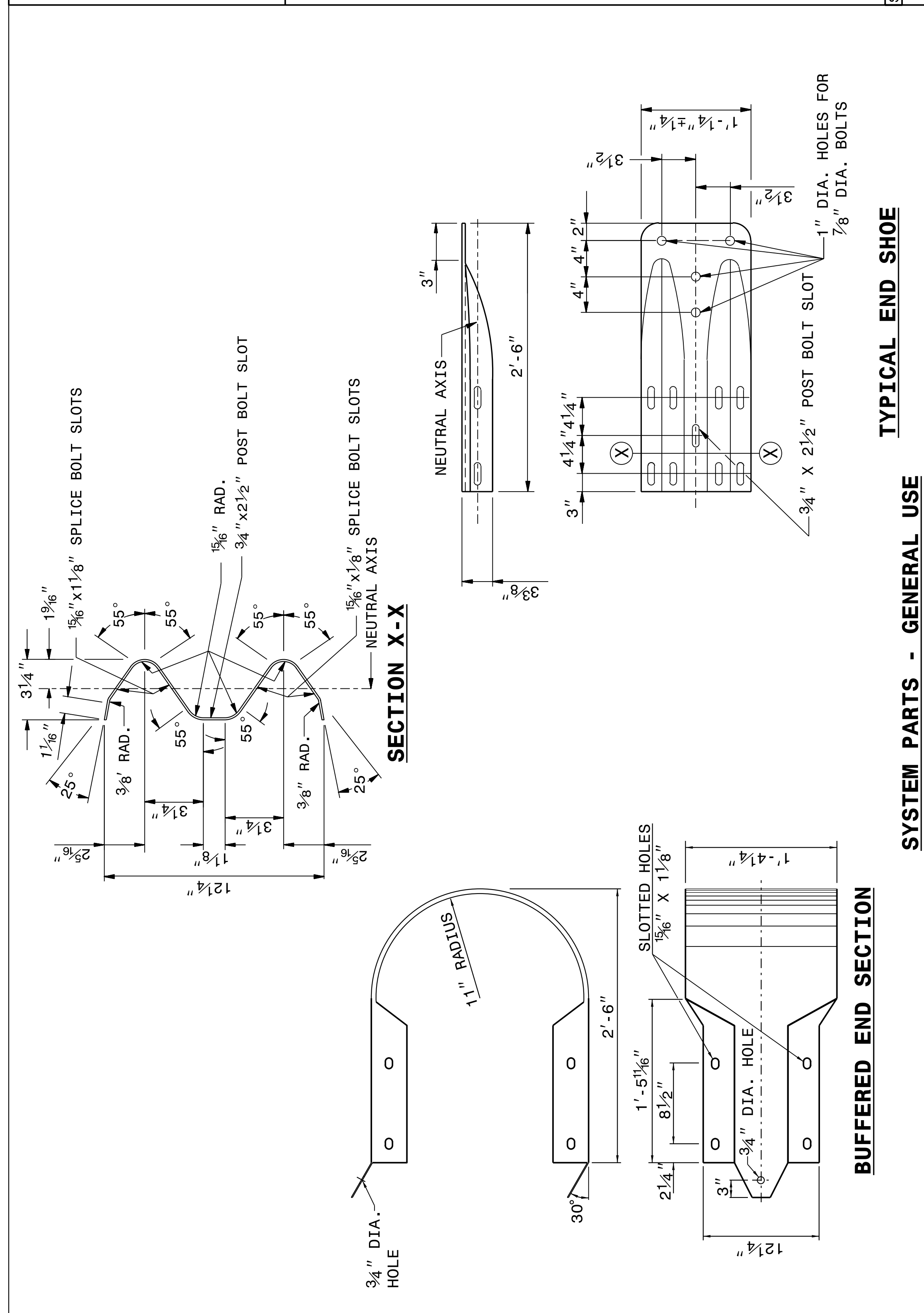


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 J.Howerton AT:CSU-292595

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 8 OF 8  
**862D02**



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

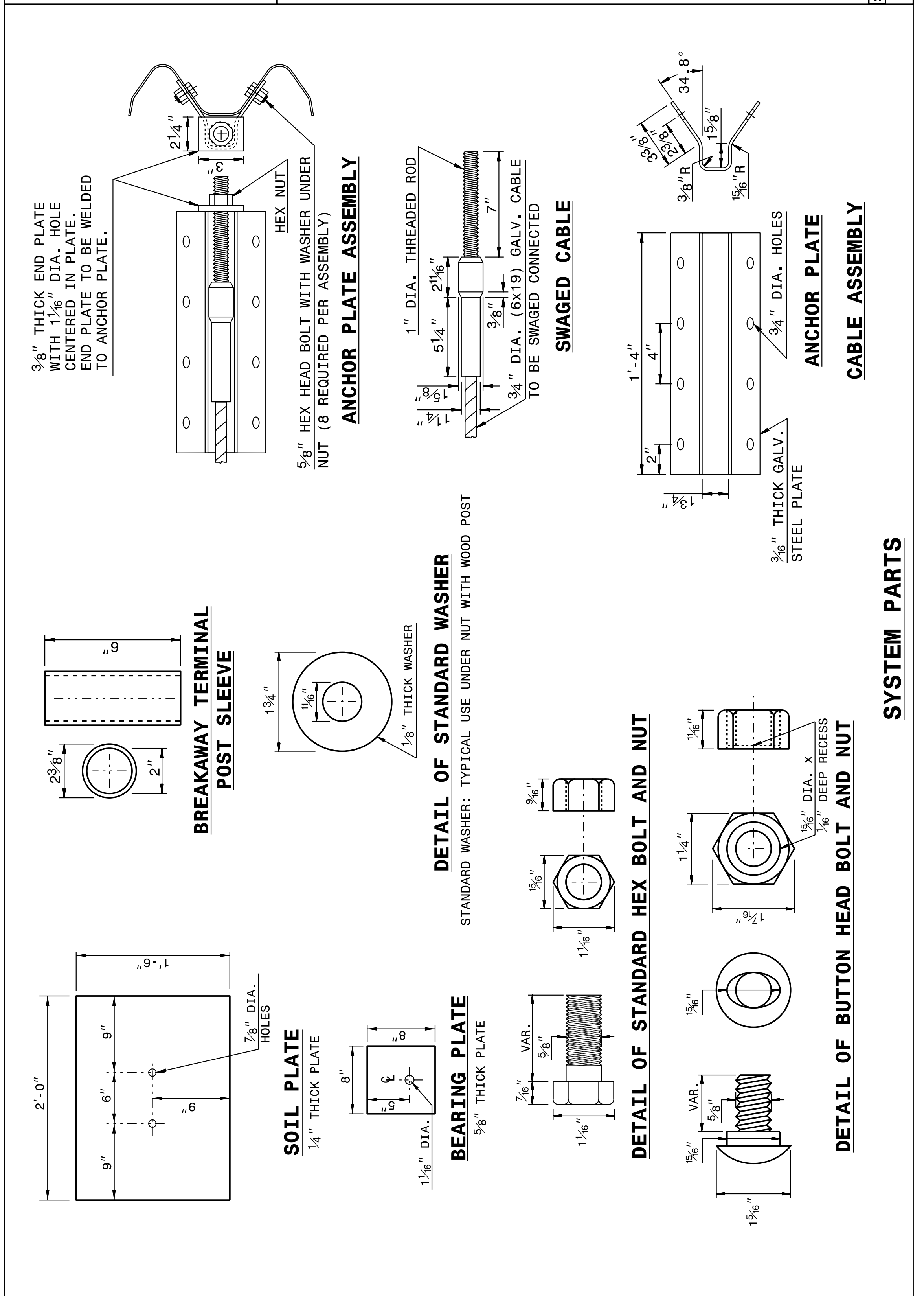
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 8 OF 8  
**862D02**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 7 OF 8  
**862D02**



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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 7 OF 8  
**862D02**

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 AND DEVELOPMENT UNIT**  
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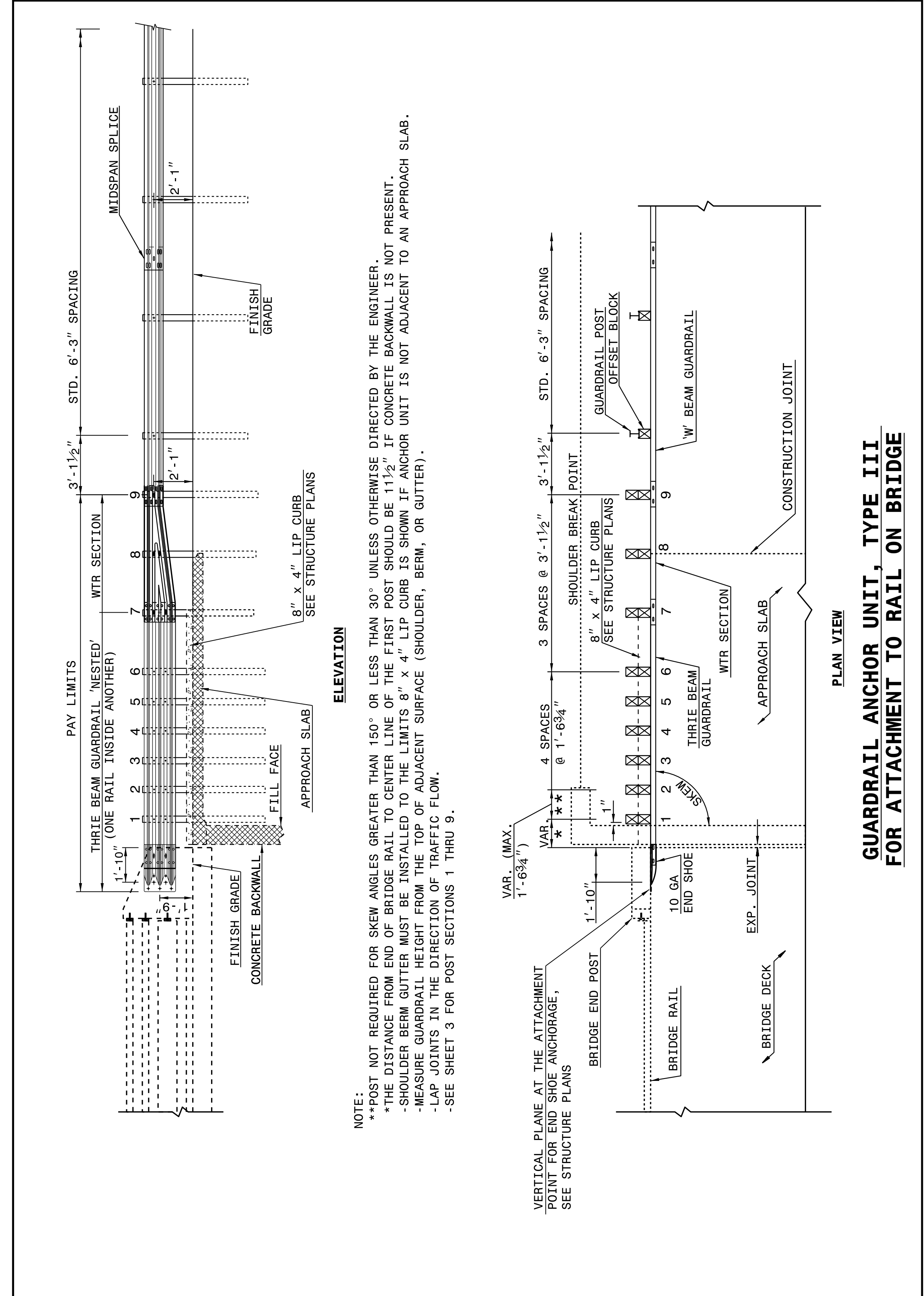


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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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

SHEET 1 OF 7  
**862D03**

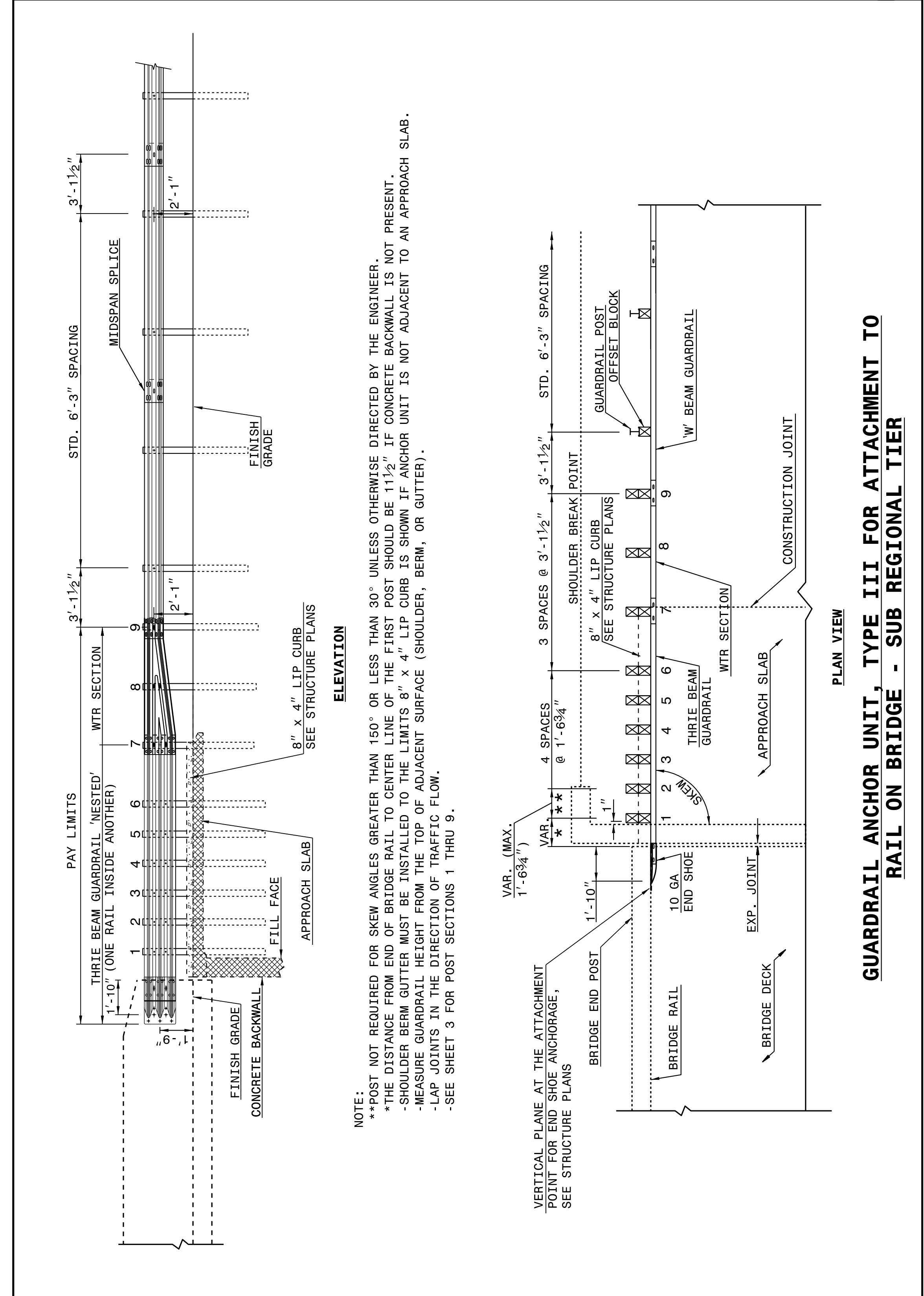


**NOTE:**  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED 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 DIVISION OF HIGHWAYS 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 2 OF 7  
**862D03**



**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 11 1/2" 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 DIVISION OF HIGHWAYS 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**

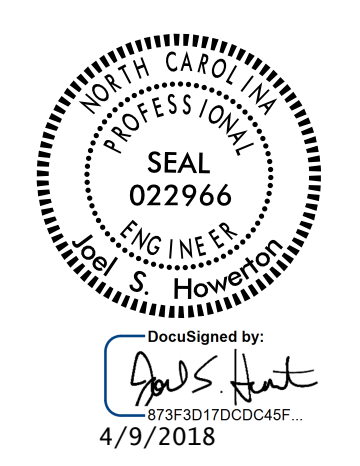
**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER**

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**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
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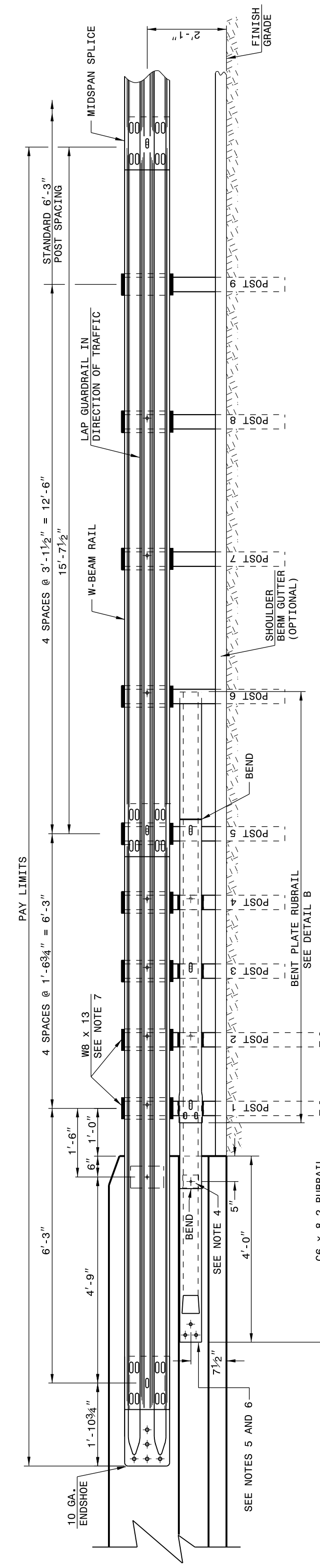
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 FILE SPEC.:



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STATE OF  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.



**ELEVATION**

- GENERAL NOTES:**
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL; RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 5/8" BUTTOMHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH 5/8" X 1 1/4" LONG BUTTOMHEAD BOLTS. RUBRAIL IS FLARED TO BACK OF POST 6, AND NOT SECURED.
  - W-BEAM GUARDRAIL TUBES SHALL BE CALIBERED TO FIT OVER THE RUBRAIL AND BE 1/8" LONGER THAN THE RUBRAIL. ATTACH TUBE TO GUARDRAIL ONLY WITH 5/8" X 1 1/4" LONG BUTTOMHEAD BOLT AND RECTANGULAR PLATE WASHER.
  - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8" X 3" LAG BOLT WITH FLAT WASHER. TOE OF THE BARRIER OR BRIDGE RAIL.
  - ANCHOR THE RUBRAIL TO THE W-BEAM USING THREE 5/8" X 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1/2".
  - AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE 5/8" X 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1/2".
  - A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.041). INSTALL THE W-BEAM END SHOE BEHIND THE NESTED W-BEAM ELEMENTS.
  - 1 1/2" DIA. HOLES IN RUBRAIL AND W-BEAM ELEMENTS. DETAILLED ON THE STRUCTURE PLANS.
  - POSTS 1 AND 2 ARE W8 X 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W8 X 8.5.

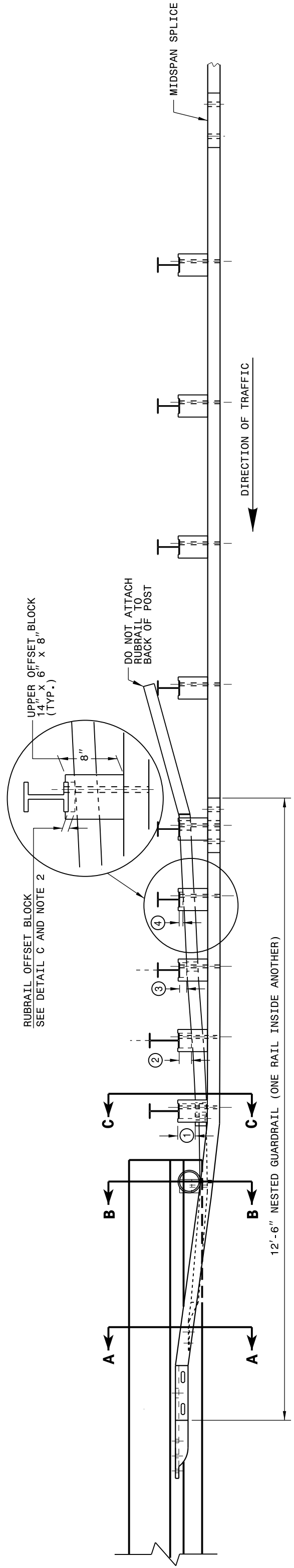
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL ANCHOR UNIT**  
GUARDRAIL ANCHOR UNIT TYPE B-77  
FOR F-SHAPE BARRIER

SHEET 4 OF 7  
**862D03**

STATE OF  
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNIT**  
FOR F-SHAPE BARRIER

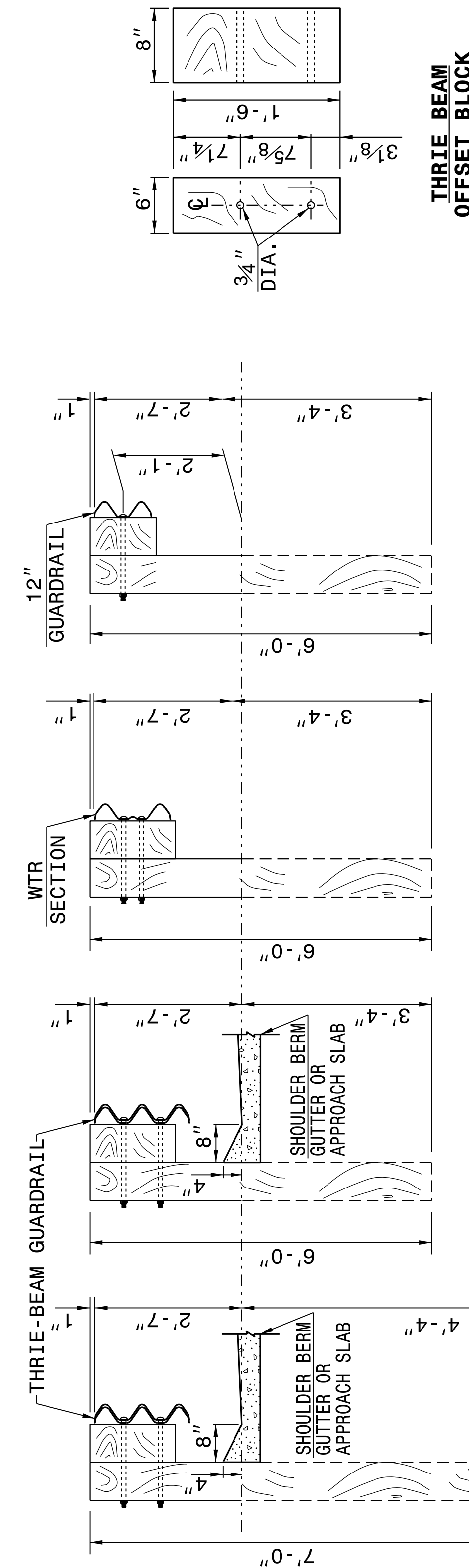
SHEET 4 OF 7  
**862D03**



**PLAN**

**GUARDRAIL ANCHOR UNIT TYPE B-77**

STATE OF  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.



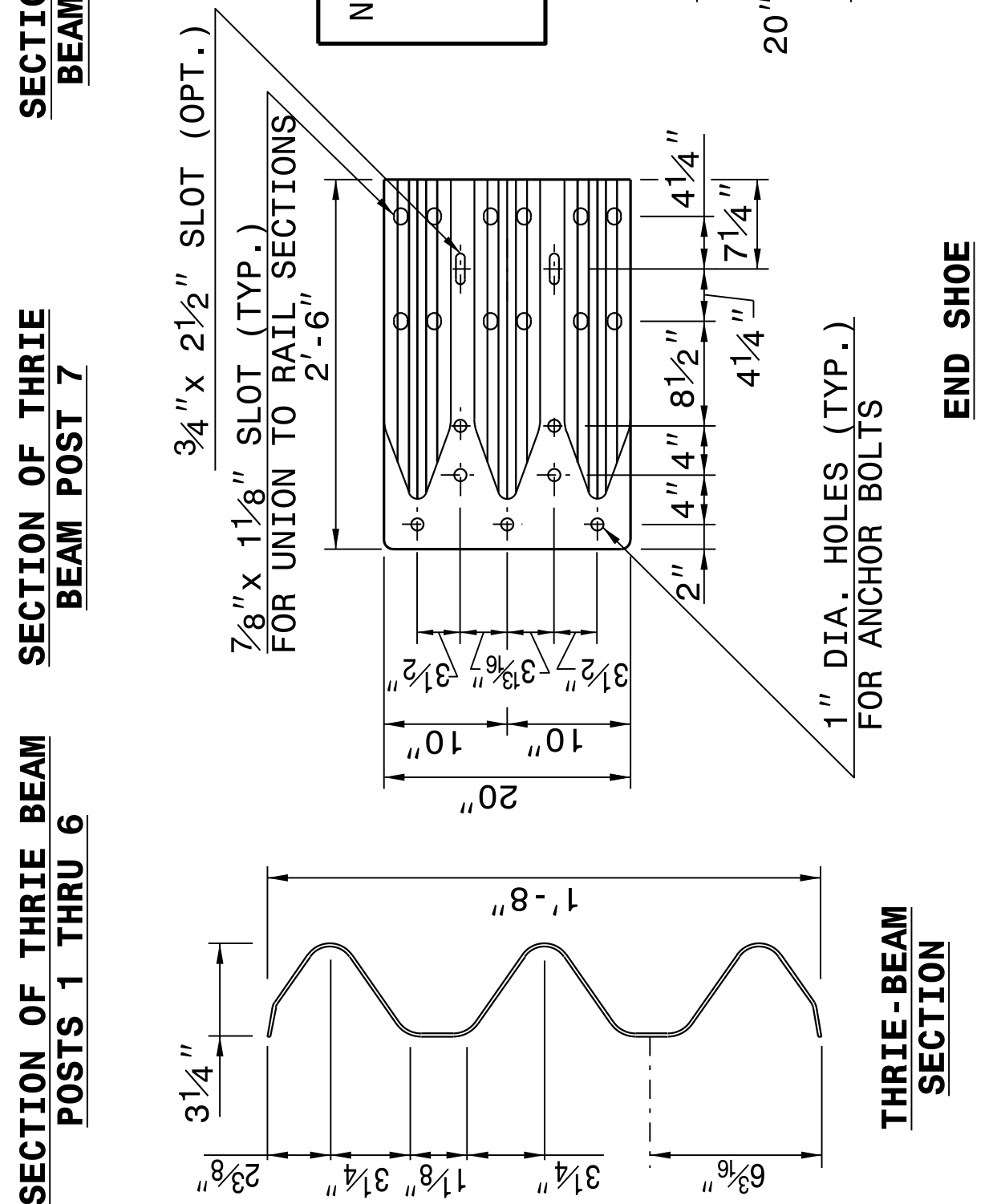
ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862D03**

STATE OF  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

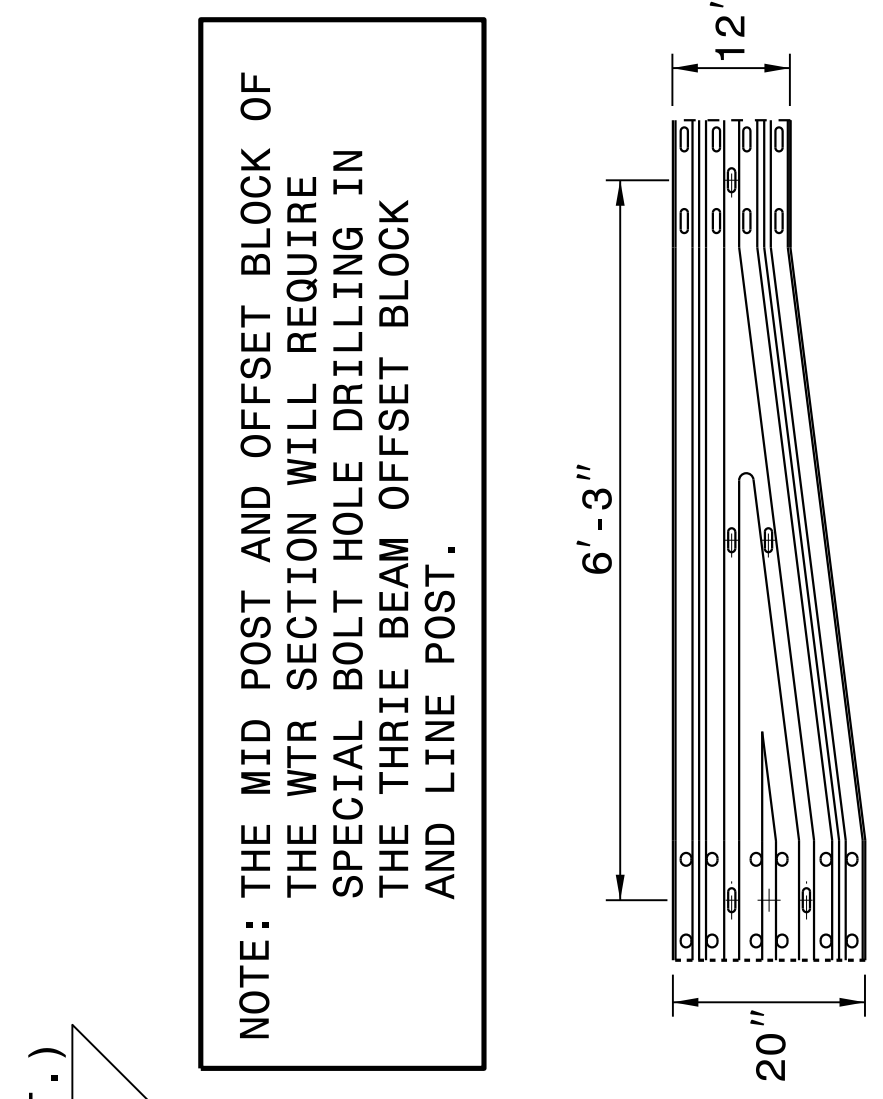
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**STRUCTURE ANCHOR UNITS**  
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7  
**862D03**

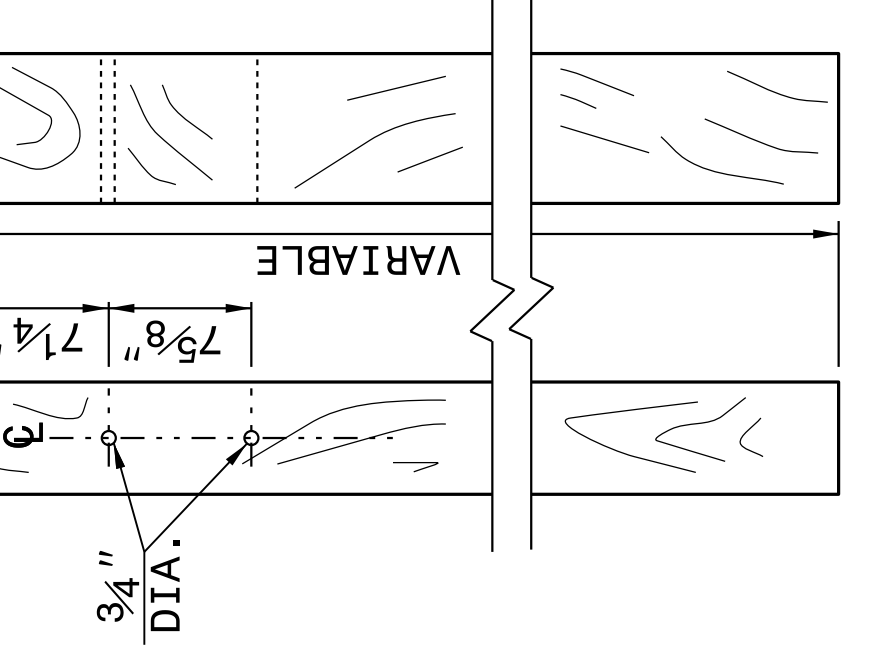


**END SHOE**

NOTE: THE MID POST AND OFFSET BLOCK OF WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



**WTR SECTION ELEVATION VIEW**



**THRIE BEAM OFFSET BLOCK**

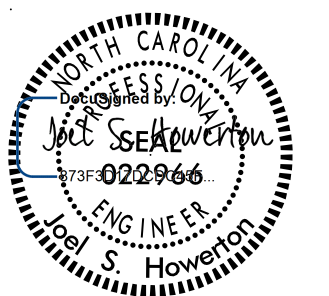
**THRIE BEAM LINE POST**

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**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
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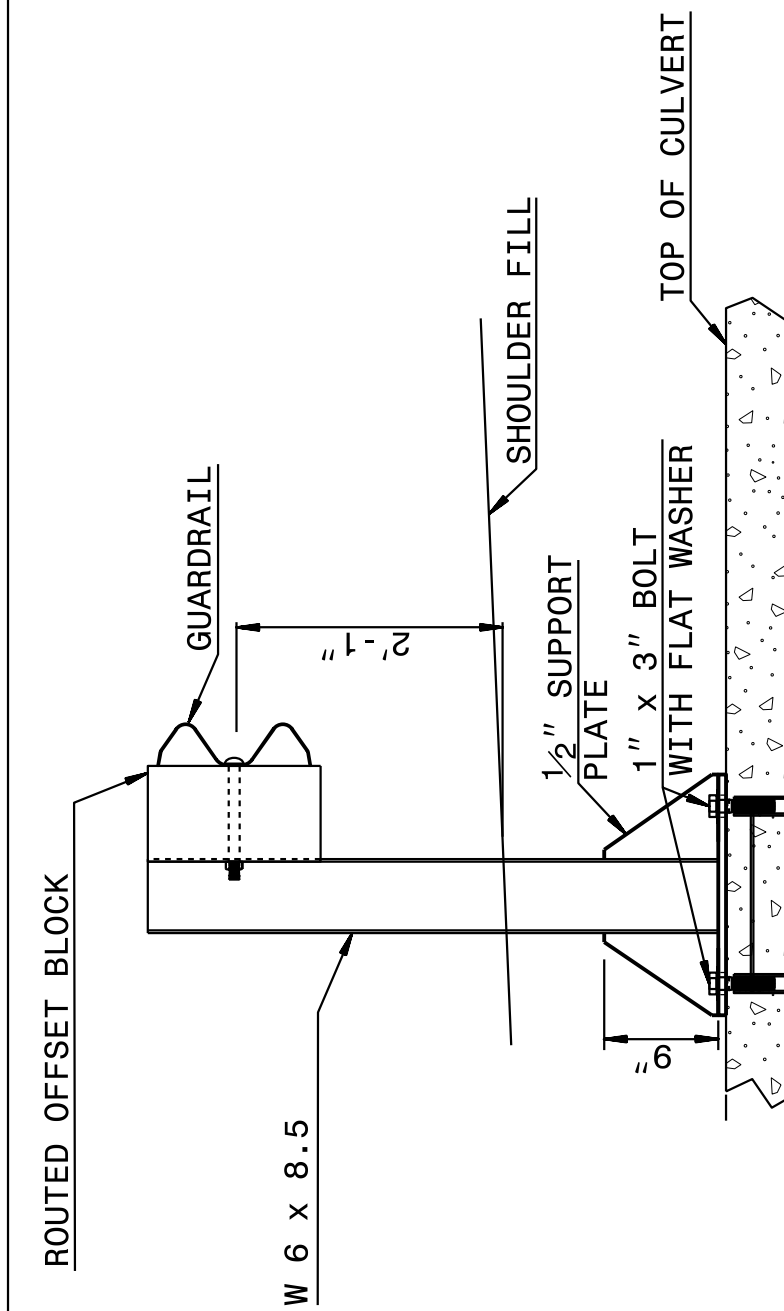


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STATE OF  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

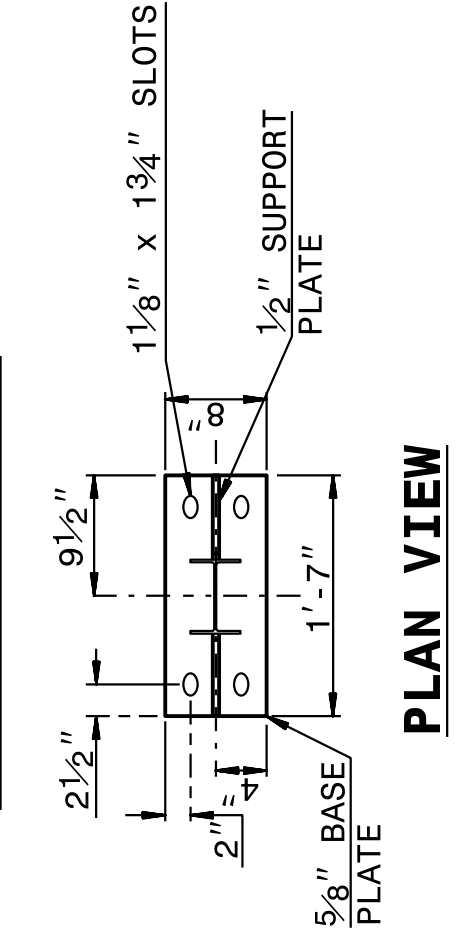
ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

SHEET 7 OF 7  
**862D03**

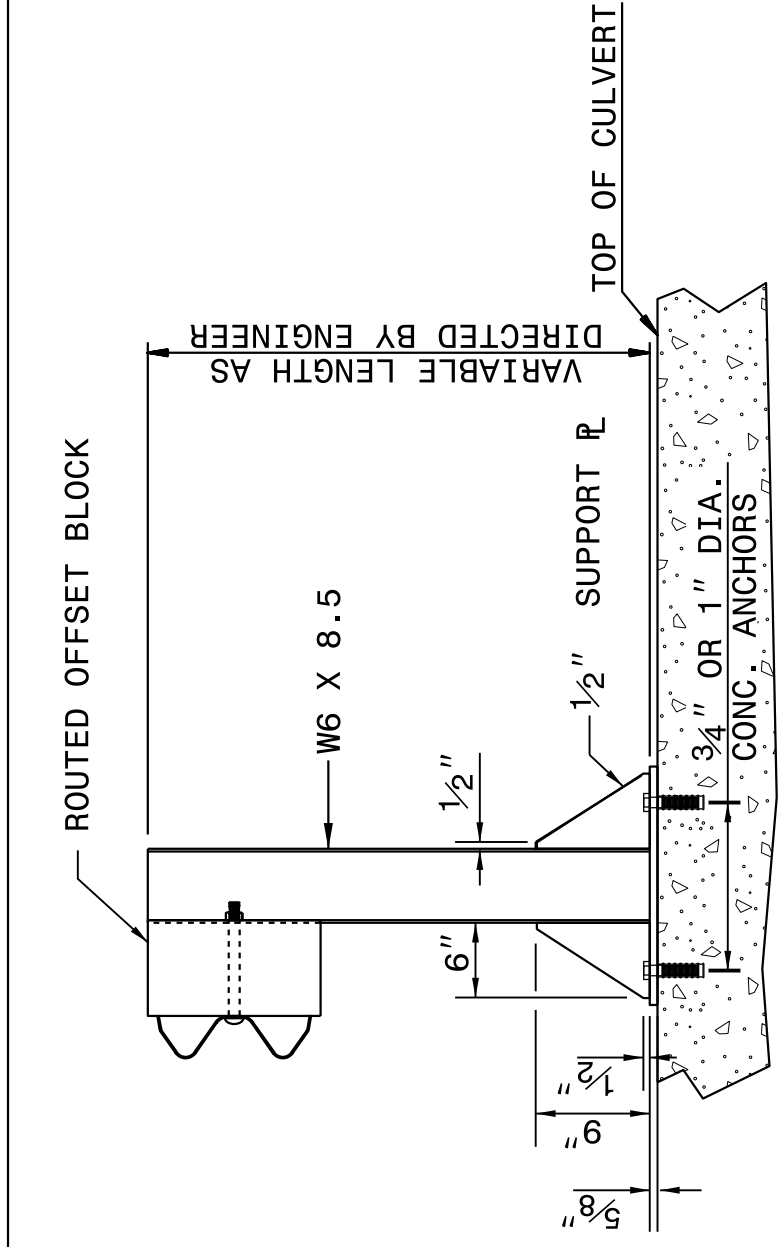


**ELEVATION VIEW**

GUARDRAIL ANCHOR ASSEMBLY ASSEMBLED AND INSTALLED IN ACCORDANCE WITH STRUCTURE PLANS (SEE NOTES)



**PLAN VIEW**



**ELEVATION VIEW**

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

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

SHEET 7 OF 7  
**862D03**

**NOTES FOR:**  
 -USE FULL LENGTH 1/4" BUTT WELDS AT ALL LOCATIONS OF CONTACT BETWEEN THE BASE PLATE, SUPPORT PLATES AND STEEL POST.  
 -USE POST AND POST BASE PLATES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION TO CONFORM TO A.S.T.M. A-123.

**NEW STRUCTURES:**  
 -ATTACH POST TO INSERT ASSEMBLY UNITS (USING ANCHOR BOLTS SUPPLIED WITH INSERTS) WHICH HAVE BEEN CAST INTO THE STRUCTURE DURING CONSTRUCTION.

**EXISTING STRUCTURES:**  
 -USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 2875 LBS. FOR A 3/4" OR 1" DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON 1/4 THE ACTUAL HOLDING POWER OF THE ANCHOR IN 3500 PSI CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.

-USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

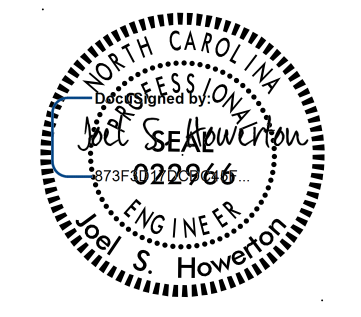
**ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT**

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**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
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FILE SPEC.:	







COMPUTED BY: KDA      DATE : 4/5/2016  
 CHECKED BY: AJF      DATE : 4/7/2016

PROJECT NO.      SHEET NO.  
 B-5205              3G-1

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
					250	450	500**		
					250	450	500**		

\*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 SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* SD	LF
				200	200
				TOTAL LF:	200

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

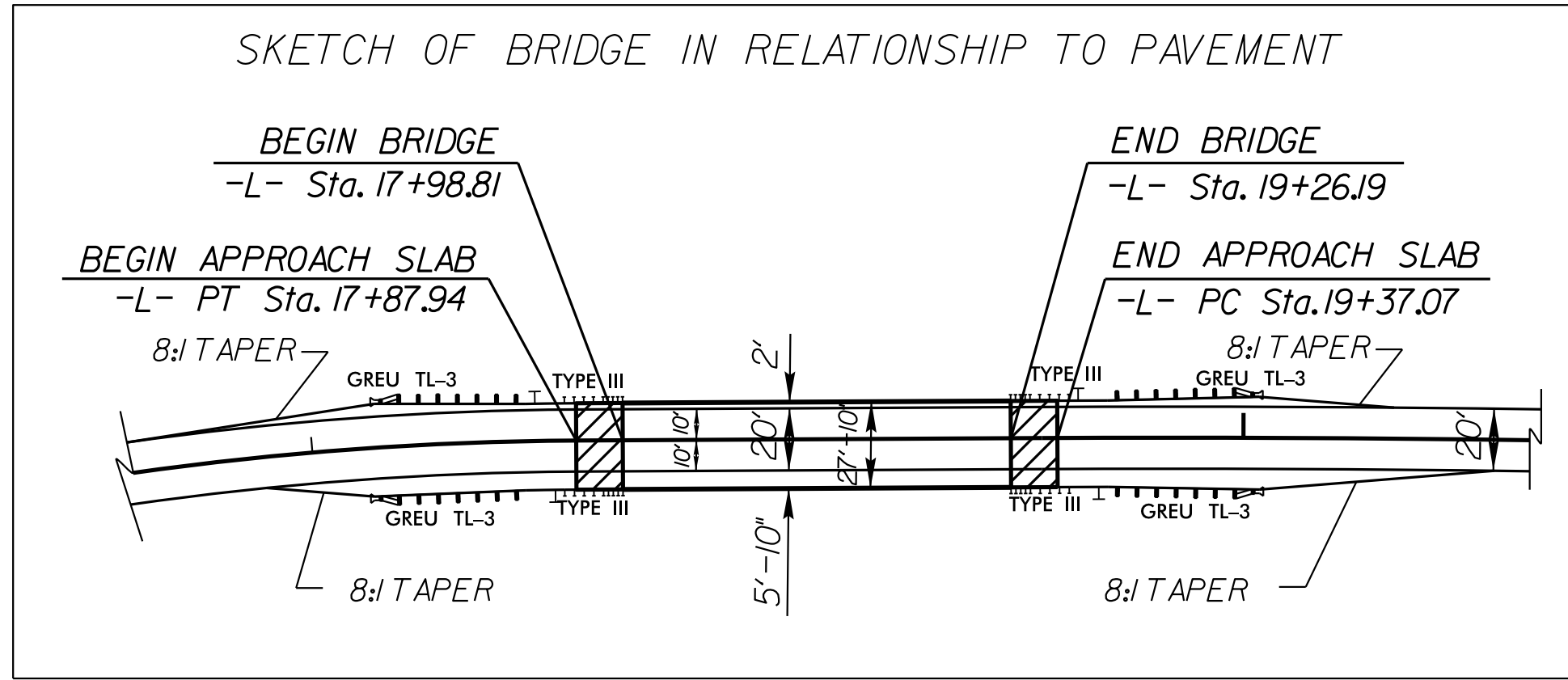
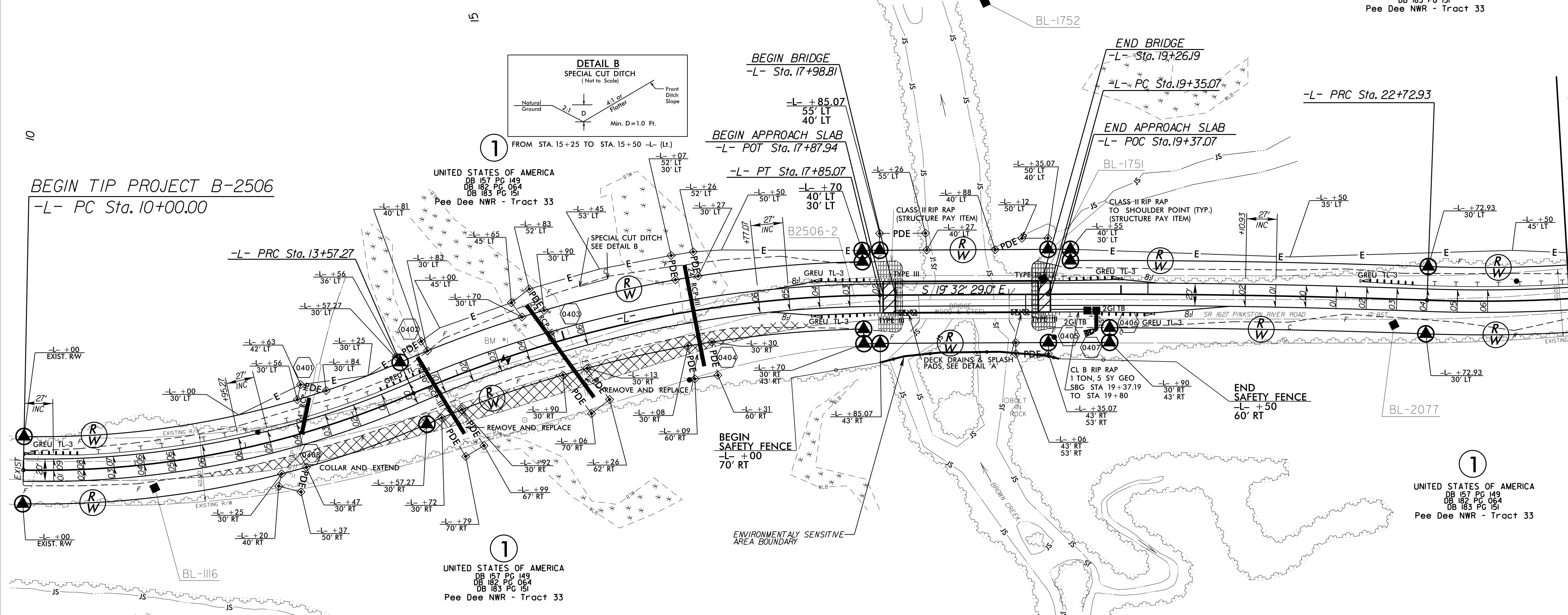
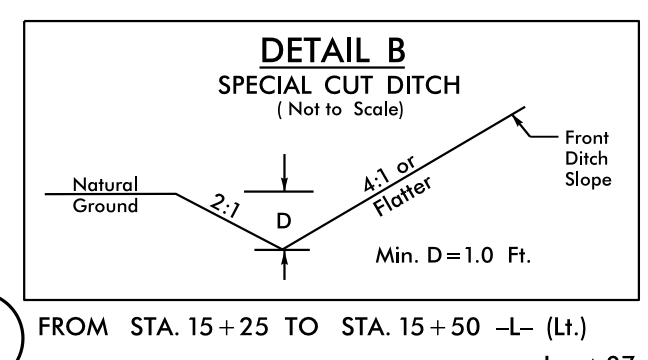
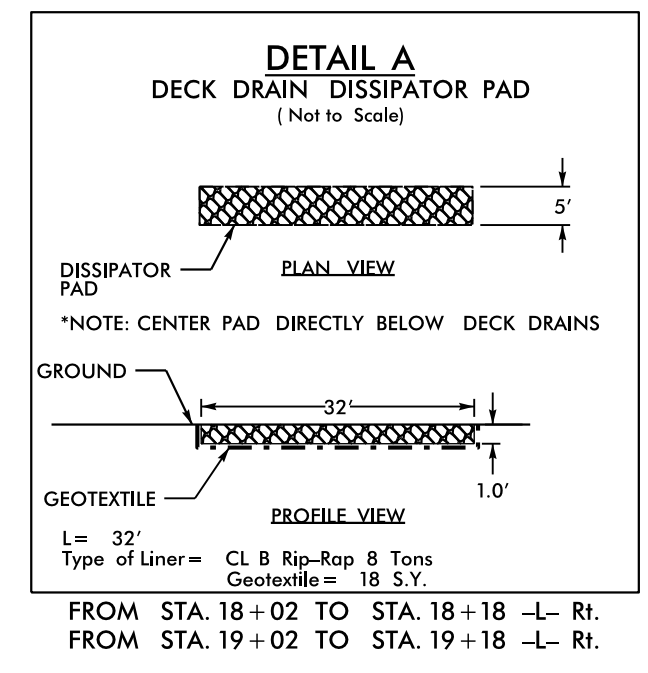


PROJECT REFERENCE NO. B-2506	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
10/4/2017	10/4/2017
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

FOR -L- PROFILE SEE SHEET 6  
FOR STRUCTURE PLANS SEE SHEETS S-1 TO S-20

**NAD 83/NSRS 2007**

-L-		
PI Sta 11+81.42 $\Delta = 24' 34" 25.1" (LT)$ D = 6' 52' 41.7" L = 357.27' T = 181.42' R = 833.00' SE = 06 INC = 27' RO = 162'	PI Sta 15+74.12 $\Delta = 23' 07" 26.0" (RT)$ D = 5' 24' 18.9" L = 427.80' T = 216.85' R = 1,060.00' SE = 06 INC = 27' RO = 162'	PI Sta 21+04.02 $\Delta = 2' 24" 06.1" (RT)$ D = 0' 42' 39.1" L = 337.86' T = 168.95' R = 8,060.00' SE = 06 INC = 27' RO = 162'



1  
UNITED STATES OF AMERICA  
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DB 182 PG 064  
DB 183 PG 151  
Pee Dee NWR - Tract 33

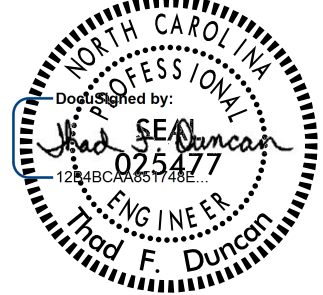

1  
UNITED STATES OF AMERICA  
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Pee Dee NWR - Tract 33

MATCHLINE SHEET 5 -L- STA. 24+00

REVISIONS

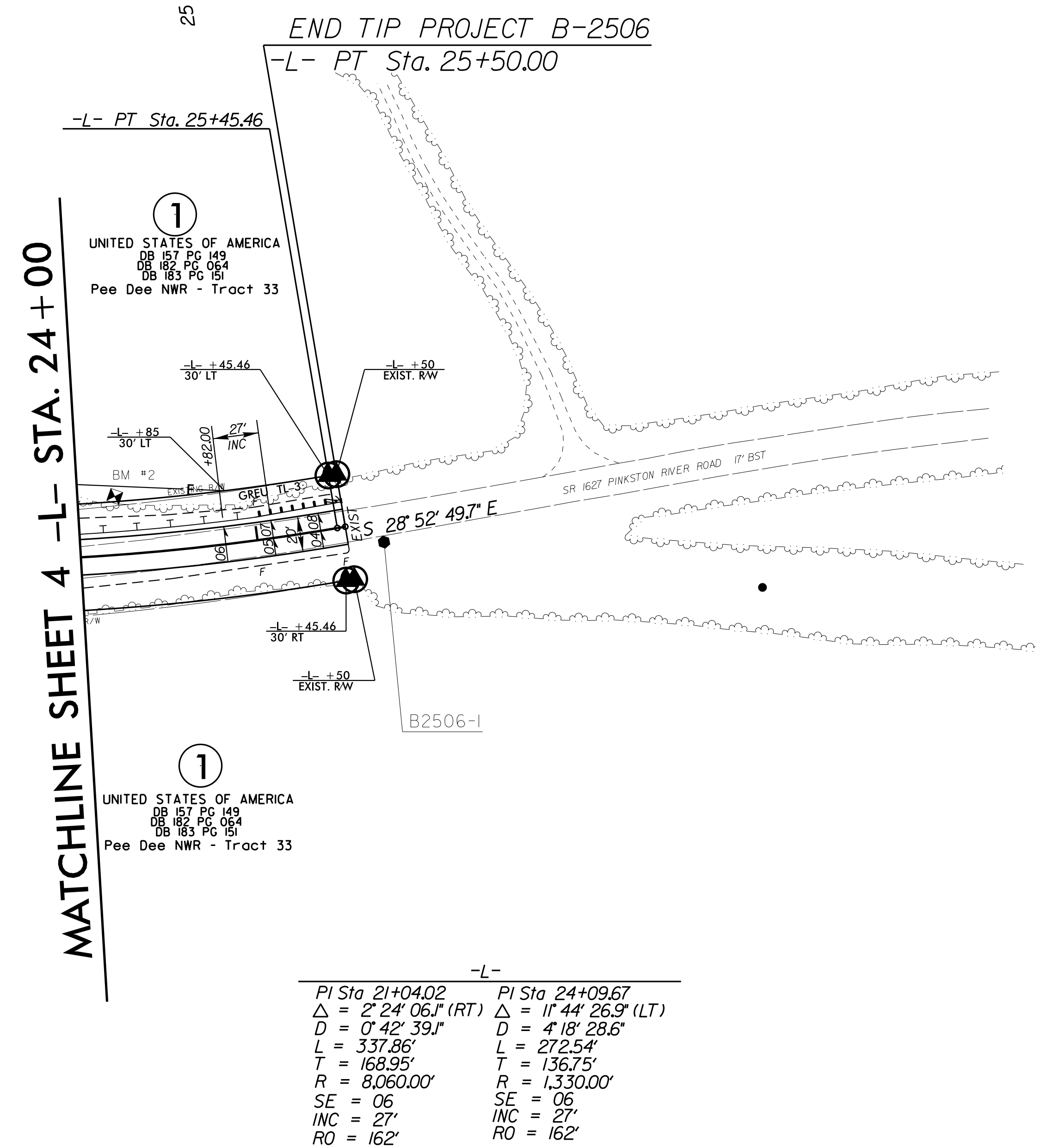
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PROJECT REFERENCE NO. B-2506	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
10/4/2017	10/4/2017
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FOR -L- PROFILE SEE SHEET 6

NAD 83/NSRS 2007



-L-

PI Sta 21+04.02	PI Sta 24+09.67
$\Delta = 2^\circ 24' 06.1''$ (RT)	$\Delta = 1^\circ 44' 26.9''$ (LT)
$D = 0^\circ 42' 39.1''$	$D = 4^\circ 18' 28.6''$
$L = 337.86'$	$L = 272.54'$
$T = 168.95'$	$T = 136.75'$
$R = 8,060.00'$	$R = 1,330.00'$
SE = 06	SE = 06
INC = 27'	INC = 27'
RO = 162'	RO = 162'

MATCHLINE SHEET 4 -L- STA. 24+00

①  
UNITED STATES OF AMERICA  
DB 157 PC 149  
DB 182 PC 064  
DB 183 PC 151  
Pee Dee NWR - Tract 33

①  
UNITED STATES OF AMERICA  
DB 157 PC 149  
DB 182 PC 064  
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Pee Dee NWR - Tract 33

REVISIONS

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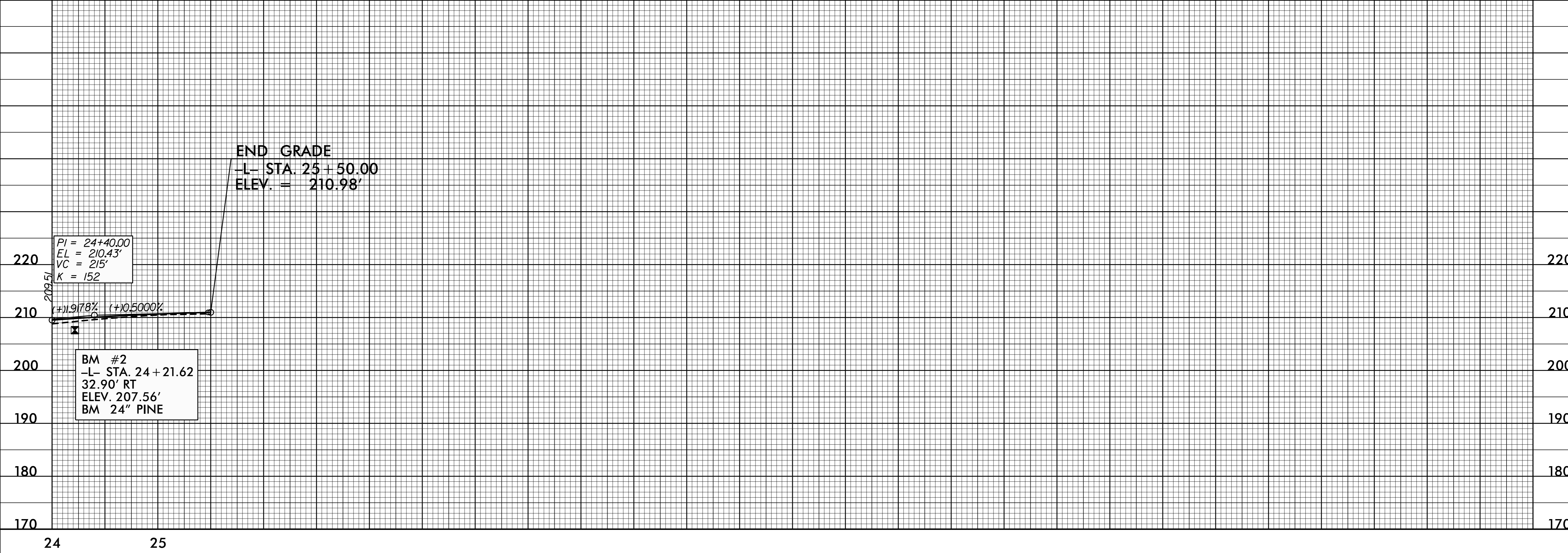
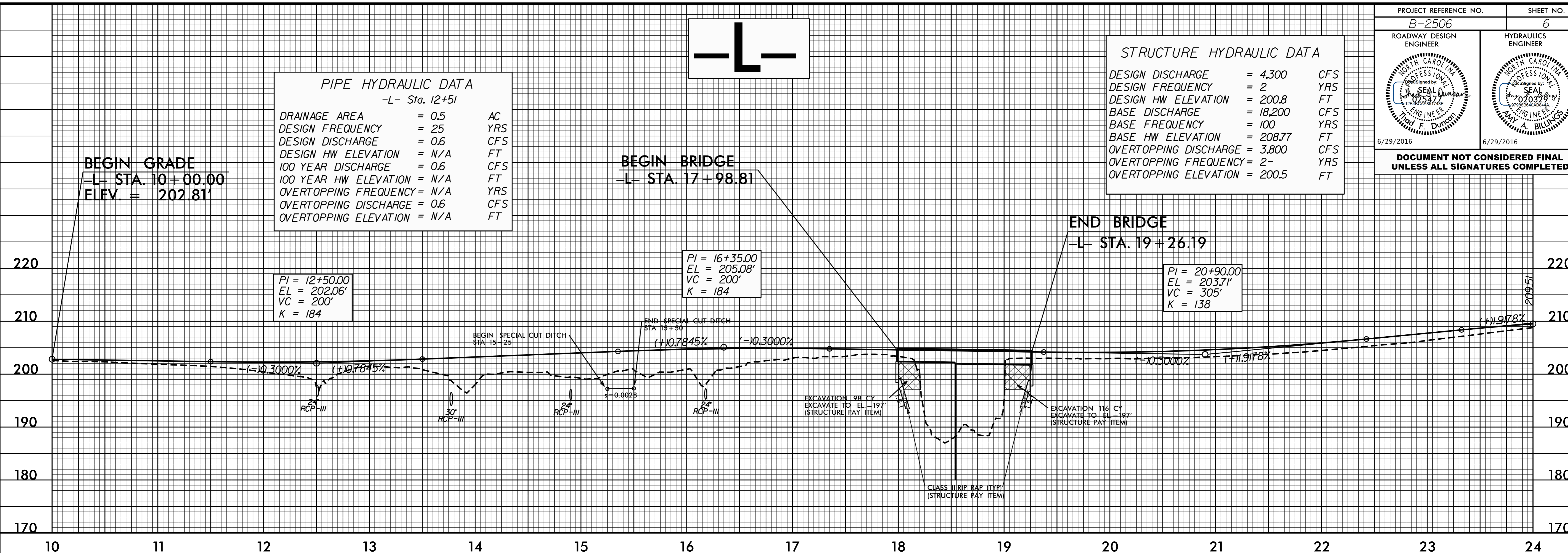
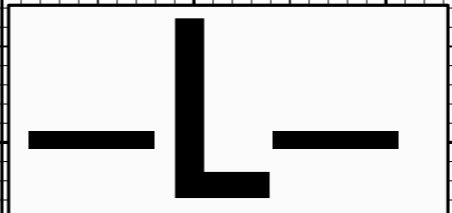
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UNLESS ALL SIGNATURES COMPLETED

**PIPE HYDRAULIC DATA**  
-L- Sta. 12+51

DRAINAGE AREA	= 0.5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.6	CFS
DESIGN HW ELEVATION	= N/A	FT
100 YEAR DISCHARGE	= 0.6	CFS
100 YEAR HW ELEVATION	= N/A	FT
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING DISCHARGE	= 0.6	CFS
OVERTOPPING ELEVATION	= N/A	FT

**STRUCTURE HYDRAULIC DATA**

DESIGN DISCHARGE	= 4,300	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 200.8	FT
BASE DISCHARGE	= 18,200	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 208.77	FT
OVERTOPPING DISCHARGE	= 3,800	CFS
OVERTOPPING FREQUENCY	= 2-	YRS
OVERTOPPING ELEVATION	= 200.5	FT



5/28/99  
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